Statistics South Africa

CENSUS 2001

Computer editing specifications

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I EXECUTIVE SUMMARY

The Republic of South Africa conducted its second post-apartheid Population and Housing Census in October 2001. More than 10 million questionnaires were received at the processing centre in Pretoria following the enumeration. These questionnaires were scanned, and the data from them was then delivered to Statistics South Africa for editing and tabulation. This document provides the specifications used for the computerised editing operation that followed data capture.

Computerised data editing for population and housing censuses is the automated detection and correction of errors in accordance with a pre-defined set of edit specifications. It is one of the last of the main phases of data processing, which are:

Processing Phase	Description	Output Product
receipt/check-in	archival of materials in warehouse, registration in document control system	batches of questionnaires, organised and ready for capture
data capture	scanning, tiling, completion, coding, capture quality assurance	raw data
interactive editing	operations such as bogus detection, flip-flop resolution, and continuation barcodes.*	intermediate raw data
computerised editing	error detection and correction	final data
tabulation/data products	production of tables and other data products	final tables, ready for publication and dissemination

(Design specifications for the bogus, flip-flop, and other interactive editing processes are available from Stats SA. See source list below.)

* The interactive edits are fully described in section X for more information

The purpose of editing is to make processed data complete and internally consistent, while making a minimum number of changes. Proper editing will reduce content error, although it will not markedly improve census quality or resolve collection and capture problems.

It is important that published census data and other dissemination products exhibit consistency and be free of unreasonable values. Statistics South Africa's data editing strategy involved the compilation of edit specifications for the housing, population, and mortality parts of the census questionnaire. Thereafter, software specialists implemented the edits in accordance with these specifications using computer programmes. After the pilot Census in March 2001, a team was formed to define and implement these specifications. The team consisted of Stats SA subject matter specialists, demographers, and programmers, as well as outside consultants.

This document defines the agreed specifications for computerised editing of Census 2001. Section II describes the key concepts involved in editing, what the different types of edits are, explains why editing of data is necessary, and discusses some of the risks associated with the process. Sections III-VI elaborate specific edit checks for each of the 80+ variables in the census questionnaire, and resolutions when these checks are not satisfied. Edits that make use of coded data (such as the religion, migration, and economic activity questions), are grouped at the end of section V (population edits), since at one point a staggered release schedule for non-coded and coded sections was anticipated.

The recommendations made in the following sections are summarised below:

Quality control measures. The editing team implemented a comprehensive set of quality control measures, including maintaining backups of raw data, providing an audit trail, incorporating diagnostic routines in the editing system, and providing comprehensive reporting and comparison of results. A formal testing system was used to ensure that the final data was consistent and did not contain invalid values.

Imputation techniques. The editing system uses a combination of both "logical" imputation techniques and "hot decks" (dynamic imputation) when inconsistencies are found in the data; "undetermined" values are used for only a few variables, such as industry and occupation. The system tries to make the minimum number of imputations in order to remove errors and make the data consistent.

Logical imputations, in which a consistent value is calculated or deduced from other information in the household, are usually preferred over hot deck imputations. Generally, the editing system attempts to resolve inconsistencies first by looking at other characteristics of the household (for example, a married person with invalid sex would be assigned the opposite sex to their spouse). If this is unsuccessful, then a consistent value is imputed from a hot deck (as described in section II.5).

Imputation flags. In order to assess the effects of imputation, almost all variables have corresponding imputation flags. These flags are maintained at the record level, and indicate what imputation, if any, was performed on each data item. Each flag has values to indicate whether or not an imputation was performed, and if so, if it was a logical or hot-deck imputation. Imputation flags are described in section VII.

Unedited data. The final data set contains "copies" of the unedited values for several key variables, as described in section VIII. If analysts need access to raw census data, they can use these values. In addition, the imputation flags described above could serve as filters if a researcher wants to exclude hot-decked values during analysis, for example.

As mentioned above, copies of the entire raw data set are preserved. However, these would be difficult to compare to the edited data because they contain superfluous data for bogus person and death records (see section X.2), records that are not minimally processable (edit III.6), duplicate questionnaires (edit III.8), vacant households (edit III.7), babies born after the census reference night (edit V.2), etc.

Collaboration with specialists. Stats SA demographers and subject-matter specialists were consulted to help review and refine the edit specifications, and analyse the results of the editing system. Specialists from outside Stats SA were consulted on some of the editing sections, including disabilities, education, migration, and fertility.

Computer software. The Integrated Microcomputer Processing System (IMPS), developed by the U.S. Census Bureau, is the principal software product used to implement the editing system. Specifically, the edits in sections III-VI were programmed using the CONCOR module of IMPS. Interactive edits, defined in section X, were implemented mostly using Oracle PL/SQL and Visual Basic.

Risks. The risks associated with data editing mostly concern poor quality data. Simply put, consistency analysis and imputation can be problematic when the data contains high rates of non-response or many inconsistencies. Editing will not markedly improve poor-quality data, and the editing process in these situations usually requires manual intervention and is very time consuming.

The editing team's final report to Stats SA management includes imputation rates and an assessment of the effects of editing for every variable. The report also signals particular situations where imputations rates seem unreasonably high, or the data quality for a variable is suspect.

II INTRODUCTION

II.1 BACKGROUND

No census is perfect, and census data invariably contain errors. Before computer processing became pervasive, national statistical offices hired teams of semi-skilled clerks to review questionnaires for inconsistencies and make corrections manually as needed. This approach had several negative repercussions:

- no set of unedited data was available afterwards;
- the process was very time-consuming and could significantly delay publication of results;
- it was difficult to obtain systematic reports of imputation rates;
- there was a high risk of introducing bias in the data, since different clerks (or even the same clerk at different times) might interpret the data in different ways.

This manual editing approach has also been used in conjunction with computer processing. One scenario would be to capture the data, and then use a computer programme to identify inconsistencies. Editing clerks would then analyse individual persons or households and make imputations as needed. But here again, it is difficult to report on what imputations were made and with what frequency, and the risk of differing interpretations is still present. Also, in many cases there might not be a clear-cut resolution to a given inconsistency.

Another alternative is computer-assisted manual editing during the data capture phase. For example, during keying the computer might beep and inform the entry clerk that some inconsistent data has just been entered. The clerk could then review what was entered to make sure it is correct, or call a supervisor to make a correction. There are a couple of drawbacks to this approach when used during a census capture operation, however. First, the skill level and training of the entry clerks is almost always inadequate for them to make correct imputation decisions (they are trained to enter data, not analyze it). Second, it slows the capture phase down significantly and is difficult to manage from an operational point of view.

Computerised data editing, as implemented in Census 2001, is an attempt to systematise the editing process by using a detailed set of pre-defined rules that are applied to the raw data. These rules are implemented as a series of computer programs, whose output is the edited data set. This approach solves the problems previously cited; and has the following advantages:

- a copy of the unedited data is preserved at all times for archival (or internal analysis) purposes;
- the process is quick and efficient;[1]
- comprehensive reports can be produced, showing occurrences of specific inconsistencies and imputation frequencies;
- there is no chance of differing interpretations, since the computer will always apply the same set of rules in the same pre-defined manner;
- the edit specifications can be fine-tuned and applied many times, which makes the process more interactive and flexible.

However, because the census data set will invariably contain bizarre, unanticipated cases, some human interaction and manual imputation will almost always be necessary. But with a comprehensive set of specifications, the amount of manual editing can be minimised.

[1] The automated editing system for Census 2001 takes approximately 16 hours to run.

Statistical organisations in more than one hundred countries around the world use the Integrated Microcomputer Processing System (IMPS), developed by the U.S. Census Bureau, to implement their computerised data editing systems. IMPS and its successor CSPro have been recommended by the statistical office of SADC for use by member countries as part of the 2000 Round of Population Censuses.

II.2 WHY EDIT CENSUS DATA?

Computerised data editing (referred to here simply as *editing*) is not a substitute for good census planning, a well-designed questionnaire, motivated and well-trained enumerators, good collection procedures, and an accurate data capture system. It is not meant to resolve problems and shortcomings in these other processes. In fact, although editing will correct certain errors, it cannot dramatically improve the overall quality of the census.

If editing will not markedly improve census quality, then why do it? The answer is that proper editing has several very important benefits:

Proper editing facilitates data processing. As the manual *Principles and Recommendations*[2] notes, raw data contain two broad types of errors, those that impede or prevent processing (structural errors) and those that introduce distortions in the data (inconsistencies). All of the structural errors must be corrected, and as many of the inconsistencies as possible. Failure to correct structural errors (such as missing record types, invalid questionnaire identification, duplicate or missing questionnaires, blank records, etc.) will make tabulating the raw data impossible.

Proper editing cleans up the data and fixes errors. In statistical terms, this means lowering the amount of content error. This involves removing or imputing invalid response values (such as a person's age declared as 465), categorising blanks (a blank response to the question "Number of children surviving" has different meanings for men and for women aged 12-50), handling skip pattern violations (such as unemployed people who respond to the industry and occupation questions), and dealing with ridiculous inconsistencies (such as 5-year olds who are grandparents). Editing is a good way to deal with these issues; without editing, the final census results would inevitably contain inconsistencies and a certain amount of meaningless data.

Proper editing increases user confidence. Data users might unfairly criticise the census and the statistical organisation if the census results contain inconsistent data. If they see a table showing a few 3-year-olds who have finished high school, they might decide that since this is obviously an error, then the quality of the whole census is suspect. According to the *Handbook on Editing*, "the credibility of the census and the national census/statistical organisation is often at stake in obtaining a census without invalid and inconsistent entries."[3]

Proper editing facilitates planning and data use. When tables include unknown or unstated values, planners will have to decide how to handle these values. Often, they will simply allocate them among the other possible categories. Having this "noise" in the data can make usage cumbersome. Taking advantage of other characteristics of a person or household in order to make an intelligent imputation decision is usually a better approach. As the *Handbook on Editing* notes, "Columns or rows of unknowns in tables are neither informative, nor useful, so planners in most countries prefer to have these data imputed."[4]

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[2] United Nations (1998)*Principles and Recommendations for Population and Housing Censuses*, paragraph 1.195.
[3] United Nations (2002) *Handbook on Population and Housing Census Editing*, paragraph 56.
[4] *Handbook on Population and Housing Census Editing*, paragraph 63.

Caveat: While it is true that proper editing will reduce content error, it is also true that *improper* editing can introduce further response error. Statistically speaking, imputation rates must be kept low in order to avoid introducing bias. The edit specifications attempt to identify the minimum number of imputations that are necessary to remove inconsistencies from the data. Facilities to report imputation rates should be used, and these rates closely monitored.

II.3 TYPES AND SOURCES OF ERRORS

Editing is a response to errors that are present in the raw census data. These errors can be classified as either coverage errors or content errors.[5] Coverage errors are omissions or duplications of persons or households during enumeration; editing can often catch duplication of data, while other tools (specifically the Post-Enumeration Survey) are better suited for evaluating omissions. Content errors are errors in the recorded characteristics of households or persons caused by incorrect information being reported during enumeration, or introduced into the data during processing. Content errors can be subdivided into omissions (no data reported), impossible entries of invalid values or codes, inconsistent entries, and unreasonable magnitudes (for example, a woman who reports having had 50 children).[6]

Errors can be introduced during any of the various phases of the census. Some errors are random, others are systematic. Examples of error sources are:[7]

- questionnaire design (poor wording or arrangements of questions, awkward or unclear skip patterns);
- enumerator (interviewer mis-states or doesn't understand a question, fails to record responses correctly);
- respondent (misreporting due to recall errors, deliberate misrepresentation, inability to provide correct information, or not understanding a question);
- data capture (faulty scanning, recognition, or completion of data);
- coding (coding clerk fails to assign the correct code to an open response question);
- editing (ironically, the editing process can also introduce errors and decrease accuracy);
- tabulation (tables are not properly programmed).

[5] *Principles and Recommendations for Population and Housing Censuses*, paragraph 1.257.
[6] U.S. Census Bureau (1979), *Popstan: A Case Study for the 1980 Censuses of Population and Housing. Part A: Programme Considerations,* page 118.
[7] *Handbook on Population and Housing Census Editing,* paragraphs 15-24.

II.4 IMPUTATION

Imputation is the replacement of a field's value during editing, either because the original response was not provided or was inconsistent with the edit specifications. As mentioned above, some statistical offices impute "not stated" values in these cases. More frequently, if a reasonable alternative value can be determined, then that value is imputed.

For many users, imputation makes the data more meaningful in terms of interpretation and use in planning. Consider a hypothetical table:

Age by sex

	Sex			
Age group	Total	Male	Female	Not stated
Total	4,539	2,205	2,289	45
Less than 10 years	1,666	814	845	7
10-19 years	1,213	598	608	7
20-29 years	652	312	326	14
30-39 years	432	210	214	8
40-49 years	265	126	136	3
50-59 years	182	85	92	5
60 years and over	129	60	68	1

Planners who need to know the breakdown of this population by sex have to take into account the not stated values, and often what they do is allocate them either equally 50%/50% (male/female) or on a pro-rated basis (here, 49%/51%). This itself is an imputation, but the user is completely uninformed as to the other characteristics of the people in the not stated column, and thus the allocation cannot take this information into account.

But what if those 45 persons with unknown sexes were examined, and it was found that 30 of the ones 12-50 years old had valid fertility information? Obviously, those 30 are almost certainly women. This is how, by elaborating a comprehensive set of edit specifications, intelligent and reasonable imputations can be made. These imputations will be more accurate than allocations that do not take this additional information into account.

On the other hand, some data users prefer that the unknown values be left in the data. Often these are demographers or other researchers, and having the unknown values facilitates their analysis since "this can allow them to perform various kinds of evaluation on the figures to measure the effectiveness of census procedures or to assist in planning for future censuses and surveys."[8]

It is easy to satisfy both types of users and create two sets of final data – one with imputed values (for public consumption and general use) and another with unknowns retained (for researchers and internal use). This is not difficult, especially given the processing power available in today's microcomputers and the availability of large, inexpensive hard drives. Another alternative – one that Stats SA has adopted for Census 2001 (see section VIII) – is to store copies of the raw data for certain key variables alongside the edited data in the same file. This is convenient for making direct comparisons.

[8] *Handbook on Population and Housing Census Editing,* paragraph 44.

II.5 IMPUTATION METHODS

Two commonly used techniques for imputation are static imputation (also called the *cold deck* method) and dynamic imputation (also called the *hot deck* method). These are both described below. Another method, which Stats SA calls *logical imputation*, is also described.

Static or cold deck techniques. In this method, a look-up table (or deck) of predetermined, consistent values is maintained, and data are imputed from the deck. For example, a cold deck that provides a correlation between walls, floors, and roofing materials might be maintained:

Cold deck for determining wall materials, based on roof and floor materials

	roof materials			
floor materials	cement	thatch	shingles	tin
cement	cement	brick	brick	brick
brick	cement	brick	brick	brick
wood	cement	wood	wood	brick
tile	cement	brick	brick	brick
dirt (none)	cement	mud	brick	brick

Given the materials used for the roof and floors, a reasonable value for the walls can be determined. For example, if a house's roof was made of tin and its floors were wood, then its walls could be imputed to brick if they were determined to be invalid. (An example of an invalid combination would be dirt walls with a cement roof – it would collapse!)

Another method of static imputation involves imputing data on a ratio basis. For example, the first person with an invalid sex is made male, the second a female, the third a male, and so on. More sophisticated proportions can be maintained, such as 30% of time imputing a value X, 45% of the time imputing Y, and 25% of the time imputing Z.

The key characteristic of static imputation techniques is that the imputed values come from a pre-defined source, and the source is not updated.

Dynamic or hot deck techniques. Here, a deck is maintained (like in the example above), but it is updated when valid response combinations are encountered. For example, suppose that as the edit progresses through an enumeration area's data, households with the following characteristics are encountered:

household	**floor**	**roof**	**walls**
1	brick	tin	wood
2	tile	shingles	cement
3	cement	cement	cement
4	tile	shingles	BLANK

The first household causes the hot deck entry for floor = brick, roof = tin to be updated from walls = brick to walls = wood; the second causes the entry for floor = tile, roof = shingles to be updated from walls = brick to walls = cement; etc. The fourth household has an invalid type of walls, so the hot deck entry floor = tile, roof = shingles is consulted and the value "cement" is imputed for the walls.

Note that the hot deck is constantly being updated, to reflect the reality of the households and persons most recently processed. In the example above, this might be particularly useful if different building materials are used in different parts of the country (say, in the mountains versus near the coast). Dynamic imputation techniques are commonly used and, as the *Handbook on Editing* notes, the method has "become increasingly popular during census editing because it is easy and produces clean, replicable results."[9]

Several issues need to be considered when using dynamic imputation. Since imputations depend on previous valid cases, the raw data file should be sorted by geography, since people living in the same vicinity usually (although not always) share homogeneous demographic characteristics.[10] Care should be taken that appropriate variables are used when designing the imputation decks; these decisions should be undertaken in consultation with subject matter specialists. Deck size (number of cells) is important, since a deck that is too small risks imputing the same value many times before it is updated, while a deck that is too large could have cells that are not updated frequently enough. A hot deck can be given initial "seed" values, or be programmed to ensure that the deck is updated at least once before it is used for imputation.

Logical imputation techniques. Logical imputation, as referred to by Stats SA, is imputation of values that are calculated or deduced from other information in the household. For example, if a person's date of birth is supplied but their age is left blank, then their age can be logically imputed based on the date of birth. Similarly, if a person's sex is invalid but the sex of their spouse is given (and there is sufficient reason to believe that the two people are married), then the person's sex can be reasonably imputed to the opposite of their spouse. Also, some variables that are deleted because they are not applicable to a skip pattern (a 3-year-old responding to the level of education question, for example) are in effect logically imputed to blank.

The Census 2001 questionnaire is very complex, and includes pointer variables to link spouses, mothers, and fathers. Because of this, there is ample opportunity to make logical imputations in many situations, before it is necessary to use a hot deck.

II.6 IMPUTATION STRATEGY FOR CENSUS 2001

In Census 2001, invalid or inconsistent values were imputed for almost all variables. The only exceptions to this were the industry, occupation, religion, and place-name variables, where invalid/inconsistent values were assigned "not specified" or "unknown" values in some situations.

A combination of logical and dynamic imputation was used to implement the editing system. Logical imputations were preferred, and in many cases substantial effort was undertaken to deduce a consistent value based on the rest of the household's information. If it was not possible to make a logical imputation, then a hot deck imputation was performed.

In a few cases, the valid value set for a question was changed to remove "other" or "don't know" responses through editing. For example, question P17 (highest level of education) initially included values for both "other" and "don't know". After consultation with the Department of Education, it was decided to treat both of these as invalid responses and to have the edit (section V.18) impute valid values. There were two reasons for this decision:

1. the list of values present was already complete (there really were no "others");

[9] *Handbook on Population and Housing Census Editing*, paragraph 122.
[10] *Handbook on Population and Housing Census Editing*, paragraph 40.

2. these extra categories impede planning; for example, it is not clear how would they enter into a calculation of the population with/without matric.

The raw unedited data are preserved for this question, however, in case experts need access to them.

A set of imputation flags has been maintained, in order to assess the effects of imputation. These flags are maintained at the individual record level, and indicate what imputation, if any, was performed on each data item. Imputation flags have one of the following values:

0	no imputation was performed; raw data were preserved
1	logical imputation was performed; raw data were blank
2	logical imputation was performed; raw data were not blank
3	hot-deck imputation was performed; raw data were blank
4	hot-deck imputation was performed; raw data were not blank

The imputation flags have several benefits. They can be tabulated to assess the imputation rate for a variable or combination of variables. They can be used as a filter if experts want to exclude imputed (or hot-deck imputed) data during analysis. And finally, they can be used to assess the effects of imputation on Census 2001.

II.7 QUALITY CONTROL DURING EDITING

Quality control is an important consideration for the editing phase of data processing. Several steps were taken to ensure that editing was done correctly and as planned, and did not introduce biases or new errors into the data.

Backups. Back-up copies of the raw data were made before starting the editing process. It will always be possible for Stats SA staff to consult the unedited data, should the need arise. (This applies to data in both Oracle and IMPS formats.)

Audit trail. The order of execution of the editing programs, their input, output and auxiliary files, and other relevant information was documented so that the editing process is entirely reproducible. Also, when the need arose for manual editing of bizarre, unanticipated cases, this editing was done on the raw data; again, this ensures that the final results are reproducible. A copy of the raw data with no manual editing was also archived (this archive also excluded post-capture interactive editing processes such as the “flip-flop” edit).

In addition, the final data set contains “copies” of the unedited values for several key variables, as described in section VIII. If analysts need access to raw census data, they can use these values.

Diagnostics. The editing programs themselves contain special diagnostic routines that will make sure that the edits perform as expected. For example, at the end of the programme, a check of the household’s relationships, mother person numbers, father person numbers, and spouse person numbers is made to ensure that the household has correct and consistent family structures. In addition to this, a comprehensive consistency check was made as part of the testing prior to the final handover to Stats SA management.

Reporting. The editing system generates several types of reports:

- summary reports show the number of times that any particular edit condition occurs (note that an edit such as the one for fertility, V.20, might contain more than a hundred such conditions);

- questionnaire-level reports show which edits were applied to any given household;
- frequency reports show the distribution of imputed values for each variable;
- case reports show the raw and edited data for every household ("case"), as well as all the specific edit actions taken on the household and its members.

All these reports are useful for analysing trends and errors in the data.

The final handover document for the editing system includes the following:

- imputation rates for each variable;
- the effects of editing on each variable or section of variables (raw/edited distributions and other relevant tables and charts);
- any significant findings that the editing team made, including data quality problems (high rates of imputation), systematic scanning errors, etc.

Accounting. Several of the edits cause records or entire questionnaires to be deleted:

reason for deleting	**Edit**
bogus person and death records	III.1
duplicate questionnaires	III.8
non-minimally-processable person and death records	III.6 and VI.1
vacant households/institutions	III.7
babies born after Census night	V.2
deaths more than one year before Census night	VI.1

The number of records in the raw and edited data must be reconciled, taking into account those that were removed. In other words, all records must be accounted for.

Comparison of data sets. After the editing phase, tables were produced showing frequency distributions for all variables in the raw and edited data sets. These can be converted into graphs and overlaid, so that the effects of editing can be seen and evaluated.

II.8 RISKS ASSOCIATED WITH DATA EDITING

Questionnaire complexity. The Census 2001 questionnaire is very complicated, and involves many skips and inter-related questions, as well as questions that are only applicable to certain respondents. A complex questionnaire introduces many more opportunities for inconsistent responses, and can thus cause increased imputation rates and have other negative effects on the editing process. In general, the more complicated the questionnaire, the more complicated the edit specifications to handle it must be.

The three "linking" questions – spouse person number (SPN), mother person number (MPN), and father person number (FPN) – illustrate the risks to editing of implementing a complicated census questionnaire. These three questions have a tremendous impact on the relationship question (and several others as well), since a person's relationship to the head must also be consistent with their mother's, father's, and spouse's relationships. For example, if person A is the head's grandchild, then their parent (MPN/FPN) must indicate someone who is either a child, adopted child, stepchild, or child-in-law of the head; any other response is inconsistent. In addition, person A's SPN must indicate someone with relationship "other related person". Dealing with all of these combinations, and determining reasonable ways to rectify inconsistent responses, was a major challenge to the editing team.

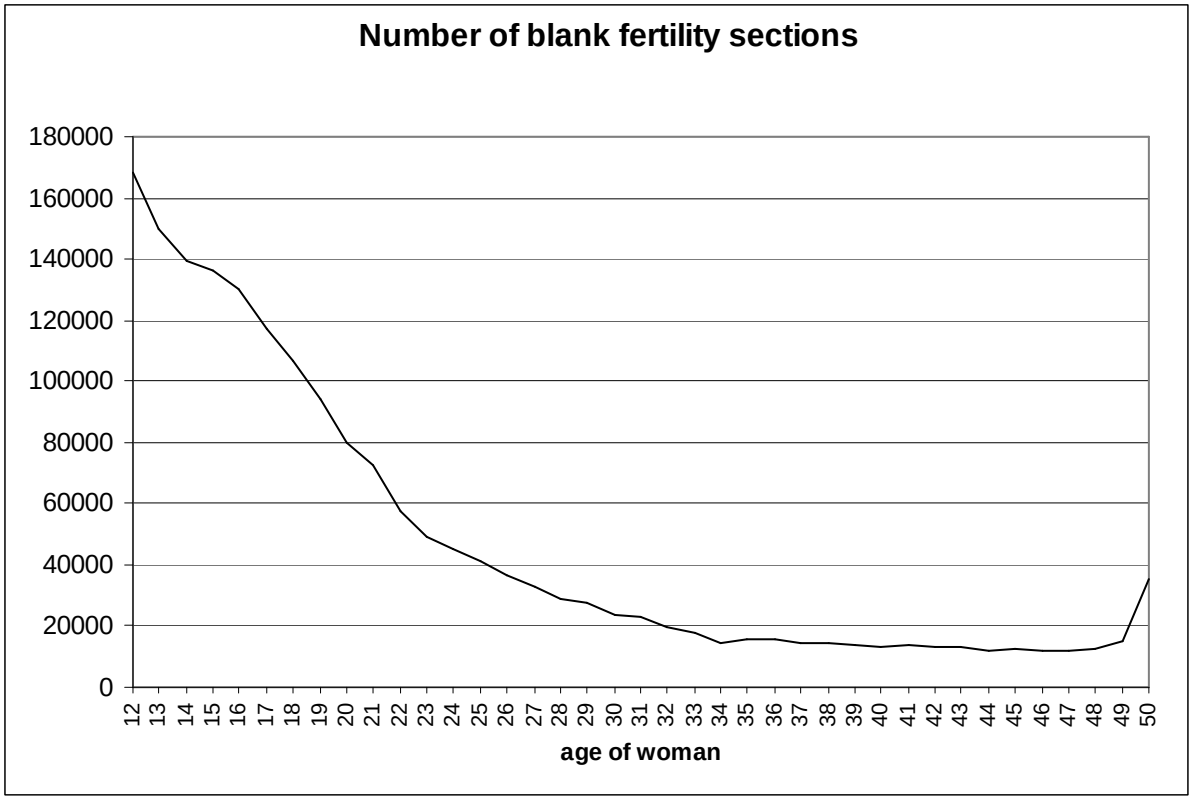
High non-response rates. Another significant risk involved with computerised editing (or any type of data editing, for that matter) occurs when the quality of raw data is poor, and contains many inconsistencies or non-responses. Several variables in the Census 2001 have serious quality problems, most notably high levels of non-response, and therefore the imputation rates for these are very high. The following table summarizes some – but by no means all – of these:

Variable	universe	Non-response rate	approx imputation rate	
			logical	hot deck
fertility section	women aged 12-50 years	13,5%	1-21%	≈ 11%
Income	all persons	15,5%	not used	15,8%
country of citizenship	non-South African citizens	24,1%	21,8%	2,4%
level of education	persons 5+ years	4,0%	3,7%	5,2%
energy used for heating	all households	2,9%	2,6%	0,6%

Source: Census 2001

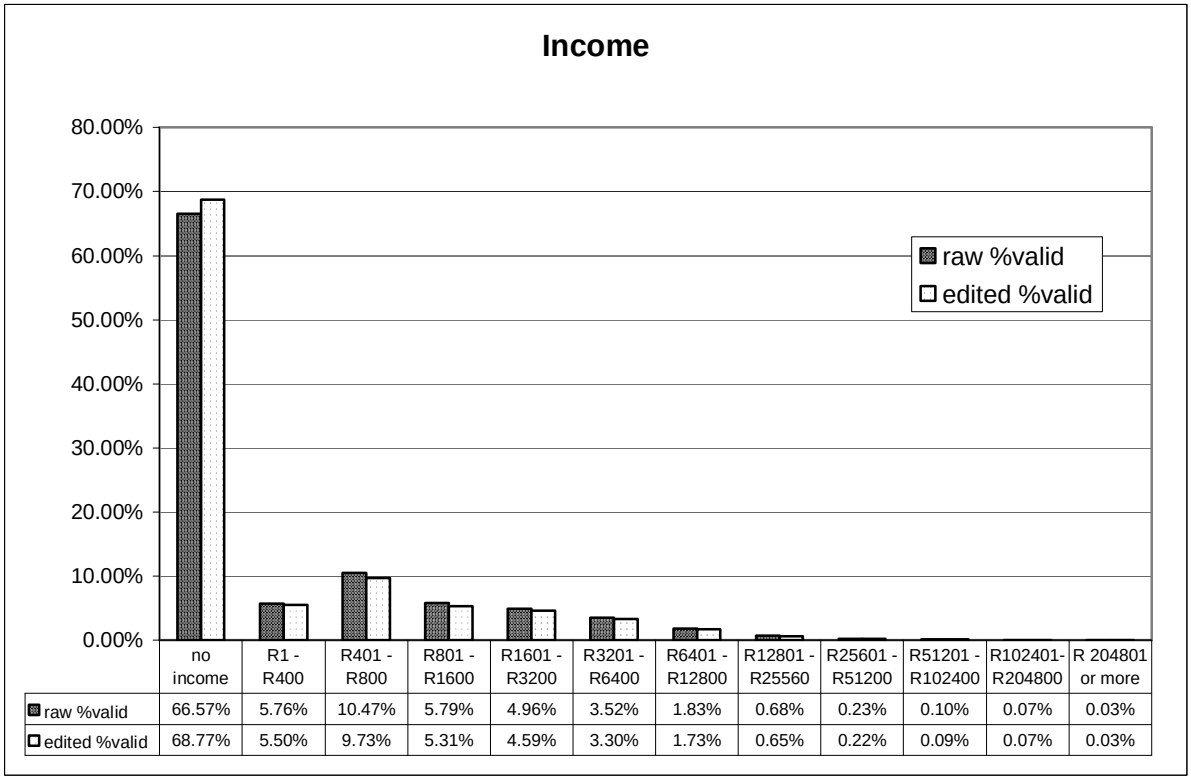
In some of these cases, a logical explanation for the high non-response rate can be deduced. For example, in many households composed of non-South African citizens only the head of household reported a country of citizenship. With income, the high non-response rate is concentrated among young or unemployed persons mostly (only slightly more than 6% of working adults did not respond to the question).

In the case of fertility, the non-response rate declines as the age of the woman increases:



This implies that young women, probably with no births, often left the fertility section blank.

When imputation rates are low, the distribution of edited data is almost identical to the distribution of valid raw data. When rates go up, this might not always be true. However, in the case of income, which has a high non-response rate, the distributions of raw and edited data follow similar patterns:



	no income	R1 - R400	R401 - R800	R801 - R1600	R1601 - R3200	R3201 - R6400	R6401 - R12800	R12801 - R25560	R25601 - R51200	R51201 - R102400	R102401- R204800	R 204801 or more
raw %valid	66.57%	5.76%	10.47%	5.79%	4.96%	3.52%	1.83%	0.68%	0.23%	0.10%	0.07%	0.03%
edited %valid	68.77%	5.50%	9.73%	5.31%	4.59%	3.30%	1.73%	0.65%	0.22%	0.09%	0.07%	0.03%

As mentioned previously, the editing team presented statistics showing the imputation rate for each variable in Census 2001, as well as charts showing distributions of raw and edited data. In situations where high imputation rates occur, Stats SA should review the situation and react as needed. Possible responses include:

- adjust the edit specification (to correct for mistaken assumptions);
- limit the applicable universe (as in the income example above);
- consider deleting error-prone variables (such as MPN/FPN/SPN above), and adjusting the edit specifications accordingly;
- do not publish results for the variable or section;
- use an alternative to imputation (such as "unknown" values)

Delays due to manual intervention. Another risk related to editing concerns households with so many problems that the editing system cannot be executed successfully. In these situations, manual intervention is required; an analyst has to review the questionnaire (or rather, an image of the questionnaire supplied by the data capture contractor) and make some corrections manually. The corrected data are then run through the editing system, hopefully with better results. This type of manual investigation can be very time consuming. If there are many such outlier cases, production schedules can be adversely impacted.

II.9 REFERENCES

United Nations (2000). *Handbook on Population and Housing Census Editing (draft).*

_____ (2000). *Handbook on Census Management for Population and Housing Censuses*. Sales No. E.00.XVII.15.

_____ (1998). *Principles and Recommendations for Population and Housing Censuses – Revision 1*. Sales No. E.98.XVII.8.

U.S. Census Bureau (1979). *Popstan: A Case Study for the 1980 Censuses of Population and Housing. Part A: Programme Considerations.* Washington, D.C.

Chamberlain, Kathleen E. and Durding, Bruce M. (1992). *Editing of Population Census Data: How Much is Enough?*, International Statistical Programs Center, U.S. Census Bureau, Washington, D.C.

Stats SA Census 2001 design specification documents (all stored in the \\epsilon1\docs\way forward\specs\interactive edits sub-directory):

DS-BOGUS Bogus Interactive Edit
DS-FLIP Flip Flop Interactive Edit
DS-CONTBC Continuation Barcodes Interactive Edit
DS-EXPORT Exporting the country
DS-FLIPQC Flip Flop Quality Control
DS-MGTTOOL EA and QN Management Tools
DS-SIZE EA Size Check Interactive Edit

III STRUCTURE EDITS

III.1 BOGUS PERSON AND DEATH RECORDS

Valid values:
n/a

Universe:
all households and institutions

Edit checks:

A. Bogus (false-positive scanned) person and death records must be removed from all households and institutions. These are not considered for editing, and are not included in the final output data. (See section X.2 for a description of the Bogus Interactive Edit.)
B. Perform a debug check to see if there are any Procon-defined bogus person or death records that were not considered bogus by the interactive editing system. Any such cases should be investigated.

Resolution:

A. Remove bogus person records. Perform a check to see if any non-bogus records were marked as bogus under Procon's definition; log such cases for manual investigation.

B. Remove bogus death records. Perform a check to see if any non-bogus records were marked as bogus under Procon's definition; log such cases for manual investigation.

Software:
This edit is implemented in subroutine SIII1a and SIII1b in the CONCOR programme BOGUS.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

III.2 UNIQUE HOUSEHOLD IDENTIFICATION / THIS QN NUMBER

Valid values:
n/a

Universe:
all households and institutions

Edit checks:

A. Every household must have a unique identification code. This code will be determined as follows:
   - when the household is a single questionnaire: ID is the same as the bar code serial number (SN);
   - when the household spans multiple questionnaires: ID is the bar code from the first questionnaire of the household;
   - institutions: ID is the bar code from the C-type Questionnaire for the institution.

B. Households that were enumerated using more than one questionnaire have the barcodes for subsequent questionnaires stored in the variables CONTINUE-FIRST, SECOND-QST, THIRD-QST, and FOURTH-QST (representing the first, second, third, and fourth additional questionnaire barcodes). Note that this can only accommodate households containing at most 99 people. These variables are not applicable for institutions.

C. The response to the question "How many questionnaires for this household?" or "How mmany B questionnaires were completed for this institution?" must be consistent with the number of questionnaires used to enumerate the household, or the number of persons enumerated in the institution.

D. The response to the question "What is the number of this questionnaire?" is not applicable at this stage of processing, and is not processed.

E. Investigate the possibility of improperly linked questionnaires (a common enumerator mistake) in the following cases:
   - person number starts with 11 (or 21, 31, etc.);
   - the "total population" reported on the front page of the questionnaire reports more than 10 people, but the household has 10 people;
   - the household doesn't have a head.

Resolution:

A. For households (A-type QNs):
   a. determine the number of QNs that were used for this household, by adding 1 to the number of non-blank responses for CONTINUE-FIRST, SECOND-QST, THIRD-QST, and FOURTH-QST; call this value **{num QNs}**.
   b. if **{num QNs}** is not equal to "how many questionnaires for this HH" , then impute that variable to **{num QNs}**.

B. For institutions (B- and C-type QNs):
   a. determine the number of B-type QNs that were used, by counting the number of person records in the institution; call this value **{num QNs}**.
   b. if **{num QNs}** is not equal to "how many B-type questionnaires for this institution" , then impute that variable to **{num QNs}**.

C. Log manual investigation situations that might indicate improperly linked questionnaires:
   - first person number starts with 11 (or 21, 31, etc.);

- the “total population” reported on the front page of the questionnaire reports more than 10 people, but the household has 10 people;
- the household doesn’t have a head.

Software:

This edit is implemented separately for households and institutions in the subroutines SIII2 (STRUCT.CN) and SIII2INST (HOUSE.CN), respectively. Both programs are stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

III.3 NUMBER OF HOUSING RECORDS

Housing records contain data from Section B: Information on Housing in the A-type questionnaire, and page C2 in the C-type questionnaire.

Valid values:

n/a

Universe:

all households and institutions

Edit checks:

A. There must be one and only one housing record for every household or institution.
B. In the case of households that continue across multiple questionnaires, gather a usable set of household data as follows. For each variable in the housing record:
    a. if the first QN in the set has a non-blank response, then preserve this response;
    b. otherwise, if another QN in the set has a non-blank response, then preserve this response;
    c. otherwise, make the response blank.

Note: this calculation is made during the Export To IMPS post-capture processing phase.

Resolution:

A. If a household has no housing record, manually investigate, using Procon's image viewer.

B. If a household has more than one housing record and is not part of a continuation questionnaire, then manually investigate, using Procon's image viewer.

Software:

This edit is implemented in subroutine SIII3 in the CONCOR programme STRUCT.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

III.4 NUMBER OF QUESTIONNAIRE INFO RECORDS

Questionnaire info records contain data from the questionnaire that are not used to identify the questionnaire, but do not logically belong to any of the other record types (person, housing, and mortality). Examples of data that appear on the questionnaire info record are total population, male/female population (from the front page of the questionnaire), and responses to "who completed this questionnaire, enumerator or household member?" and "number of questionnaires for this household?"

Valid values:

n/a

Universe:

all households and institutions

Edit checks:

A. There must be one and only one questionnaire info record for every household or institution.
B. In the case of households that continue over multiple questionnaires, gather a usable set of questionnaire info data as follows. For each variable in the questionnaire info record:
    a. if the first QN in the set has a non-blank response, then preserve this response;
    b. otherwise, if another QN in the set has a non-blank response, then preserve this response;
    c. otherwise, make the response blank.

Note: this calculation is made during the Export To IMPS post-capture processing phase.

Resolution:

A. If a household has no questionnaire info record, manually investigate, using Procon's image viewer.

B. If a household has more than one questionnaire info record and is not part of a continuation questionnaire, then manually investigate using Procon's image viewer.

Software:

This edit is implemented in subroutine SIII4 in the CONCOR programme STRUCT.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

III.5 NUMBER OF MORTALITY RECORDS

Mortality records contain data from questions concerning deaths during the past year (questions H-31). Each mortality record has data on a death; a questionnaire can report at most 5 deaths, although a household can register more than 5 deaths (through the parent barcode mechanism used to handle continuation households).

Valid values:

n/a

Universe:

all households (mortality is not reported for institutions)

Edit checks:

A. Households can contain more than 5 deaths; this would be accomplished by using continuation questionnaires and reporting deaths on multiple questionnaires.
B. Institutional questionnaires must not contain any mortality records.
C. In the case of households that continue over multiple questionnaires:
    a. if no QNs in the set have non-bogus mortality data, then the continuation HH has no mortality data;
    b. otherwise, if only one QN in the set (not necessarily the first QN) has non-bogus mortality data, then assign this data to the continuation HH;
    c. otherwise, if more than one QN in the set has non-bogus mortality data:
        i. if the mortality records from the different QNs are identical, then only use one set of them;
        ii. otherwise (the mortality records are different), manually investigate the records to determine if they are for the same death. Manually correct situations where the same death is registered differently among the QNs in a continuation set.

Note: this calculation and investigation is made following the continuation barcodes interactive edit, and is tracked manually.

Resolution:

A. If a household contains 0-5 mortality records, then do nothing.

B. If a household contains more than 5 mortality records and is part of a continuation questionnaire, then keep all of the mortality records, but flag this questionnaire for manual review.

Software:

This edit is implemented in subroutine SIII5 in the CONCOR programme STRUCT.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

III.6 MINIMUM PROCESSABILITY OF PERSON RECORDS

Valid values:

n/a

Universe:

all person records in households
(see edit III.6INST for the corresponding institution edit)

Edit checks:

A. Person records must contain a minimum of information in order to be considered processable, namely:
   - responses to at least 2 of the questions sex, age (either birth year or age), and relationship; or
   - responses to at least 1 of the questions sex, age (either birth year or age), and relationship, **and** at least 2 other non-coded person record variables.

   If a person record is not minimally processable, then discard it. (Note that the responses to the questions above do not have to be valid values, they just have to be something other than blank.)
B. Verify that no one else in the household has a spouse person number (SPN), mother person number (MPN), or father person number (FPN) that refers to someone who is not minimally processable; log these cases for future investigation.
C. Report on situations where the total population reported on the first page of the questionnaire is the same as the number of person records found, but where one or more of those person records is determined to be not minimally processable.
D. When suppressing person records, adjust the person numbers for the rest of the household's person records. Also adjust SPNs, MPNs, and FPNs that point to other members of the household.

Resolution:

A. For persons that do not satisify the following criteria (and are thus not minimally processable):
   - ✓ the person has responses to at least 2 of the questions sex, age (birth year or age), and relationship; or
   - ✓ the person has responses to at least 1 of the questions sex, age (birth year or age), and relationship, and at least 2 other non-coded person record variables:

   a. if anyone else in the household uses this person as their linking SPN/MPN/FPN, then log this information for future investigation
   b. also, delete this person from the household
   c. also, update the rest of the household's person numbers
   d. also, update the household's SPNs, MPNs, FPNs as needed.

Software:

This edit is implemented in subroutine SIII6 in the CONCOR programme STRUCT.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. A report showing the number of dropped persons was generated, to assist with evaluating this edit. The report provides information on the number of dropped person records with 0 non-blank responses (for all questions P02-P21), 1 non-blank response, 2 non-blank responses, etc.
B. Person number pointers have to be tracked meticulously (SPN, MPN, FPN), since any changes can potentially introduce errors in spouse, mother, and father information.

III.6 INST MINIMUM PROCESSABILITY OF PERSON RECORDS (INSTITUTIONS)

Valid values:

n/a

Universe:

all person records in institutions
(see edit III.6 for the corresponding household edit)

Edit checks:

A. Person records must contain a minimum of information in order to be considered processable, namely:
   - responses to at least 2 of the questions sex and age (either birth date or age); or
   - responses to at least 1 of the questions sex and age (either birth date or age), **and** at least 2 other person record variables.

   If a person record is not minimally processable, then discard it. (Note that the responses to the questions above do not have to be valid values, they just have to be something other than blank.)

Resolution:

A. Delete person records that are not minimally processable.

Software:

This edit is implemented in subroutine SIII6INST in the CONCOR programme STRUCT.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. A report showing the number of dropped persons will be generated, so that this edit can be evaluated. The report will provide information on the number of dropped person records with 0 non-blank responses (for all questions P02-P22), 1 non-blank response, 2 non-blank responses, etc.

III.7 NUMBER OF PERSON RECORDS

Person records contain data from Section A: Information for Persons in the Household in the A-type questionnaire, and pages B2-B4 in the B-type questionnaire.

Valid values:

a household can have at most 99 occupants
an institution can have at most 9999 occupants

Universe:

all households and institutions

Edit checks:

A. The number of person records in the household or institution must correspond to the number declared on the first page of the questionnaire; adjust the first page value if necessary.
B. The number of males and females in the household or institution must correspond to the numbers of males and females declared on the first page of the A- or C-type questionnaire.
C. All households and institutions must have at least 1 occupant (vacant households/institutions are not processed).
D. A household can have at most 99 occupants.
E. An institution can have at most 9999 occupants.

Resolution:

A. If the number of person records is not consistent with the summary information on the first page of the questionnaire, then log this questionnaire for future investigation.

B. If the number of males or females in the household is not consistent with the summary information on the first page of the questionnaire, then log this questionnaire for future investigation.

C. If the household or institution is vacant, then do not process it.

D. If the household has more than 99 persons in it, then flag it for future investigation.

E. If the institution has more than 9999 persons in it, then flag it for future investigation.

Software:

This edit is implemented separately for households and institutions in the subroutines SIII7 (STRUCT.CN) and SIII7INST (STRUCT.CN and EDITS2.CN), respectively. Both programs are stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. This edit requires manual investigation for correction.
B. See also edit X.4 below.

III.8 REMOVAL OF DUPLICATE QUESTIONNAIRES

Questionnaires that were identified during post-capture processing as being duplicates are removed. The list of these barcodes is supplied by Procon, and stored in the lookup file \\postcap_svr\data\dup_bc.lku.

Valid values:

n/a

Universe:

all households and institutions

Edit checks:

A. Duplicate questionnaires must be removed from the data set.

Resolution:

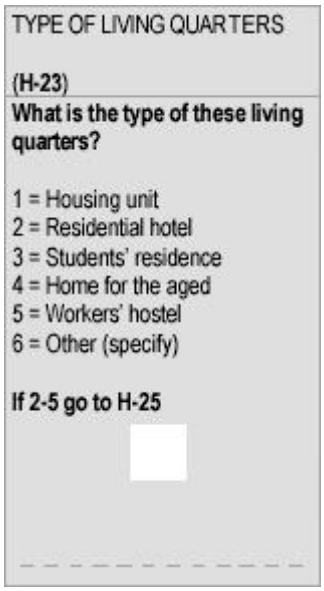
A. If the questionnaire's barcode appears in the list of duplicates, then remove it.

Software:

This edit is implemented in subroutine SIII8 in the CONCOR programme BOGUS.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

IV HOUSING EDITS

IV.1 TYPE OF LIVING QUARTERS (H-23)


TYPE OF LIVING QUARTERS

(H-23)

What is the type of these living quarters?

1 = Housing unit
2 = Residential hotel
3 = Students' residence
4 = Home for the aged
5 = Workers' hostel
6 = Other (specify)

If 2-5 go to H-25

Valid values:

1	Housing unit
2	Residential hotel
3	Students' residence
4	Home for the aged
5	Workers' hostel

Universe:

all households
(this edit is not applicable for institutions)

Edit checks:

A. Variable must have a valid value (1:5). Note that "other" responses (value 6) are removed during editing.
B. If living quarters response is invalid, try to determine it based on the responses from other questions:
    - type of housing unit (H23a)
    - more than one dwelling (H23b)
    - rooms (H24)
    - sharing 1 room (H24a)
C. Impute living quarters using a hot deck (based on household size) if needed.
D. Handle scanning error where housing units were sometimes captured as homes for the aged.

Resolution:

A. If type of living quarters is valid:
    a. if living quarters response is "home for the aged":
        i. if anyone in the household is younger than 50 and type of housing unit (H23a) is not blank and number of rooms (H24) is not blank, then impute living quarters = housing unit.
    b. if living quarters response is 2:5:

i. if other applicable questions (H23a-H24a) are all blank, then update the hot deck AQUARTERS-NONHU and AQUARTERS-ALL;
ii. otherwise, impute the other applicable questions (H23a-H24a) to blank;

c. otherwise (living quarters = "housing unit"), if other applicable questions (H23a-H24) are blank:
   i. if the whole household section is invalid, then do nothing;
   ii. otherwise, impute living quarters from the hot deck AQUARTERS-NONHU (giving a value 2:5);
d. otherwise, update the hot deck AQUARTERS-ALL.

B. If type of living quarters is not valid:
   a. if any of the other applicable questions (H23a-H24a) has a valid response, then impute living quarters = "housing unit";
   b. otherwise, if the whole household section is invalid, then impute living quarters from the hot deck AQUARTERS-ALL (giving a value 1:6); also, if a value of 2:5 was imputed, then make sure H23a-H24a are all blank;
   c. otherwise (whole section not invalid, but skip section blank/invalid), then impute living quarters from the hot deck AQUARTERS-NONHU (giving a value 2:5); also, if a value of 2:5 was imputed, then make sure H23a-H24a are all blank.

Structure for hot decks AQUARTERS-ALL (returns values 1:6) and AQUARTERS-NONHU (returns values 2:5 only)

HOUSEHOLD SIZE									
1	2	3	4	5	6	7	8	9	10+
value	value	value	value	value	value	value	value	value	value

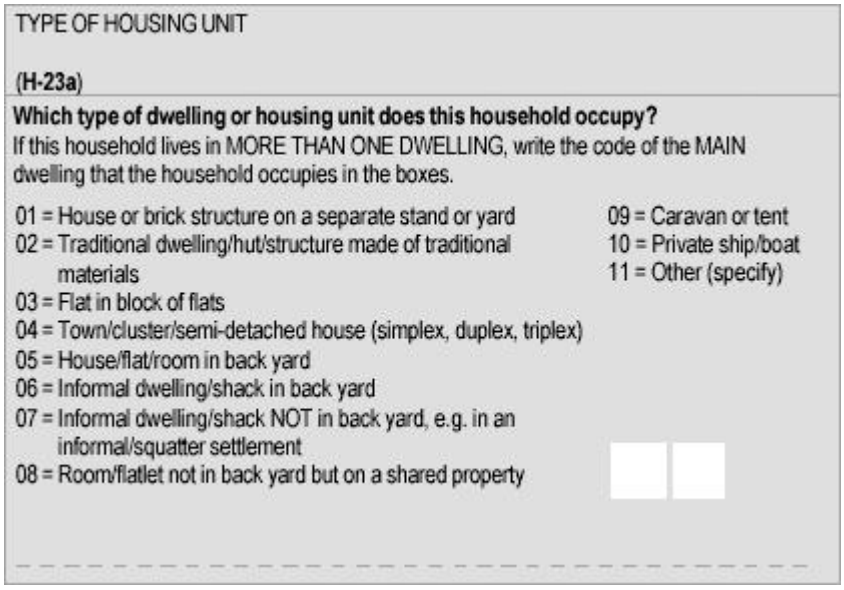
Software:

This edit is implemented in subroutine SIV1 in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (99) and not applicable (blank) are not allowed for this question.

IV.2 TYPE OF HOUSING UNIT (H-23A)



TYPE OF HOUSING UNIT

(H-23a)

Which type of dwelling or housing unit does this household occupy?

If this household lives in MORE THAN ONE DWELLING, write the code of the MAIN dwelling that the household occupies in the boxes.

01 = House or brick structure on a separate stand or yard
02 = Traditional dwelling/hut/structure made of traditional materials
03 = Flat in block of flats
04 = Town/cluster/semi-detached house (simplex, duplex, triplex)
05 = House/flat/room in back yard
06 = Informal dwelling/shack in back yard
07 = Informal dwelling/shack NOT in back yard, e.g. in an informal/squatter settlement
08 = Room/flatlet not in back yard but on a shared property
09 = Caravan or tent
10 = Private ship/boat
11 = Other (specify)

Valid values:

1	House or brick structure on a separate stand or yard
2	Traditional dwelling/hut/structure made of traditional materials
3	Flat in block of flats
4	Town/cluster/semi-detached house (simplex, duplex, triplex)
5	House/flat/room in back yard
6	Informal dwelling/shack in back yard
7	Informal dwelling/shack NOT in back yard, e.g. in an informal/squatter settlement
8	Room/flatlet not in back yard but on a shared property
9	Caravan or tent
10	Private ship/boat

Universe:

all households with living quarters = 1 (housing unit)
(see edit IV.2INST for institution edit)

Edit checks:

A. Variable must have a valid value (1:10). Note that "other" responses (value 11) are removed during editing.
B. Use a hot deck (based on toilet facilities and lighting source in the household) to impute housing unit type when necessary. (If toilet facilities or lighting source are invalid, then impute housing unit type based on the previous household.)

Resolution:

A. For households with valid housing unit type:
    a. if toilet facilities and lighting source are both valid, then update the hot deck ADWELLINGS;
    b. otherwise, do nothing.

B. For households with invalid housing unit type:
    a. if toilet facilities and lighting source responses are both valid, then impute housing unit type from the hot deck ADWELLINGS;
    b. otherwise, make housing unit type the same as that of the previous household.

ADWELLINGS structure:

	TOILET (H-26)						
1	2	3	4	5	6	7	LIGHTING (H28-C)
Value	value	value	value	Value	value	value	Electricity
Value	value	value	value	Value	value	value	Gas
Value	value	value	value	Value	value	value	Paraffin
Value	value	value	value	Value	value	value	Candles
Value	value	value	value	Value	value	value	Solar
Value	value	value	value	Value	value	value	Other

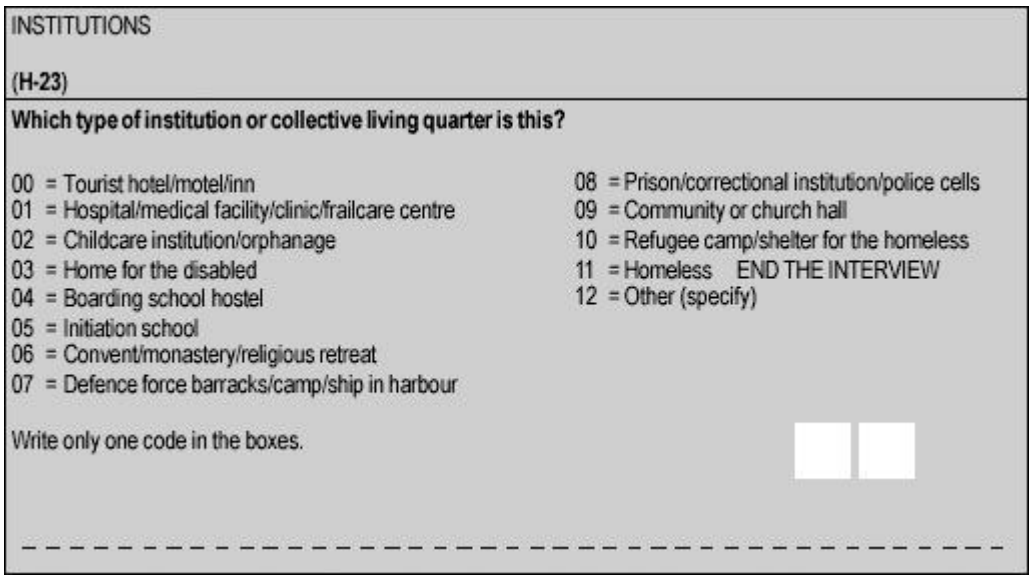
Software:

This edit is implemented in subroutine SIV2 in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (99) and not applicable (blank) are not allowed for this question.
B. Hot deck variables were chosen in part based on valid response distributions in main census.

IV.2 INST TYPE OF INSTITUTION (H-23A) / HOMELESSNESS


INSTITUTIONS

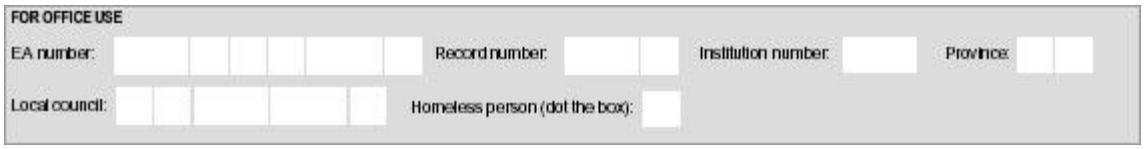
(H-23)

Which type of institution or collective living quarter is this?

00 = Tourist hotel/motel/inn
01 = Hospital/medical facility/clinic/frailcare centre
02 = Childcare institution/orphanage
03 = Home for the disabled
04 = Boarding school hostel
05 = Initiation school
06 = Convent/monastery/religious retreat
07 = Defence force barracks/camp/ship in harbour
08 = Prison/correctional institution/police cells
09 = Community or church hall
10 = Refugee camp/shelter for the homeless
11 = Homeless END THE INTERVIEW
12 = Other (specify)

Write only one code in the boxes.

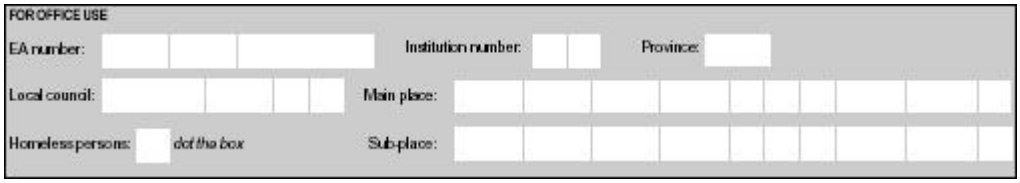
front page, B-type questionnaire:


FOR OFFICE USE

EA number: Record number: Institution number: Province:

Local council: Homeless person (dot the box):

front page, C-type questionnaire:


FOR OFFICE USE

EA number: Institution number: Province:

Local council: Main place:

Homeless persons: dot the box Sub-place:

Valid values:

for type of institution

- 20 Tourist hotel/motel
- 21 Hospital/medical facility/clinic/frailcare centre
- 22 Childcare institution/orphanage
- 23 Home for the disabled
- 24 Boarding school hostel
- 25 Initiation school
- 26 Convent/monastery/religious retreat
- 27 Defence force barracks/camp/ship in harbour
- 28 Prison/correctional institution/police cells
- 29 Community or church hall
- 30 Refugee camp/shelter for the homeless
- 31 Homeless

(note that institution values are recoded from their original values during importation to facilitate distinguishing housing types)

for homelessness (B- and C-type questionnaire tick boxes):

1 yes/ticked
2 no/blank

Universe:

all institutions
(see edit IV.2 for household edit)

Edit checks:

A. Variable must have a valid value (20:31 for institutions). Note that "other" responses (value 32) are removed during editing.
B. Make homeless status consistent, which can be indicated in three ways:
    - through a tick box on the front page of the B-type QN;
    - through a tick box on the front page of the C-type QN;
    - through the institution type question.
C. In determining homelessness, give priority to the institution type response, unless all B- and C- type questionnaires comprising the institution have ticked the homeless box. (In the final data set, homelessness is indicated only through the institution type value.)
D. Use a hot deck (based on institution size) to impute institution unit type when necessary.

Resolution:

A. If institution type is valid:
    a. if all B-type QNs and C-type QNs have homeless = yes and the institution type is not homeless, then impute institution type = homeless;
    b. otherwise, update the hot deck AINSTTYPE based on the number of people in the institution.

B. Otherwise (institution type not valid):
    a. if all B-type QNs and C-type QNs have homeless = yes, then impute institution type = homeless;
    b. otherwise, impute a valid institution type using the hot deck AINSTTYPE.

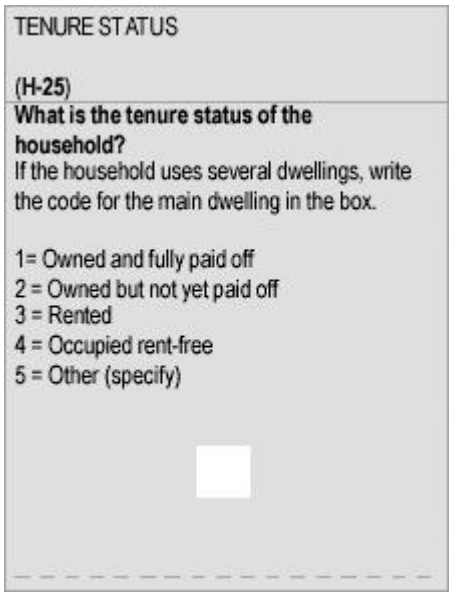
AINSTTYPE structure (with initial seed values):

INSTITUTION SIZE							
1-10	11-20	21-50	51-100	101-199	200-299	300-399	400+
0	0	0	0	0	0	21	21

Software:

This edit is implemented in subroutines SIV2INST and SHOMELESS in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

IV.3 TENURE STATUS (H-25)


TENURE STATUS

(H-25)

What is the tenure status of the household?

If the household uses several dwellings, write the code for the main dwelling in the box.

1= Owned and fully paid off
2 = Owned but not yet paid off
3 = Rented
4 = Occupied rent-free
5 = Other (specify)

Valid values:

1 Owned and fully paid off
2 Owned but not yet paid off
3 Rented
4 Occupied rent-free

Universe:

all households where type of living quarters is housing unit
(this question does not appear on the institutional questionnaire; see edit IV.3INST)

Edit checks:

A. Variable must have a valid value (1:4). Note that "other" responses (value 5) are removed during editing.
B. Tenure status is only applicable for housing units in households (as determined by the living quarters question).

Resolution:

A. If living quarters is not housing unit (value 1), then make sure that tenure status is blank (not applicable).

B. Otherwise, if tenure status is valid, then update the hot deck ATENURE (as a function of housing unit type).

C. Otherwise, impute tenure status from the hot deck ATENURE.

Structure for ATENURE hot deck:

tenure	**Type of housing unit**
value	House or brick
value	Traditional
value	Flat
value	Semi-detached
value	Backyard
value	Informal – back yard
value	Informal – other
value	Room – shared property
value	Caravan or tent
value	Private ship/boat

Software:

This edit is implemented in subroutine SIV3 in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. This question is only applicable for households where living quarters is housing unit; it is not applicable in any other situation.
B. Housing unit type must have been edited prior to using this edit.

IV.3 INST TENURE STATUS (H-25) (INSTITUTIONS)

Valid Values:

none

Universe:

institutions (see edit IV.3 for the corresponding household edit)

Edit checks:

A. This variable is not applicable for institutions.

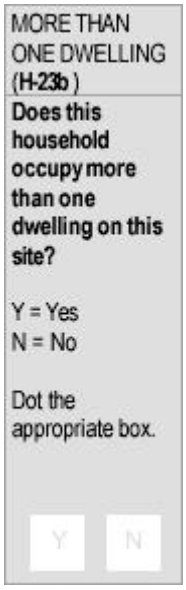
Resolution:

A. If this variable is not “not applicable” (9), then make it so.

Software:

This edit is implemented in subroutine SIV3INST in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

IV.4 MORE THAN ONE DWELLING (H-23B)



Valid values:

1	yes
2	no

Universe:

all households that have living quarters = 1 (housing unit)
(this question does not appear on the institutional questionnaire; see edit IV.4INST)

Edit checks:

A. Variable must have a valid value (1:2).

Resolution:

A. If "more than 1 dwelling" is valid, update the hot deck AMULTI as a function of housing unit type. Otherwise, impute "more than 1 dwelling" from the hot deck.

AMULTI structure:

	Type of housing unit
value	House or brick
value	Traditional
value	Flat
value	Semi-detached
value	Backyard
value	Informal – backyard
value	Informal – other
value	Room – shared property
value	Caravan or tent
value	Private ship/boat

Software:

This edit is implemented in subroutine SIV4 in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) and not applicable (blank) are not allowed for this question.
B. Housing unit type must have been edited prior to using this edit.

IV.4 INST MORE THAN ONE DWELLING (H-23B) (INSTITUTIONS)

Valid values:

none

Universe:

all institutions aside from homeless
(see edit IV.4 for the corresponding household edit)

Edit checks:

A. This variable is not applicable for institutions.

Resolution:

A. If this variable is not blank, then make it blank.

Software:

This edit is implemented in subroutine SIV4INST in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

IV.5 ROOMS (H-24)

ROOMS

(H-24)

How many rooms, including kitchens, are there for this household?

Count all rooms in all dwellings.

Exclude bathrooms, sheds, garages, stables, etc. unless persons are living in them.

For example, if 4 rooms 0 4

Valid values:

01:25

Universe:

all households with living quarters = 1 (housing unit)

(see edit IV.5INST for institution edit)

Edit checks:

A. Variable must have a valid value (01:25).
B. Housing units caravan and ship/boat cannot have more than 6 rooms.

Resolution:

A. For housing unit values 9:10 (caravan/tent, ship/boat):
    a. if number of rooms is 1:6, then update the hot deck AROOMS;
    b. otherwise, impute number of rooms from the hot deck.
B. For housing unit values 1:8:
    a. if number of rooms is valid, update the hot deck AROOMS as a function of household size and housing unit type;
    b. otherwise, impute number of rooms from the hot deck.

AROOMS structure:

HOUSEHOLD SIZE										
1	2	3	4	5	6	7	8	9	10+	HOUSING UNIT TYPE
Val	val	val	val	val	val	val	val	val	val	House or brick
Val	val	val	val	val	val	val	val	val	val	Traditional
Val	val	val	val	val	val	val	val	val	val	Flat
Val	val	val	val	val	val	val	val	val	val	Semi-detached
Val	val	val	val	val	val	val	val	val	val	Backyard
Val	val	val	val	val	val	val	val	val	val	Informal – back yard
Val	val	val	val	val	val	val	val	val	val	Informal – other
Val	val	val	val	val	val	val	val	val	val	Room – shared property
Val	val	val	val	val	val	val	val	val	val	Caravan or tent
Val	val	val	val	val	val	val	val	val	val	Private ship/boat

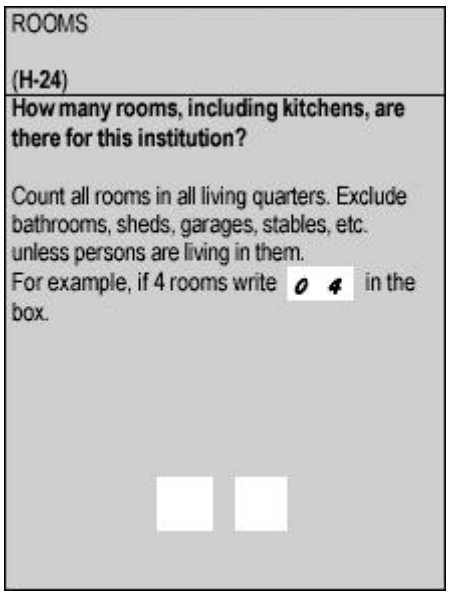
Software:

This edit is implemented in subroutine SIV5 in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (99) is not allowed for this question.
B. Housing unit type must have been edited prior to using this edit.

IV.5 INST ROOMS (H-24) (INSTITUTIONS)


ROOMS

(H-24)

How many rooms, including kitchens, are there for this institution?

Count all rooms in all living quarters. Exclude bathrooms, sheds, garages, stables, etc. unless persons are living in them.
For example, if 4 rooms write 0 4 in the box.

Valid values:

001:999

Universe:

all institutions aside from homeless
(see edit IV.4 for households edit)

Edit checks:

A. Variable must have a valid value (001:999).
B. This question is not applicable for initiation schools and homeless institution types.

Resolution:

A. If number of rooms is valid, update the hot deck AIROOMS as a function of institution type. Otherwise, impute number of rooms from the hot deck.

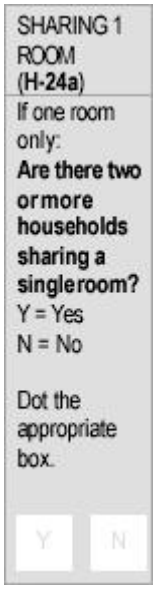
AIROOMS structure:

	Institution type
value	Tourist hotel/motel
value	Hospital/medical facility/clinic/frailcare centre
value	Childcare institution/orphanage
value	Home for the disabled
value	Boarding school hostel
value	Convent/monastery/religious retreat
value	Defence force barracks/camp/ship in harbour
value	Prison/correctional institution/police cells
value	Community or church hall
value	Refugee camp/shelter for the homeless

Software:

This edit is implemented in subroutine SIV5INST in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

IV.6 SHARING ONE ROOM (H-24A)



Valid values:

1	yes
2	no

Universe:

all households with living quarters = 1 (housing unit) that have 1 room only
(this question does not appear on the institutional questionnaire; see edit IV.6INST)

Edit checks:

A. This item is not applicable for households with more than 1 room.
B. Variable must have a valid value.

Resolution:

A. If the number of rooms is 1:
    a. if the household is a caravant or ship (H23a = 9 or 10), then make sure that sharing 1 room = "no";
    b. otherwise, if the sharing 1 room response is valid, then update the hot deck ASHARING (based on household size and type of housing unit);
    c. otherwise, impute sharing 1 room response from the deck ASHARING.

B. If the number of rooms is not 1:
    a. impute sharing 1 room to blank, if it is not already.

ASHARING structure:

HOUSEHOLD SIZE										
1	2	3	4	5	6	7	8	9	10+	HOUSING UNIT TYPE
val	val	val	val	val	val	val	val	val	val	House or brick
val	val	val	val	val	val	val	val	val	val	Traditional
val	val	val	val	val	val	val	val	val	val	Flat
val	val	val	val	val	val	val	val	val	val	Semi-detached
val	val	val	val	val	val	val	val	val	val	Backyard
val	val	val	val	val	val	val	val	val	val	Informal – back yard
val	val	val	val	val	val	val	val	val	val	Informal – other
val	val	val	val	val	val	val	val	val	val	Room – shared property

Software:

This edit is implemented in subroutine SIV6 in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (99) is not allowed for this question.
B. Housing unit type must have been edited prior to using this edit.

IV.6 INST SHARING ONE ROOM (H-24A) (INSTITUTIONS)

Valid values:

none

Universe:

all institutions aside from homeless
(see edit IV.6 for the corresponding household edit)

Edit checks:

A. This variable is not applicable for institutions.

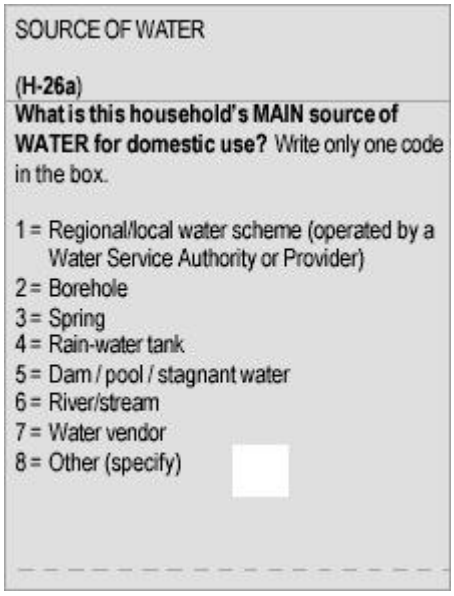
Resolution:

A. If this variable is not blank, then make it blank.

Software:

This edit is implemented in subroutine SIV6INST in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

IV.7 SOURCE OF WATER (H-26A)


SOURCE OF WATER

(H-26a)

What is this household's MAIN source of WATER for domestic use? Write only one code in the box.

1 = Regional/local water scheme (operated by a Water Service Authority or Provider)
2 = Borehole
3 = Spring
4 = Rain-water tank
5 = Dam / pool / stagnant water
6 = River/stream
7 = Water vendor
8 = Other (specify)

Valid values:

1	Regional/local water scheme (operated by a Water Service Authority or Provider)
2	Borehole
3	Spring
4	Rain-water tank
5	Dam / pool / stagnant water
6	River/stream
7	Water vendor
8	Other

Universe:

all households
(see edit IV.7INST for the corresponding institution edit)

Edit checks:

A. Variable must have a valid value.
B. Impute water source from a hot deck (based on housing unit type) when necessary.

Resolution:

A. If water source is valid, update the hot deck ASOURCE. Otherwise, impute water source from the hot deck ASOURCE.

Structures for hot decks ASOURCE:

	Type of housing unit
value	House or brick
value	Traditional
value	Flat
value	Semi-detached
value	Backyard
value	Informal – back yard
value	Informal – other
value	Room – shared property
value	Caravan or tent
value	Private ship/boat
value	not applicable (living quarters 2:5)

The “not applicable” row is for households with living quarters = 2:5 (since the housing unit question is not applicable for them)

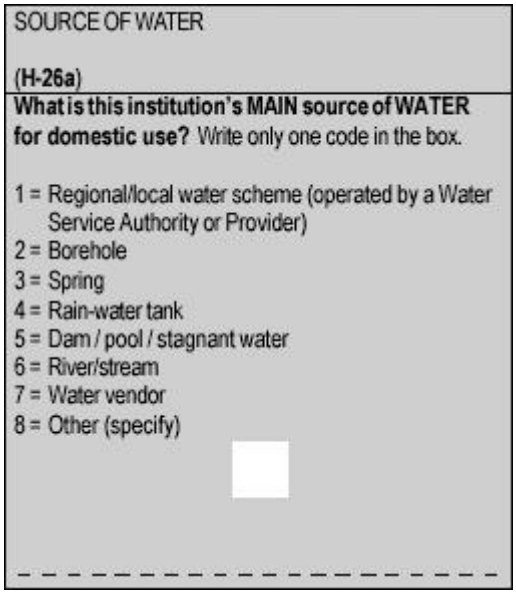
Software:

This edit is implemented in subroutine SIV7 in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) and not applicable (blank) are not allowed for these questions.
B. Housing unit type must have been edited prior to using this edit.

IV.7 INST SOURCE OF WATER (H-26A) (INSTITUTIONS)


SOURCE OF WATER

(H-26a)

What is this institution's MAIN source of WATER for domestic use? Write only one code in the box.

1 = Regional/local water scheme (operated by a Water Service Authority or Provider)
2 = Borehole
3 = Spring
4 = Rain-water tank
5 = Dam / pool / stagnant water
6 = River/stream
7 = Water vendor
8 = Other (specify)

Valid values:

see edit IV.7 above

Universe:

all institutions aside from homeless
(see edit IV.7 for the corresponding household edit)

Edit checks:

A. See edit IV.7 above; the same edit checks apply for institutions.

Resolution:

A. See edit IV.7 above; the same resolution strategy applies for institutions.

Structures for hot decks AISOURCE:

	Institution type
value	Tourist hotel/motel
value	Hospital/medical facility/clinic/frailcare centre
value	Childcare institution/orphanage
value	Home for the disabled
value	Boarding school hostel
value	Initiation school
value	Convent/monastery/religious retreat
value	Defence force barracks/camp/ship in harbour
value	Prison/correctional institution/police cells
value	Community or church hall
value	Refugee camp/shelter for the homeless
value	Homeless
value	Other

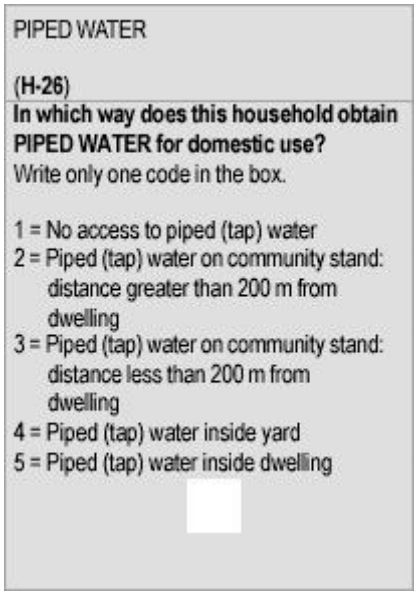
Software:

This edit is implemented in subroutine SIV7INST in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) and not applicable (blank) are not allowed for these questions.
B. Housing unit type must have been edited prior to using this edit.

IV.8 PIPED WATER (H-26)


PIPED WATER

(H-26)

In which way does this household obtain PIPED WATER for domestic use?

Write only one code in the box.

1 = No access to piped (tap) water
2 = Piped (tap) water on community stand: distance greater than 200 m from dwelling
3 = Piped (tap) water on community stand: distance less than 200 m from dwelling
4 = Piped (tap) water inside yard
5 = Piped (tap) water inside dwelling

Valid values:

1	No access to piped (tap) water
2	Piped (tap) water to community stand: distance less than 200m from dwelling
3	Piped (tap) water to community stand: distance greater than 200m from dwelling
4	Piped (tap) water inside yard
5	Piped (tap) water inside dwelling

Universe:

all households
(see edit IV.8INST for the corresponding institution edit)

Edit checks:

A. Variables must have valid values.
B. Impute piped water access from a hot deck (based on housing unit type and water source) when necessary.
C. Correct for a common enumerator error where responses are no piped access (1), water scheme (1), flush toilet (1); impute piped water from a deck in this case.

Resolution:

A. PRE-EDIT: If piped water = no access (1), water source = 1 (scheme), and toilets = 1 (flush), then delete the piped water response; it will be imputed in this case.

B. If piped water access is valid, update the hot deck APIPED.

C. Otherwise, impute piped water access from the hot deck APIPED.

Structures for hot decks APIPED:

WATER SOURCE								
1	2	3	4	5	6	7	8	HOUSING UNIT TYPE
value	value	value	value	value	value	value	value	House or brick
value	value	value	value	value	value	value	value	Traditional
value	value	value	value	value	value	value	value	Flat
value	value	value	value	value	value	value	value	Semi-detached
value	value	value	value	value	value	value	value	Backyard
value	value	value	value	value	value	value	value	Informal – back yard
value	value	value	value	value	value	value	value	Informal – other
value	value	value	value	value	value	value	value	Room – shared property
value	value	value	value	value	value	value	value	Caravan or tent
value	value	value	value	value	value	value	value	Private ship/boat
value	value	value	value	value	value	value	value	OTHER/not applicable

The “not applicable” row is for households with living quarters = 2:5 (since the housing unit question is not applicable for them)

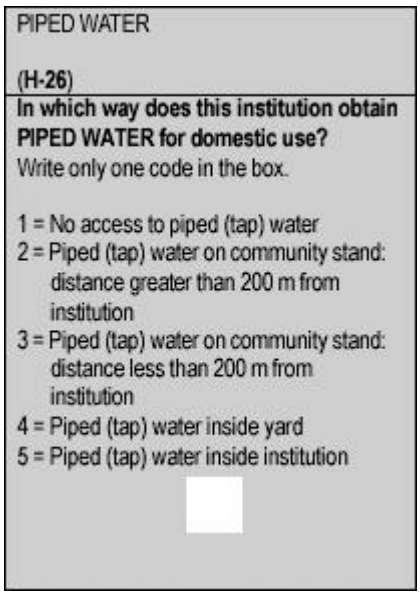
Software:

This edit is implemented in subroutine SIV8 in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) and not applicable (blank) are not allowed for these questions.
B. Both housing unit type and water source must have been edited prior to using this edit.

IV.8 INST PIPED WATER (H-26) (INSTITUTIONS)


PIPED WATER

(H-26)

In which way does this institution obtain PIPED WATER for domestic use?

Write only one code in the box.

1 = No access to piped (tap) water
2 = Piped (tap) water on community stand: distance greater than 200 m from institution
3 = Piped (tap) water on community stand: distance less than 200 m from institution
4 = Piped (tap) water inside yard
5 = Piped (tap) water inside institution

Valid values:

see edit IV.8 above

Universe:

all institutions aside from homeless
(see edit IV.8 for the corresponding household edit)

Edit checks:

A. See edit IV.8 above; the same edit checks apply for institutions.

Resolution:

A. See edit IV.8 above; the same resolution strategy applies for institutions.

Structures for hot decks AIPIPED:

	Institution type
value	Tourist hotel/motel
value	Hospital/medical facility/clinic/frailcare centre
value	Childcare institution/orphanage
value	Home for the disabled
value	Boarding school hostel
value	Initiation school
value	Convent/monastery/religious retreat
value	Defence force barracks/camp/ship in harbour
value	Prison/correctional institution/police cells
value	Community or church hall
value	Refugee camp/shelter for the homeless
value	Homeless
value	Other

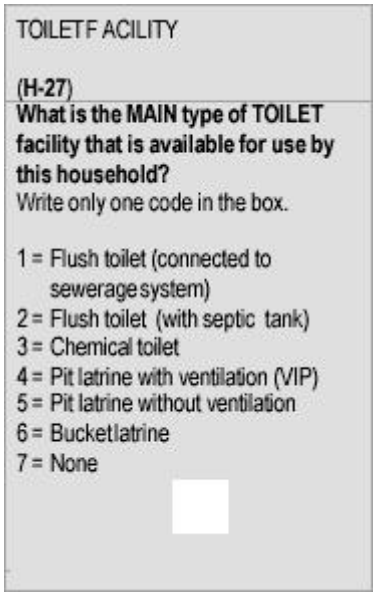
Software:

This edit is implemented in subroutine SIV8INST in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) and not applicable (blank) are not allowed for these questions.
B. Both housing unit type and water source must have been edited prior to using this edit.

IV.9 TOILET FACILITY (H-27)


TOILET F ACILITY

(H-27)

What is the MAIN type of TOILET facility that is available for use by this household?

Write only one code in the box.

1 = Flush toilet (connected to sewerage system)
2 = Flush toilet (with septic tank)
3 = Chemical toilet
4 = Pit latrine with ventilation (VIP)
5 = Pit latrine without ventilation
6 = Bucket latrine
7 = None

Valid values:

1	Flush toilet (connected to sewerage system)
2	Flush toilet (with septic tank)
3	Chemical toilet
4	Pit latrine with ventilation (VIP)
5	Pit latrine without ventilation
6	Bucket latrine
7	None

Universe:

all households and institutions (except homeless)

Edit checks:

A. Variable must have a valid value.

Resolution:

A. If toilet facility is valid, update the hot deck ATOILET (as a function of source of water and piped water access);

B. Otherwise, impute toilet facility from the hot deck ATOILET.

C. POST-EDIT: If piped water = no access (1), water source = 1 (scheme), and toilets = 1 (flush), then impute piped water = 5 (piped inside dwelling).
note: this post edit is necessary to avoid re-run test problems (see section XI.1).

ATOILET structure:

WATER SOURCE								
1	2	3	4	5	6	7	8	PIPED WATER
value	value	value	value	value	value	value	value	no
value	value	value	value	value	value	value	value	yes; less than 200m
value	value	value	value	value	value	value	value	yes; more than 200m
value	value	value	value	value	value	value	value	yes; inside yard
value	value	value	value	value	value	value	value	yes; inside house

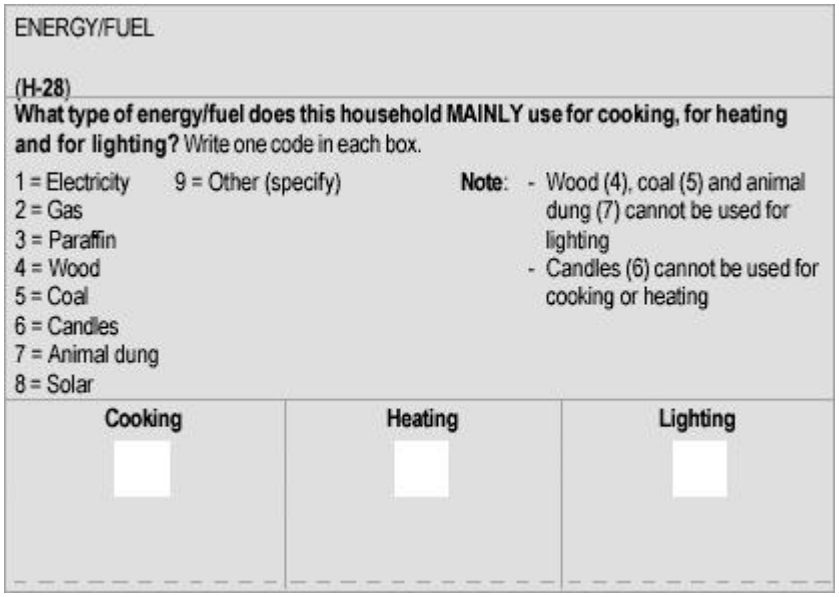
Software:

This edit is implemented in subroutine SIV9 in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) and not applicable (blank) are not allowed for this question.
B. Both source of water and piped water access must have been edited prior to using this edit.

IV.10 ENERGY/FUEL: HEATING (H-28B)


ENERGY/FUEL

(H-28)

What type of energy/fuel does this household MAINLY use for cooking, for heating and for lighting? Write one code in each box.

1 = Electricity
2 = Gas
3 = Paraffin
4 = Wood
5 = Coal
6 = Candles
7 = Animal dung
8 = Solar
9 = Other (specify)

Note:
- Wood (4), coal (5) and animal dung (7) cannot be used for lighting
- Candles (6) cannot be used for cooking or heating

Cooking	Heating	Lighting

Valid values:

1	Electricity
2	Gas
3	Paraffin
4	Wood
5	Coal
7	Animal dung
8	Solar
9	Other

Universe:

all households (see edit IV.11INST for the corresponding institution edit)

Edit checks:

A. Variable must have a valid value (1:5, 7:9); note that candles (value 6 on questionnaire) cannot be used for heating.
B. Blank responses are assumed to imply "no heating" if a valid response is provided for the cooking or lighting variables (or both); in such cases, heating is imputed to "other" (value 9).
C. Invalid responses are imputed from a hot deck (based on housing unit type).
D. Correct for scanning error where electricity responses (value 1) are incorrectly reported as dung (value 7).

Resolution:

A. PRE-EDIT: if cooking response is electricity (1) and the household is in an urban area (GEO-TYPE = 1,2) and method of heating is dung (7), then assign heating = electricity/dung (90%/10% split).

B. If heating energy/fuel is valid, update the hot deck AHEATING as a function of housing unit type.

C. Otherwise, if heating energy/fuel is blank and (cooking is valid or lighting is valid), then impute to heating = 9 (other).

D. Otherwise (invalid and not blank), impute heating energy/fuel from the hot deck.

AHEATING structure:

	Type of housing unit
value	House or brick
value	Traditional
value	Flat
value	Semi-detached
value	Backyard
value	Informal – back yard
value	Informal – other
value	Room – shared property
value	Caravan or tent
value	Private ship/boat
value	not applicable (living quarters 2:5)

The "not applicable" row is for households with living quarters = 2:5 (since the housing unit question is not applicable for them)

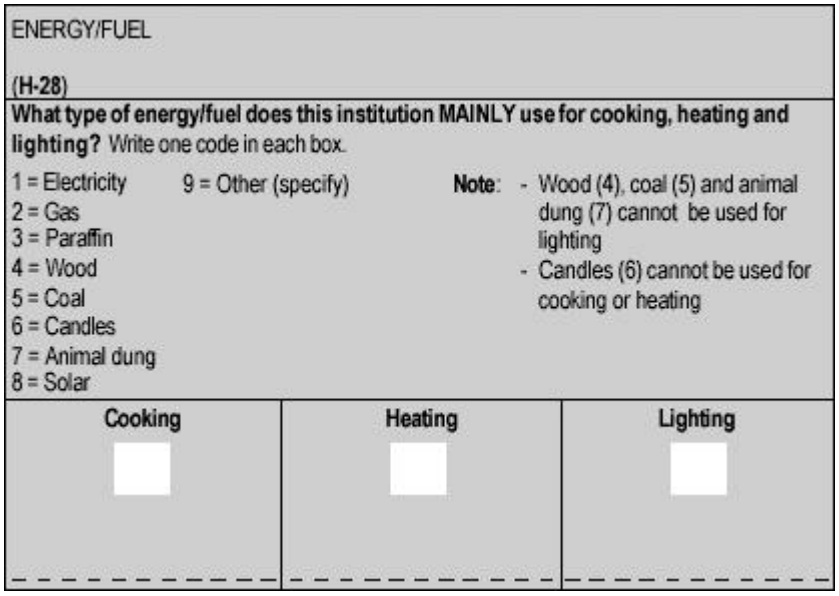
Software:

This edit is implemented in subroutine SIV10 in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) and not applicable (blank) are not allowed for this question.
B. Housing unit type must have been edited prior to using this edit.

IV.10 INST ENERGY/FUEL: HEATING (H-28B) (INSTITUTIONS)


ENERGY/FUEL

(H-28)

What type of energy/fuel does this institution MAINLY use for cooking, heating and lighting? Write one code in each box.

1 = Electricity
2 = Gas
3 = Paraffin
4 = Wood
5 = Coal
6 = Candles
7 = Animal dung
8 = Solar
9 = Other (specify)

Note:
- Wood (4), coal (5) and animal dung (7) cannot be used for lighting
- Candles (6) cannot be used for cooking or heating

Cooking	Heating	Lighting

Valid values:

1	Electricity
2	Gas
3	Paraffin
4	Wood
5	Coal
7	Animal dung
8	Solar
9	Other

Universe:

all institutions aside from homeless (see edit IV.11 for the households edit)

Edit checks:

A. Variable must have a valid value (1:5, 7:9); note that candles (value 6 on questionnaire) cannot be used for heating.
B. Blank responses are assumed to imply "no heating" if a valid response is provided for the cooking or lighting variables (or both); in such cases, heating is imputed to "other" (value 9).
C. Invalid responses are imputed from a hot deck.
D. Correct for scanning error where electricity responses (value 1) are incorrectly reported as dung (value 7).

Resolution:

A. PRE-EDIT: if cooking response is electricity (1) and the institution is in an urban area (GEO-TYPE = 1,2) and method of heating is dung (7), then assign heating = electricity/dung (90%/10% split).

B. If heating energy/fuel is valid, update the hot deck AIHEATING as a function of institution type.

C. Otherwise, if heating energy/fuel is blank and (cooking is valid or lighting is valid), then impute to heating = 9 (other).

D. Otherwise (invalid and not blank), impute heating energy/fuel from the hot deck.

AIHEATING structure:

	Institution type
value	Tourist hotel/motel
value	Hospital/medical facility/clinic/frailcare centre
value	Childcare institution/orphanage
value	Home for the disabled
value	Boarding school hostel
value	Initiation school
value	Convent/monastery/religious retreat
value	Defence force barracks/camp/ship in harbour
value	Prison/correctional institution/police cells
value	Community or church hall
value	Refugee camp/shelter for the homeless
value	Homeless
value	Other

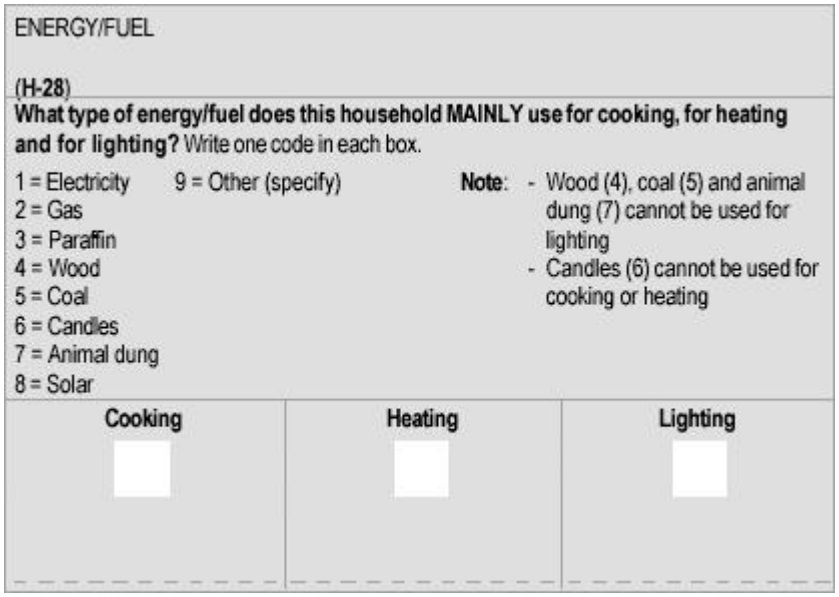
Software:

This edit is implemented in subroutine SIV10INST in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) and not applicable (blank) are not allowed for this question.
B. Institution type must have been edited prior to using this edit.

IV.11 ENERGY/FUEL: COOKING (H-28A)


ENERGY/FUEL

(H-28)

What type of energy/fuel does this household MAINLY use for cooking, for heating and for lighting? Write one code in each box.

1 = Electricity
2 = Gas
3 = Paraffin
4 = Wood
5 = Coal
6 = Candles
7 = Animal dung
8 = Solar
9 = Other (specify)

Note:
- Wood (4), coal (5) and animal dung (7) cannot be used for lighting
- Candles (6) cannot be used for cooking or heating

Cooking	Heating	Lighting

Valid values:

1	Electricity
2	Gas
3	Paraffin
4	Wood
5	Coal
7	Animal dung
8	Solar
9	Other

Universe:

all households
(see edit IV.10INST for the corresponding institution edit)

Edit checks:

A. Variable must have a valid value (1:5, 7:9); note that candles (value 6 on questionnaire) cannot be used for cooking.
B. Correct for a scanning error that sometimes mis-recognised 1 (electricity) as 7 (dung).
C. Invalid responses are imputed from a hot deck (based on type of housing unit).

Resolution:

A. For persons with a valid cooking response:
    a. if heating and lighting are both 1 (electricity), and cooking is 7 (dung), then impute cooking = 1 (electricity);
    b. otherwise, update the hot deck ACOOKING (based on type of housing unit);

B. Otherwise, impute cooking energy/fuel from the hot deck ACOOKING.

ACOOKING structure:

	Type of housing unit
value	House or brick
value	Traditional
value	Flat
value	Semi-detached
value	Backyard
value	Informal – back yard
value	Informal – other
value	Room – shared property
value	Caravan or tent
value	Private ship/boat
value	not applicable (living quarters 2:5)

The "not applicable" row is for households with living quarters = 2:5 (since the housing unit question is not applicable for them)

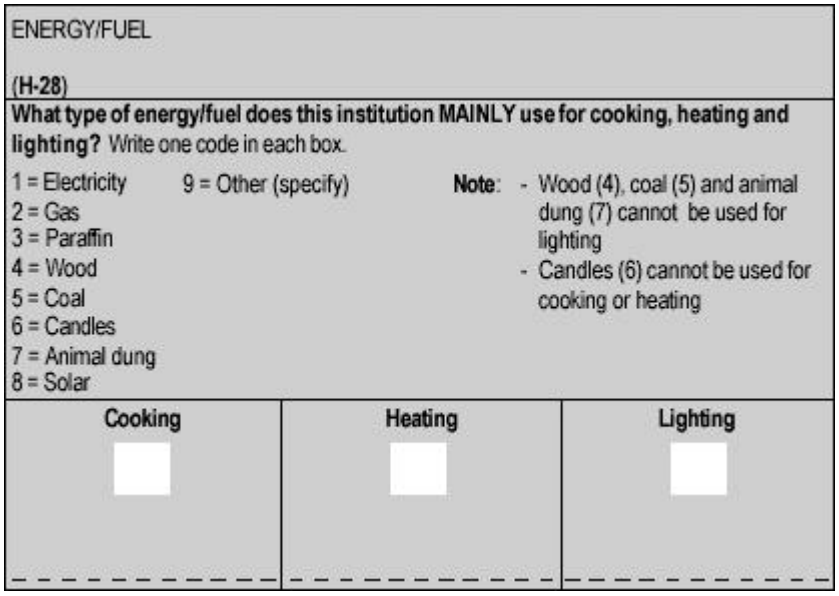
Software:

This edit is implemented in subroutine SIV11 in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) and not applicable (blank) are not allowed for this question.
B. Housing unit type must have been edited prior to using this edit.

IV.11 INST ENERGY/FUEL: COOKING (H-28A) (INSTITUTIONS)


ENERGY/FUEL

(H-28)

What type of energy/fuel does this institution MAINLY use for cooking, heating and lighting? Write one code in each box.

1 = Electricity
2 = Gas
3 = Paraffin
4 = Wood
5 = Coal
6 = Candles
7 = Animal dung
8 = Solar
9 = Other (specify)

Note:
- Wood (4), coal (5) and animal dung (7) cannot be used for lighting
- Candles (6) cannot be used for cooking or heating

Cooking	Heating	Lighting

Valid values:

1	Electricity
2	Gas
3	Paraffin
4	Wood
5	Coal
7	Animal dung
8	Solar
9	Other

Universe:

all institutions except homeless (see edit IV.10 for the corresponding household edit)

Edit checks:

A. Variable must have a valid value (1:5, 7:9); note that candles (value 6 on questionnaire) cannot be used for cooking.
B. Correct for a scanning error that sometimes mis-recognised 1 (electricity) as 7 (dung).

Resolution:

A. For persons with a valid cooking response:
    a. if heating and lighting are both 1 (electricity), and cooking is 7 (dung), then impute cooking = 1 (electricity);
    b. otherwise, update the hot deck AICOOKING.

B. Otherwise, impute cooking energy/fuel from the hot deck AICOOKING.

AICOOKING structure:

	Institution type
value	Tourist hotel/motel
value	Hospital/medical facility/clinic/frailcare centre
value	Childcare institution/orphanage
value	Home for the disabled
value	Boarding school hostel
value	Initiation school
value	Convent/monastery/religious retreat
value	Defence force barracks/camp/ship in harbour
value	Prison/correctional institution/police cells
value	Community or church hall
value	Refugee camp/shelter for the homeless
value	Homeless
value	Other

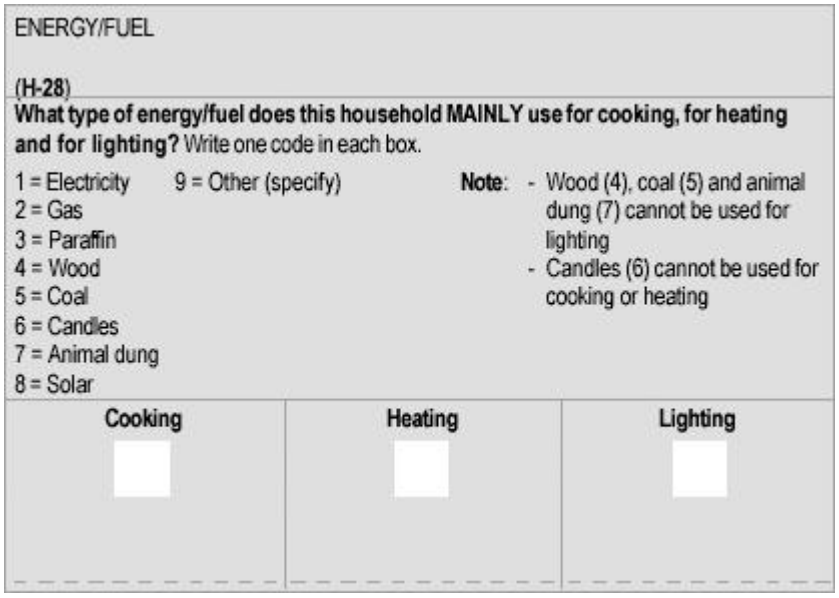
Software:

This edit is implemented in subroutine SIV11INST in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) and not applicable (blank) are not allowed for this question.
B. Institution type must have been edited prior to using this edit.

IV.12 ENERGY/FUEL: LIGHTING (H-28C)


ENERGY/FUEL

(H-28)

What type of energy/fuel does this household MAINLY use for cooking, for heating and for lighting? Write one code in each box.

1 = Electricity
2 = Gas
3 = Paraffin
4 = Wood
5 = Coal
6 = Candles
7 = Animal dung
8 = Solar
9 = Other (specify)

Note:
- Wood (4), coal (5) and animal dung (7) cannot be used for lighting
- Candles (6) cannot be used for cooking or heating

Cooking	Heating	Lighting

Valid values:

1	Electricity
2	Gas
3	Paraffin
6	Candles
8	Solar
9	Other

Universe:

all households (see edit IV.12INST for the corresponding institution edit)

Edit checks:

A. Variable must have a valid value (1:3, 6, 8, 9); note that wood (value 4 on the questionnaire), coal (value 5), and animal dung (value 7) cannot be used for lighting.
B. Responses for wood, coal, and animal dung lighting are converted to "other".
C. Invalid responses are imputed from a hot deck (based on type of housing unit)

Resolution:

A. If lighting energy/fuel is valid, update the hot deck ALIGHTING as a function of housing unit type.

B. Otherwise, if lighting energy/fuel is wood, coal, or animal dung, then impute to 9 (other).

C. Otherwise (invalid and not 4,5,7), impute lighting energy/fuel from the hot deck.

D. POST-EDIT 1: if cooking response is electricity (1) and the household is in an urban area (GEO-TYPE = 1,2) and method of heating is dung (7), then assign heating = electricity (1).
note: this post edit is necessary to avoid re-run test problems (see section XI.1).

E. POST-EDIT 2: if heating and lighting are both 1 (electricity), and cooking is 7 (dung), then impute cooking = 1 (electricity).
note: this post edit is necessary to avoid re-run test problems (see section XI.1).

ALIGHTING structure:

	Type of housing unit
value	House or brick
value	Traditional
value	Flat
value	Semi-detached
value	Backyard
value	Informal – backyard
value	Informal – other
value	Room – shared property
value	Caravan or tent
value	Private ship/boat
value	not applicable (living quarters 2:5)

The “not applicable” row is for households with living quarters = 2:5 (since the housing unit question is not applicable for them)

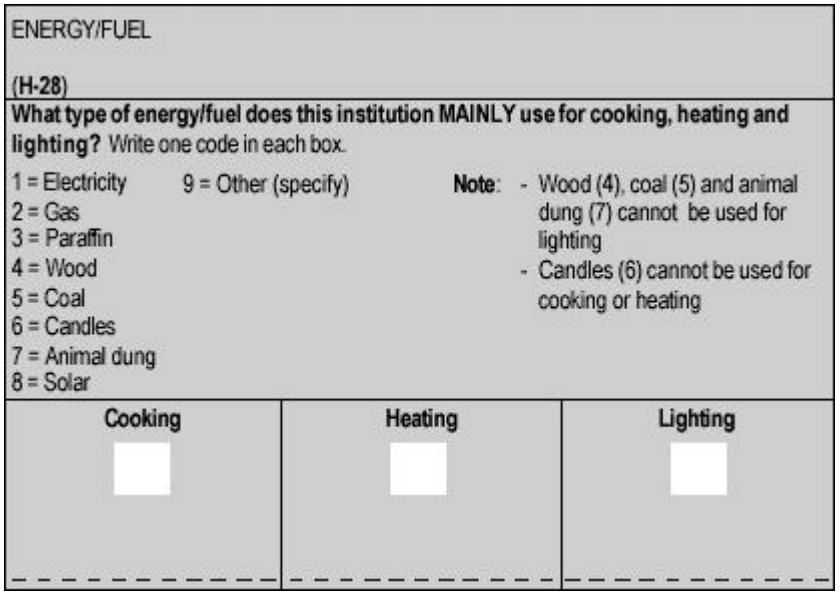
Software:

This edit is implemented in subroutine SIV12 in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) and not applicable (blank) are not allowed for this question.
B. Housing unit type must have been edited prior to using this edit.

IV.12 INST ENERGY/FUEL: LIGHTING (H-28C) (INSTITUTIONS)


ENERGY/FUEL

(H-28)

What type of energy/fuel does this institution MAINLY use for cooking, heating and lighting? Write one code in each box.

1 = Electricity
2 = Gas
3 = Paraffin
4 = Wood
5 = Coal
6 = Candles
7 = Animal dung
8 = Solar
9 = Other (specify)

Note:
- Wood (4), coal (5) and animal dung (7) cannot be used for lighting
- Candles (6) cannot be used for cooking or heating

Cooking	Heating	Lighting

Valid values:

1	Electricity
2	Gas
3	Paraffin
6	Candles
8	Solar
9	Other

Universe:

all institutions aside from homeless (see edit IV.12 for the households edit)

Edit checks:

A. Variable must have a valid value (1:3, 6, 8, 9); note that wood (value 4 on the questionnaire), coal (value 5), and animal dung (value 7) cannot be used for lighting.
B. Responses for wood, coal, and animal dung lighting are converted to "other".
C. Invalid responses are imputed from a hot deck..

Resolution:

A. If lighting energy/fuel is valid, update the hot deck AILIGHTING as a function of institution unit type.

B. Otherwise, if lighting energy/fuel is wood, coal, or animal dung, then impute to 9 (other).

C. Otherwise (invalid and not 4,5,7), impute lighting energy/fuel from the hot deck.

D. POST-EDIT 1: if cooking response is electricity (1) and the household is in an urban area (GEO-TYPE = 1,2) and method of heating is dung (7), then assign heating = electricity (1).
note: this post edit is necessary to avoid re-run test problems (see section XI.1).

E. POST-EDIT 2: if heating and lighting are both 1 (electricity), and cooking is 7 (dung), then impute cooking = 1 (electricity).
note: this post edit is necessary to avoid re-run test problems (see section XI.1).

AILIGHTING structure:

	Institution type
value	Tourist hotel/motel
value	Hospital/medical facility/clinic/frailcare centre
value	Childcare institution/orphanage
value	Home for the disabled
value	Boarding school hostel
value	Initiation school
value	Convent/monastery/religious retreat
value	Defence force barracks/camp/ship in harbour
value	Prison/correctional institution/police cells
value	Community or church hall
value	Refugee camp/shelter for the homeless
value	Homeless
value	Other

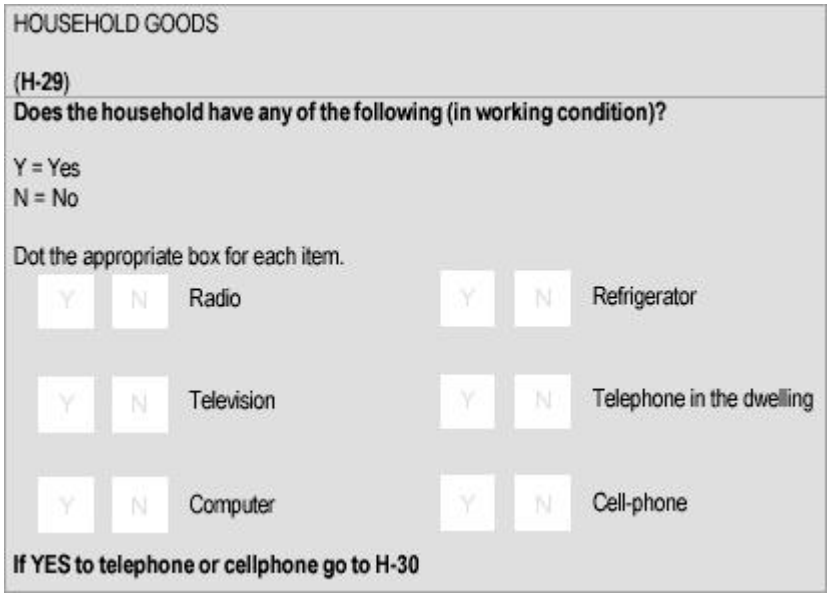
Software:

This edit is implemented in subroutine SIV12INST in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) and not applicable (blank) are not allowed for this question.
B. Insitution type must have been edited prior to using this edit.

IV.13 HOUSEHOLD GOODS (OVERALL PRE-EDIT)


HOUSEHOLD GOODS

(H-29)

Does the household have any of the following (in working condition)?

Y = Yes
N = No

Dot the appropriate box for each item.

Y	N	Radio	Y	N	Refrigerator
Y	N	Television	Y	N	Telephone in the dwelling
Y	N	Computer	Y	N	Cell-phone

If YES to telephone or cellphone go to H-30

Valid values:

1 yes
2 no

Universe:

all households and institutions

Edit checks:

A. Handle cases where the respondent uses blank responses to indicate “no” responses.

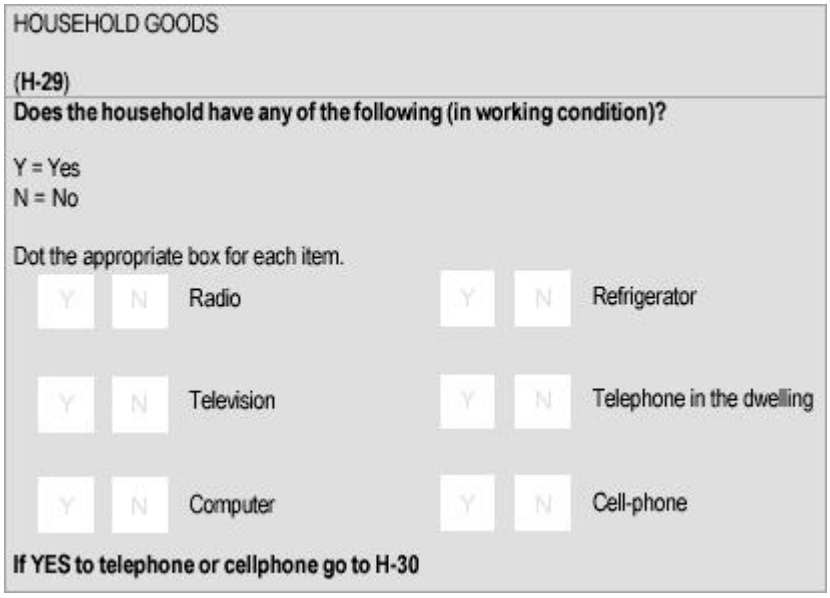
Resolution:

A. If the only responses for the household goods questions (radio, television, computer, refrigerator, telephone, cell-phone) are blank and yes, then convert all blanks to “no” responses.

Software:

This edit is implemented in subroutine SIV13 in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

IV.14 HOUSEHOLD GOODS: RADIO (H29RADIO)


HOUSEHOLD GOODS

(H-29)

Does the household have any of the following (in working condition)?

Y = Yes
N = No

Dot the appropriate box for each item.

Y	N	Radio	Y	N	Refrigerator
Y	N	Television	Y	N	Telephone in the dwelling
Y	N	Computer	Y	N	Cell-phone

If YES to telephone or cellphone go to H-30

Valid values:

1	yes
2	no

Universe:

all households
(see edit IV.14INST for the corresponding institution edit)

Edit checks:

A. Variable must have a valid value (1,2).

Resolution:

A. If radio is valid, update the hot deck ARADIO as a function of housing unit type.

B. Otherwise, impute radio from the hot deck.

ARADIO structure:

	Type of housing unit
value	House or brick
value	Traditional
value	Flat
value	Semi-detached
value	Backyard
value	Informal – back yard
value	Informal – other
value	Room – shared property
value	Caravan or tent
value	Private ship/boat
value	not applicable (living quarters 2:5)

The “not applicable” row is for households with living quarters = 2:5 (since the housing unit question is not applicable for them)

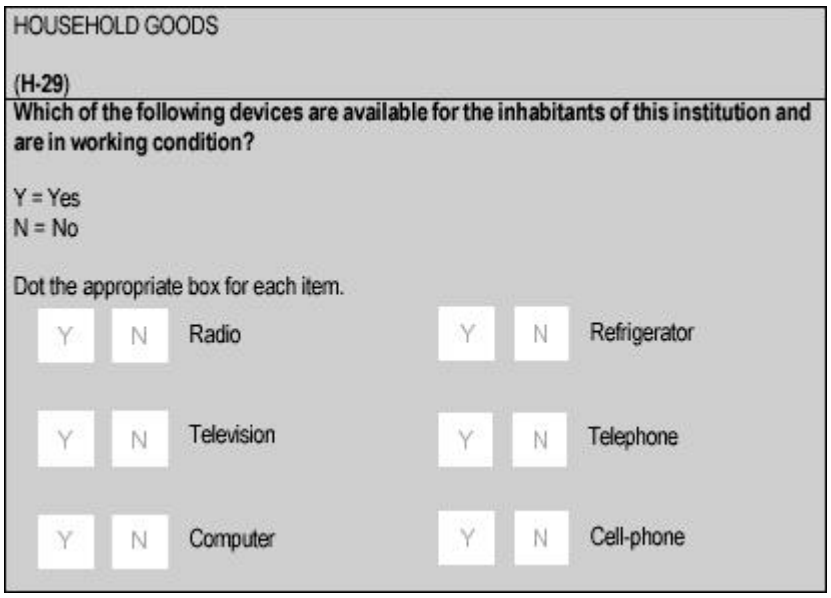
Software:

This edit is implemented in subroutine SIV14 in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) and not applicable (blank) are not allowed for this question.
B. Housing unit type must have been edited prior to using this edit.

IV.14 INST HOUSEHOLD GOODS: RADIO (H29RADIO) (INSTITUTIONS)


HOUSEHOLD GOODS

(H-29)

Which of the following devices are available for the inhabitants of this institution and are in working condition?

Y = Yes
N = No

Dot the appropriate box for each item.

Y	N	Radio	Y	N	Refrigerator
Y	N	Television	Y	N	Telephone
Y	N	Computer	Y	N	Cell-phone

Valid values:

1 yes
2 no

Universe:

all institutions aside from homeless
(see edit IV.14 for the household edit)

Edit checks:

A. Variable must have a valid value (1,2).

Resolution:

A. If radio is valid, update the hot deck AIRADIO as a function of institution type.

B. Otherwise, impute radio from the hot deck.

AIRADIO structure:

	Institution type
value	Tourist hotel/motel
value	Hospital/medical facility/clinic/frailcare centre
value	Childcare institution/orphanage
value	Home for the disabled
value	Boarding school hostel
value	Initiation school
value	Convent/monastery/religious retreat
value	Defence force barracks/camp/ship in harbour
value	Prison/correctional institution/police cells
value	Community or church hall
value	Refugee camp/shelter for the homeless
value	Homeless
value	Other

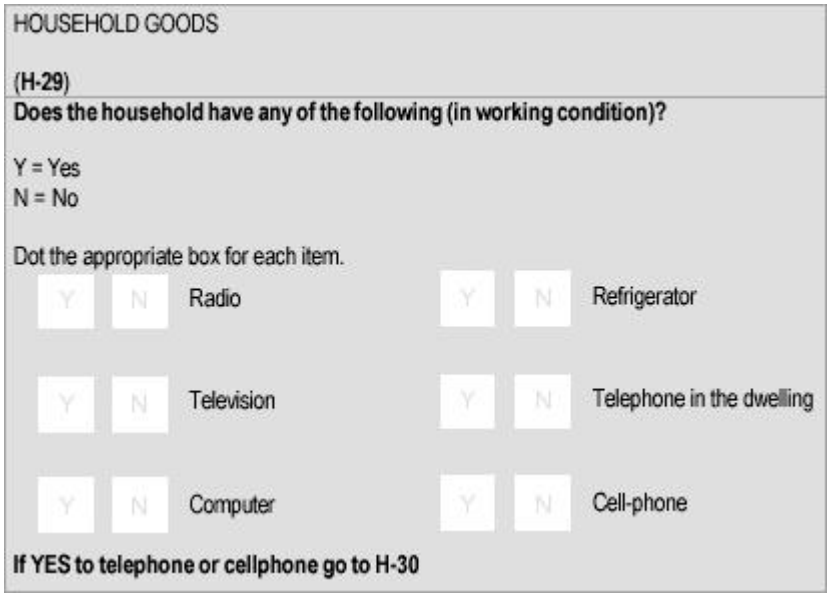
Software:

This edit is implemented in subroutine SIV14INST in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) and not applicable (blank) are not allowed for this question.
B. Institution type must have been edited prior to using this edit.

IV.15 HOUSEHOLD GOODS: TELEVISION (H29TELEVISION)


HOUSEHOLD GOODS

(H-29)

Does the household have any of the following (in working condition)?

Y = Yes
N = No

Dot the appropriate box for each item.

Y	N	Radio	Y	N	Refrigerator
Y	N	Television	Y	N	Telephone in the dwelling
Y	N	Computer	Y	N	Cell-phone

If YES to telephone or cellphone go to H-30

Valid values:

1	yes
2	no

Universe:

all households
(see edit IV.15INST for the corresponding institution edit)

Edit checks:

A. Variable must have a valid value (1,2).

Resolution:

A. If television is valid, update the hot deck ATELEVISION as a function of housing unit type.

B. Otherwise, impute television from the hot deck.

ATELEVISION structure:

	Type of housing unit
value	House or brick
value	Traditional
value	Flat
value	Semi-detached
value	Backyard
value	Informal – backyard
value	Informal – other
value	Room – shared property
value	Caravan or tent
value	Private ship/boat
value	not applicable (living quarters 2:5)

The “not applicable” row is for households with living quarters = 2:5 (since the housing unit question is not applicable for them)

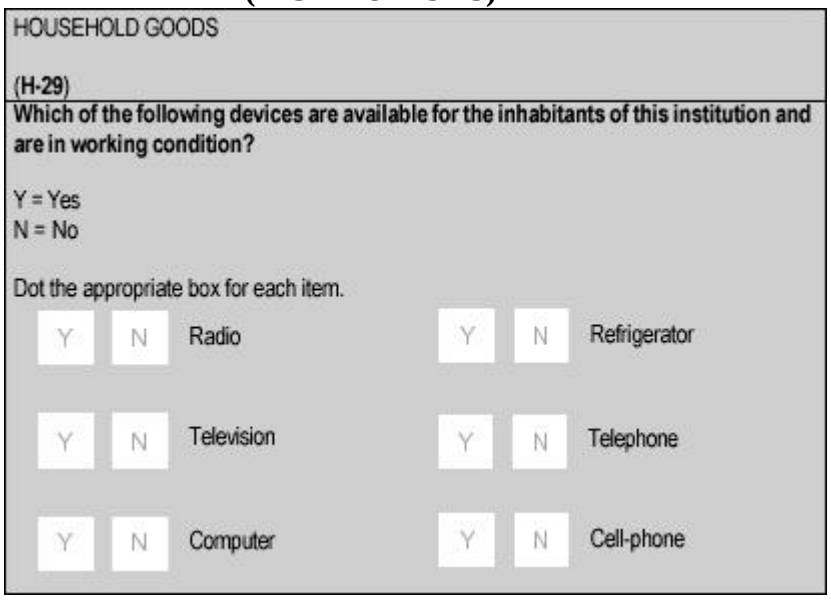
Software:

This edit is implemented in subroutine SIV15 in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) and not applicable (blank) are not allowed for this question.
B. Housing unit type must have been edited prior to using this edit.

IV.15 INST HOUSEHOLD GOODS : TELEVISION (H29TELEVISION) (INSTITUTIONS)


HOUSEHOLD GOODS

(H-29)

Which of the following devices are available for the inhabitants of this institution and are in working condition?

Y = Yes
N = No

Dot the appropriate box for each item.

Y	N	Radio	Y	N	Refrigerator
Y	N	Television	Y	N	Telephone
Y	N	Computer	Y	N	Cell-phone

Valid values:

1	yes
2	no

Universe:

all institutions aside from homeless
(see edit IV.15 for the households edit)

Edit checks:

A. Variable must have a valid value (1,2).

Resolution:

A. If television is valid, update the hot deck AITELEVISION as a function of institution type.

B. Otherwise, impute television from the hot deck.

AITELEVISION structure:

	Institution type
value	Tourist hotel/motel
value	Hospital/medical facility/clinic/frailcare centre
value	Childcare institution/orphanage
value	Home for the disabled
value	Boarding school hostel
value	Initiation school
value	Convent/monastery/religious retreat
value	Defence force barracks/camp/ship in harbour
value	Prison/correctional institution/police cells
value	Community or church hall
value	Refugee camp/shelter for the homeless
value	Homeless
value	Other

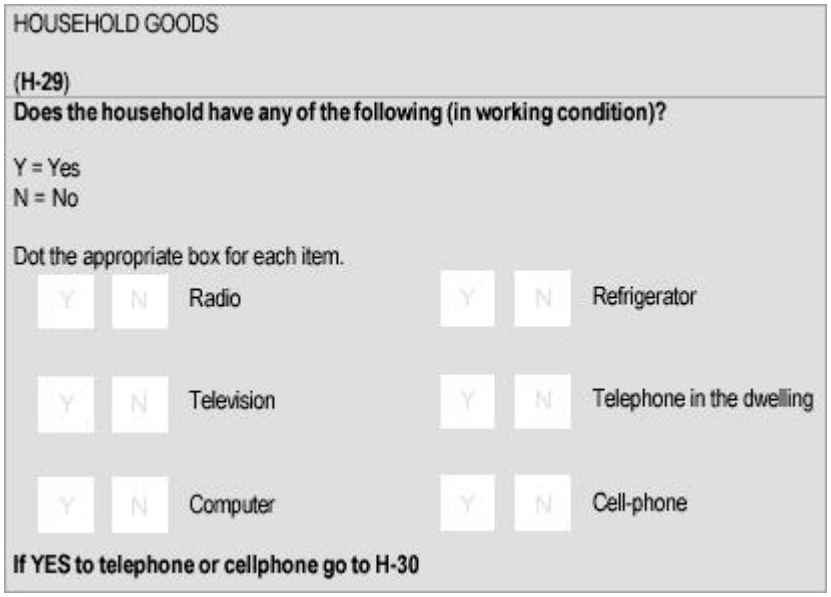
Software:

This edit is implemented in subroutine SIV15INST in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) and not applicable (blank) are not allowed for this question.
B. Institution type must have been edited prior to using this edit.

IV.16 HOUSEHOLD GOODS: COMPUTER (H29COMPUTER)


HOUSEHOLD GOODS

(H-29)

Does the household have any of the following (in working condition)?

Y = Yes
N = No

Dot the appropriate box for each item.

Y	N	Radio	Y	N	Refrigerator
Y	N	Television	Y	N	Telephone in the dwelling
Y	N	Computer	Y	N	Cell-phone

If YES to telephone or cellphone go to H-30

Valid values:

1	yes
2	no

Universe:

all households
(see edit IV.16INST for the corresponding institution edit)

Edit checks:

A. Variable must have a valid value (1,2).

Resolution:

A. If computer is valid, update the hot deck ACOMPUTER as a function of housing unit type.

B. Otherwise, impute computer from the hot deck.

ACOMPUTER structure:

	Type of housing unit
value	House or brick
value	Traditional
value	Flat
value	Semi-detached
value	Backyard
value	Informal – backyard
value	Informal – other
value	Room – shared property
value	Caravan or tent
value	Private ship/boat
value	not applicable (living quarters 2:5)

The “not applicable” row is for households with living quarters = 2:5 (since the housing unit question is not applicable for them)

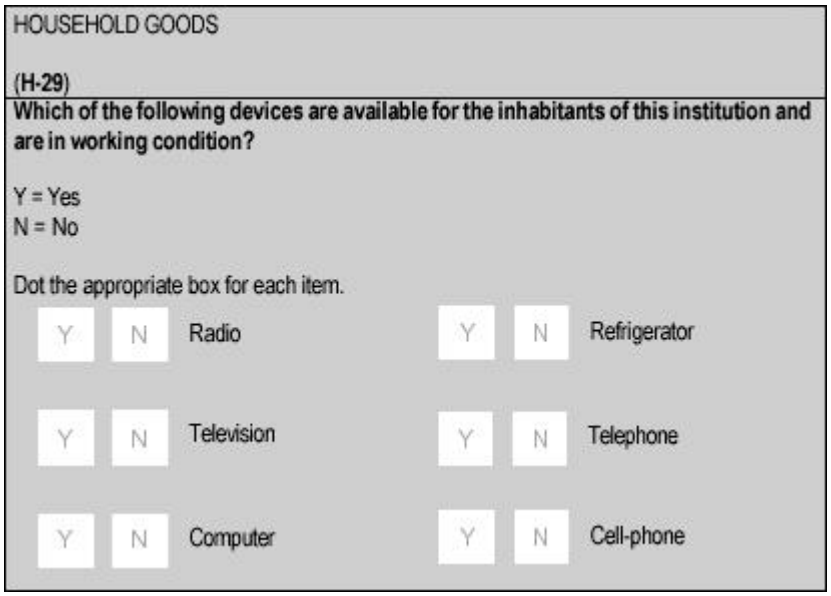
Software:

This edit is implemented in subroutine SIV16 in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) and not applicable (blank) are not allowed for this question.
B. Housing unit type must have been edited prior to using this edit.

IV.16 INST HOUSEHOLD GOODS: COMPUTER (H29COMPUTER) (INSTITUTIONS)


HOUSEHOLD GOODS

(H-29)

Which of the following devices are available for the inhabitants of this institution and are in working condition?

Y = Yes
N = No

Dot the appropriate box for each item.

Y	N	Radio	Y	N	Refrigerator
Y	N	Television	Y	N	Telephone
Y	N	Computer	Y	N	Cell-phone

Valid values:

1 yes
2 no

Universe:

all institutions aside from homeless
(see edit IV.16 for the household edit)

Edit checks:

A. Variable must have a valid value (1,2).

Resolution:

A. If computer is valid, update the hot deck AICOMPUTER as a function of institution type.

B. Otherwise, impute computer from the hot deck.

AICOMPUTER structure:

	Institution type
value	Tourist hotel/motel
value	Hospital/medical facility/clinic/frailcare centre
value	Childcare institution/orphanage
value	Home for the disabled
value	Boarding school hostel
value	Initiation school
value	Convent/monastery/religious retreat
value	Defence force barracks/camp/ship in harbour
value	Prison/correctional institution/police cells
value	Community or church hall
value	Refugee camp/shelter for the homeless
value	Homeless
value	Other

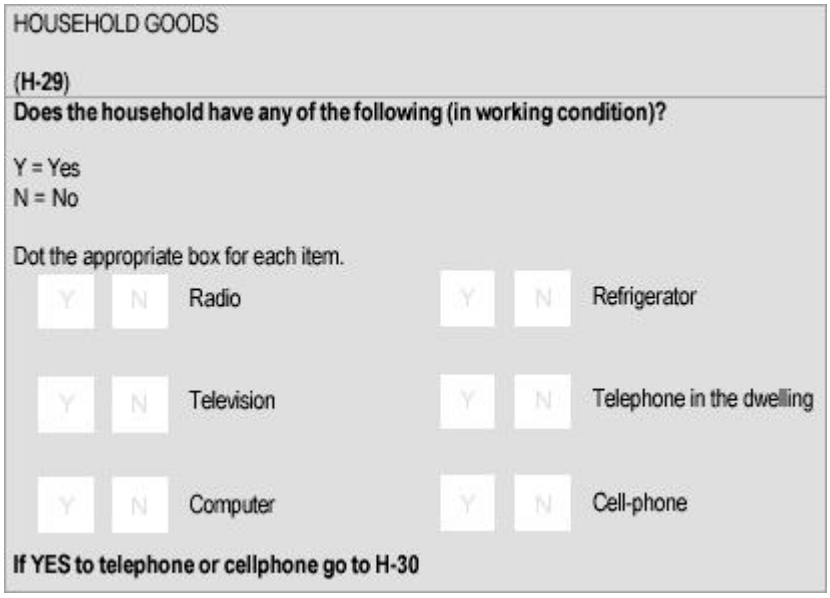
Software:

This edit is implemented in subroutine SIV16INST in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) and not applicable (blank) are not allowed for this question.
B. Institution type must have been edited prior to using this edit.

IV.17 HOUSEHOLD GOODS: REFRIGERATOR (H29FRIDGE)


HOUSEHOLD GOODS

(H-29)

Does the household have any of the following (in working condition)?

Y = Yes
N = No

Dot the appropriate box for each item.

Y	N	Radio	Y	N	Refrigerator
Y	N	Television	Y	N	Telephone in the dwelling
Y	N	Computer	Y	N	Cell-phone

If YES to telephone or cellphone go to H-30

Valid values:

1	yes
2	no

Universe:

all households
(see edit IV.17INST for the corresponding institution edit)

Edit checks:

A. Variable must have a valid value (1,2).

Resolution:

A. If refrigerator is valid, update the hot deck AREFRIGERATOR as a function of housing unit type.

B. Otherwise, impute refrigerator from the hot deck.

AREFRIGERATOR structure:

	Type of housing unit
value	House or brick
value	Traditional
value	Flat
value	Semi-detached
value	Backyard
value	Informal – backyard
value	Informal – other
value	Room – shared property
value	Caravan or tent
value	Private ship/boat
value	not applicable (living quarters 2:5)

The “not applicable” row is for households with living quarters = 2:5 (since the housing unit question is not applicable for them)

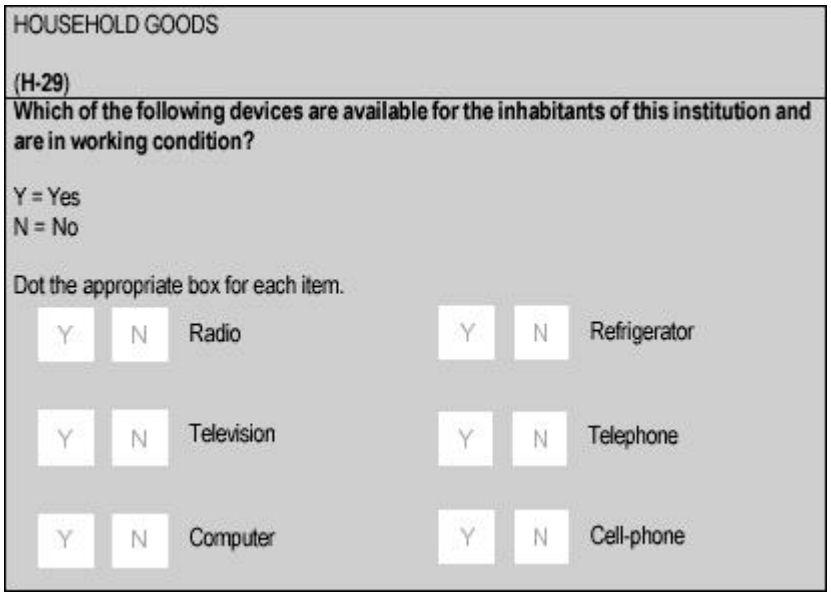
Software:

This edit is implemented in subroutine SIV17 in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) and not applicable (blank) are not allowed for this question.
B. Housing unit type must have been edited prior to using this edit.

IV.17 INST HOUSEHOLD GOODS: REFRIGERATOR (H29FRIDGE) (INSTITUTIONS)


HOUSEHOLD GOODS

(H-29)

Which of the following devices are available for the inhabitants of this institution and are in working condition?

Y = Yes
N = No

Dot the appropriate box for each item.

Y	N	Radio	Y	N	Refrigerator
Y	N	Television	Y	N	Telephone
Y	N	Computer	Y	N	Cell-phone

Valid values:

1 yes
2 no

Universe:

all institutions aside from homeless
(see edit IV.16 for the households edit)

Edit checks:

A. Variable must have a valid value (1,2).

Resolution:

A. If refrigerator is valid, update the hot deck AIREFRIGERATOR as a function of institution type.

B. Otherwise, impute refrigerator from the hot deck.

AIREFRIGERATOR structure:

	Institution type
value	Tourist hotel/motel
value	Hospital/medical facility/clinic/frailcare centre
value	Childcare institution/orphanage
value	Home for the disabled
value	Boarding school hostel
value	Initiation school
value	Convent/monastery/religious retreat
value	Defence force barracks/camp/ship in harbour
value	Prison/correctional institution/police cells
value	Community or church hall
value	Refugee camp/shelter for the homeless
value	Homeless
value	Other

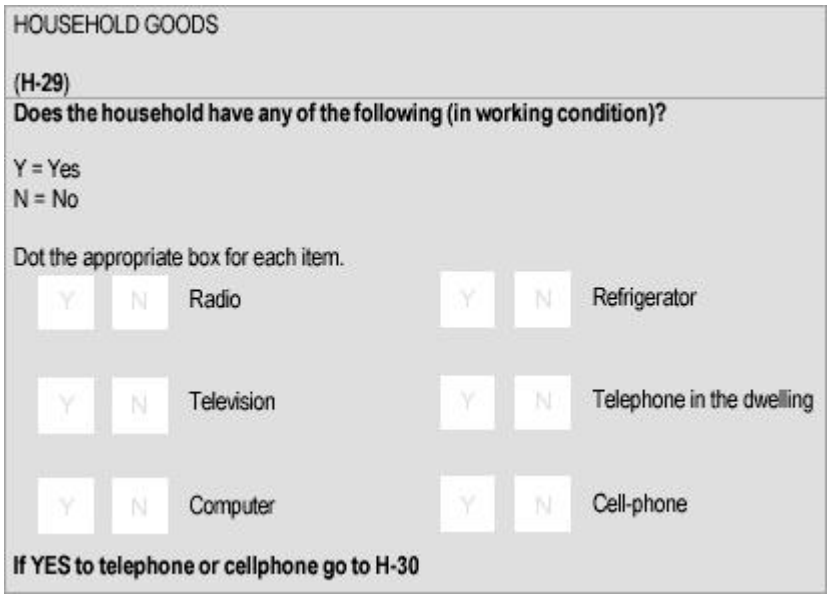
Software:

This edit is implemented in subroutine SIV17INST in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) and not applicable (blank) are not allowed for this question.
B. Institution type must have been edited prior to using this edit.

IV.18 HOUSEHOLD GOODS: TELEPHONE (H29TELEPHONE) AND CELL-PHONE (H29CELL), AND ACCESS TO TELEPHONE (H-29A)


HOUSEHOLD GOODS

(H-29)

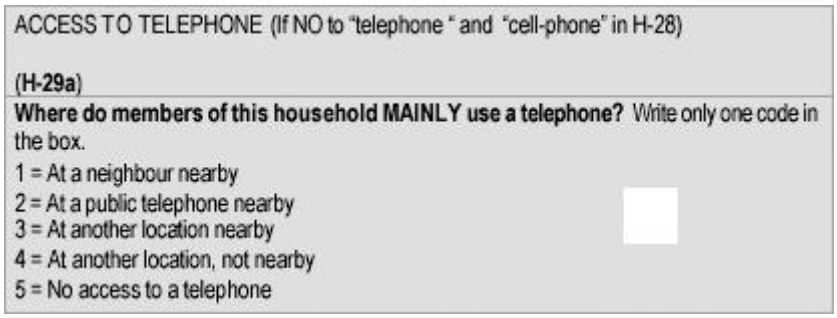
Does the household have any of the following (in working condition)?

Y = Yes
N = No

Dot the appropriate box for each item.

Y	N	Radio	Y	N	Refrigerator
Y	N	Television	Y	N	Telephone in the dwelling
Y	N	Computer	Y	N	Cell-phone

If YES to telephone or cellphone go to H-30


ACCESS TO TELEPHONE (If NO to "telephone " and "cell-phone" in H-28)

(H-29a)

Where do members of this household MAINLY use a telephone? Write only one code in the box.

1 = At a neighbour nearby
2 = At a public telephone nearby
3 = At another location nearby
4 = At another location, not nearby
5 = No access to a telephone

Valid values:

Telephone in dwelling:

1 yes
2 no

Cell-phone:

1 yes
2 no

Access to a telephone:

1 At a neighbour nearby
2 At a public telephone nearby
3 At another location nearby
4 At another location, not nearby
5 No access to a telephone

Universe:

all households
(see edit IV.18INST for the corresponding institution edit)

Edit checks:

A. Variables must have valid values.
B. Telephone access is not applicable for households that have telephones or cellphones.
C. If a household has invalid responses for both cellphone and telephone, but has a valid response for access, then impute cellphone and telephone both to "no".
D. If necessary, impute valid responses from hot decks (based on type of housing unit).

Resolution:

A. If cellphone and telephone are both invalid, and telephone access is valid, then impute cellphone = no and telephone = no; also update the hot deck AACCESS.

B. Otherwise:
    a. edit telephone:
        i. if telephone is valid, then update the hot deck ATELEPHONE;
        ii. otherwise, impute telephone from the hot deck ATELEPHONE;
    b. also, edit cellphone:
        i. if cellphone is valid, then update the hot deck ACELL-PHONE;
        ii. otherwise, impute cellphone from the hot deck ACELL-PHONE;
    c. also, edit access:
        i. if cellphone = yes or telephone = yes:
            1. if access ≠ blank, then impute access = blank;
            2. otherwise, do nothing;
        ii. otherwise (cellphone = no and telephone = no):
            1. if access is valid, then update the hot deck AACCESS;
            2. otherwise, impute access from the hot deck AACCESS.

Structures for AACCESS, ATELEPHONE, and ACELL-PHONE:

	Type of housing unit
value	House or brick
value	Traditional
value	Flat
value	Semi-detached
value	Backyard
value	Informal – backyard
value	Informal – other
value	Room – shared property
value	Caravan or tent
value	Private ship/boat
value	not applicable (living quarters 2:5)

The "not applicable" row is for households with living quarters = 2:5 (since the housing unit question is not applicable for them)

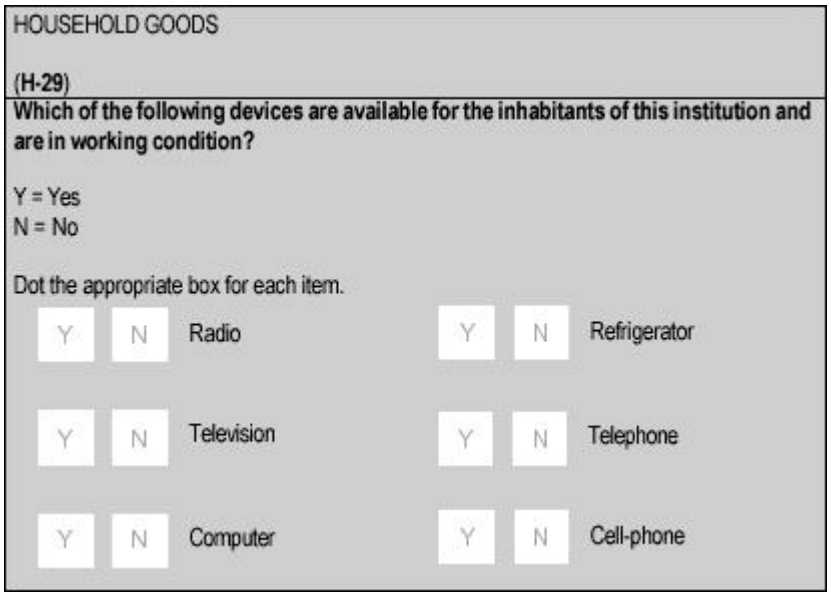
Software:

This edit is implemented in subroutine SIV18 in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) is not allowed for this question.
B. Housing unit type must have been edited prior to using this edit.

IV.18 INST HOUSEHOLD GOODS: TELEPHONE (H29TELEPHONE) AND CELL-PHONE (H29CELL) (INSTITUTIONS)



Valid values:

Telephone:

1 yes
2 no

Cell-phone:

1 yes
2 no

Universe:

all institutions aside from homeless (see edit IV.15 for the households edit; note that the "Access to Telephone" question is not asked on the institution questionnaire)

Edit checks:

A. Variables must have valid values (1,2).

Resolution:

A. If telephone is valid, update the hot deck AITELEPHONE as a function of institution type. Otherwise, impute telephone from the hot deck AITELEPHONE.

B. If cell-phone is valid, update the hot deck AICELL-PHONE as a function of institution type. Otherwise, impute cell-phone from the hot deck AICELL-PHONE.

AITELEPHONE and AICELL-PHONE structure:

	Institution type
value	Tourist hotel/motel
value	Hospital/medical facility/clinic/frailcare centre
value	Childcare institution/orphanage
value	Home for the disabled
value	Boarding school hostel
value	Initiation school
value	Convent/monastery/religious retreat
value	Defence force barracks/camp/ship in harbour
value	Prison/correctional institution/police cells
value	Community or church hall
value	Refugee camp/shelter for the homeless
value	Homeless
value	Other

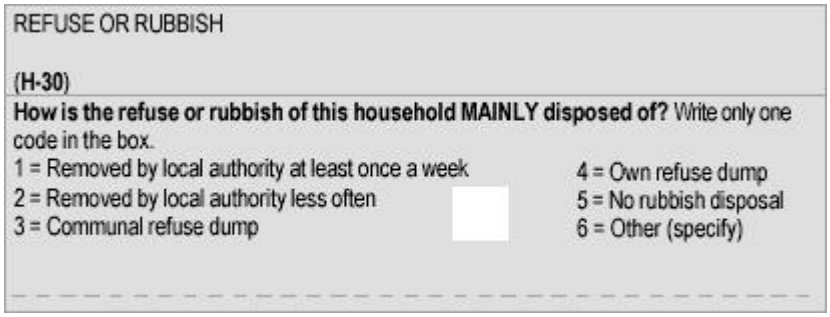
Software:

This edit is implemented in subroutine SIV18INST in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) and not applicable (blank) are not allowed for this question.
B. Institution type must have been edited prior to using this edit.

IV.19 REFUSE OR RUBBISH (H-30)


REFUSE OR RUBBISH

(H-30)

How is the refuse or rubbish of this household MAINLY disposed of? Write only one code in the box.

1 = Removed by local authority at least once a week
2 = Removed by local authority less often
3 = Communal refuse dump
4 = Own refuse dump
5 = No rubbish disposal
6 = Other (specify)

Valid values:

1	Removed by local authority at least once a week
2	Removed by local authority less often
3	Communal refuse dump
4	Own refuse dump
5	No rubbish disposal

Universe:

all households (see edit IV.19INST for the corresponding institution edit)

Edit checks:

A. Variable must have a valid value (1:5). Note that "other" responses (value 6) are removed during editing

Resolution:

A. If refuse is valid, update the hot deck ARUBBISH as a function of housing unit type.

B. Otherwise, impute refuse from the hot deck.

ARUBBISH structure:

	Type of housing unit
value	House or brick
value	Traditional
value	Flat
value	Semi-detached
value	Backyard
value	Informal – backyard
value	Informal – other
value	Room – shared property
value	Caravan or tent
value	Private ship/boat
value	not applicable (living quarters 2:5)

The "not applicable" row is for households with living quarters = 2:5 (since the housing unit question is not applicable for them)

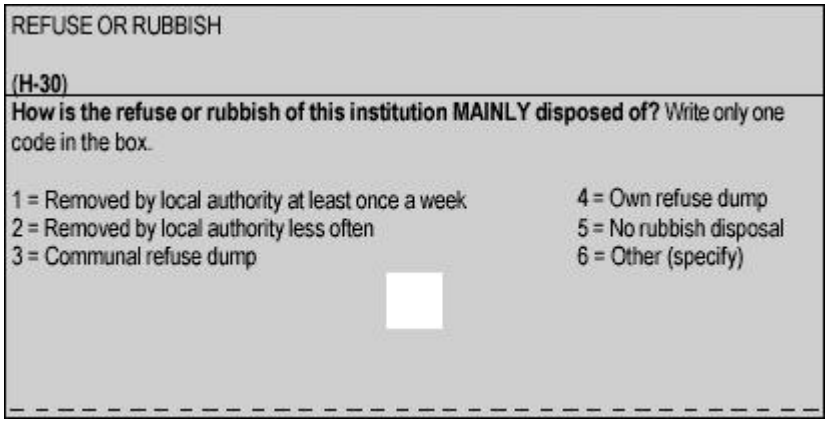
Software:

This edit is implemented in subroutine SIV19 in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) and not applicable (blank) are not allowed for this question.
B. Housing unit type must have been edited prior to using this edit.

IV.19 INST REFUSE OR RUBBISH (H-30) (INSTITUTIONS)



Valid values:

1 Removed by local authority at least once a week
2 Removed by local authority less often
3 Communal refuse dump
4 Own refuse dump
5 No rubbish disposal

Universe:

all institutions aside from homeless
(see edit IV.19 for the households edit)

Edit checks:

A. Variable must have a valid value (1:6). Note that "other" responses (value 6) are removed during editing.`

Resolution:

A. If refuse is valid, update the hot deck AIRUBBISH as a function of institution type.

B. Otherwise, impute refuse from the hot deck.

AIRUBBISH structure:

	Institution type
value	Tourist hotel/motel
value	Hospital/medical facility/clinic/frailcare centre
value	Childcare institution/orphanage
value	Home for the disabled
value	Boarding school hostel
value	Initiation school
value	Convent/monastery/religious retreat
value	Defence force barracks/camp/ship in harbour
value	Prison/correctional institution/police cells
value	Community or church hall
value	Refugee camp/shelter for the homeless
value	Homeless
value	Other

Software:

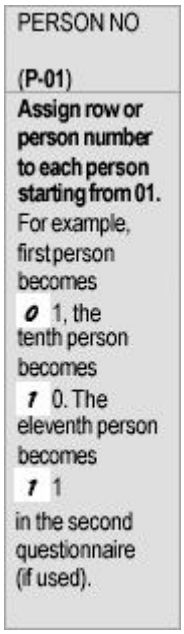
This edit is implemented in subroutine SIV19INST in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) and not applicable (blank) are not allowed for this question.
B. Institution type must have been edited prior to using this edit.

V POPULATION EDITS

V.1 PERSON NUMBER (P-01)



Valid values:

01:99 code for person number

Universe:

all persons in households
(see edit V.1INST for the corresponding institution edit)

Edit checks:

A. Variable must have a valid value.
B. People in the household must be consecutively numbered 01, 02, 03, ...
C. Handle ambiguity in the person number linking questions. In cases where a person number is duplicated, remove any spouse person numbers (SPNs), mother person numbers (MPNs), and father person numbers (FPNs) that have this duplicated person number value.
D. Perform a pre-edit for SPN/MPN/FPN; set any of these variables to blank if they point to a non-existent person record (except for the value 99).
E. Two people can't have the same person number (this could cause errors in spouse person number, mother person number, and father person number).

Resolution:

A. If everyone in the household has a person number larger than 10, then signal that this might be an improperly linked questionnaire.

B. If a person number is duplicated (i.e., more than one person record with the same person number), then impute all SPNs, MPNs, and FPNs with this person number value to blank.

C. Make blank any SPNs, MPNs, or FPNs that point to non-existing person numbers (except if they have the value 99).

D. If person number does not follow the sequence or is invalid, then flag the questionnaire for possible investigation. Also, impute person number so that it is sequential. Also, update the SPN, MPN, and FPN of other household members as needed.

E. If two people have the same person number, then flag the questionnaire for future investigation, and do not attempt to process it.

Software:

This edit is implemented in subroutine SV1 in the CONCOR programme STRUCT.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (99) and not applicable (blank) are not allowed for this question.
B. This edit was implemented as part of the structure edits, since it is necessary to detect problems with person numbers before analyzing for minimum processability (edit III.6).
C. This edit can indicate scanning problems where person records are inadvertently not processed.
D. See also edits III.6 and III.7 above.

V.1 INST PERSON NUMBER (P-01) (INSTITUTIONS)

Although “person number” does not appear on the B questionnaire, it will be assigned during processing.

Valid values:

01:99 code for person number (repeats if more than 99 persons reside in the institution)

Universe:

all persons in institutions
(see edit V.1 for the corresponding household edit)

Edit checks:

A. Variable must have a valid value.
B. People in institutions must be consecutively numbered 01, 02, 03, ...

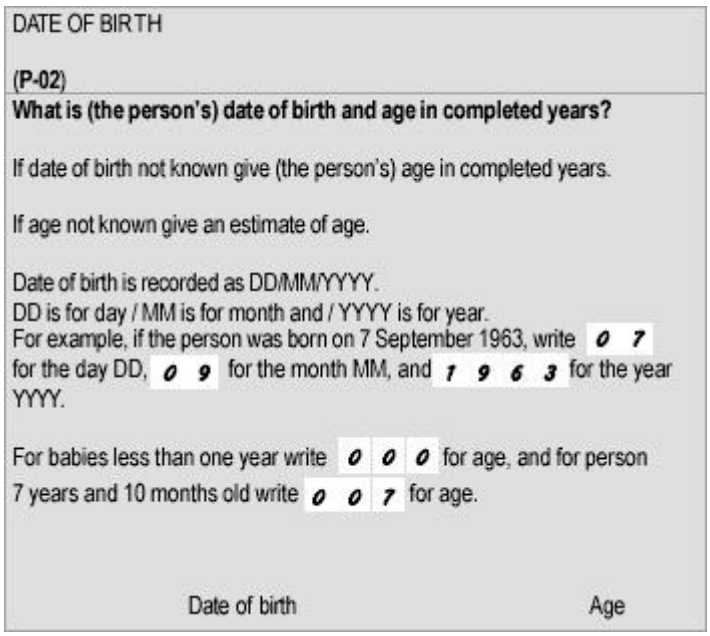
Resolution:

A. Put person numbers in order.

Software:

This edit is implemented in subroutine SV1INST in the CONCOR programme HOUSE.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

V.2 DATE OF BIRTH AND AGE (P-02)


DATE OF BIRTH

(P-02)

What is (the person's) date of birth and age in completed years?

If date of birth not known give (the person's) age in completed years.

If age not known give an estimate of age.

Date of birth is recorded as DD/MM/YYYY.
DD is for day / MM is for month and / YYYY is for year.
For example, if the person was born on 7 September 1963, write 0 7 for the day DD, 0 9 for the month MM, and 1 9 6 3 for the year YYYY.

For babies less than one year write 0 0 0 for age, and for person 7 years and 10 months old write 0 0 7 for age.

Date of birth Age

Valid values:

Date of Birth is subdivided into day, month, and year:

Day:	01:31
Month:	01:12
Year:	1880:2001

Age 000:120

Universe:

all persons in households and institutions

Edit checks:

A. Variables must have valid values.
B. A person's age must be consistent with their birthdate. For example, a person born on 9 October, 2000 would be 1 year old on census night, a person born on 10 October, 2000 would be 0 years old.
C. If the month of birth is not given, then impute it from a hot deck, taking the day and year of birth into account if possible.
D. If the day of birth is not given, then impute it from a hot deck, taking the month and year of birth into account if possible (especially for people born in October).
E. If the person was born in 1996 and needs to have month or day of birth imputed, try to take the response for "where living 5 years ago" (edit V.25) into account:
    a. if the person responded "born after", then impute a month/day combination on or after October 10;
    b. if the person responded "yes" or "no", then impute a month/day combination before October 10.
F. When the age is invalid, try to determine it from the birthdate. Conversely, when the birth year is invalid, try to determine it from the person's age.
G. When both age and birthdate are valid but not consistent, try to see if the age might be more "reasonable" than the date of birth. This is done by examining other person characteristics, such as marital status, educational level, presence of children in the household, economic activity, and fertility (for women).
H. Impute the person's age as a function of their birthdate (give priority to their birthdate).

I. When both age and birthdate are invalid, try to impute the person's age based on their relationship to the head of household and sex.
J. Remove babies born after Census night, but first check to see if their dates of birth might have been incorrectly reported.
K. Don't correct for day/month inconsistencies such as February 30, April 31, etc.
L. Correct for enumerator errors where the person does not report a valid age, and gives their year of birth as 00:99 (excluding 19); change the year of birth to 1902:2001 in these cases and impute a consistent age.
M. Correct for special situation where year of birth is 19 (a subset of the enumerator error above); make both age and year of birth blank in this case, and make age blank if it is reported as zero.
N. Correct for enumerator error where head of household reports age = zero and year of birth blank; remove the year of birth (and allow a reasonable age to be imputed) in these cases.

Resolution:

A. PRE-EDIT:
    a. if the person's relationship is head of household and has age = zero and year of birth blank, then make the person's age blank (it will be imputed to a reasonable value later);
    b. also, if the person's age is invalid and year of birth is 00:99:
        i. if the year of birth is 00, 01, then impute year of birth = year of birth + 2000 (thus giving 2000 or 2001);
        ii. otherwise, if the year of birth is 19, then make the year of birth blank;
        iii. otherwise, impute year of birth = year of birth + 1900 (thus giving 1902:1999);
    c. otherwise, if the person's year of birth is 19 and age is valid:
        i. if the person's age = zero, then make both age and year of birth blank (they will be imputed to reasonable values later);
        ii. otherwise, if the person's age is not zero, then make the year of birth blank.

B. For persons with a valid year of birth:
    a. check the person's month of birth:
        i. if the person's month of birth is not valid:
            1. if the response for "where living 5 years ago" is "born after" and the person's year of birth is 1996:
                a. if the person's day of birth is 1:9, then impute month of birth from the deck APOST2-MONTH (giving a value 11:12);
                b. otherwise (day of birth 10:31 or invalid), impute month of birth from the deck APOST1-MONTH (giving a value 10:12);
            2. otherwise, if the response for "where living 5 years ago" is "yes" or "no" and the person's year of birth is 1996:
                a. if the person's day of birth is 1:9, then impute month of birth from the deck AEARLY2-MONTH (giving a value 1:10);
                b. otherwise (day of birth 10:31 or invalid), impute month of birth from the deck AEARLY1-MONTH (giving a value 1:9);
            3. otherwise, if the person's age is valid:
                a. if (2001 – year of birth) = age:
                    i. if day of birth = 1:9 or day of birth is invalid, then impute month of birth from the hot deck AEARLY2-MONTH (giving a value 1:10);

ii. otherwise (day of birth 10:31) impute month of birth from the hot deck AEARLY1-MONTH (giving a value 1:9);

b. otherwise, if (2001 – year of birth – 1) = age:
   i. if day of birth = 1:9, then impute month of birth from the hot deck APOST2-MONTH (giving a value 11:12);
   ii. otherwise (day of birth 10:31 or invalid) impute month of birth from the hot deck APOST1-MONTH (giving a value 10:12);

c. otherwise, impute month from the deck AMONTH (giving a value 1:12);

4. otherwise, impute month from the deck AMONTH (giving a value 1:12);

ii. otherwise (month of birth is valid), update the deck AMONTH and (depending on the month value) the decks AEARLY1-MONTH, AEARLY2-MONTH, APOST1-MONTH, and APOST2-MONTH;

b. check the person's day of birth:
   i. if the person's day of birth is not valid:
      1. if the response for "where living 5 years ago" is "born after" and the person was born in October 1996, then impute day of birth from the deck APOST3-DAY (giving a value 10:31);
      2. otherwise, if the response for "where living 5 years ago" is "yes" or "no" and the person was born in October 1996, then impute day of birth from the deck AEARLY3-DAY (giving a value 1:9);
      3. otherwise, if the month of birth is October and the person's age is valid:
         a. if (2001 – year of birth) = age, then impute day of birth from the hot deck AEARLY3-DAY (giving a value 1:9);
         b. otherwise, if (2001 – year of birth – 1) = age, then impute day of birth from the hot deck APOST3-DAY (giving a value 10:31);
         c. otherwise, impute day from the deck ADAY (giving a value 1:31);
      4. otherwise, impute day from the deck ADAY (giving a value 1:31);

   ii. otherwise, update the deck ADAY and (depending on the day value) the decks AEARLY3-DAY and APOST3-DAY;

c. also, check the person's age:
   i. if the person's age and birth year are consistent, then do nothing;
   ii. otherwise (age and DOB valid, but inconsistent), try to decide which of the two variables is more reasonable:
   note: DOBAGE here refers to the age derived from the person's date of birth
      1. if any of the following conditions are satisfied, then DOBAGE is not reasonable:
         a. person's marital status is not "never married" (1:4 or 6:8) or blank, and the person is 11 years or younger;

b. a child (MPN = this person for women; FPN = this person for men) with valid age is present and is less than 12 years younger than DOBAGE;
c. a parent (based on this person's MPN/FPN) with valid age is present and is 12 or more years older than DOBAGE;
d. person is a head of household and has a parent or child with valid age who is less than 12 years older/younger than DOBAGE;
e. person has a valid response for educational level (not 21 or 22), and DOBAGE is inconsistent with the minimum age for that level;
f. person has a valid response for educational institution (not 1 or 8), and DOBAGE is inconsistent with the minimum/maximum ages for that institution;
g. person is female and DOBAGE is not 12:50 years, and there are page 9 fertility responses;
h. person is female and responded to TCEB and her DOBAGE is less than (10+TCEB);
i. person is female and gives a year of birth for last born child, and her DOBAGE is not 12+ years older than that child;
j. person is 85 years or older.

If DOBAGE is reasonable (thus implying that the person's date of birth is reasonable), then impute the person's age as a function of their birth date;

2. otherwise (DOBAGE is not reasonable), if any of the following conditions are satisfied, then age (the recorded age, that is) is not reasonable:
    a. person's marital status is not "never married" (1:4 or 6:8) or blank, and the person is 11 years or younger;
    b. a child (MPN = this person for women; FPN = this person for men) with valid age is present and is less than 12 years younger than age;
    c. a parent (based on this person's MPN/FPN) with valid age is present and is 12 or more years older than age;
    d. person is a head of household and has a parent or child with valid age who is less than 12 years older/younger than DOBAGE;
    e. person has a valid response for educational level (not 21 or 22), and age is inconsistent with the minimum age for that level;
    f. person has a valid response for educational institution (not 1 or 8), and age is inconsistent with the minimum/maximum ages for that institution;
    g. person is female and age is not 12:50 years, and there are page 9 fertility responses;
    h. person is female and responded to TCEB and her age is less than (10+TCEB);
    i. person is female and gives a year of birth for last born child, and she is not 12+ years older than that child.

    If age is reasonable, then impute the person's year of birth as a function of their age;

3. otherwise (DOBAGE and recorded age both not reasonable), impute the person's age as a function of their birth date;

d. also, if the person was born after census day, then investigate whether the person's date of birth was incorrectly reported:
   i. if the person's age is valid and greater than one year, then accept the person's age and impute their year of birth based on the age;
   ii. if the person's age is valid and greater than zero years, then flag the person for manual investigation;
   iii. if the person reported any page 9 fertility information (CEB or CS), then flag the person for manual investigation;
   iv. if the person reported economic activity, then flag the person for manual investigation;
   v. if the person reported a level of eduction, then flag the person for manual investigation;
   vi. if someone else in the household declared this person as their spouse, then flag the person for manual investigation;
   vii. if someone else in the household declared this person as their mother, then flag the person for manual investigation;
   viii. if someone else in the household declared this person as their father, then flag the person for manual investigation;

e. also, delete the baby (although manual investigation may later resolve the raw data and preserve the person). If a deleted baby's mother (via MPN) has this baby's DOB as her last born child DOB, and her last born child's sex is the same as the baby's, and her last born child is declared as still living, and the mother has 1+ TCEB/TCS and MCEB/MCS (if baby was a boy) or FCEB/FCS (if baby was a girl), then decrease her CEB/CS counts accordingly. Renumber other household members' person numbers so that they are sequential, and adjust SPN/MPN/FPN values correspondingly.

C. For persons without a valid year of birth:
   a. check the person's month of birth:
      i. if the person's month of birth is not valid:
         1. if the person's age is 4 years and the response for "where living 5 years ago" is "born after", then impute month of birth from the deck APOST1-MONTH (giving a value 10:12);
         2. otherwise, if the person's age is 4 years and the response for "where living 5 years ago" is "yes" or "no", then impute month of birth from the deck AEARLY1-MONTH (giving a value 1:9);
         3. otherwise, impute month from the deck AMONTH (giving a value 1:12);

   b. check the person's day of birth
      i. if the person's day of birth is not valid:
         1. if the person's age is 4 years and the response for "where living 5 years ago" is "born after" and the month of birth is October, then impute day of birth from the deck APOST3-DAY (giving a value 10:31);
         2. otherwise, if the person's age is 4 year and the response for "where living 5 years ago" is "yes" or "no" and the month of birth is October,

then impute day of birth from the deck AEARLY3-DAY (giving a value 1:9);
3. otherwise, impute day from the deck ADAY (giving a value 1:31);

c. also, check the person's age:
   i. if the person's age is valid, impute their birth year as a function of their age (also taking day and month of birth into account);
   ii. otherwise, if the person's relationship is valid:
      1. if the person's sex is not valid (thus both age and sex are invalid):
         a. if the person has any fertility responses, then make the person a woman;
         b. otherwise, if anyone in the household declares the person as their spouse, then make the person opposite sex from the their spouse;
         c. otherwise, if anyone in the household declares the person as their mother, then make the person a woman;
         d. otherwise, if anyone in the household declares the person as their father, then make the person a man;
         e. otherwise, impute sex to male or female using a 50%/50% distribution;
      2. also: if the person is a head of household or a spouse:
         a. if the person is a head, then execute edit V.5 in order to determine a reasonable age for the person;
         b. otherwise, if the person is a spouse:
            i. if the head of household is at least 12 years old and has a valid sex, then impute the spouse's age using the deck ASPHD-AGE (which takes head's age and sex into account); also, make spouse's DOB consistent with newly imputed age;
            ii. otherwise (bad head), flag this household for manual investigation;
      3. otherwise (person is not a head or spouse), execute edit V.11;
   iii. otherwise, if the person is in an institution, then impute age/DOB from the previous person (happens seldom);
   iv. otherwise (invalid relationship, age, DOB), flag this household for manual investigation.

The following hot decks are used in this edit:

deck name	values returned
AMONTH	1:12
AEARLY1-MONTH	1:9
AEARLY2-MONTH	1:10
APOST1-MONTH	10:12
APOST2-MONTH	11:12
ADAY	1:31
AEARLY3-DAY	1:9
APOST3-DAY	10:31

Structure for these decks:

HOUSEHOLD SIZE										
1	2	3	4	5	6	7	8	9	10+	
value	value	value	value	value	value	value	value	value	value	deck value

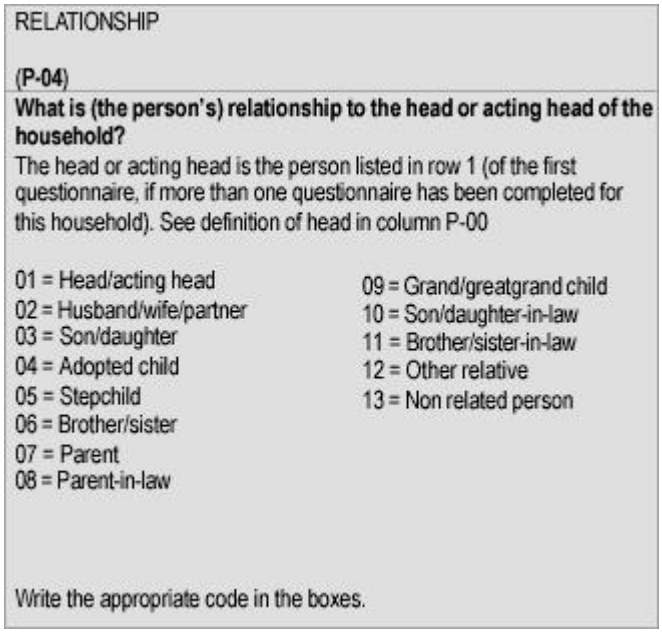
Software:

This edit is implemented in subroutine SV2 in the CONCOR programme AGEDOB.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Not applicable (blank) is not allowed for these questions.
B. This edit ensures consistency between age and date of birth; age is also checked against relationship later.
C. The edit does not address issues around number of days per month. For this reason, it is possible to have someone born on February 31.

V.3 RELATIONSHIP (P-04) FOR HEAD OF HOUSEHOLD


RELATIONSHIP

(P-04)

What is (the person's) relationship to the head or acting head of the household?

The head or acting head is the person listed in row 1 (of the first questionnaire, if more than one questionnaire has been completed for this household). See definition of head in column P-00

01 = Head/acting head
02 = Husband/wife/partner
03 = Son/daughter
04 = Adopted child
05 = Stepchild
06 = Brother/sister
07 = Parent
08 = Parent-in-law
09 = Grand/greatgrand child
10 = Son/daughter-in-law
11 = Brother/sister-in-law
12 = Other relative
13 = Non related person

Write the appropriate code in the boxes.

Valid values:

01	Head/acting head
02	Husband/wife/partner
03	Son/daughter
04	Adopted son/daughter
05	Stepson/stepdaughter
06	Brother/sister
07	Parent
08	Parent-in-law
09	Grand/greatgrand child
10	Son/daughter-in-law
11	Brother/sister-in-law
12	Other relative
13	Non related person

Universe:

heads of household
(this edit is not used for institutions)

Edit checks:

A. There must be 1 and only 1 head of household.
B. In cases where there is a single head (or multiple heads all with ages) younger than 16, check to see if an older related person in the household could become the head.
C. When there is no head declared, then locate one by examining other information from the household (listed in order of priority):
    a. look for the head's spouse; that person's spouse person number (SPN) might indicate the head;
    b. look for the head's children; their mother/father person number (MPN/FPN) might indicate the head;
    c. look for the head's parents; someone with a MPN/FPN that indicates a parent of the head might be the head;
    d. make the oldest person in the household the head.

D. When there is more than 1 head declared, then choose from among them by examing other information from the household (listed in order of priority):
    a. try to find the head through spouse's SPN (when one spouse present)
    b. try to find the head through children's FPNs (if the head is a male)
    c. try to find the head through children's MPNs (if the head is a female);
    d. make the oldest of the declared heads the head, if that person is 12+ years old;
    e. make another relative (i.e., relationship = 2:12) in the household the head, if that person is 12+ years old;
    f. compare the declared heads' educational level responses;
    g. compare the declared heads' educational institution responses;
    h. compare the declared heads' economic activity responses;
    i. compare the declared heads' fertility responses (for women);
    j. make the oldest of the declared heads the head, even if all heads are younger than 12 years.
E. The head of household must be the first person in the household (i.e., person number 01).
F. Flag households where there is no head and the first person reports relationship 99. This is a common enumerator error.

Resolution:

A. For households with 1 head present:
    a. if the head is younger than 16:
        i. if there is another relative (relationship = 2:12) older than 16 in the household, then make the oldest of these the head, and make the (former) head's relationship 00 (and handle it in edit V.9 below);
        ii. otherwise, leave the young head as is;
    b. otherwise, all is good, do nothing.

B. For households with no head present:
    a. If the relationship of the first person in the household is 99:
        i. if this a continuation household, then flag it for manual correction;
        ii. also, make the first person the head.
    b. otherwise, if someone in the household has been declared a spouse of the head and the declared person is 12 years or older (and both people are married and of opposite sex), then make the person's spouse the head;
    c. otherwise, if someone in the household is a child of the head, and the parent's age is 12+ years (and the parent's sex coincides with the child's MPN/FPN indicator), then make the parent the head;
    d. otherwise, if someone in the household is a parent of the head, and the parent's age is 12+ years older than a person that calls the parent mother (for female parent) or father (for male parent), and the child of the parent is at least 12 years old, then make the child of the parent the head;
    e. otherwise, make the oldest person in the household the head;

C. For households with more than 1 head present:
    a. if there is one spouse in the household, and the spouse has a marital status 1:4, and the spouse's SPN points to one of the candidate heads, and that head has marital status 1:4, and both the spouse and that head are 12+ years old, then make that person the head.
    b. if there is a child (relationship 3) in the household with a valid age who reports one of the heads as FPN, and that head is a male 12+ years older than the child, then make that person the head;

c. if there is a child (relationship 3) in the household with a valid age who reports one of the heads as MPN, and that head is a female 12:50 years older than the child, then make that person the head;
d. if at least one of these is 12 years or older:
    i. make the oldest the head; also:
    ii. make other heads' relationships 00 (and handle them in edit V.9 below);
e. if none of these is 12 years or older:
    i. if another relative in the household is 12 years or older, then make that person the head, and make all the heads' relationships 00 (and handle them in edit V.9 below);
    ii. otherwise, if any of the declared heads has a valid response for educational level (P-17), then make the one with the highest educational level the head (don't include values of 99, 21, or 22 in this search);
    iii. otherwise, if any of the declared heads has a valid response for educational institution (P-16), then make the one with the highest educational institution the head (don't include values of 1, 7, or 8 in this search);
    iv. otherwise, if any of the declared heads has any responses in the economic activities section (P-18 and P-19), then make the oldest of these the head;
    v. otherwise, if any of the the declared heads is a woman and has fertility responses, then make the oldest of these the head;
    vi. otherwise, make the oldest of the declared heads the head (choose the first sequentially if 2 or more heads report the same age).
    vii. Also: make the other declared heads of households' relationships 00 (and handle them in edit V.9 below).

D. POST EDIT: if the head of household is not the first person in the household:
    a. swap the head and person number 01, thus putting the head first;
    b. also, update any links in spouse person number, mother person number, or father person number for household members, as needed.

Note that some of these possibilities examine data that might be inconsistent with the head's age; for example, economic activity responses for someone younger than 10. These inconsistencies are treated in edit V.5 below.

Software:

This edit is implemented in subroutine SV3 in the CONCOR programme EDITS1.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Note:

A. Non-response and not applicable (blank) are not allowed for this question.

V.4 SEX (P-03) FOR HEAD OF HOUSEHOLD

Valid values:

1 Male
2 Female

Universe:

heads of household
(this edit is not used for institutions)

Edit checks:

A. Variable must have a valid value.
B. Assess reasonableness of valid sex responses for the head, by counting the number of "unlikely situations" from among the following:
   - ✓ head's sex is male, but someone in the household reports the head as their mother;
   - ✓ head's sex is female, but someone in the household reports the head as their father;
   - ✓ head's sex is the same as his/her reported spouse;
   - ✓ head's sex is the same as someone in the household who reports the head as their spouse;
   - ✓ head's sex is male and age is 12+ years, but has non-zero page 9 fertility responses.

   If 3 or more of these conditions occur, then impute the opposite sex for the head, as described below.
C. If the head of household's sex is invalid, then try to determine it by using other information from the household (listed in order of priority):
   a. if there is a spouse present, then make the head's sex opposite of the spouse's;
   b. if the head has fertility data, then make the head a woman;
   c. if someone else in the household declares this person as their mother (and no one else declares this person as their father), then make the head a woman;
   d. if someone else in the household declares this person as their father (and no one else declares this person as their mother), then make the head a man;
   e. impute from a hot deck (based on age) if necessary.

Resolution:

A. For heads with valid sex, assess the reasonableness of the head's sex response. Count the number of "unlikely situations" from among the following:
   - ✓ head's sex is male, but someone in the household reports the head as their mother;
   - ✓ head's sex is female, but someone in the household reports the head as their father;
   - ✓ head's sex is the same as his/her reported spouse;
   - ✓ head's sex is the same as someone in the household who reports the head as their spouse;
   - ✓ head's sex is male and age is 12+ years, but has non-zero page 9 fertility responses.

   If 3 or more of these conditions occur, then make the head's sex zero (so that it will be imputed in the next step).

B. For heads of household with invalid sex:
   a. if there is at least 1 spouse present:
      i. if the spouse has a valid sex, then impute head's sex to opposite of that spouse's;
      ii. otherwise, if the head has fertility responses, then make the head female and the spouse a male (and make sure spouse's fertility is blank).
      iii. otherwise, if the spouse has fertility responses, then make the head a man and the spouse a woman;
      iv. otherwise, if someone else in the household has declared the head as their mother (and no one else declares the head as their father), then make the head a woman;
      v. otherwise, if someone else in the household has declared the head as their father (and no one else declares the head as their mother), then make the head a man;
      vi. otherwise, impute the sex of the head from the hot deck ASEX.
   b. for heads with no spouse present:
      i. if the head has fertility responses, them make the head a female;
      ii. otherwise, if someone else in the household has declared the head as their mother (and no one else declares the head as their father), then make the head a woman;
      iii. otherwise, if someone else in the household has declared the head as their father (and no one else declares the head as their mother), then make the head a man;
      iv. otherwise, impute the sex of the head from the hot deck ASEX.

C. For heads of household with valid sex, update the hot deck ASEX.

Structure for hot deck ASEX (note that this deck is also used in edit V.9 below):

PERSON'S AGE										
0	1	…	13	14	15:19	20:24	…	80:84	85+	Relationship to Head
value	value	value	value	value	value	value	value	value	value	Head/Acting head
value	value	value	value	value	value	value	value	value	value	Husband/wife/partner
value	value	value	value	value	value	value	value	value	value	Son/daughter
value	value	value	value	value	value	value	value	value	value	Adopted son/daughter
value	value	value	value	value	value	value	value	value	value	Stepson/stepdaughter
value	value	value	value	value	value	value	value	value	value	Brother/sister
value	value	value	value	value	value	value	value	value	value	Parent
value	value	value	value	value	value	value	value	value	value	Parent-in-law
value	value	value	value	value	value	value	value	value	value	Grand/greatgrand child
value	value	value	value	value	value	value	value	value	value	Son/daughter-in-law
value	value	value	value	value	value	value	value	value	value	Brother/sister-in-law
value	value	value	value	value	value	value	value	value	value	Other relative
value	value	value	value	value	value	value	value	value	value	Non related person
value	value	value	value	value	value	value	value	value	value	Institution resident

Note: since age of head is not guaranteed to be valid until after edit V.5, invalid head ages are grouped with the 0:14 cohort.

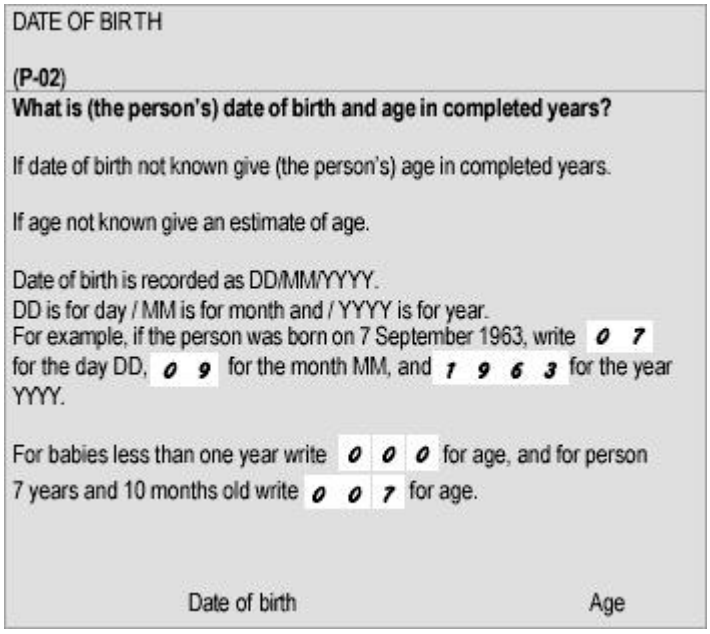
Software:

This edit is implemented in subroutine SV4 in the CONCOR programme EDITS1.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response and not applicable (blank) are not allowed for this question.
B. See also the edit for Marital Status, which deals with multiple spouses and polygamy.

V.5 AGE (P-02) FOR HEAD OF HOUSEHOLD


DATE OF BIRTH

(P-02)

What is (the person's) date of birth and age in completed years?

If date of birth not known give (the person's) age in completed years.

If age not known give an estimate of age.

Date of birth is recorded as DD/MM/YYYY.
DD is for day / MM is for month and / YYYY is for year.
For example, if the person was born on 7 September 1963, write 0 7 for the day DD, 0 9 for the month MM, and 1 9 6 3 for the year YYYY.

For babies less than one year write 0 0 0 for age, and for person 7 years and 10 months old write 0 0 7 for age.

Date of birth Age

Valid values:

for Head of Household: 00:120
for Spouses: 12:120

Universe:

heads of household and spouses
(this edit is not used for institutions)

Edit checks:

A. Variable must have a valid value.
B. Married heads of household must be at least 12 years old.
C. If the head's age is not valid, then try to determine it by using other information from the household (listed in order of priority):
    a. if there is a spouse present, then impute the head's age using a hot deck based on the spouse's age and the head's sex;
    b. if there are children (biological only, not adopted or step) present, then impute the head's age using a hot deck based on the child's age and the head's sex;
    c. impute the head's age from the hot deck AHEADAGE (based on head's sex and household size).
D. Confirm ages of heads younger than 12 by checking other characteristics (marital status, childrens' ages, head's education, economic activity, fertility) that the person might have. Impute the head's age if any of the following conditions are not met:
    a. minimum age for being married is 12 years old;
    b. head must be at least 12 years older than the head's children;
    c. minimum age for educational level depends on the level;
    d. minimum age for educational institution depends on the institution;
    e. minimum age for economic activity responses is 10 years old;
    f. minimum age for fertility (for women) is 12 years old.

Resolution:

A. For heads with valid age (00:120):
    a. if the head is younger than 12 years, then confirm the age:
        i. if the head's marital status is not "never married" (1:4 or 6:8), then impute the head's age from the hot deck AHEADAGE;
        ii. if children (biological only, not adopted or step) are present and any child is less than 12 years younger than the head, then impute the head's age from the hot deck ACH-AGE;
        iii. if the head has a valid response for educational level (not 21 or 22), then impute age from AHEADAGE and make sure that age is at least the minimum age for that level (make head older by adjusting to minimum age if necessary);
        iv. if the head has a valid response for educational institution (not 1 or 8), then impute age from AHEADAGE and make sure the head has the minimum age for that institution (make head older if necessary);
        v. if the head has economic activity responses, then impute age from AHEADAGE and make sure the head is at least 10 years old (make head older if necessary);
        vi. if the head is female and has fertility responses, then impute age from AHEADAGE and make sure she is at least 12 years old;

        Heads who pass all these tests can retain their young age.

    b. also, if the head is 12 years or older, then update the hot deck AHEADAGE;

    c. also, if one or more spouses are present:
        i. if each spouse is 12 years or older and the head is 12 years or older, then update the hot deck ASP-AGE (using that spouse's age and head's sex);
        ii. otherwise, do nothing;

    d. also, if children (biological only, not adopted or step) are present:
        i. if each child's age is at least 12 years younger than the head and the head is 12 years or older, then update the hot deck ACH-AGE (using child's age and head's sex);
        ii. otherwise, do nothing;

B. For heads with invalid age:
    a. if a spouse is present and the spouse is at least 12 years old, then impute the head's age using the hot deck ASP-AGE (using spouse's age and head's sex);
    b. otherwise, if children (biological only, not adopted or step) are present and the any child has a valid age, then impute the head's age using the hot deck ACH-AGE (using the oldest child's age and head's sex);
    c. otherwise, impute the head's age from the deck AHEADAGE.

C. Post edit: if the age was changed, then be sure to make the head's date of birth is consistent as well.

The following decks are used in this edit:

deck name	Usage	dimension variables	values for age returned
ASP-AGE	when spouse has valid age	head's sex, spouse's age	head's age
ACH-AGE	when child has valid age	head's sex, child's age	head's age

Structure for hot deck AHEADAGE (only has values 12:120):

HOUSEHOLD SIZE										
1	2	3	4	5	6	7	8	9	10+	sex
value	value	value	value	value	value	value	value	value	value	male head
value	value	value	value	value	value	value	value	value	value	female head

Structure for hot decks ASP-AGE:

SEX OF HEAD		
Male	Female	AGE
Value	value	12:19
Value	value	20:29
Value	value	30:39
Value	value	40:49
Value	value	50:59
Value	value	60:69
Value	value	70:79
Value	value	80:89
Value	value	90+

Structure for hot decks ACH-AGE:

SEX OF HEAD		
Male	Female	AGE
Value	value	00:09
Value	value	10:19
Value	value	20:29
Value	value	30:39
Value	value	40:49
Value	value	50:59
Value	value	60:69
Value	value	70:79
Value	value	80:89
Value	value	90+

See edit V.18 for the structure of AEDUC-LVL
See edit V.19 for the structure of AINSTAGE.

Software:

This edit is implemented in subroutine SV5 in the CONCOR programs AGEDOB.CN and EDITS1.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (999) and not applicable (blank) are not allowed for this question.
B. There is no minimum age for the head of household, although ages for heads younger than 12 years are confirmed through other household information.

V.6 PRE SPOUSE CHECK PRE-EDIT

Universe:

spouses of heads of household (households only)
this edit is not used for institutions

Edit Checks:

A. Before editing marital status and spouse person number for heads and spouses (in edits V.6, V.7, and V.8), assess the possibility that spouse(s) have been incorrectly reported.
B. Identify and correct a common enumeration/capture error where the spouse is the second person in the household, but has blank relationship. In these cases, make the second person the spouse.

Resolution:

A. For each spouse in the household, count the number of "unlikely situations" from among the following:
   - ✓ age of spouse is valid but less than 12 years;
   - ✓ age of spouse is valid and difference between head and spouse exceeds 18 years;
   - ✓ head has valid marital status but is not married (ie, MS = 5:8);
   - ✓ spouse has valid marital status but is not married (ie, MS = 5:8);
   - ✓ sex of spouse is valid and same as head's sex;
   - ✓ spouse's MPN points to head or a child or a different spouse;
   - ✓ spouse's FPN points to head or a child or a different spouse;
   - ✓ spouse's SPN does not point to head.

   If 3 or more of these conditions occur, then make the spouse's relationship zero, thus removing the spouse and causing the person's relationship to be handled in edit V.12).

B. Identify a common enumeration/capture error, where:
   - ✓ the household has no spouses;
   - ✓ the head is the first person in the household;
   - ✓ the second person in the household has blank relationship;
   - ✓ person number two has valid sex;
   - ✓ the first two persons have opposite sex;
   - ✓ the first two persons are both 12+ years old;
   - ✓ the first two persons have "married" marital status (1:4);
   - ✓ SPN for the head is blank or points to person 2;
   - ✓ SPN for person two is blank or points to the head;

   In these cases, impute relationship for person number to spouse.

Software:

This edit is implemented in subroutine SV6PRE in the CONCOR programme EDITS1.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

V.6 MARITAL STATUS (P-05) AND SPOUSE PERSON NUMBER (P-05A) FOR HEAD OF HOUSEHOLD (NO SPOUSES PRESENT)

MARITAL STATUS (P-05)	SPOUSE (P-05a)
What is (the person's) PRESENT marital status? 1 = Married civil/religious 2 = Married traditional/customary 3 = Polygamous marriage 4 = Living together like married partners 5 = Never married 6 = Widower/widow 7 = Separated 8 = Divorced Write only one code per person in the box. If both civil/religious and traditional marriage, indicate civil/religious. **If categories 5-8 go to (P-06).**	If categories 1-4 in P-05 **Who, in the household, is (the person's) spouse or partner?** Write the person number of the spouse or partner in the appropriate box. For example, if the spouse of the head of the household is the person listed in row 2 write 0 2 in row 1. If a man has more than one wife, write the row number of the first wife. Write the row number of the husband for each of his wives. If spouse is not in the household write 9 9.

Valid values:

for Marital Status:

1 Married civil/religious
2 Married traditional/customary
3 Polygamous marriage
4 Living together as unmarried partners
5 Never married
6 Widower/widow
7 Separated
8 Divorced

for Spouse person number (SPN):
code for person number of spouse

Universe:

heads of household where no spouses are present (households only)
(see also edits V.7, V.8, and V.12; this edit is not used for institutions)

Edit Checks:

A. Marital Status must be a valid value (1:8).
B. Female heads cannot have polygamous marital status.
C. It **is** permissible to have a male head with polygamous marital status and no spouses present in the HH; this occurs when the head's spouses live in other households.
D. If a married head furnishes a spouse person number (SPN), and the person indicated by the head's SPN qualifies as a spouse (opposite sex, 12+ years, married marital status), and that person is not declared as a spouse, then make that person's relationship "spouse".
E. When no spouse is present in the household, married heads (MS 1:4) must have SPN = 99.
F. Non-married heads (MS 5:8) must have blank SPN.
G. Heads that are married (MS 1:4) or have ever been married (MS 6:8) must be at least 12 years old.

Resolution:

A. For heads with valid Marital Status:
    a. handle marital status:
        i. for heads who are married (status 1:4):
            1. if the head is a male, then update the hot decks AMARITAL-ALL and AMARITAL-MARRIED;
            2. otherwise (female head), if the marital status is not polygamous then update the hot decks AMARITAL-ALL and AMARITAL-MARRIED;
            3. otherwise (female polygamous), impute her marital status from the hot deck AMARITAL-MARRIED (giving a value of 1,2,4).
        ii. for heads who are not married:
            1. update the hot decks AMARITAL-ALL and AMARITAL-UNMARRIED.
    b. handle SPN:
        i. if the head is married:
            1. if the head's SPN indicates a person that could be the head's spouse (opposite sex, 12+ years old, marital status 1/2/4/blank), then impute that person's relationship to "spouse". (note that this will cause edit V.7 to be executed);
            2. otherwise, make sure that the head's SPN is 99.
        ii. otherwise (head not married), make sure the SPN is blank.

B. For heads with invalid Marital Status:
    a. if the head's SPN is 99, then impute marital status from AMARITAL-MARRIED (giving a value from 1:4 for men or 1,2,4 for women);
    b. otherwise, if the head's SPN is blank, then impute marital status from AMARITAL-ALL (giving a value 1:8); also, if the imputed marital status is married (1:4), then make the head's SPN = 99;
    c. otherwise, if the head's SPN indicates a person that could be the head's spouse (opposite sex, 12+ years old, marital status 1/2/4/blank), then impute that person's relationship to "spouse" and make the head's marital status the same as the new spouse's. (note that this will cause edit V.7 to be executed);
    d. otherwise (bad SPN), impute marital status from the hot deck AMARITAL-ALL (giving a value from 1:8). In addition
        i. if the imputed Marital Status is married (1:4), then make the head's SPN = 99;
        ii. otherwise (imputed marital status is not married), make the head's SPN blank.

C. POST EDIT: if the head is married or has ever been married (MS 1:4 or 6:8) and head's age is not 12+ years, then impute head's age from the hot deck AHEADAGE. Also, if the age was changed then be sure to make the head's date of birth is consistent as well.

The following hot decks are used in the marital status edits (0, V.7, V.8, and V.12):

deck name	usage	dimension variables	values for P05 returned
AMARITAL-ALL	any marital status	relationship, age, sex	1:8 (will not give 3 for females)
AMARITAL-MARRIED	married statuses only	relationship, age, sex	1:4 (will not give 3 for females)
AMARITAL-UNMARRIED	unmarried statuses only	relationship, age, sex	5:8
AMARITAL-SPOUSE	spousal marital statuses	relationship, age, sex	1, 2, or 4

Structure for hot decks AMARITAL-MARRIED, AMARITAL-UNMARRIED, and AMARITAL-SPOUSE:

MALE

RELATIONSHIP													
1	2	3	4	5	6	7	8	9	10	11	12	13	AGE
value	value	value	value	value	value	value	value	value	value	value	value	value	12-14
value	value	value	value	value	value	value	value	value	value	value	value	value	15-19
value	value	value	value	value	value	value	value	value	value	value	value	value	20-24
value	value	value	value	value	value	value	value	value	value	value	value	value	25-29
value	value	value	value	value	value	value	value	value	value	value	value	value	30-34
value	value	value	value	value	value	value	value	value	value	value	value	value	35-39
value	value	value	value	value	value	value	value	value	value	value	value	value	40-44
value	value	value	value	value	value	value	value	value	value	value	value	value	45-49
value	value	value	value	value	value	value	value	value	value	value	value	value	50-54
value	value	value	value	value	value	value	value	value	value	value	value	value	55-59
value	value	value	value	value	value	value	value	value	value	value	value	value	60-64
value	value	value	value	value	value	value	value	value	value	value	value	value	65+

FEMALE

value	value	value	value	value	value	value	value	value	value	value	value	value	12-14
value	value	value	value	value	value	value	value	value	value	value	value	value	15-19
value	value	value	value	value	value	value	value	value	value	value	value	value	20-24
value	value	value	value	value	value	value	value	value	value	value	value	value	25-29
value	value	value	value	value	value	value	value	value	value	value	value	value	30-34
value	value	value	value	value	value	value	value	value	value	value	value	value	35-39
value	value	value	value	value	value	value	value	value	value	value	value	value	40-44
value	value	value	value	value	value	value	value	value	value	value	value	value	45-49
value	value	value	value	value	value	value	value	value	value	value	value	value	50-54
value	value	value	value	value	value	value	value	value	value	value	value	value	55-59
value	value	value	value	value	value	value	value	value	value	value	value	value	60-64
value	value	value	value	value	value	value	value	value	value	value	value	value	65+

Structure for hot decks AMARITAL-ALL (also used for institution edits)

MALES

RELATIONSHIP														
1	2	3	4	5	6	7	8	9	10	11	12	13	INST	AGE
value	value	value	value	value	value	value	value	value	value	value	value	value	value	12-14
value	value	value	value	value	value	value	value	value	value	value	value	value	value	15-19
value	value	value	value	value	value	value	value	value	value	value	value	value	value	20-24
value	value	value	value	value	value	value	value	value	value	value	value	value	value	25-29
value	value	value	value	value	value	value	value	value	value	value	value	value	value	30-34
value	value	value	value	value	value	value	value	value	value	value	value	value	value	35-39
value	value	value	value	value	value	value	value	value	value	value	value	value	value	40-44
value	value	value	value	value	value	value	value	value	value	value	value	value	value	45-49
value	value	value	value	value	value	value	value	value	value	value	value	value	value	50-54
value	value	value	value	value	value	value	value	value	value	value	value	value	value	55-59
value	value	value	value	value	value	value	value	value	value	value	value	value	value	60-64
value	value	value	value	value	value	value	value	value	value	value	value	value	value	65+

FEMALES

value	value	value	value	value	value	value	value	value	value	value	value	value	value	12-14
value	value	value	value	value	value	value	value	value	value	value	value	value	value	15-19
value	value	value	value	value	value	value	value	value	value	value	value	value	value	20-24
value	value	value	value	value	value	value	value	value	value	value	value	value	value	25-29
value	value	value	value	value	value	value	value	value	value	value	value	value	value	30-34
value	value	value	value	value	value	value	value	value	value	value	value	value	value	35-39
value	value	value	value	value	value	value	value	value	value	value	value	value	value	40-44
value	value	value	value	value	value	value	value	value	value	value	value	value	value	45-49
value	value	value	value	value	value	value	value	value	value	value	value	value	value	50-54
value	value	value	value	value	value	value	value	value	value	value	value	value	value	55-59
value	value	value	value	value	value	value	value	value	value	value	value	value	value	60-64
value	value	value	value	value	value	value	value	value	value	value	value	value	value	65+

Software:

This edit is implemented in subroutine SV6 in the CONCOR programme EDITS1.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Note:

A. Non-response and not applicable (blank) are not allowed for this question.
B. This edit does not treat polygamous marriages; see edits V.8 and V.12 below for that.

V.7 MARITAL STATUS (P-05) AND SPOUSE PERSON NUMBER (P-05A) FOR HEAD OF HOUSEHOLD; RELATIONSHIP (P-04) / SEX (P-03) / AGE (P-02) / MARITAL STATUS (P-05) / SPOUSE PERSON NUMBER (P-05A) FOR SPOUSE (SINGLE SPOUSE PRESENT)

MARITAL STATUS (P-05)	SPOUSE (P-05a)
What is (the person's) PRESENT marital status? 1 = Married civil/religious 2 = Married traditional/customary 3 = Polygamous marriage 4 = Living together like married partners 5 = Never married 6 = Widower/widow 7 = Separated 8 = Divorced Write only one code per person in the box. If both civil/religious and traditional marriage, indicate civil/religious. **If categories 5-8 go to (P-06).**	If categories 1-4 in P-05 **Who, in the household, is (the person's) spouse or partner?** Write the person number of the spouse or partner in the appropriate box. For example, if the spouse of the head of the household is the person listed in row 2 write 0 2 in row 1. If a man has more than one wife, write the row number of the first wife. Write the row number of the husband for each of his wives. If spouse is not in the household write 9 9.

Valid values:

for Relationship:

01	Head/acting head
02	Husband/wife/partner
03	Son/daughter
04	Adopted son/daughter
05	Stepson/stepdaughter
06	Brother/sister
07	Parent
08	Parent-in-law
09	Grand/greatgrand child
10	Son/daughter-in-law
11	Brother/sister-in-law
12	Other relative
13	Non related person

for Sex:

1	Male
2	Female

for age of spouse: 12:120

for Marital Status:

1 Married civil/religious
2 Married traditional/customary
3 Polygamous marriage
4 Living together as unmarried partners
5 Never married
6 Widower/widow
7 Separated
8 Divorced

Spouse person number (SPN):
code for person number of spouse

Universe:
heads of household and spouses (relationships 1 and 2) where one and only one spouse is present
(see also edits 0, V.8, and V.12; this edit is not used for institutions)

Edit checks:

A. Male heads of household with a single spouse present must be married (civil/religious, traditional/customary, polygamous, or living together).
B. Female heads of household with a single spouse present must be married (civil/religious, traditional/customary, or living together, but **not** polygamous).
C. It **is** permissible to have a male head with polygamous marital status and just one spouse (female, married civil/religious or traditional/customary) present in the HH; this occurs when the head's spouses live in several households.
D. Marital status for spouses in non-polygamous marriages must be 1 (civil/religious marriage) or 2 (traditional/customary marriage) or 4 (living together).
E. Marital status for (female) spouses in polygamous marriages must be 1 (civil/religious marriage), 2 (traditional/customary marriage), or 4 (living together).
F. The head's SPN must point to the spouse.
G. The spouse's SPN must point to the head.
H. The spouse must be at least 12 years old.
I. Married heads must be at least 12 years old.
J. Same-sex marriages are allowed, but must be consistent with the partners' fertility responses and other household members' MPN/FPN values.

Resolution:

A. For the head (relationship = 1):
    a. make sure that the head's SPN points to the spouse;
    b. if the head is a male:
        i. if his marital status is 1:4, then update the hot decks AMARITAL-MARRIED and AMARITAL-ALL;
        ii. otherwise, impute his marital status from the hot deck AMARITAL-MARRIED (giving a value of 1:4).
    c. otherwise (head is a female):
        i. if her marital status is 1,2 or 4, then update the hot decks AMARITAL-MARRIED and AMARITAL-ALL;
        ii. otherwise, impute her marital status from the hot deck AMARITAL-MARRIED (giving a value of 1,2,4).

B. For the spouse (relationship = 2):
    a. handle the spouse's age:

i. if the spouse is younger than 12 or has an invalid age, then impute the spouse's age using the hot deck ASPHD-AGE (minimum age 12);
ii. otherwise, update the hot deck ASPHD-AGE, based on the age difference between the spouse and the head, the head's age, and the head's sex.

b. handle the spouse's sex:
i. if the spouse's sex is the same as the head's:
1. if the spouse is a man and the spouse has fertility responses on page 9, then impute the spouse's sex to female;
2. otherwise, if the head is a man and the head has fertility, then flag the questionnaire for manual review;
3. otherwise, if the spouse is a woman 12:50 years and she does not have fertility, then impute the spouse's sex to male;
4. otherwise, if the head is a woman 12:50 years and she does not have fertility, then flag the questionnaire for manual review;
5. otherwise, if the head is a man and someone in the household declares him as their mother (through MPN), or the head is a woman and someone in the household declares her as their father (through FPN), then flag the questionnaire for possible manual review;
6. otherwise, if the spouse is a man and someone in the household declares him as their mother (through MPN), or the spouse is a woman and someone in the household declares her as their father (through FPN), then impute the spouse's sex to opposite of the head's;
7. otherwise, do nothing (and leave the same-sex couple).
ii. otherwise, make sure the spouse's sex is opposite of the head's.

c. handle SPN for spouse:
i. make sure that the spouse's SPN points to the head of household;

d. handle marital status for spouse:
i. if the spouse's marital status is 1, 2, or 4, then update the hot decks AMARITAL-SPOUSE, AMARITAL-ALL and AMARITAL-MARRIED ;
ii. otherwise (spouse has incorrect marital status):
1. if the head's marital status is 1,2, or 4, then make the spouse's marital status the same as the head's;
2. otherwise, impute the spouse's marital status from the hot deck AMARITAL-SPOUSE (giving a value of 1,2, or 4).

C. POST-EDIT:
a. If the head is married and head's age is not 12+ years, then impute head's age from the hot deck AHEADAGE. Also update the head's YOB if this happens.
b. Make sure that marital status for same-sex couples is living together (4); impute it to 4 if not.

Structure for hot deck ASPHD-AGE (gives age difference between spouse and head, based on head's age and head's sex):

HEAD'S SEX		
male	female	HEAD'S AGE
value	value	less than 10
value	value	10:19
value	value	20:29
value	value	30:39
value	value	40:49
value	value	50:59
value	value	60:69
value	value	70:79
value	value	80:89
value	value	90+

Note: a positive value in ASPHD-AGE indicates that the head is older than the spouse; a negative value indicates that the spouse is older than the head.

Software:

This edit is implemented in subroutine SV7 in the CONCOR programme EDITS1.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response and not applicable (blank) are not allowed for this question.
B. This edit does not treat polygamous marriages; see edits edits V.8 and V.12 below for that.

V.8 MARITAL STATUS (P-05) AND SPOUSE PERSON NUMBER (P-05A) FOR HEAD OF HOUSEHOLD; RELATIONSHIP (P-04) / SEX (P-03) / AGE (P-02) / MARITAL STATUS (P-05) / SPOUSE PERSON NUMBER (P-05A) FOR SPOUSE (MULTIPLE SPOUSES PRESENT)

MARITAL STATUS (P-05)	SPOUSE (P-05a)
What is (the person's) PRESENT marital status? 1 = Married civil/religious 2 = Married traditional/customary 3 = Polygamous marriage 4 = Living together like married partners 5 = Never married 6 = Widower/widow 7 = Separated 8 = Divorced Write only one code per person in the box. If both civil/religious and traditional marriage, indicate civil/religious. **If categories 5-8 go to (P-06).**	If categories 1-4 in P-05 **Who, in the household, is (the person's) spouse or partner?** Write the person number of the spouse or partner in the appropriate box. For example, if the spouse of the head of the household is the person listed in row 2 write 0 2 in row 1. If a man has more than one wife, write the row number of the first wife. Write the row number of the husband for each of his wives. If spouse is not in the household write 9 9.

Valid values:

for Relationship:

01	Head/acting head
02	Husband/wife/partner
03	Son/daughter
04	Adopted son/daughter
05	Stepson/stepdaughter
06	Brother/sister
07	Parent
08	Parent-in-law
09	Grand/greatgrand child
10	Son/daughter-in-law
11	Brother/sister-in-law
12	Other relative
13	Non related person

for Sex:

1	Male
2	Female

for age of spouse: 12:120

for Marital Status:

1 Married civil/religious
2 Married traditional/customary
3 Polygamous marriage
4 Living together as unmarried partners
5 Never married
6 Widower/widow
7 Separated
8 Divorced

Spouse person number (SPN):
code for person number of spouse

Universe:
heads of household and spouses where more than one spouse is present
(see also edits 0, V.7, and V.12; this edit is not used for institutions)

Edit checks:

A. Male heads of household with multiple spouses present must be polygamously married.
B. Female heads of household cannot have multiple spouses, and cannot have polygamous marital status.
C. In marriages that are not declared polygamous, the head can have 1 spouse at most.
D. Marital status for spouses in non-polygamous marriages must be 1 (civil/religious marriage), 2 (traditional/customary marriage), or 4 (living together).
E. Marital status for (female) spouses in polygamous marriages must be 1 (civil/religious marriage), 2 (traditional/customary marriage), or 4 (living together).
F. All of the head's spouses must be at least 12 years old and have sex opposite of the head's.
G. When multiple spouses are present in a household, the (male) head's SPN must point to the first (female) spouse.
H. When multiple spouses are present in a household, each (female) spouse's SPN must point to the (male) head.
I. Odd cases where there are multiple spouses of different sexes will be corrected by allowing the first head/spouse pair of 12+ year olds with opposite sexes; other spouses will be imputed reasonable relationships from a hot deck (note that this will result in a non-polygamous household).
J. Married heads must be at least 12 years old.
K. Same-sex polygamous marriages are not allowed.

Resolution:

A. For the head (relationship = 1):
    a. if the head is a man:
        i. if the head's marital status is polygamous (3), then update the hot decks AMARITAL-ALL and AMARITAL-MARRIED;
        ii. otherwise (not declared polygamous), if there is at least 1 spouse who is 12+ years old and female, then make her the only spouse; make other spouses' relationships 00 (and handle them in edit V.9 below), their marital status from AMARITAL-ALL (if invalid), and their SPNs blank or 99 (depending on the imputed marital status). Also, if head is not married (1,2,4) then impute his marital status from the deck AMARITAL-MARRIED;
        iii. otherwise (not declared polygamous, no qualifying spouses), convert all spouses' relationships to 00 (and handle them in edit V.9 below), impute their marital statuses from AMARITAL-ALL (if invalid), and make their

SPNs blank or 99 (depending on the marital status values). Also, if head's marital status is not valid, then impute from AMARITAL-ALL. Also:

1. if new marital status is married (1:4), then make sure head's SPN is 99;
2. otherwise, make sure head's SPN is blank.

b. if the head is a woman:
   i. handle her marital status:
      1. if her marital status is 1,2,4, then update the hot decks AMARITAL-ALL and AMARITAL-MARRIED;
      2. otherwise, impute her marital status from the hot deck AMARITAL-MARRIED (giving 1,2,4).
   ii. handle her spouses:
      1. if there is at least 1 spouse who is 12+ years old and male, then make him the only spouse; make other spouses' relationships 00 (and handle them in edit V.9 below), impute their marital status from AMARITAL-ALL, and make their SPNs 99 or blank (depending on the imputed marital status).
      2. otherwise (no qualifying spouses), convert all spouses to relationship 00 (and handle them in edit V.9 below), impute their marital statuses from AMARITAL-ALL, and make their SPNs 99 or blank (depending on the imputed marital status values).

B. Post-edit for the head:
   a. handle SPN: make sure that the head's SPN point to the first spouse in the household (or that the head's SPN is 99 if no spouses are present).

C. For each spouse (relationship = 2):
   a. handle the spouse's age:
      i. if the spouse is younger than 12 or has an invalid age, then impute the spouse's age using the hot deck ASPHD-AGE (minimum 12);
      ii. otherwise, update the hot deck ASPHD-AGE, based on the age difference between the spouse and the head, the head's age, and the head's sex.
   b. handle the spouse's sex:
      i. make sure the spouse's sex is opposite of the head's.
   c. handle marital status for spouse:
      i. if the spouse's marital status is 1, 2, or 4, then update the hot decks AMARITAL-SPOUSE, AMARITAL-ALL and AMARITAL-MARRIED ;
      ii. otherwise (spouse has incorrect marital status), impute the spouse's marital status from the hot deck AMARITAL-SPOUSE (giving a value of 1,2, or 4).
   d. handle SPN for spouse:
      i. make sure that the spouse's SPN points to the head of household;

D. POST-EDIT:
   a. If the head is married and head's age is not 12+ years, then impute head's age from the hot deck AHEADAGE.
   b. Make sure that marital status for same-sex couples is living together (4); impute it to 4 if not.

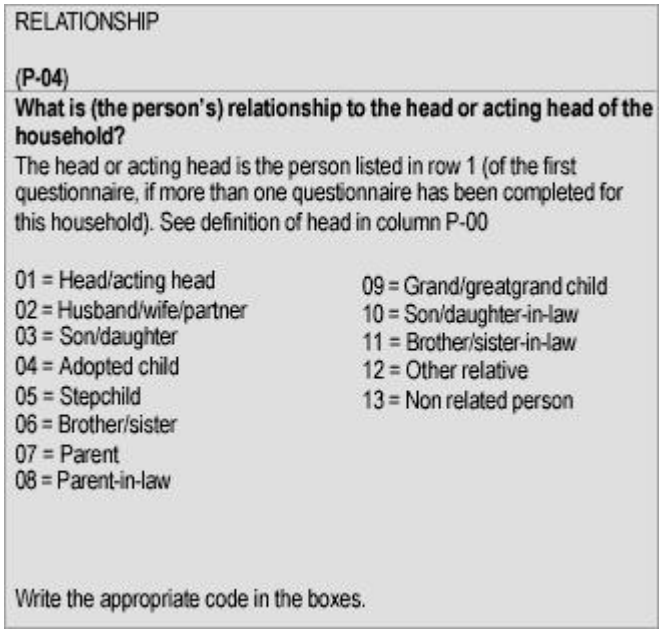
Software:

This edit is implemented in subroutine SV8 in the CONCOR programme EDITS1.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response and not applicable (blank) are not allowed for this question.
B. See also the edits for Relationship for the head (edit V.3 above) and Relationship and Marital Status for the rest of the household (see V.9 and V.12 below).

V.9 RELATIONSHIP (P-04) FOR REST OF HOUSEHOLD


RELATIONSHIP

(P-04)

What is (the person's) relationship to the head or acting head of the household?

The head or acting head is the person listed in row 1 (of the first questionnaire, if more than one questionnaire has been completed for this household). See definition of head in column P-00

01 = Head/acting head
02 = Husband/wife/partner
03 = Son/daughter
04 = Adopted child
05 = Stepchild
06 = Brother/sister
07 = Parent
08 = Parent-in-law
09 = Grand/greatgrand child
10 = Son/daughter-in-law
11 = Brother/sister-in-law
12 = Other relative
13 = Non related person

Write the appropriate code in the boxes.

Valid values:

01	Head/acting head
02	Husband/wife/partner
03	Son/daughter
04	Adopted son/daughter
05	Stepson/stepdaughter
06	Brother/sister
07	Parent
08	Parent-in-law
09	Grand/greatgrand child
10	Son/daughter-in-law
11	Brother/sister-in-law
12	Other relative
13	Non related person

Universe:

all persons who are not heads of household or spouses of heads
(see edits V.3, 0, V.7, and V.8 for relationship edits for heads of household and spouses)
all persons in institutions

Edit checks:

A. Variable must have a valid value.
B. Persons in institution are automatically assigned a special relationship code "99".
C. If the person's relationship to the head of household is not valid, then try to determine it by using other information from the household (listed in order of priority):
    a. if the person is the spouse of someone else in the household, then try to determine their relationship to the head based on their spouse's;
    b. if the person is married and has a spouse in the household, and the spouse has a valid sex the opposite of the person (or the person's sex is invalid) then try to determine their relationship to the head from their spouse's;
    c. if the person is the mother of someone else, then try to determine their relationship to the head based on their child's;

d. if the person's mother is in the household, then try to determine their relationship to the head from their mother's;
e. if the person is the father of someone else, then try to determine their relationship to the head based on their child's;
f. if the person's father is in the household, then try to determine their relationship to the head from their father's;
g. impute the person's relationship to the head of household from a hot deck (based on their age and sex).

D. If hot deck imputation is performed, then check the relationship against the head's age using a lookup table. Convert relationships that do not have a reasonable age to "other relative".
E. If hot deck imputation of a child (relationship 3) is performed, then check consistency: if the child's MPN or FPN points to someone who is not the head or spouse, then make the child's relationship "other relative".

Resolution

A. For persons in institutions: Assign relationship = 99 and exit the edit.

B. For persons with valid relationship (3:13):
   a. if the person is a parent-in-law and younger than 12 years, then make the relationship zero; this will cause a reasonable relationship to be imputed below;
   b. otherwise, update the hot deck ARELATION

C. For persons with invalid relationship:
   a. if someone else in the household has declared this person as their spouse (using the other person's spouse number SPN) and that person has a valid relationship, then impute the person's relationship based on their spouse's (using the first row from the cold deck ASPOUSE-REL);
   b. otherwise, if this person has a spouse (using their SPN) and the spouse has a valid relationship, then impute the person's relationship based on their spouse's (using the first row from the cold deck ASPOUSE-REL);
   c. otherwise, if someone in the household has declared this person as their mother (using that person's mother person number MPN) and that person has a valid relationship, then then impute the person's relationship based on their child's (using the first row from the cold deck ACHILD-REL);
   d. otherwise, if this person's mother is in the household (using their MPN) and has a valid relationship, then impute the person's relationship from their mother's (using the cold deck APARENT-REL);
   e. otherwise, if someone in the household has declared this person as their father (using that person's father person numer FPN) and that person has a valid relationship, then impute the person's relationship based on their child's (using the first row from the cold deck ACHILD-REL);
   f. otherwise, if this person's father is in the household (using their FPN) and has a valid relationship, then impute the person's relationship from their father's (using the first row from the cold deck APARENT-REL);
   g. otherwise, impute the person's relationship from the hot deck ARELATION. Also:
      i. if the person already has a valid age, and the age difference between the person and the head does not fall within the allowable limits (as specified by the table shown below), then make the person "other relative".
      ii. if the imputed relationship is child, and the person's MPN or FPN point to a person who is not the head or spouse, then make the person "other relative".

Structure for hot deck ARELATION:

AGE					
0-14	15-29	30-44	45-59	60+	SEX
12	12	12	12	12	Males
12	12	12	12	12	Females

note: this deck is populated with initial values of 12 (other relative)

Table for min/max ages of imputed relationships:

Relationship		HEAD'S SEX			
		Male		Female	
		Min	Max	Min	Max
3	Son/daughter	15	120	15	50
4	Adopted child	15	120	15	120
5	Stepchild	15	120	15	120
6	Brother/sister	0	38	0	38
7	Parent	15	120	15	50
9	Grand/greatgrand child	24	120	24	120

Software:

This edit is implemented in subroutine SV9 in the CONCOR programme EDITS1.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (99) and not applicable (blank) are not allowed for this question.

Structure for cold deck ASPOUSE-REL (also used in edit V.29 below):
(example to interpret: "if my SPOUSE is a parent, then I can be a parent (7), parent-in-law (8), or other relative (12)")

SPOUSE'S RELATIONSHIP TO HEAD

head	spouse	child	adopted child	step-child	sibling	parent	parent-in-law	grand/great grand child	child-in-law	brother/sister -in-law	other relative	non related person	SPOUSE'S RELATIONSHIP
2	1	10	10	10	11	7	8	12	3	6	12	13	
			12	12	12	8	7		4	12	4		
						12	12		5		5		
									12		6		
											7		
											8		
											9		
											10		
											11		

Structure for cold deck APARENT-REL (also used in edits V.29 and V.16 below):
(example to interpret: "if my PARENT is a child (3), then I can be a grand/great-grand child (9) or other relative (12)")

PARENT'S RELATIONSHIP TO HEAD

head	spouse	child	adopted child	step-child	sibling	parent	parent-in-law	grand/great grand child	child-in-law	brother/sister -in-law	other relative	non related person	CHILD'S RELATIONSHIP
3	3	9	9	9	12	6	11	9	9	12	12	13	
4	4	12	12	12		1	2	12	12		3		
5	5						12				4		
											5		
											6		
											8		
											9		
											10		
											11		

Structure for cold deck ACHILD-REL (also used in edits V.29):
(example to interpret: "if my CHILD is a sibling (7), then I can be a parent (7), or other relative (12)")

CHILD'S RELATIONSHIP TO HEAD													
head	spouse	child	adopted child	step-child	sibling	parent	parent-in-law	grand/great grand child	child-in-law	brother/sister -in-law	other relative	non related person	PARENT'S RELATIONSHIP
7	8	1	1	1	7	12	12	3	12	8	12	13	
12	12	2	2	2	12			4		12	1		
		12	12	12				5			2		
								9			3		
								10			4		
								12			5		
											6		
											7		
											8		
											9		
											10		
											11		

V.10 SEX FOR REST OF HOUSEHOLD (P-02)

Valid values:

1 Male
2 Female

Universe:

- all persons in households who are not heads of household and spouses of heads (see V.4 above for sex edit for head of household and spouse)
- all persons in institutions

Edit checks:

A. Variable must have a valid value.
B. Assess reasonableness of valid sex responses for household members, by counting the number of "unlikely situations" from among the following:
   - ✓ person's sex is male, but someone in the household reports this person as their mother;
   - ✓ person's sex is female, but someone in the household reports this person as their father;
   - ✓ person's sex is the same as their reported spouse;
   - ✓ person's sex is the same as someone in the household who reports this person as their spouse;
   - ✓ person's sex is male and age is 12+ years, but has non-zero page 9 fertility responses.

   If 3 or more of these conditions occur, then impute a more reasonable sex for the person, as described below.
C. For household members, if the person's sex is not valid, then try to determine it by using other information from the household (listed in order of priority):
   a. if the person has page 9 fertility information, then make the person a woman;
   b. if the person is the spouse of someone else in the household, then make their sex the opposite of their spouse's;
   c. if the person has a spouse in the household and that spouse has a valid sex, then make their sex the opposite of their spouse's;

d. if the person has a spouse in the household and that spouse is married and has fertility, then make their sex male;
e. if the person is someone's mother, then make the person a woman;
f. if the person is someone's father, then make the person a man;
g. if the person's sex can be determined by examining his or her mother's fertility responses (boys/girls surviving), then do this;
h. if the reported number of males and females on the front cover of the questionnaire can be used to determine a single missing sex, then do this;
i. impute the person's sex from a hot deck (based on their age and relationship to the head).

D. For institution residents, if the person's sex is not valid, then try to determine it by using other information from the household (listed in order of priority):
   a. if the person has fertility information, then make the person a woman;
   b. impute the person's sex from a hot deck (based on their age).

Resolution

A. For persons in households with valid sex, assess the reasonableness of the person's sex response. Count the number of "unlikely situations" from among the following:
   - ✓ person's sex is male, but someone in the household reports this person as their mother;
   - ✓ person's sex is female, but someone in the household reports this person as their father;
   - ✓ person's sex is the same as their reported spouse;
   - ✓ person's sex is the same as someone in the household who reports this person as their spouse;
   - ✓ person's sex is male and age is 12+ years, but has non-zero page 9 fertility responses.

   If 3 or more of these conditions occur, then make the person's sex zero (so that it will be imputed in the next step).

B. For persons with valid sex:
   a. update the hot deck ASEX.

C. For persons in households with invalid sex:
   a. if total children ever born or total children surviving have responses, then make the person a female;
   b. otherwise, if someone else in the household has declared this person as their spouse (using SPN) and that person is married, then impute the person's sex the opposite of the spouse (if the spouse has a valid sex);
   c. otherwise, if this person is married and has a spouse, and the spouse has a valid sex, then impute the person's sex the opposite of the spouse;
   d. otherwise, if this person is married (marital status 1:4) and has a valid SPN, and the spouse has page 9 fertility data, then make this person a male;
   e. otherwise, if someone in the household has declared this person as their mother (using MPN), then make this person a female;
   f. otherwise, if someone in the household has declared this person as their father (using FPN), then make this person a male;
   g. if the person's MPN is valid and points to a woman who is 12+ years old and 12:50 years older than the person, and the woman has valid responses for TCS, MCS, and FCS, and the number of people in the household who report that this woman is their mother = her MCS+FCS:

i. if the number of males who report this woman as their mother ≤ MCS-1 and the number of females who report this woman as their mother = FCS, then make the person a male;
ii. otherwise, if the number of females who report this woman as their mother ≤ FCS-1 and the number of males who report this woman as their mother = MCS, then make the person a female;

h. if front cover males = total of males in household – 1 and front cover females = total females in household, then make the person a male;
i. if front cover males = total of males in household and front cover females = total females in household - 1, then make the person a female;
j. otherwise, impute the person's sex from the hot deck ASEX.

D. For persons in institutions with invalid sex:
   a. if total children ever born or total children surviving have responses, then make the person a female;
   b. otherwise, impute the person's sex from the hot deck ASEX.

Structure for hot deck ASEX (note that this deck is also used in edit V.4 above):

PERSON'S AGE										
0	1	…	13	14	15:19	20:24	…	80:84	85+	Relationship to Head
value	value	value	value	value	value	value	value	value	value	Head/Acting head
value	value	value	value	value	value	value	value	value	value	Husband/wife/partner
value	value	value	value	value	value	value	value	value	value	Son/daughter
value	value	value	value	value	value	value	value	value	value	Adopted son/daughter
value	value	value	value	value	value	value	value	value	value	Stepson/stepdaughter
value	value	value	value	value	value	value	value	value	value	Brother/sister
value	value	value	value	value	value	value	value	value	value	Parent
value	value	value	value	value	value	value	value	value	value	Parent-in-law
value	value	value	value	value	value	value	value	value	value	Grand/greatgrand child
value	value	value	value	value	value	value	value	value	value	Son/daughter-in-law
value	value	value	value	value	value	value	value	value	value	Brother/sister-in-law
value	value	value	value	value	value	value	value	value	value	Other relative
value	value	value	value	value	value	value	value	value	value	Non related person
value	value	value	value	value	value	value	value	value	value	Institution resident

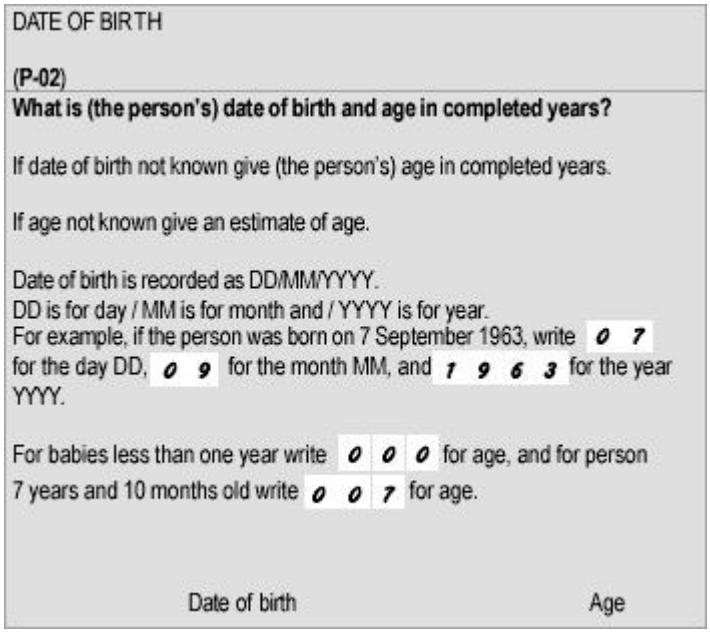
Software:

This edit is implemented in subroutine SV10 in the CONCOR programme EDITS1.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) and not applicable (blank) are not allowed for this question.

V.11 AGE (P-02) FOR REST OF HOUSEHOLD


DATE OF BIRTH

(P-02)

What is (the person's) date of birth and age in completed years?

If date of birth not known give (the person's) age in completed years.

If age not known give an estimate of age.

Date of birth is recorded as DD/MM/YYYY.
DD is for day / MM is for month and / YYYY is for year.
For example, if the person was born on 7 September 1963, write 0 7 for the day DD, 0 9 for the month MM, and 1 9 6 3 for the year YYYY.

For babies less than one year write 0 0 0 for age, and for person 7 years and 10 months old write 0 0 7 for age.

Date of birth Age

Valid values:

000:120

Universe:

all persons who are not heads of household or spouses of heads
(see V.5 above for age edits for heads and spouses of heads; this edit is not used for institutions)

Edit checks:

A. Variable must have a valid value.
B. Children of the head (i.e., relationship 3) cannot be less than 12 years younger than the head of household.
C. Grand/greatgrand children cannot be less 24 years younger than the head of household.
D. Grand/greatgrand children cannot be older than 54 years.
E. Children cannot be older than 80 years.
F. Parents cannot be less than 12 years older than the head of household.
G. There is no correlation between the age of the head and the ages of siblings, adopted children, step-children, children-in-law, parents-in-law, brother/sisters-in-law, other relatives, and non-relatives.
H. Children-in-law must be at least 12 years old.
I. Parents-in-law must be at least 24 years old.
J. Handle common enumeration errors where relationships are inverted (based on analysis of age differences and mother person number MPN/father person number FPN):
    - child reported as parent
    - parent reported as child
K. When someone's age is invalid or not consistent with the head of household's (for children, grand/greatgrand children, and parents), then impute it using a hot deck (based on age differences by relationship, the age of the head, and the sex of the head)

Resolution

THE FOLLOWING IS IMPLEMENTED IN EDITS1:

A. For persons with valid ages:
    a. for children:
        i. if the child is 12 or more years older than the male head or 12:50 years older than the female head:
            1. if MPN/FPN values support the child really being a child, then make the child's relationship "other relative" (and leave their age unchanged);
            2. otherwise, change the child's relationship to parent; (note: report on situations where the head's MPN or FPN points to the former child);
        ii. otherwise, if the child is older than 80 years, then make the child's relationship "other relative" (and leave their age unchanged);
        iii. otherwise, if the child is not 12+ years younger than the male head of household or is not 12:50 years younger than the female head of household:
            1. if the head is married and has a spouse and the head's and spouse's SPNs point to each other, and the spouse is 12+ years older than the child, and the child's MPN/FPN points to the spouse (depending on spouse sex), then make the child a step child;
            2. otherwise, make the child's relationship "other relative" (and leave their age unchanged);
        iv. otherwise, update the hot deck ACHHD-AGE, based on the age difference between the child and the head, the head's age, the head's sex, and the person's person number.
    b. for grandchildren/great grandchildren:
        i. if the grandchild is 24 or more years older than the male head or 24:100 years older than the female head, then make the grandchild an other relative *(note: report on situations where the head's parent's MPN or FPN point to the former grand/greatgrand child)*;
        ii. otherwise, if the grandchild is less than 24 years younger than the head of household or older than 54 years, then make the grandchild's relationship "other relative" (and leave their age unchanged).
        iii. otherwise, update the hot deck AGRHD-AGE, based on the age difference between the grandchild and the head, the head's age, the head's sex, and the person's person number.
    c. for parents:
        i. if the parent is 12 or more years younger than the male head or 12:50 years younger than the female head:
            1. if MPN/FPN values support the parent really being a parent, then make the parent's relationship "other relative" (and leave their age unchanged);
            2. otherwise, change the parent's relationship to child; (note: report on situations where the child's MPN or FPN point to the former head or a spouse)
        ii. otherwise, if the parent is a male not 12+ years older than the head or a female not 12:50 years older than the head, then make the parent's relationship "other relative" (and leave their age unchanged);
        iii. otherwise, update the hot deck APAHD-AGE, based on the age difference between the parent and the head, the head's age, the head's sex, and the person's person number.

d. for siblings:
    i. update the hot deck ASBHD-AGE, based on the age difference between the sibling and the head, the head's age, the head's sex, and the person's person number.
e. for children-in-law:
    i. if the child-in-law is younger than 12 years, then make the child-in-law's relationship "other relative" (and leave their age unchanged);
    ii. otherwise, update the hot deck AORHD-AGE, based on the age difference between the person and the head, the head's age, the head's sex, and the person's person number.
f. for parents-in-law:
    i. if the parent-in-law is younger than 24 years, then make the parent-in-law's relationship "other relative" (and leave their age unchanged);
    ii. otherwise, update the hot deck AORHD-AGE, based on the age difference between the person and the head, the head's age, the head's sex, and the person's person number.
g. for other relationships (adopted children, step-children, brothers/sisters-in-law, other relatives, and non-relatives):
    i. update the hot deck AORHD-AGE, based on the age difference between the person and the head, the head's age, the head's sex, and the person's person number.

THE FOLLOWING IS IMPLEMENTED IN AGEDOB:

A. For persons without valid ages:
    a. for children, impute the child's age using the hot deck ACHHD-AGE. Also, if the child's MPN indicates a woman in the household with a last born child who is older than the newly imputed child, then mark the questionnaire for manual review.
    b. for grandchildren and great grandchildren, impute the person's age using the hot deck AGRHD-AGE.
    c. for parents, impute the parent's age using the hot deck APAHD-AGE..
    d. for siblings, impute the sibling's age using the hot deck ASBHD-AGE.
    e. for other relationships (adopted children, step-children, children-in-law, parents-in-law, brother/sisters-in-law, other relatives, and non-relatives), impute the person's age using the hot deck AORHD-AGE.

B. POST-EDIT: minimum/maximum age checks –
    a. if a child is older than 80 years, then make the child's relationship "other relative" (and leave their age unchanged);
    b. if a grandchild is older than 80 years, then make the child's relationship "other relative" (and leave their age unchanged);
    c. if a child-in-law is younger than 12 years, then make the child-in-law's relationship "other relative" (and leave their age unchanged);
    d. if a parent-in-law is younger than 24 years, then make the parent-in-law's relationship "other relative" (and leave their age unchanged);

C. POST-EDIT: age and DOB consistency –
    a. If a person's age was imputed, then determine their birth year so that it is consistent with their age.

Structure of hot decks ACHHD-AGE, AGRHD-AGE, APAHD-AGE, AGPHD-AGE, ASBHD-AGE, and AORHD-AGE:

	HEAD'S SEX		
	Male	Female	HEAD'S AGE
PERSON 1			
	Value	value	00:19
	Value	value	20:29
	Value	value	30:39
	Value	value	40:49
	Value	value	50:59
	Value	value	60:69
	Value	value	70:79
	Value	value	80:89
	Value	value	90+
PERSON 2			
	Value	value	00:19
	Value	value	20:29
	Value	value	30:39
	Value	value	40:49
	Value	value	50:59
	Value	value	60:69
	Value	value	70:79
	Value	value	80:89
	Value	value	90+
…	…	…	…
PERSON 10+			
	Value	value	00:19
	Value	value	20:29
	Value	value	30:39
	Value	value	40:49
	Value	value	50:59
	Value	value	60:69
	Value	value	70:79
	Value	value	80:89
	Value	value	90+

Software:

This edit is implemented in subroutine SV11 in the CONCOR programs AGEDOB.CN and EDITS1.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (99) and not applicable (blank) are not allowed for this question.
B. The maximum ages for grand/greatgrand children (54) and children (80) were determined empirically, by reviewing raw data.

V.12 MARITAL STATUS (P-05) AND SPOUSE PERSON NUMBER (P-05A) FOR REST OF HOUSEHOLD

MARITAL STATUS (P-05)	SPOUSE (P-05a)
What is (the person's) PRESENT marital status? 1 = Married civil/religious 2 = Married traditional/customary 3 = Polygamous marriage 4 = Living together like married partners 5 = Never married 6 = Widower/widow 7 = Separated 8 = Divorced Write only one code per person in the box. If both civil/religious and traditional marriage, indicate civil/religious. **If categories 5-8 go to (P-06).**	If categories 1-4 in P-05 **Who, in the household, is (the person's) spouse or partner?** Write the person number of the spouse or partner in the appropriate box. For example, if the spouse of the head of the household is the person listed in row 2 write 0 2 in row 1. If a man has more than one wife, write the row number of the first wife. Write the row number of the husband for each of his wives. If spouse is not in the household write 9 9 .

Valid values:

Marital status:

1	Married civil/religious
2	Married traditional/customary
3	Polygamous marriage
4	Living together as unmarried partners
5	Never married
6	Widower/widow
7	Separated
8	Divorced

Spouse person number (SPN):

code for person number of spouse

Universe:

Marital status: all persons except heads and spouses of heads

Spouse person number: all married persons (marital status = 1:4)

(see also edits edits 0, V.7, and V.8; this edit is not used for institutions)

Edit checks:

A. Marital status must be a valid value (1:8).
B. People who are married or have ever been married must be at least 12 years old.
C. Same-sex marriages are allowed, but only if each partner's sex is consistent with his/her fertility responses, other household members' MPN/FPN values, and both partners have SPNs that point to each other.
D. Women cannot have polygamous marital status.
E. A married woman can have at most 1 husband (i.e., a married man in the household whose SPN points to her).
F. Men can have multiple wives only when their marital status is polygamous.
G. A married man with polygamous marital status can have any number of wives (i.e., women whose SPNs point to him) in the household.

H. It **is** permissible for a man to have polygamous marital status and have one or no spouses (female – married civil/religious, traditional/customary, or living together) present in the HH; this occurs when the man's spouses live in several households.
I. A married man with civil/religious, traditional/customary, or living together marital status can have at most 1 wife (i.e., a married woman whose SPN points to him).
J. Marital status for spouses' marriages must be 1 (civil/religious marriage) or 2 (traditional/customary marriage) or 4 (living together).
K. Odd cases where a man has multiple "wives" of different sexes will be corrected by allowing the first 12+ year old woman to be his wife; other spouses will have their marital status imputed from a hot deck (note that this will result in a non-polygamous household).
L. SPN is only applicable if Marital Status is 1:4; otherwise it must be blank.
M. SPN cannot point to a person number that doesn't exist in the household.
N. The spouse indicated by the SPN must be consistent with the person's sex, age, and relationship to head of household as follows:
    a. the person's sex must be the opposite of their spouse's (except when considering same-sex marriages; see above); and
    b. relationship to head must be consistent with the spouse's; and
    c. the spouse must be at least 12 years old.
O. A married polygamous man's SPN will point to his first-reported wife; all of his wives' SPNs will point to him.
P. Same sex polygamous marriages are not allowed.
Q. Handle enumerator error where the spouse number is the same as the person's number (for example, if spouse to head is person number 02 and that person indicates their spouse number is 02 also).

<u>Resolution:</u>

A. PRE-EDIT #1 for everyone's SPN (preparatory check):
    a. If a married person's spouse person number is blank or 99 (not present in the household) and someone else in the household declared that person as their spouse:
        i. if the 2 people are compatible in terms of age, sex, and relationship, then make the person's SPN point to that other person;
        ii. otherwise, make both people's SPNs 99.

B. PRE-EDIT #2 for everyone's SPN (preparatory check):
    a. If a married person's spouse person number is either 1) the same as their person number (a common enumerator error), or 2) points to the head (relationship = 1) or head's spouse (relationship = 2), or 3) points to a person that does not exist in the household (aside from 99):
        i. if someone else in the household declared that person as their spouse:
            1. if the 2 people are compatible in terms of sex, age and relationship, then make the person's SPN point to that other person;
            2. otherwise, make both people's SPNs 99;
        ii. otherwise, if someone else in the household who is married and has not declared a SPN could qualify as a spouse and (in terms of marital status, age, sex, and relationship to head of household), then impute that other person as the spouse;
        iii. otherwise, make the person's spouse number 99 (not present in household).

REGULAR EDITS START HERE:
(note: store *spouse_count*, the number of married persons with SPN that points to the current person [irrespective of marital status]).

C. For persons with valid marital status:
    a. for persons who are married (1:4):
        i. if the person is too young to be married (less than 12 years old), then impute marital status to "never married" and make their SPN blank;
        ii. otherwise (12+ years old), if person is a man:
            1. update the hot decks AMARITAL-ALL and AMARITAL-MARRIED. Also:
            2. if the man's marital status is polygamous (3):
                a. if spouse_count = 0:
                    i. make sure the man's SPN is 99.
                b. if spouse_count > 0:
                    i. if each of the man's wives is consistent with his sex, age and relationship, then do nothing;
                    ii. otherwise (not compatible), make each non-compatible spouse's SPN 99.
                    iii. also: make sure that the man's SPN points to his first-reported wife.
            3. otherwise (man's marital status not declared polygamous), update the deck AMARITAL-SPOUSE. Also:
                a. if spouse_count = 0:
                    i. make sure the man's SPN is 99.
                b. if spouse_count = 1:
                    i. if the man's wife is consistent with his sex, age and relationship, then make sure that the man's SPN points to his wife, and that her SPN points to him.
                    ii. otherwise, if the man's spouse is also male and the 2 partners are consistent in terms of age and relationship:
                        1. if either of the 2 men have page 9 fertility information, or is reported as being someone's mother, then set their SPNs to 99;
                        2. otherwise, if the 2 men's SPNs do not point to each other, them make both of their SPNs 99;
                        3. otherwise, if the sex, relationship or marital status of either of the 2 women has been imputed, then make both of their SPNs 99;
                        4. otherwise, do nothing (accept the gay couple).
                    iii. otherwise, make both of their SPNs 99.
                c. if spouse_count > 1:
                    i. if there is at least 1 spouse who is consistent with the man's sex, age and relationship, then make her the only spouse for this man; make other spouses' SPNs 99 (spouse not present in household). Also, make the man's SPN point to this unique wife;
                    ii. otherwise (not declared polygamous, no qualifying spouses), convert all spouses' SPNs to 99. Also, make the man's SPN 99.
        iii. otherwise (person is a woman 12+ years):
            1. if the woman's marital status is polygamous, then impute her marital status from the hot deck AMARITAL-MARRIED (giving a value of 1,2,4);

2. otherwise (marital status not polygamous), update the hot decks AMARITAL-ALL, AMARITAL-MARRIED, and AMARITAL-SPOUSE.
3. Also:
    a. if spouse_count = 0:
        i. make sure the woman's SPN is 99.
    b. if spouse_count = 1:
        i. if the woman's husband is consistent with her sex, age and relationship, then make sure that the woman's SPN points to her husband, and that his SPN points to her.
        ii. otherwise, if the woman's spouse is also female and the 2 partners are consistent in terms of age and relationship:
            1. if either of the 2 women is reported as being someone's father, then set their SPNs to 99;
            2. otherwise, if the 2 women's SPNs do not point to each other, them make both of their SPNs 99;
            3. otherwise, if the sex, relationship or marital status ofeither of the 2 women has been imputed, then make both of their SPNs 99;
            4. otherwise, do nothing (accept the lesbian couple).
        iii. otherwise, make both of their SPNs 99.
    c. if spouse_count > 1:
        i. if there is at least 1 spouse who is consistent with the woman's sex, age and relationship, then make him the only spouse for this woman; make other spouses' SPNs 99 (spouse not present in household). Also, make the woman's SPN point to this unique husband.
        ii. otherwise (no qualifying spouses), convert all spouses' SPNs to 99. Also, make the woman's SPN 99.

b. for persons who are not married (5:8):
    i. if there is a spouse declared (SPN not blank), then make the SPN blank;
    ii. also, if the person is 12 years or older, then update the hot decks AMARITAL-UNMARRIED and AMARITAL-ALL.
    iii. otherwise (too young), make the Marital Status never married if it isn't already.

D. For persons with invalid marital status:
    a. if the person is younger than 12, impute marital status to never married and make sure that the SPN is blank;
    b. otherwise, if there is a valid spouse declared (SPN not blank):
        i. if the spouse is consistent with the person in terms of age, sex and relationship to head of household:
            1. if the spouse's marital status is polygamous, them impute this person's marital status from the hot deck AMARITAL-SPOUSE (giving 1,2, or 4);
            2. otherwise, if the spouse is married (MS 1:4), then make the person's marital status the same as their spouse's;

3. otherwise (MS not married), impute marital status from the hot deck AMARITAL-MARRIED (giving 1:4);

ii. otherwise (declared spouse not consistent), impute marital status from the hot deck AMARITAL-MARRIED (giving 1:4) and set the person's SPN to 99 (not present in household).

c. otherwise (SPN is blank or invalid), impute marital status from the hot deck AMARITAL-ALL (giving a value 1:8). Also:

i. if the newly imputed marital status is 1:4, then make the SPN 99;

ii. otherwise, make sure the SPN is blank.

E. POST-EDIT:

a. Make sure that marital status for same-sex couples is living together (4); impute it to 4 if not.

Software:

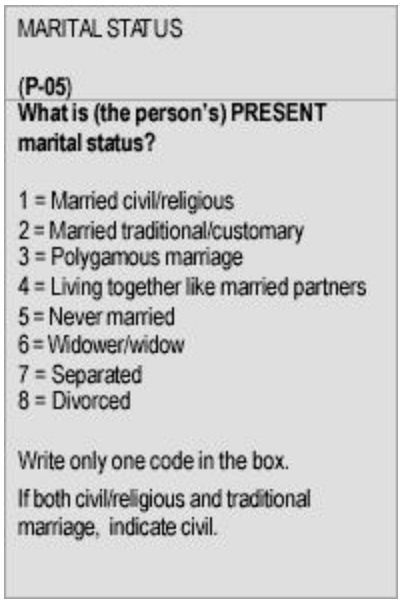
This edit is implemented in subroutine SV12 in the CONCOR programme EDITS1.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response is not allowed for either of these questions (note that 99 for SPN means spouse not present in the household).

B. Not applicable (blank) is not allowed for P05-MARITAL-ST.

V.12 INST MARITAL STATUS (P-05) AND SPOUSE PERSON NUMBER (P-05A) FOR REST OF HOUSEHOLD (INSTITUTIONS)


MARITAL STATUS

(P-05)

What is (the person's) PRESENT marital status?

1 = Married civil/religious
2 = Married traditional/customary
3 = Polygamous marriage
4 = Living together like married partners
5 = Never married
6 = Widower/widow
7 = Separated
8 = Divorced

Write only one code in the box.

If both civil/religious and traditional marriage, indicate civil.

Spouse number does not appear on the B questionnaire, but it will be introduced during processing.

Valid values:

Marital status:

1	Married civil/religious
2	Married traditional/customary
3	Polygamous marriage
4	Living together as unmarried partners
5	Never married
6	Widower/widow
7	Separated
8	Divorced

Spouse person number (SPN):
code for person number of spouse

Universe:
all people in institutions

Edit checks:

A. Marital status must be a valid value (1:8).
B. People who are married or have ever been married must be at least 12 years old.
C. Women cannot have polygamous marital status.
D. SPN must be blank for all institution residents.

Resolution:

A. For all persons:
    a. make sure that SPN is blank.

B. For persons with valid marital status:
    a. for persons who are married (1:4):

i. if the person is too young to be married (less than 12 years old), then impute marital status to “never married”;
ii. otherwise (12+ years old), if the person’s marital status is 3 (polygamous):
    1. if the person is a man, then update the hot decks AMARITAL-ALL and AMARITAL-MARRIED;
    2. otherwise, impute marital status from the deck AMARITAL-ALL.
iii. otherwise, update the hot decks AMARITAL-ALL and AMARITAL-MARRIED.

b. otherwise (person is not married):
    i. if the person is too young to have ever been married (less than 12 years old), then impute marital status to “never married”;
    ii. otherwise, update the hot deck AMARITAL-ALL.

C. For persons with invalid Marital Status:
    a. if the person is < 12 years old, then impute marital status = never married;
    b. otherwise, impute marital status from the deck AMARITAL-ALL.

Software:

This edit is implemented in subroutine SV12INST in the CONCOR programme EDITS1.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

V.13 POPULATION GROUP (P-06)

Valid values:

1	Black African
2	Coloured
3	Indian or Asian
4	White

Universe:

all persons in households

Edit checks:

A. Variable must have a valid value (1:4). Note that "other" responses (value 5) are removed during editing.
B. Impute from the head of household's population group if relative in the household does not have a valid population group.
C. Impute from the population group of a blood relative in the household if the head of household does not have a valid population group.
D. If the person has an African language (P07 = 3:11) and invalid population group, then make their population group black African.
E. Impute population group from a hot deck when no relatives in the household have a valid population group. (In this case, all related members of the household would be assigned the same population group.)
F. Impute population group for non-related persons from a hot deck when it is not valid.

Resolution:

A. For persons with a valid population group, update the hot deck APOPGROUP;

B. For persons without a valid population group:
    a. if the person is a head of household:
        i. if a relative in the household has a valid population group, then impute population group from that other person.
        ii. otherwise (no relatives with a valid value)

1. if the person's language is 3:11, then impute population group = black African;
2. otherwise, impute population group from the hot deck APOPGROUP as function of age and household size.

b. otherwise (not a head of household), if the person is a relative, then impute population group from the head of household; (note: if the head's population group was imputed from a hot deck, then assign this person's imputation flag as hot deck as well; otherwise assign the imputation flag as logical);
c. otherwise (non-related person), if the person's language is 3:11, then impute population group = black African;
d. otherwise (non-related person without language), impute population group from the hot deck APOPGROUP.

APOPGROUP structure:

HOUSEHOLD SIZE											
1	2	3	4	5	6	7	8	9	10+	INST	AGE
value	value	value	value	value	value	value	value	value	value	value	00-04
value	value	value	value	value	value	value	value	value	value	value	05-09
value	value	value	value	value	value	value	value	value	value	value	10-14
value	value	value	value	value	value	value	value	value	value	value	15-19
value	value	value	value	value	value	value	value	value	value	value	20-24
value	value	value	value	value	value	value	value	value	value	value	25-29
value	value	value	value	value	value	value	value	value	value	value	30-34
value	value	value	value	value	value	value	value	value	value	value	35-39
value	value	value	value	value	value	value	value	value	value	value	40-44
value	value	value	value	value	value	value	value	value	value	value	45-49
value	value	value	value	value	value	value	value	value	value	value	50-54
value	value	value	value	value	value	value	value	value	value	value	55-59
value	value	value	value	value	value	value	value	value	value	value	60-64
value	value	value	value	value	value	value	value	value	value	value	65-69
value	value	value	value	value	value	value	value	value	value	value	70-74
value	value	value	value	value	value	value	value	value	value	value	75-79
value	value	value	value	value	value	value	value	value	value	value	80-84
value	value	value	value	value	value	value	value	value	value	value	85+

Note that this structure is also used for institutions residents (all of which use the institution column).

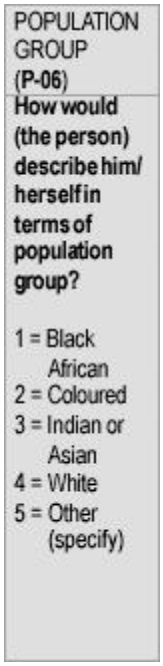
Software:

This edit is implemented in subroutine SV13 in the CONCOR programme EDITS2.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Note:

A. Non-response (9) and not applicable (blank) are not allowed for this question.
B. For Census 2006: consider not including "other" for this question, unless there are really other races.
C. Nerve Centre: report on removing other category here
D. For Census 2006: consider fixing up population group other write-ins with an office edit or through the coding system.

V.13 INST POPULATION GROUP (P-06) (INSTITUTIONS)



Valid values:
see edit V.13

Universe:
all persons in institutions

Edit checks:
A. Variable must have a valid value (1:4). Note that "other" responses (value 5) are removed during editing.
B. If the person has an African language (P07 = 3:11) and invalid population group, then make their population group black African.
C. Impute population group from a hot deck (as a function of the person's age) when invalid.

Resolution:
A. For persons with a valid population group, update the hot deck APOPGROUP;

B. For persons without a valid population group:
   a. if the person's language is 3:11, then impute population group = black African;
   b. otherwise, impute population group from the hot deck APOPGROUP.

See edit V.13 for the APOPGROUP hot deck structure.

Software:
This edit is implemented in subroutine SV13INST in the CONCOR programme EDITS2.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Note:
A. Non-response (9) and not applicable (blank) are not allowed for this question.

V.14 LANGUAGE (P-07)

LANGUAGE

(P-07)

Which language does (the person) speak most often in this household?

01 = Afrikaans
02 = English
03 = IsiNdebele
04 = IsiXhosa
05 = IsiZulu
06 = Sepedi
07 = Sesotho
08 = Setswana
09 = SiSwati
10 = Tshivenda
11 = Xitsonga
12 = Other (specify)

Write only one code per person.

Valid values:

1	Afrikaans
2	English
3	IsiNdebele
4	IsiXhosa
5	IsiZulu
6	Sepedi
7	Sesotho
8	Setswana
9	SiSwati
10	Tshivenda
11	Xitsonga
12	Other

Universe:

all persons in households

Edit checks:

A. Variable must have a valid value (1:12).
B. If a child (5 years or younger) has an invalid language response, then try to impute from the child's mother.
C. If a relative of the head of the household does not have a valid language, impute from the language of the head of the household.
D. If the head of household does not have a valid language, impute from a relative o f the head with a valid language.
E. Impute language from a hot deck when no other relatives in the household have a valid language. (In this case, all members of the household would be assigned the same language.)
F. Impute language from a hot deck for non-related persons without a valid language.
G. Correct for a scanning error that sometimes mis-recognised 1 (Afrikaans) or 2 (English) as 7 (Sesotho).

Resolution:

A. For persons with a valid language:
    a. if the person's population group is white, coloured, or Indian/Asian and language is Sesotho and a related person in the household speaks Afrikaans, then impute language = Afrikaans;
    b. if the person's population group is white, coloured, or Indian/Asian and language is Sesotho and a related person in the household speaks English, then impute language = English;
    c. otherwise, update the hot deck ALANGUAGE.

B. For persons without a valid language:
    a. if the person is 0-5 years and has a valid mother person number, and the mother is a woman 12:50 years older than this person, and the child's mother has a valid language response, then impute the child's language to the same as the mother's;
    b. otherwise, if the person is a head of household:
        i. a relative in the household has a valid language, then impute language from the first relative in the household with a valid language.
        ii. otherwise (no relatives with a valid value) impute language from the hot deck ALANGUAGE as function of age and population group.
    c. otherwise (not a head of household), if the person is a relative, then impute language from the head of household; (*note: if the head's language was imputed from a hot deck, then assign this person's imputation flag as hot deck as well; otherwise assign the imputation flag as logical*);
    d. otherwise (non-related person), impute language from the hot deck ALANGUAGE.

C. POST-EDITS:
    a. if the person's population group is white, coloured, or Indian/Asian and language is Sesotho and a related person in the household speaks Afrikaans, then impute language = Afrikaans;
    b. if the person's population group is white, coloured, or Indian/Asian and language is Sesotho and a related person in the household speaks English, then impute language = English;

    note: these post edits are necessary to avoid re-run test problems (see section XI.1).

ALANGUAGE structure:

POPULATION GROUP					
1	2	3	4	5	AGE
value	value	value	value	value	00-04
value	value	value	value	value	05-09
value	value	value	value	value	10-14
value	value	value	value	value	15-19
value	value	value	value	value	20-24
value	value	value	value	value	25-29
value	value	value	value	value	30-34
value	value	value	value	value	35-39
value	value	value	value	value	40-44
value	value	value	value	value	45-49
value	value	value	value	value	50-54
value	value	value	value	value	55-59
value	value	value	value	value	60-64
value	value	value	value	value	65-69
value	value	value	value	value	70-74
value	value	value	value	value	75-79
value	value	value	value	value	80-84
value	value	value	value	value	85+

Note that this structure is also used for institutions residents.

Software:

This edit is implemented in subroutine SV14 in the CONCOR programme EDITS2.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Note:

A. Non-response (9) and not applicable (blank) are not allowed for this question.
B. Nerve Centre: report on scanning problems with 1/7 and pre-edit solution

V.14 INST LANGUAGE (P-07) (INSTITUTIONS)

LANGUAGE

(P-07)

Which language does (the person) speak most often in this institution?

01 = Afrikaans
02 = English
03 = IsiNdebele
04 = IsiXhosa
05 = IsiZulu
06 = Sepedi
07 = Sesotho
08 = Setswana
09 = SiSwati
10 = Tshivenda
11 = Xitsonga
12 = Other (specify)

Write only one code.

Valid values:
see edit V.14

Universe:
all persons in institutions

Edit checks:
A. Variable must have a valid value (1:12).
B. Impute language from a hot deck (as a function of the person's population group) when invalid.
C. Correct for a scanning error that sometimes mis-recognised 1 (Afrikaans) or 2 (English) as 7 (Sesotho).

Resolution:
A. For persons with a valid language:
    a. if the person's population group is white, coloured, or Indian/Asian and language is Sesotho, then delete the language (it will be imputed from the hot deck in this case);
    b. otherwise, update the hot deck ALANGUAGE;

B. For persons without a valid language, impute language from the hot deck ALANGUAGE.

C. POST-EDIT: if the person's population group is white, coloured, or Indian/Asian and language is Sesotho, then impute language = English.
note: these post edits are necessary to avoid re-run test problems (see section XI.1).

See edit V.14 for the ALANGUAGE hot deck structure.

Software:

This edit is implemented in subroutine SV14INST in the CONCOR programme EDITS2.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Note:

A. Non-response (9) and not applicable (blank) are not allowed for this question.

V.15 DISABILITY (P-13)

DISABILITY

(P-13)

Does (the person) have any serious disability that prevents his/her full participation in life activities (such as education, work, social life)?

Mark any that apply.

0 = None
1 = Sight (blind/severe visual limitation)
2 = Hearing (deaf, profoundly hard of hearing)
3 = Communication (speech impairment)
4 = Physical (e.g. needs wheelchair, crutches or prosthesis; limb, hand usage limitations)
5 = Intellectual (serious difficulties in learning)
6 = Emotional (behavioural, psychological)

Dot the appropriate boxes.

Valid values:

There are 7 sub-questions on disability, specifically:

0) no disability
1) sight
2) hearing
3) communication
4) physical
5) intellectual
6) emotional

For each of these, valid values are:

1 yes
2 no

Universe:

all persons in households and institutions

Edit checks:

A. All variables must have valid values.
B. People with disabilities cannot indicate that they have "no disability"; in this case the "no disability" response is removed.
C. People declaring disabilities cannot also have "no disability."
D. People leaving the entire disability section blank are interpreted as having no disabilities.

Resolution:

A. PRE-EDIT: Make all blank responses "no"
(note: this does not have any effect on the imputation flags)

B. If any disabilities are declared, then make sure that the "no disability" response is "no".

C. If all 7 disability responses are "no", then impute "no disability" = yes.

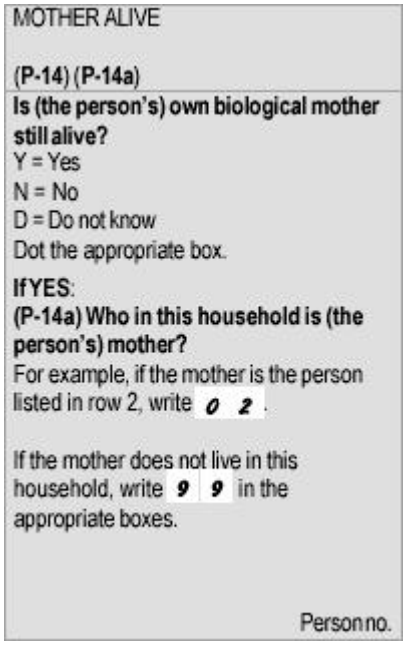
Software:

This edit is implemented in subroutine SV15 in the CONCOR programme EDITS2.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) is not allowed for any of these questions
B. Not applicable (blank) is not allowed for any of these questions (blanks are converted to "no" responses).

V.16 MOTHER ALIVE (P-14) AND MOTHER'S PERSON NUMBER (P-14A)


MOTHER ALIVE

(P-14) (P-14a)

Is (the person's) own biological mother still alive?
Y = Yes
N = No
D = Do not know
Dot the appropriate box.

If YES:
(P-14a) Who in this household is (the person's) mother?
For example, if the mother is the person listed in row 2, write 0 2.

If the mother does not live in this household, write 9 9 in the appropriate boxes.

Person no.

Valid values:

Mother Alive:

1 Yes
2 No

Mother's Person Number:

01: XX (the highest person number in the household)
99 for mother who does not live in the household

Universe:

Mother Alive: all persons in households
Mother's Person Number (MPN): all persons with a mother still living
(see edit V.21 INST for the corresponding institution edit)

Edit checks:

A. All variables must have valid values. Note that "don't know" responses (value 3) are removed during editing.
B. "Don't know" responses can sometimes be changed to "yes", based on the MPN value and other circumstances in the household.
C. If the mother alive response is "yes", then the MPN must have a response.
D. If the mother alive response is "no" or "don't know", then the MPN must be blank.
E. The MPN must point to a valid person number in the household, or be 99.
F. Mothers must be women 12:50 years older than their children.
G. The person and their mother (if indicated in the household) must have consistent relationships to the head of household.
H. MPN is not applicable (blank) if the mother is no longer living or the person doesn't know whether or not the mother is living.
I. In a female-headed household, a person with relationship 3 (biological child) cannot have a non-living mother; it is probable that the relationship is misreported and that the person is an adopted or step-child.
J. In a female-headed household, a person with relationship 4 (adopted child) or 5 (step child) cannot report the head as their MPN.
K. Use a hot deck to impute the response to mother living (based on age and sex) when needed.

Resolution:

A. PRE-EDIT: If the person is a child (relationship 3) with mother alive = "yes" or invalid and the head of household is a female, then impute mother living = yes and MPN = head, if it is not already.

B. PRE-EDIT: If the MPN is valid but points to a person number that doesn't exist in the household, then delete it (make it blank).

C. For persons with a valid response to Mother Alive:
    a. if mother alive = yes:
        i. if Mother Person Number (MPN) indicates a person in the household who is female, is 12:50 years older, and has a consistent relationship to the household head, then update the hot deck AMOTHER;
        ii. otherwise, if the MPN is 99, then update the hot deck AMOTHER;
        iii. if FPN indicates a person in the household whose spouse could be this person's mother (compatible in terms of age and relationship to the head), then make the father's spouse the person's mother;
        iv. otherwise, if another woman in the household qualifies (in terms of age and relationship to head), then make the first-qualifying person the MPN;
        v. otherwise, make sure the MPN is "not living in household" (99);

    b. if mother alive = no:
        i. if the MPN is blank, then update the hot deck AMOTHER;
        ii. otherwise, impute MPN to blank.

D. For persons without a valid response to Mother Alive:
    a. if the person is a child and the head is a female, then impute mother alive = yes; also make sure that the child's MPN points to the head;
    b. otherwise, if the person is a child (relationship 3) and the head of household is a male, and the head's spouse is a female who is could be this person's mother (in terms of age), then impute mother living = yes and MPN = head's spouse;
    c. otherwise, if MPN indicates a person in the household who is female, is 12:50 years older, and has a consistent relationship to the household head (based on the cold deck APARENT-REL), then impute mother living = yes;
    d. otherwise, if the MPN = 99, then impute mother living = yes;
    e. otherwise, impute mother alive using the hot deck AMOTHER; also:
        i. if the newly imputed response is mother alive, then try to find a mother:
            1. if another woman in the household qualifies (in terms of age and relationship to head), then make the first-qualifying person the MPN;
            2. otherwise, impute MPN = 99;
        ii. otherwise (newly imputed response is mother not alive) make sure the MPN is blank.

E. POST-EDIT: For persons with a "no" response to Mother Alive:
    a. if the head of household is a woman and the person's relationship is biological child, then impute the person's relationship to "adopted child".

F. POST-EDIT: If the person is an adopted child or a step-child, and the head of household is a female, and the person reports the head as their MPN, then impute MPN = 99.

Structure for hot deck AMOTHER:

SEX		
1	2	AGE
Value	value	00
Value	value	01
Value	value	02
Value	value	03
Value	value	04
… (single year age groups continue 00:99)		
Value	value	92
Value	value	93
Value	value	94
Value	value	95
Value	value	96
Value	value	97
Value	value	98
Value	value	99+

Structure for cold deck APARENT-REL is defined in edit V.9 above.

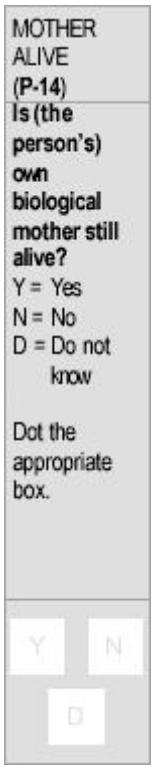
Software:

This edit is implemented in subroutine SV16 in the CONCOR programme EDITS2.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Unspecified (9) is not allowed for Mother Alive; a response of 99 for MPN indicates that the mother does not live in the household.
B. Not applicable (blank) is not allowed for Mother Alive.
C. Not applicable (blank) for Mother Person Number indicates that the mother is not living or it is not known whether or not she is living.
D. We implicitly give more confidence to the relationship response (P04) than MPN.

V.16 INST MOTHER ALIVE (P-14) AND MOTHER'S PERSON NUMBER (P-14A) (INSTITUTIONS)



Valid values:

Mother Alive:

1 yes
2 no

Mother's Person Number:

blank

Universe:

Mother Alive: all persons in institutions
Mother's Person Number (MPN): all persons in institutions

Edit checks:

A. The mother alive variables must have valid values. Note that "don't know" responses (value 3) are removed during editing.
B. MPN must be blank, since it is not asked of people living in institutions.
C. Use a hot deck to impute the response to mother alive (based on age and sex) when needed.

Resolution:

A. If the MPN is not blank, then impute it to blank (note that MPN is not on the institution questionnaire).

B. If mother alive is valid, then update the hot deck AMOTHER;

C. Otherwise, impute a valid response from the hot deck AMOTHER.

See edit V.16 above for the structure of the hot deck AMOTHER.

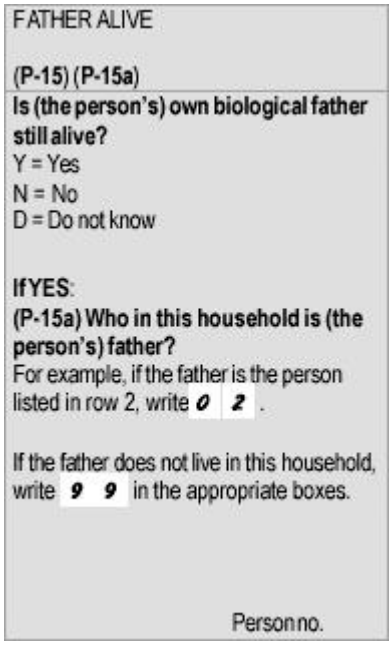
Software:

This edit is implemented in subroutine SV16INST in the CONCOR programme EDITS2.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) is not allowed for mother alive
B. Not applicable (blank) is not allowed for mother alive.
C. MPN is always blank in institutions.

V.17 FATHER ALIVE (P-15) AND FATHER'S PERSON NUMBER (P-15A)


FATHER ALIVE

(P-15) (P-15a)

Is (the person's) own biological father still alive?
Y = Yes
N = No
D = Do not know

If YES:
(P-15a) Who in this household is (the person's) father?
For example, if the father is the person listed in row 2, write **0 2** .

If the father does not live in this household, write **9 9** in the appropriate boxes.

Person no.

Valid values:

Father Alive:

1 yes
2 no

Father's Person Number:

01:XX (the highest person number in the household)
99 for father who does not live in the household

Universe:

Father Alive: all persons in households
Father's Person Number (FPN): all persons with a father still living
(see edit V.22 INST for the corresponding institution edit)

Edit checks:

A. All variables must have valid values. Note that "don't know" responses (value 3) are removed during editing.
B. "Don't know" responses can sometimes be changed to "yes", based on the FPN value and other circumstances in the household.
C. If the father alive response is "yes", then the FPN must have a valid response.
D. If the father alive response is "no" or "don't know", then the FPN must be blank.
E. The FPN must point to a valid person number in the household, or be 99.
F. Fathers must be men at least 12 years older than the child.
G. The person and their father must have consistent relationships to the head of household.
H. FPN is not applicable (blank) if the father is no longer living or the person doesn't know whether or not the father is living.
I. In a male headed household, a person with relationship 3 (biological child) cannot have a non-living father; it is probable that the relationship is misreported and that the person is an adopted or step-child.
J. Use a hot deck to impute the response to father alive (based on age and sex) when needed.

Resolution:

A. PRE-EDIT: If the person is a child (relationship 3) with father alive = "yes" or invalid and the head of household is a male, then impute father living = yes and FPN = head, if it is not already.

B. PRE-EDIT: If the FPN is valid but points to a person number that doesn't exist in the household, then delete it (make it blank).

C. For persons with a valid response to Father Alive:
    a. if father alive = yes:
        i. if Father Person Number (FPN) indicates a person in the household who is male, at least 12 years older than the child, and has a consistent relationship to the household head, then update the hot deck AFATHER.
        ii. otherwise, if the FPN is 99, then update the hot deck AFATHER;
        iii. if MPN indicates a person in the household whose spouse could be this person's father (compatible in terms of age and relationship to the head), then make the mother's spouse the person's father;
        iv. otherwise, if another man in the household qualifies (in terms of age and relationship to head), then make the first-qualifying person the FPN;
        v. otherwise, make sure the FPN is "not living in household" (99);
    b. if father alive = no:
        i. if the FPN is blank, then update the hot deck AFATHER;
        ii. otherwise, impute FPN to blank.

D. For persons without a valid response to Father Alive:
    a. if the person is a child and the head is a male, then impute father alive = yes; also make sure that the child's FPN points to the head;
    b. otherwise, if the person is a child (relationship 3) and the head of household is a female, and the head's spouse is a male who is could be this person's father (in terms of age), then impute father living = yes and FPN = head's spouse;
    c. otherwise, if FPN indicates a person in the household who is male, at least 12 years older than the child, and has a consistent relationship to the household head (based on the cold deck APARENT-REL), then impute father living = yes;
    d. otherwise, if the FPN = 99, then impute father living = yes;
    e. otherwise, impute father alive using the hot deck AFATHER; also:
        i. if the newly imputed response is father alive, then try to find a father:
            1. if another man in the household qualifies (in terms of age and relationship to head), then make the first-qualifying person the FPN;
            2. otherwise, impute FPN = 99;
        ii. otherwise (newly imputed response is father not alive) make sure the FPN is blank.

E. POST-EDIT: For persons with a "no" response to Father Alive:
    a. if the head of household is a man and the person's relationship is biological child, then impute the person's relationship to "adopted child".

F. POST-EDIT: If the person is an adopted child or a step-child, and the head of household is a male, and the person reports the head as their FPN, then impute FPN = 99.

Structure for hot deck AFATHER:

SEX		
1	2	AGE
Value	value	00
Value	value	01
Value	value	02
Value	value	03
Value	value	04
… (single year age groups continue 00:99)		
Value	value	92
Value	value	93
Value	value	94
Value	value	95
Value	value	96
Value	value	97
Value	value	98
Value	value	99+

Structure for cold deck APARENT-REL is defined in edit V.9 above.

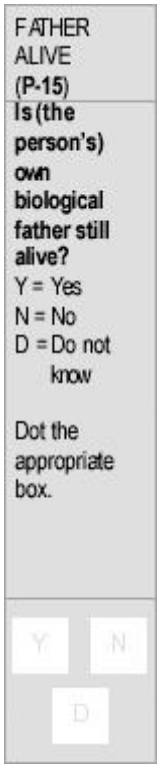
Software:

This edit is implemented in subroutine SV17 in the CONCOR programme EDITS2.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) is not allowed for father alive; a response of 99 for father person number indicates that the father does not live in the household.
B. Not applicable (blank) is not allowed for father alive.
C. Not applicable (blank) for father person number indicates that the father is not living or it is not known whether or not he is living.
D. We implicitly give more confidence to the relationship response (P04) than FPN.

V.17 INST FATHER ALIVE (P-15) AND FATHER'S PERSON NUMBER (P-15A) (INSTITUTIONS)



Valid values:

Father Alive:

1 Yes
2 No

Father's Person Number:

blank

Universe:

Father Alive: all persons in institutions
Father's Person Number (FPN): all persons in institutions
(see edit V.22 for the corresponding household edit)

Edit checks:

A. The Father Alive variables must have valid values. Note that "don't know" responses (value 3) are removed during editing.
B. FPN must be blank, since it is not asked of people living in institutions.
C. Use a hot deck to impute the response to father alive (based on age and sex) when needed.

Resolution:

A. If the FPN is not blank, then impute it to blank (note that FPN is not on the institution questionnaire).

B. If father alive is valid, then update the hot deck AFATHER.

C. Otherwise, impute a valid response from the hot deck AFATHER.

See edit V.17 above for the structure of the hot deck AFATHER.

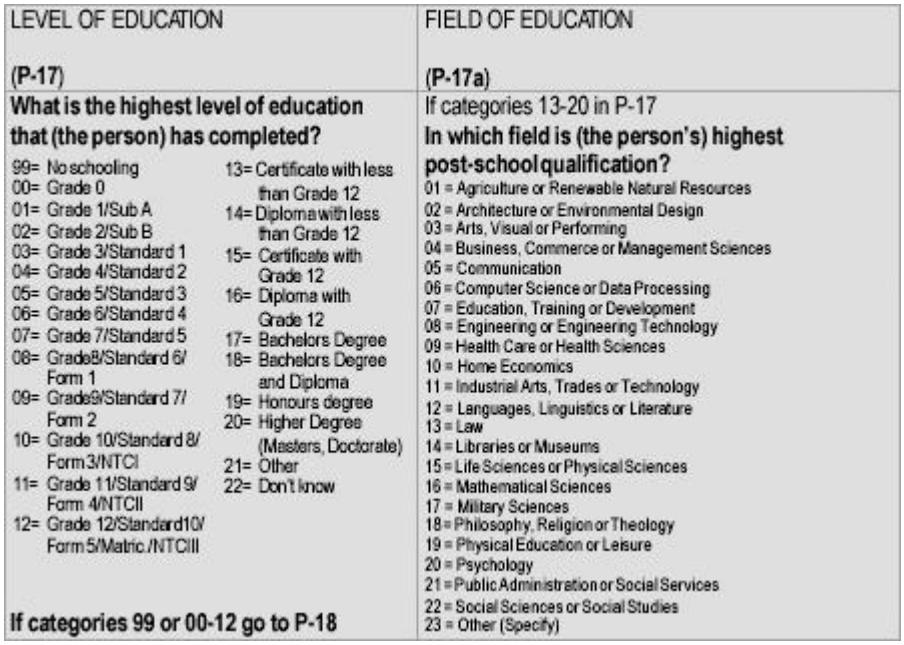
Software:

This edit is implemented in subroutine SV17INST in the CONCOR programme EDITS2.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) is not allowed for Father Living
B. Not applicable (blank) is not allowed for Father Living.
C. FPN is always blank in institutions.

V.18 LEVEL OF EDUCATION (P-17) AND FIELD OF EDUCATION (P-17A)



LEVEL OF EDUCATION (P-17)	FIELD OF EDUCATION (P-17a)
What is the highest level of education that (the person) has completed? 99= No schooling 00= Grade 0 01= Grade 1/Sub A 02= Grade 2/Sub B 03= Grade 3/Standard 1 04= Grade 4/Standard 2 05= Grade 5/Standard 3 06= Grade 6/Standard 4 07= Grade 7/Standard 5 08= Grade8/Standard 6/ Form 1 09= Grade9/Standard 7/ Form 2 10= Grade 10/Standard 8/ Form3/NTCI 11= Grade 11/Standard 9/ Form 4/NTCII 12= Grade 12/Standard10/ Form 5/Matric./NTCIII 13= Certificate with less than Grade 12 14= Diploma with less than Grade 12 15= Certificate with Grade 12 16= Diploma with Grade 12 17= Bachelors Degree 18= Bachelors Degree and Diploma 19= Honours degree 20= Higher Degree (Masters, Doctorate) 21= Other 22= Don't know **If categories 99 or 00-12 go to P-18**	If categories 13-20 in P-17 **In which field is (the person's) highest post-school qualification?** 01 = Agriculture or Renewable Natural Resources 02 = Architecture or Environmental Design 03 = Arts, Visual or Performing 04 = Business, Commerce or Management Sciences 05 = Communication 06 = Computer Science or Data Processing 07 = Education, Training or Development 08 = Engineering or Engineering Technology 09 = Health Care or Health Sciences 10 = Home Economics 11 = Industrial Arts, Trades or Technology 12 = Languages, Linguistics or Literature 13 = Law 14 = Libraries or Museums 15 = Life Sciences or Physical Sciences 16 = Mathematical Sciences 17 = Military Sciences 18 = Philosophy, Religion or Theology 19 = Physical Education or Leisure 20 = Psychology 21 = Public Administration or Social Services 22 = Social Sciences or Social Studies 23 = Other (Specify)

Valid values:

Level of Education:

01 Grade 1/Sub A (completed or in process)
02 Grade 1/Sub B
03 Grade 3/Standard 1
04 Grade 4/Standard 2
05 Grade 5/Standard 3
06 Grade 6/Standard 4
07 Grade 7/Standard 5
08 Grade 8/Standard 6/Form 1
09 Grade 9/Standard 7/Form 2
10 Grade 10/Standard 8/Form 3/NTC I
11 Grade 11/Standard 9/Form 4/NTC II
12 Grade 12/Standard 10/Form 5/Matric./NTC III
13 Certificate with less than grade 12
14 Diploma with less than grade 12
15 Certificate with grade 12
16 Diploma with grade 12
17 Bachelor's degree
18 Bachelor's degree and diploma
19 Honour's degree
20 Higher degree (Master's, Doctorate)
99 No schooling

Field of Education:

01 Agriculture or Renewable Energy Resources
02 Architecture or Environment Design
03 Arts, Visual or Performing
04 Business, Commerce or Management Sciences
05 Communication
06 Computer Science or Data Processing
07 Education, Training or Development
08 Engineering or Engineering Technology
09 Health Care or Health Sciences
10 Home Economics
11 Industrial Arts, Trades or Technology
12 Languages, Linguistics or Literature
13 Law
14 Libraries or Museums
15 Life Sciences or Physical Sciences
16 Mathematical Sciences
17 Military Sciences
18 Philosophy, Religion or Theology
19 Physical Education or Leisure
20 Psychology
21 Public Administration or Social Services
22 Social Sciences or Social Studies
23 Other

Universe:

Level of Education: all persons 5 years and older
Field of Education: all persons who have post-school qualification (Level of Education 13:20) (note that these people will all be at least 16 years old)
Note: this edit is for both households and institutions.

Note that although data were collected for level of education "grade 0", the data for this value seem to be of very poor quality. Grade 0 has therefore been joined with "no schooling."

Edit checks:

A. All variables must have valid values. Note that "other" and "don't know" values for P17 (values 21 and 22, respectively) are removed during editing, and grade 0 is grouped into "no schooling".
B. Account for common enumeration error where inconsistencies between educational institution and highest level are due to misinterpretation of level question as "highest level currently attending," and not "highest level completed."
C. People younger than 5 do not respond to these questions (they are not applicable).
D. Only people with post-school qualification respond to the Field of Education question; it is not applicable for others.
E. Only people 16+ years old can report a field of education.
F. The level of education must be consistent with the person's age.
G. Use hot decks to impute these items (based on age, sex and educational institution) when needed.

Resolution:

A. EDUCATION PRE-EDIT – Account for common misinterpretation of the level and educational institution questions:
    a. if level is grade zero, then impute level = “no schooling”;
    b. also, if institution = “school” and level = “no schooling” and age = 5+ years:
        i. if age = 5:9, then impute level = “grade 1/sub A”;
        ii. otherwise, delete the level of education (causing it to have a consistent response imputed during the regular edit);
    c. also, if age >= 25 and institution = “school” and field of education is valid, then impute institution = “university”
    d. also, if level = grade 12 and institution = “school” and field of education is valid, then impute institution = “university”;
    e. also, if institution = “school” and age = 0:3, then impute institution = “pre-school”;
    f. also, if institution = “technikon” and age < 16 years and level is 00:08, then impute institution = “school”.

B. For persons younger than 5 years (age = 0:4), make sure that level of education and field are blank;

C. For persons 5 years and older:
    a. if the level of education is valid:
        i. if the person is old enough for the declared level of education:
            1. if the level is post-school (13:20):
                a. if the field of education is valid, then update the hot decks AEDUC-LVL-POST, AEDUC-FLD, and AEDUC-LVL-ALL;
                b. otherwise, impute the field from the hot deck AEDUC-FLD.
            2. otherwise (level = 0:12), if the field is blank, then update the hot deck AEDUC-LVL-ALL;
            3. otherwise, impute the field to blank;
        ii. otherwise, if field is valid and age >= 16, then impute the level from AEDUC-LVL-POST;
        iii. otherwise (field not valid or too young for post-school level), impute the level from AEDUC-LVL-ALL. Also:
            1. if the newly imputed educational level is 13:20, then impute the field from AEDUC-FLD;
            2. otherwise, make sure the field is blank;
    b. otherwise (level not valid), if the field is valid and the person is 16+ years old, then impute the level to a value from 13:20 using the hot deck AEDUC-LVL-POST;
    c. otherwise (both level and field invalid or person <16 years), impute the level from the hot deck AEDUC-LVL-ALL. Also:
        i. if the newly imputed educational level is 13:20, then impute the field from AEDUC-FLD;
        ii. otherwise, make sure the field is blank.

Structure for AEDUC-LVL (cold deck):

MIN AGE	LEVEL
5	99
5	00
5	01
6	02
7	03
8	04
9	05
10	06
11	07
12	08
13	09
14	10
15	11
16	12
16	13
16	14
16	15
16	16
18	17
18	18
20	19
21	20

Structure for hot deck AEDUC-LVL-ALL:

SEX		
Male	female	AGE
INST 2		
Value	value	5
Value	value	6
Value	value	7
…	…	…
Value	value	18
Value	value	19
Value	value	20
Value	value	21:24
Value	value	25:29
Value	value	30-34
Value	value	35+
INST 3		
Value	value	5
Value	value	6
Value	value	7
…	…	…
Value	value	18
Value	value	19
Value	value	20
Value	value	21:24
Value	value	25:29
Value	value	30-34
Value	value	35+
(continues INSTS 4 through 8)		
Value	value	5
Value	value	6
Value	value	7
…	…	…
Value	value	18
Value	value	19
Value	value	20
Value	value	21:24
Value	value	25:29
Value	value	30-34
Value	value	35+
INST INVALID		
Value	value	5
Value	value	6
Value	value	7
…	…	…
Value	value	18
Value	value	19
Value	value	20
Value	value	21:24
Value	value	25:29
Value	value	30-34
Value	value	35+

Structure for hot decks AEDUC-LVL-POST:

SEX		
Male	female	AGE
Value	value	5
Value	value	6
Value	value	7
Value	value	8
Value	value	9
…	…	…
Value	value	15
Value	value	16
Value	value	17
Value	value	18
Value	value	19
Value	value	20
Value	value	21:24
Value	value	25:29
Value	value	30:34
Value	value	35+

Structure for hot deck AEDUC-FLD:

SEX		
male	female	AGE
LEVEL 13		
value	value	05:09
value	value	10:14
value	value	15:19
value	value	20:24
value	value	25:29
value	value	30:34
value	value	35+
LEVEL 14		
value	value	05:09
value	value	10:14
value	value	15:19
value	value	20:24
value	value	25:29
value	value	30:34
value	value	35+

(continues 15,16,17,18,19)

LEVEL 20		
value	value	05:09
value	value	10:14
value	value	15:19
value	value	20:24
value	value	25:29
value	value	30:34
value	value	35+

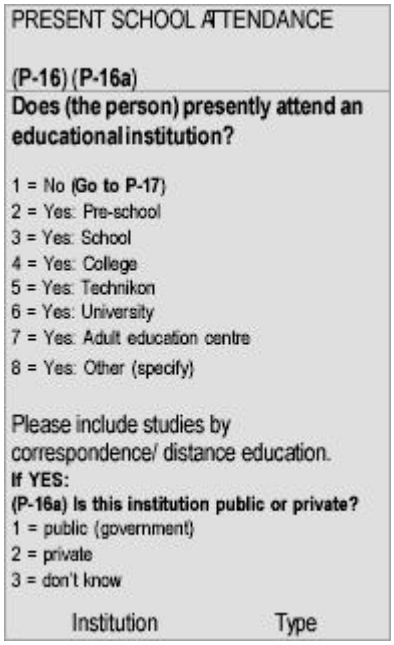
Software:

This edit is implemented in subroutine SV18 in the CONCOR programme EDITS2.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-responses are not allowed for either of these questions.
B. Not applicable (blank) is not allowed for Level of Education if the person is 5 years or older.
C. Not applicable (blank) for Field of Education indicates that the person has not attained a post-school education level (or that the person is younger than 5 years)

V.19 PRESENT EDUCATIONAL INSTITUTION (P-16) AND TYPE (P-16A)


PRESENT SCHOOL ATTENDANCE

(P-16) (P-16a)

Does (the person) presently attend an educational institution?

1 = No **(Go to P-17)**
2 = Yes: Pre-school
3 = Yes: School
4 = Yes: College
5 = Yes: Technikon
6 = Yes: University
7 = Yes: Adult education centre
8 = Yes: Other (specify)

Please include studies by correspondence/ distance education.
If YES:
(P-16a) Is this institution public or private?
1 = public (government)
2 = private
3 = don't know

Institution Type

Valid values:

Institution:

1	no
2	yes, pre-school
3	yes, school
4	yes, college
5	yes, technikon
6	yes, university
7	yes, adult education centre
8	yes, other

Type of Institution:

1	public (government)
2	Private

Note that although type of institution is edited, the data for this variable seem to be of very poor quality. The variable will therefore not be published.

Universe:

Educational institution: all persons
Type of educational institution: all persons who presently attend an educational institution
Note: this edit is used for both households and institutions.

Edit checks:

A. All variables must have valid values. Note that "don't know" responses for the type of institution question (value 3) are removed during editing.
B. People presently attending an educational institution must specify which type of institution it is.
C. The type of institution is not applicable (blank) if the person is not presently attending an educational institution.
D. The educational institution must be consistent with the person's age.
E. The educational institution must be consistent with the person's level of education.
F. The educational institution "technikon" is always a public type of institution.

G. Use a hot deck to impute the type of educational institution (based on age, sex, and educational institution level) when needed. Note that 2 decks are maintained – one for all institutions values (1:8) and another for "attending" only values (2:8)

Resolution:

A. For persons with a valid response for institution:
    a. if the person does not currently attend an institution (institution = 1):
        i. if the institution type is blank, then update the hot deck AINST1-ALL;
        ii. otherwise, impute institution type to blank;
    b. otherwise (institution = 2:8), if the person's age is consistent with the declared institution (using the cold decks AINSTMINAGE and AINSTMAXAGE):
        i. if the person's institution is consistent with their level of education (using AINSTLVL):
            1. if the type of institution is valid, then update hot decks AINST1-ALL, AINST2-ATTENDING, and ATYPE;
            2. otherwise, impute institution type from deck ATYPE.
        ii. otherwise (institution not consistent with education level), impute an institution AINST2-ATTENDING (giving a value 2:8). Also:
            1. if the imputed institution is "no", then make sure the institution type is blank;
            2. otherwise, if the institution type is not valid, then impute it using the hot deck ATYPE;
    c. otherwise (institution is 2:8, but age not consistent with institution), impute institution from the hot deck AINST2-ATTENDING (giving a value 2:8). Also:
        i. if the imputed institution is "no", then make sure the institution type is blank;
        ii. otherwise, if the institution type is not valid, then impute it using the hot deck ATYPE.

B. For persons with invalid institution, impute the institution using the hot deck AINST1-ALL (giving a value 1:8). Also:
    a. if the imputed institution is "no", then make sure the institution type is blank;
    b. otherwise, if the institution type is not valid, then impute it using the hot deck ATYPE;

C. EDUCATION POST-EDITS:
    a. if institution is "technikon" and type of insitution is not public, then impute type of institution = public.
    b. also, if level is grade zero, then impute level = "no schooling";
    c. also, if institution = "school" and level = "no schooling"
        i. if age = 5:9, then impute level = "grade 1/sub A";
        ii. otherwise, impute a level for the person's age using the following algorithm:
            age = 10, level = 4
            age = 11, level = 5
            age = 12, level = 6
            age = 13, level = 7
            age = 14, level = 8
            age = 15, level = 9
            age = 16, level = 10
            age = 17, level = 11
            age = 18+, level = 12
    d. also, if age>=25 and institution = "school" and field of education is valid, then impute institution = "university"

e. also, if level = grade 12 and institution = “school” and field of education is valid, then impute institution = “university”;
f. also, if institution = “school” and age = 0:3, then impute institution = “pre-school”;
g. also, if institution = “technikon” and age < 16 years and level is 00:08, then impute institution = “school”.

Structure for AINSTMINAGE (cold deck):

MIN AGE	INST LEVEL
0	2
4	3
14	4
16	5
16	6
12	7
0	8

Structure for AINSTMAXAGE (cold deck):

MAX AGE	INST LEVEL
7	2
120	3
120	4
120	5
120	6
120	7
120	8

Structure for AINSTLVL (cold deck):

POSSIBLE LEVELS

MIN	MAX	INSTITUTION
99	99	2
0	12	3
9	20	4
99	99	3
12	22	5
12	22	6
0	20	7
99	99	7
0	22	8
99	99	8

Structure for ATYPE:

MALES

			EDUCATIONAL INSTITUTION				
2	3	4	5	6	7	8	AGE
Value	value	value	value	value	value	value	0:4
Value	value	value	value	value	value	value	5:9
Value	value	value	value	value	value	value	10:14
Value	value	value	value	value	value	value	15:19
Value	value	value	value	value	value	value	20:24
Value	value	value	value	value	value	value	25:29
Value	value	value	value	value	value	value	30:34
Value	value	value	value	value	value	value	35+
FEMALES							
Value	value	value	value	value	value	value	0:4
Value	value	value	value	value	value	value	5:9
Value	value	value	value	value	value	value	10:14
Value	value	value	value	value	value	value	15:19
Value	value	value	value	value	value	value	20:24
Value	value	value	value	value	value	value	25:29
Value	value	value	value	value	value	value	30:34
Value	value	value	value	value	value	value	35+

Structure for hot decks

AINST1-ALL – returns a valid institution value 1:8 and

AINST2-ATTENDING – returns a valid "attending" institution value 2:8

MALE

AGE								
0	1	(single 2 – 18)	19	20:24	25:30	31:34	35+	LEVEL OF EDUCATION
Value	value	value	value	value	value	value	value	99
Value	value	value	value	value	value	value	value	0
Value	value	value	value	value	value	value	value	1
Value	value	value	value	value	value	value	value	2
Value	value	value	value	value	value	value	value	3
Value	value	value	value	value	value	value	value	4
…	…	…	…	…	…	…	…	…
Value	value	value	value	value	value	value	value	13
Value	value	value	value	value	value	value	value	14
Value	value	value	value	value	value	value	value	15
Value	value	value	value	value	value	value	value	16
Value	value	value	value	value	value	value	value	17
Value	value	value	value	value	value	value	value	18
Value	value	value	value	value	value	value	value	19
Value	value	value	value	value	value	value	value	20
Value	value	value	value	value	value	value	value	NA(*)
FEMALE								
Value	value	value	value	value	value	value	value	99
Value	value	value	value	value	value	value	value	0
Value	value	value	value	value	value	value	value	1
Value	value	value	value	value	value	value	value	2
Value	value	value	value	value	value	value	value	3
Value	value	value	value	value	value	value	value	4
…	…	…	…	…	…	…	…	…
Value	value	value	value	value	value	value	value	13
Value	value	value	value	value	value	value	value	14
Value	value	value	value	value	value	value	value	15
Value	value	value	value	value	value	value	value	16
Value	value	value	value	value	value	value	value	17
Value	value	value	value	value	value	value	value	18
Value	value	value	value	value	value	value	value	19
Value	value	value	value	value	value	value	value	20
Value	value	value	value	value	value	value	value	NA(*)

Note: level "NA" is for persons younger than 5 years old, who don't answer the educational level question.

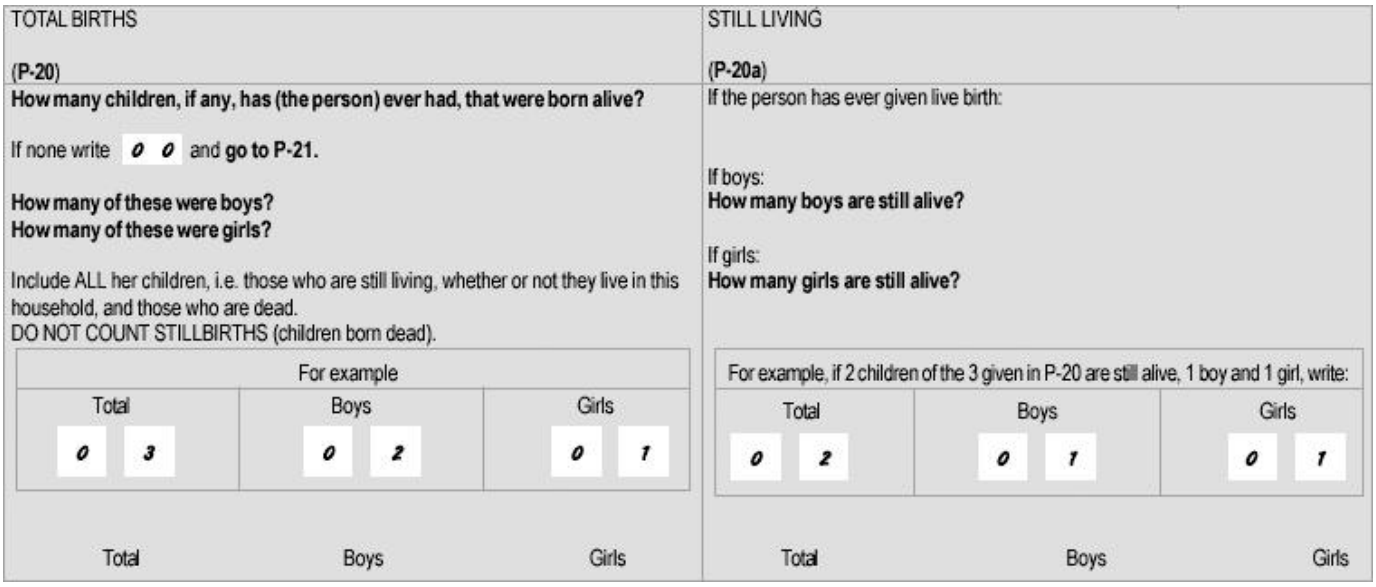
Software:

This edit is implemented in subroutine SV19 in the CONCOR programme EDITS2.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) is not allowed either of these questions.
B. Not applicable (blank) is not allowed for educational institution.
C. Not applicable (blank) for type of institution indicates that the person is not attending an educational institution.

V.20 TOTAL BIRTHS (P-20), CHILDREN STILL LIVING (P-20A) AND LAST CHILD BORN (P-20B)



TOTAL BIRTHS

(P-20)

How many children, if any, has (the person) ever had, that were born alive?

If none write 0 0 and **go to P-21.**

How many of these were boys?
How many of these were girls?

Include ALL her children, i.e. those who are still living, whether or not they live in this household, and those who are dead.
DO NOT COUNT STILLBIRTHS (children born dead).

For example

Total	Boys	Girls
0 3	0 2	0 1

Total Boys Girls

STILL LIVING

(P-20a)

If the person has ever given live birth:

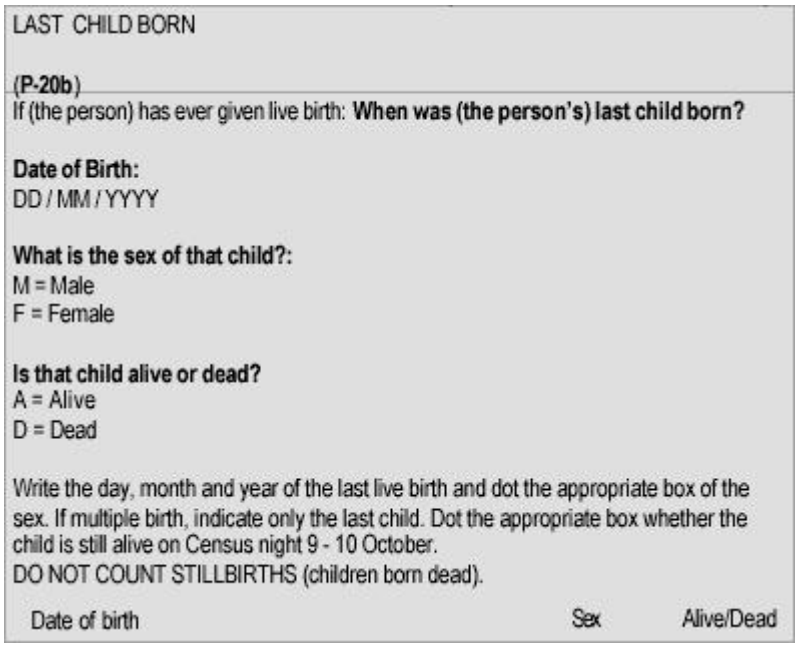
If boys:
How many boys are still alive?

If girls:
How many girls are still alive?

For example, if 2 children of the 3 given in P-20 are still alive, 1 boy and 1 girl, write:

Total	Boys	Girls
0 2	0 1	0 1

Total Boys Girls



LAST CHILD BORN

(P-20b)

If (the person) has ever given live birth: **When was (the person's) last child born?**

Date of Birth:
DD / MM / YYYY

What is the sex of that child?:
M = Male
F = Female

Is that child alive or dead?
A = Alive
D = Dead

Write the day, month and year of the last live birth and dot the appropriate box of the sex. If multiple birth, indicate only the last child. Dot the appropriate box whether the child is still alive on Census night 9 - 10 October.
DO NOT COUNT STILLBIRTHS (children born dead).

Date of birth Sex Alive/Dead

Valid values:

Total Children Ever Born:00:24
Total Males Ever Born:00:24
Total Females Ever Born:00:24
Total Children Surviving:00:24
Total Males Surviving:00:24
Total Females Surviving:00:24

Last Child Born:

Day:	01:31
Month:	01:12
Year:	1962:2001 *

Sex:

1	male
2	female

Alive/Dead:

1	alive
2	dead

* The minimum year for last born child is that of a woman aged 50 (at the time of the census), who had her last baby when she was 12. Depending on the month/day of the woman's and child's birthdays, the child could not have been born before 1962 or 1963.

Universe:

CEB and CS are applicable for women aged 12:50 living in households; last born child information is applicable to women 12:50 who have had at least one child.
(See edit V.27 INST for the corresponding institution edit)

Edit checks:

A. Variables must have valid values.
B. Handle cases where the enumerator starts fertility on one line then continues the next page on the following line (a common enumerator mistake).
C. Handle cases where a married couple has fertility reported for the husband but not for the wife, by switching the fertility information from the man to the woman (this is a common enumerator error).
D. Handle cases where an enumerator places last child born information on the person's record, instead of on the person's mother's record (this is a common enumerator error). If a person's last child born information is for the person him/herself, then correct for the following errors:
    a. if the mother's last child born birth date is blank or invalid, then impute it from the child;
    b. if the mother's last child born birth date agrees with the child's, and the mother's last child born sex is blank or invalid, then impute it from the child;
    c. if the mother's last child born birth date agrees with the child's, and the mother's last child born vital status is blank or invalid, then impute it to "living".
E. Handle the case where the enumerator only records zero values and blanks for women aged 12:50, but has recorded at least one zero response; this should be interpreted as meaning that all fertility responses should be zero.
F. Men cannot have responses to these questions.
G. Only women aged 12:50 can have responses to these questions.
H. Women cannot have more than 24 total children ever born, or more than 24 boys ever born, or more than 24 girls ever born.
I. Number of children still living cannot exceed the number of children ever born (when comparing totals, boys, or girls).
J. The number of children a woman has must be consistent with her age (older women can have more children than younger women). A woman's TCEB cannot exceed a rate of 1 child every 19 months, starting from age 12. (This rate accommodates a maximum of 24 children by age 50.)
K. The total number of children ever born must be the same as the sum of boys ever born and girls ever born.
L. The total number of children still living must be the same as the sum of boys still living and girls still living.
M. A woman who has never had children cannot have responses for the last child born question.

N. When the last child born can be found in the household (based on mother person number and date of birth), then the last child born must still be alive and its sex and date of birth must agree with the found person.
O. When the last child born indicates a child in the household, and that child's mother person number (MPN) is 99, and the child's sex, DOB, and relationship are consistent with the mother, then make the child's MPN point to the mother.
P. Use a hot deck (containing a consistent set of responses to all the fertility questions, based on age, marital status and population group) to impute fertility data when needed.

Resolution:

CEB = children ever born
TCEB = total children ever born
MCEB = male children ever born
FCEB = female children ever born
CS = children surviving
TCS = total children surviving
MCS = male children surviving
FCS = female children surviving
YRLAST = year of birth of last born child
MOLAST = month of birth of last born child
DAYLAST = day of birth of last born child
SXLAST = sex of last born child
VSLAST = vital status of last-born child (alive/dead)

A. PRE-EDIT 1 (common enumeration problems, do for all household members before other edits):
    a. For people with fertility responses to CEB and CS questions but without responses to last child (which is on the next page):
        i. if the next person has no responses for CEB and CS, but has responses for LAST; and the person's CEB/CS responses are consistent with the next person's LAST*:
            1. if the person is a woman aged 12:50, then move the next person's responses for last child to this person;
            2. otherwise, if the next person is a woman 12:50, then move the person's responses to CEB and CS to that person.
            3. otherwise, do nothing.
        ii. if the previous person has no responses for CEB and CS, but has responses LAST; and the person's CEB/CS responses are consistent with the previous person's LAST*:
            1. if the person is a woman aged 12:50, then move the previous person's responses for last child born to this person;
            2. otherwise, if the previous person is a woman 12:50, then move the person's responses to CEB and CS to that person.
            3. otherwise, do nothing.

* i.e., TCEB>=1 and MCEB>=1 (if other person LASTSX = 1) and FCEB>=1 (if other person LASTSX = 2) and TCS>=1 (if other person LASTVS = 1) and MCS>=1 (if other person LASTSX = 1 and LASTVS = 1) and FCS>=1 (if other person LASTSX = 2 and LASTVS = 1)

b. For males with fertility respones:
    i. if the man is married and his spouse is present in the household (using their spouse numbers), and the spouse is a female 12:50 years old without fertility responses, then assign the man's fertility responses to his wife, and make the man's fertility section blank.

c. For people whose last child born information is their own (sexes and dates of birth are exactly the same):
    i. if the person has a mother:
        1. if the mother's last child birth date is invalid, then move the person's last child information to the mother and make the person's last child information blank; also:
        2. if the mother's last child birth date agrees with the person, and the mother's last child sex is invalid, then impute last child sex from the person; also:
        3. if the mother's last child birth date agrees with the person, and the mother's last child vital status is invalid, then impute last child vital status to "living";
    ii. also, make the person's last child information blank.

d. For a woman (woman "A") with last child born information that corresponds to one and only one child in the household (same sex {or invalid sex} and date of birth):
    i. if that child has an MPN that points to another woman ("B") in the household who has blank fertility (CEB, CS, last child born) or is not 12:50 years old, and woman "A" could be the child's mother (i.e., consistent ages and relationships), then change the child's MPN to point to woman "A". Also, if the child's relationship was child (3), then change relationship to adopted child.

e. If a woman's CEB and CS sections contain only blanks, zeros, and 99's, then convert all values 99 to zero for her CEB and CS responses.

f. If a woman's CEB section is valid (TCEB = MCEB+FCEB, all 3 values 00:24 [interpret blanks as zero for this test]) and her CS section is completely blank, and all of the boys and girls (MCEB, FCEB) can be found in the household (via MPN checks), then impute CS = CEB. (CEB/CS sections that are all zero or blank are not excluded from this check.)

g. If a woman's MCEB is valid and her MCS is invalid, and all of her boys can be found in the household, then impute MCS = MCEB. Similarly, if a woman's FCEB is valid and her FCS is invalid, and all of her girls can be found in the household, then impute FCS = FCEB.

h. If the number of people in the household reporting a woman as their mother (via MPN) = TCEB, and her MCEB and FCEB are both numeric, but the boy/girl split does not match her MCEB/FCEB split, then adjust MCEB/FCEB so that it does. Similarly, if the number of people in the household reporting a woman as their mother (via MPN) = TCS, and her MCS and FCS are both numeric, but the boy/girl split does not match her MCS/FCS split, then adjust MCS/FCS so that it does.

i. If a woman's CEB responses are all valid, and her TCS = 0 and MCS = FCS = blank, and there are no children in the household who report the woman as their mother:

i. if her last born child information is all blank, then impute her MCS = FCS = 0;
ii. otherwise, if her last born child vital status is not alive, then impute MCS = FCS = 0.

B. PRE-EDIT 2 (not applicable and zero values):
   a. if the person is a man, then make sure that all fertility responses are blank (not applicable);
   b. otherwise, if the person is a woman:
      i. if the person is 12:50 years old:
         1. if all responses for CEB and CS are blank or zero and at least 1 response is zero, then make all responses for CEB and CS zero;
         2. otherwise, do nothing;
      ii. otherwise (not 12:50), make all fertility responses blank (not applicable).

C. MAIN EDIT – For females of ages 12:50:
   a. PART ONE – CHILDREN EVER BORN AND CHILDREN SURVIVING:
      i. update hot deck AFERTILITY if these responses are all true:
         - ✓ TCEB = MCEB + FCEB, and
         - ✓ TCS = MCS + FCS, and
         - ✓ TCEB >= TCS, and
         - ✓ MCEB >= MCS, and
         - ✓ FCEB >= FCS, and
         - ✓ number of boys in the household who declared this person as their mother (using mother person number) ≤ MCS, and
         - ✓ number of girls in the household who declared this person as their mother (using mother person number) ≤ FCS, and
         - ✓ woman's TCEB does not exceed a rate of 1 child every 19 months, starting from age 12, and
         - ✓ FCEB>0 if SXLAST = female, and
         - ✓ MCEB>0 if SXLAST = male, and
         - ✓ FCS>0 if SXLAST = female and VSLAST = alive, and
         - ✓ MCS>0 if SXLAST = male and VSLAST = alive,

      note: for never-married women, only update the hot deck if the total children ever born is 3 or fewer.
      ii. if one or more of the above conditions is not satisfied:
         1. handle children ever born:
            a. if TCEB ≠ MCEB + FCEB, or any of these 3 responses is invalid:
               i. if TCS = MCS+FCS and TCEB = TCS and MCEB = MCS, then impute FCEB = FCS;
               ii. otherwise, if TCS = MCS+FCS and TCEB = TCS and FCEB = FCS, then impute MCEB = MCS;
               iii. otherwise, if TCS = MCS+FCS and MCEB = MCS and FCEB = FCS, then impute TCEB = TCS;
               iv. otherwise, if MCEB and FCEB are valid, and MCEB+FCEB = valid, then assign TCEB = MCEB + FCEB;
               v. otherwise, if TCEB is valid and one of (MCEB or FCEB) is also valid, then assign the invalid response to TCEB – valid response (if the result gives a valid value);

vi. otherwise (2 out of 3 invalid), impute CEB and CS from hot deck AFERTILITY**

2. handle children surviving:
    a. if TCEB = TCS:
        i. if MCEB ≠ MCS, then impute MCS = MCEB; also
        ii. if FCEB ≠ FCS, then impute FCS = FCEB;
    b. otherwise, if TCS ≠ MCS + FCS, or any of these responses is invalid:
        i. if MCS and FCS are valid and MCS+FCS = valid, then assign TCS = MCS + FCS;
        ii. otherwise if TCS is valid and one of (MCS or FCS) is also valid, then assign the invalid response to TCS – valid response (assuming result gives a valid value).
        iii. otherwise, impute CEB and CS from hot deck AFERTILITY**.
3. handle consistency between CEB and CS sections:
    a. make sure that children ever born and children surviving are correct; if TCEB<TCS or MCEB<MCS or FCEB<FCS, then impute CEB and CS from hot deck AFERTILITY**
4. handle age + CEB consistency:
    a. make sure that age agrees with children ever born; if age < (10 + TCEB), then impute CEB and CS from hot deck AFERTILITY**.

** note: after imputing CEB and CS from AFERTILITY, check to make sure that they are ≥ MPN counts. Shift MCEB values to FCEB (and vice-versa), and MCS to FCS (and vice versa) if it is possible to make the imputed fertility section more consistent with MPN counts. Convert MPNs for persons who report this woman as their mother to 99 if necessary to satisfy this condition. If the woman is a head of household, change children (relationship 3) to other relatives (relationship 12) for each converted MPN.

b. PART TWO – LAST BIRTH:
    i. for men of all ages and women not 12:50, make sure that the last child born information is blank;
    ii. for women 12:50 years old with TCEB = 0, make sure that the last child born information is blank;
    iii. for women 12:50 years old with TCEB>0:
        1. date of birth pre-edit:
            a. if date of birth is not valid or is not 12:50 years less than the woman's year of birth:
                i. if there are other people in the household who declare this person as their mother, then make the youngest of these the last born child, and make sure the last born sex is the same as the youngest person's, and make sure the last born vital status is alive;
            b. otherwise (year of birth valid and within range):
                i. if there are other people in the household who declare this person as their mother and who are younger than the last born child, then make the youngest of these the

last born child, and make sure the last born sex is the same as the youngest person's, and make sure the last born vital status is alive.;

ii. otherwise, if there are other people in the household who declare this person as their mother and who have the same year of birth as the last born child, then make the youngest of these the last born child, and make sure the sex of the last born is the same as the youngest person's, and make sure the vital status of the last born is alive.;

iii. otherwise, if there is another person in the household with the same date of birth as this woman's last born child, but whose MPN does not indicate this woman or another woman with correctly linked last born DOB, and who could be this woman's child (in terms of age and relationship), then set that person's MPN = this woman. Also, if the child is a child (relationship 3) of a female head of household, then change the child's relationship to other relative (relationship 12) and change the child's FPN to 99 if it points to a spouse (relationship 2);

2. handle date of of birth:
   a. if year of birth is valid and is 12:50 years younger than the woman's YOB, and the month of birth is valid, and the day of birth is valid, and the DOB is earlier than 10 Oct 2001:
      i. if the year of birth was not imputed during the pre-edit, then update the last child year of birth section of the hot deck AFERTILITY;
      ii. otherwise, do nothing.
   b. otherwise, impute a valid DOB from the hot deck AFERTILITY. Also:
      i. if there are other people in the household who declare this person as their mother and who are younger than the last born child, then make the youngest of these the last born child, and make sure the last born sex is the same as the youngest person's, and make sure the last born vital status is alive.;
      ii. otherwise, if there are other people in the household who declare this person as their mother and who have the same year of birth as the last born child, then make the youngest of these the last born child, and make sure the sex of the last born sex is the same as the youngest person's, and make sure the vital status of the last born is alive.;

3. debug check for possible error introduced by imputations of year, month, day:
   a. if the last born child is 11 or more years younger than the mother, then raise a critical error;
   b. if the last born child is 51 or more years younger than the mother, then raise a critical error;

c. if the child was born on or after 10 October 2001 (thus implying an age less than zero), then raise a critical error;

4. sex of last born child pre-edit:
    a. if a child with the same date of birth as the last born child's date of birth, and whose MPN points to this woman, can be found in the household:
        i. make sure that the sex of the last born is the same as that child's;
        ii. also, if the last born child is a boy:
            1. if MCEB = 0, then impute MCEB = 1 and decrement FCEB;
            2. if MCS = 0, then impute MCS = 1 and decrement FCS;
        iii. also, if the last born child is a girl:
            1. if FCEB = 0, then impute FCEB = 1 and decrement MCEB;
            2. if FCS = 0, then impute FCS = 1 and decrement MCS;

5. handle sex of last born child:
    a. if the sex is consistent with the woman's CEB information (last child is a boy and MCEB>0, or last child is a girl and FCEB>0):
        i. if the sex of the last born child was not imputed during the pre-edit, then update the last born sex section of the hot deck AFERTILITY;
        ii. otherwise, do nothing
    b. otherwise, if FCEB = 0 and MCEB>0, then impute SXLAST = 1;
    c. otherwise, if MCEB = 0 and FCEB>0, then impute SXLAST = 2;
    d. also:
        i. if SXLAST is invalid or 2 and if FCS = 0 and MCS>0 and VSLAST = 1, then impute SXLAST = 1;
        ii. otherwise, if SXLAST is invalid or 1 and MCS = 0 and FCS>0 and VSLAST = 1, then impute SXLAST = 2;
    e. if SXLAST is still invalid, impute the last child's sex from the hot deck AFERTILITY:

6. vital status of last born child pre-edit:
    a. if a child with the same date of birth as the last born child's date of birth, and whose MPN points to this woman, can be found in the household:
        i. make sure that vital status = still alive;
        ii. also, if the last born child is a boy and MCS = 0, then impute MCS = 1 and decrement FCS if possible;
        iii. also, if the last born child is a girl and FCS = 0, then impute FCS = 1 and decrement MCS if possible;

7. handle vital status:

a. if the vital status is valid and consistent with the woman's CEB and CS information (for boys: MCEB>0 and MCS>0 if VSLAST = 1, or MCEB>0 and MCS>=0 for VSLAST = 2; for girls: FCEB>0 and FCS>0 if VSLAST = 1, or FCEB>0 and FCS>=0 for VSLAST = 2):
    i. if last born vital status was not imputed during the pre-edit, then update the vital status section of the hot deck AFERTILITY;
    ii. otherwise, do nothing.
b. otherwise, if the last child born is declared as no longer living, but MCEB = MCS (for last child = boy) or FCEB = FCS (for last child = girl), then impute the last child vital status to still alive;
c. otherwise, if last child born vital status is not valid and TCEB = TCS or MCS = MCEB (for last child a boy) or FCS = FCEB (for last child a girl), then impute last child born to still living;
d. otherwise, if last child born vital status is alive but MCS = 0 (for last child = boy) or FCS = 0 (for last child = girl), then impute last child born to dead;
e. otherwise, if last child born vital status is not valid and MCS = 0 (for last child a boy) or FCS = 0 (for last child a girl), then impute last child born to not living;
f. otherwise, if the last child born vital status is not valid, then impute it from the hot deck AFERTILITY.

c. PART THREE – LAST BIRTH post-edit:
(Let *xM* = number of found boys with MPN = this woman, *xF* = number of found girls with MPN = this woman.)

CEB SECTION:

i. convert MPN for sons to 99 until MCEB ≥ xM; also, if a MPN-converted person is a child of the head, then change the relationship to adopted child;
ii. convert FPN for daughters to 99 until FCEB ≥ xF; also, if a MPN-converted person is a child of the head, then change the relationship to adopted child;
iii. if SXLAST = 1 and MCEB = 0, then impute MCEB = 1
iv. if SXLAST = 2 and FCEB = 0, then impute FCEB = 1
v. if TCEB ≠ MCEB + FCEB, then impute TCEB = MCEB + FCEB

CS SECTION:

vi. convert MPN for sons to 99 until MCS ≥ xM; also, if a MPN-converted person is a child of the head, then change the relationship to adopted child;
vii. convert FPN for daughters to 99 until FCS ≥ xF also, if a MPN-converted person is a child of the head, then change the relationship to adopted child;
viii. if TCS ≠ MCS + FCS, then impute TCS = MCS + FCS

D. POST EDIT 1 – prepare intermediate data:
Intermediate fertility data contains logical edits but no hot decks. Variables that would normally be hot-decked are instead replaced with special "invalid" codes (9, 99, or 9999). Note that this does not affect the imputation flags, raw fertility data, or normal edited fertility data.

a. Copy CEB/CS/LAST data to the intermediate edited fertility variables (IP20TCEB, IP20MCEB, IP20FCEB, IP20TCS, IP20MCS, IP20FCS, IP20LSTDAY, IP20LSTMO, IP20LSTYR, IP20LSTSX, IP20LSTVS).

b. Convert hot decked variables to “invalid”:
    i. if imputation flag for TCEB=3 or 4, then impute IP20TCEB=99;
    ii. if imputation flag for MCEB=3 or 4, then impute IP20MCEB=99;
    iii. if imputation flag for FCEB=3 or 4, then impute IP20FCEB=99;
    iv. if imputation flag for TCS=3 or 4, then impute IP20TCS=99;
    v. if imputation flag for MCS=3 or 4, then impute IP20MCS=99;
    vi. if imputation flag for FCS=3 or 4, then impute IP20FCS=99;
    vii. if imputation flag for LASTDAY=3 or 4, then impute IP20LSTDAY=99;
    viii. if imputation flag for LASTMO=3 or 4, then impute IP20LSTMO=99;
    ix. if imputation flag for LASTYR=3 or 4, then impute IP20LSTYR=9999;
    x. if imputation flag for LASTSX=3 or 4, then impute IP20LSTSX=9;
    xi. if imputation flag for LASTVS=3 or 4, then impute IP20LSTVS=9;

E. POST-EDIT 2 – repeat pre-edit for completeness:
    a. For a woman (woman “A”) with last child born information that corresponds to one and only one child in the household (same sex {or invalid sex} and date of birth):
        i. if that child has an MPN that points to another woman (“B”) in the household who has blank fertility (CEB, CS, last child born) or is not 12:50 years old, and woman “A” could be the child’s mother (i.e., consistent ages and relationships), then change the child’s MPN to point to woman “A”. Also, if the child’s relationship was child (3), then change relationship to adopted child.

Structure for hot deck AFERTILITY:

	Ever Married											Never Married											
	CEB			CS			Last Birth					CEB			CS			Last Birth					
	T	M	F	T	M	F	DD	MM	YEAR	S	V	T	M	F	T	M	F	DD	MM	YEAR	S	V	AGE
BLACK AFRICAN																							
	0	0	0	0	0	0	1	1	2001	0	0	0	0	0	0	0	0	1	1	2001	0	0	12
	0	0	0	0	0	0	1	1	2000	0	0	0	0	0	0	0	0	1	1	2000	0	0	13
	0	0	0	0	0	0	1	1	1999	0	0	0	0	0	0	0	0	1	1	1999	0	0	14
	0	0	0	0	0	0	1	1	1998	0	0	0	0	0	0	0	0	1	1	1998	0	0	15
																							(continues ages 16 … 45)
	0	0	0	0	0	0	1	1	1967	1	1	0	0	0	0	0	0	1	1	1967	1	1	46
	0	0	0	0	0	0	1	1	1966	1	1	0	0	0	0	0	0	1	1	1966	1	1	47
	0	0	0	0	0	0	1	1	1965	1	1	0	0	0	0	0	0	1	1	1965	1	1	48
	0	0	0	0	0	0	1	1	1964	1	1	0	0	0	0	0	0	1	1	1964	1	1	49
	0	0	0	0	0	0	1	1	1963	1	1	0	0	0	0	0	0	1	1	1963	1	1	50
COLOURED																							
	0	0	0	0	0	0	1	1	2001	0	0	0	0	0	0	0	0	1	1	2001	0	0	12
	0	0	0	0	0	0	1	1	2000	0	0	0	0	0	0	0	0	1	1	2000	0	0	13
	0	0	0	0	0	0	1	1	1999	0	0	0	0	0	0	0	0	1	1	1999	0	0	14
	0	0	0	0	0	0	1	1	1998	0	0	0	0	0	0	0	0	1	1	1998	0	0	15
																							(continues ages 16 … 45)
	0	0	0	0	0	0	1	1	1967	1	1	0	0	0	0	0	0	1	1	1967	1	1	46
	0	0	0	0	0	0	1	1	1966	1	1	0	0	0	0	0	0	1	1	1966	1	1	47
	0	0	0	0	0	0	1	1	1965	1	1	0	0	0	0	0	0	1	1	1965	1	1	48
	0	0	0	0	0	0	1	1	1964	1	1	0	0	0	0	0	0	1	1	1964	1	1	49
	0	0	0	0	0	0	1	1	1963	1	1	0	0	0	0	0	0	1	1	1963	1	1	50
INDIAN/ASIAN																							
	0	0	0	0	0	0	1	1	2001	0	0	0	0	0	0	0	0	1	1	2001	0	0	12
	0	0	0	0	0	0	1	1	2000	0	0	0	0	0	0	0	0	1	1	2000	0	0	13
	0	0	0	0	0	0	1	1	1999	0	0	0	0	0	0	0	0	1	1	1999	0	0	14
	0	0	0	0	0	0	1	1	1998	0	0	0	0	0	0	0	0	1	1	1998	0	0	15
																							(continues ages 16 … 45)
	0	0	0	0	0	0	1	1	1967	1	1	0	0	0	0	0	0	1	1	1967	1	1	46
	0	0	0	0	0	0	1	1	1966	1	1	0	0	0	0	0	0	1	1	1966	1	1	47
	0	0	0	0	0	0	1	1	1965	1	1	0	0	0	0	0	0	1	1	1965	1	1	48
	0	0	0	0	0	0	1	1	1964	1	1	0	0	0	0	0	0	1	1	1964	1	1	49
	0	0	0	0	0	0	1	1	1963	1	1	0	0	0	0	0	0	1	1	1963	1	1	50
WHITE																							
	0	0	0	0	0	0	1	1	2001	0	0	0	0	0	0	0	0	1	1	2001	0	0	12
	0	0	0	0	0	0	1	1	2000	0	0	0	0	0	0	0	0	1	1	2000	0	0	13
	0	0	0	0	0	0	1	1	1999	0	0	0	0	0	0	0	0	1	1	1999	0	0	14
	0	0	0	0	0	0	1	1	1998	0	0	0	0	0	0	0	0	1	1	1998	0	0	15
																							(continues ages 16 … 45)

0	0	0	0	0	0	1	1	1967	0	0	0	0	0	0	0	0	1	1	1967	0	0	46
0	0	0	0	0	0	1	1	1966	0	0	0	0	0	0	0	0	1	1	1966	0	0	47
0	0	0	0	0	0	1	1	1965	0	0	0	0	0	0	0	0	1	1	1965	0	0	48
0	0	0	0	0	0	1	1	1964	0	0	0	0	0	0	0	0	1	1	1964	0	0	49
0	0	0	0	0	0	1	1	1963	0	0	0	0	0	0	0	0	1	1	1963	0	0	50

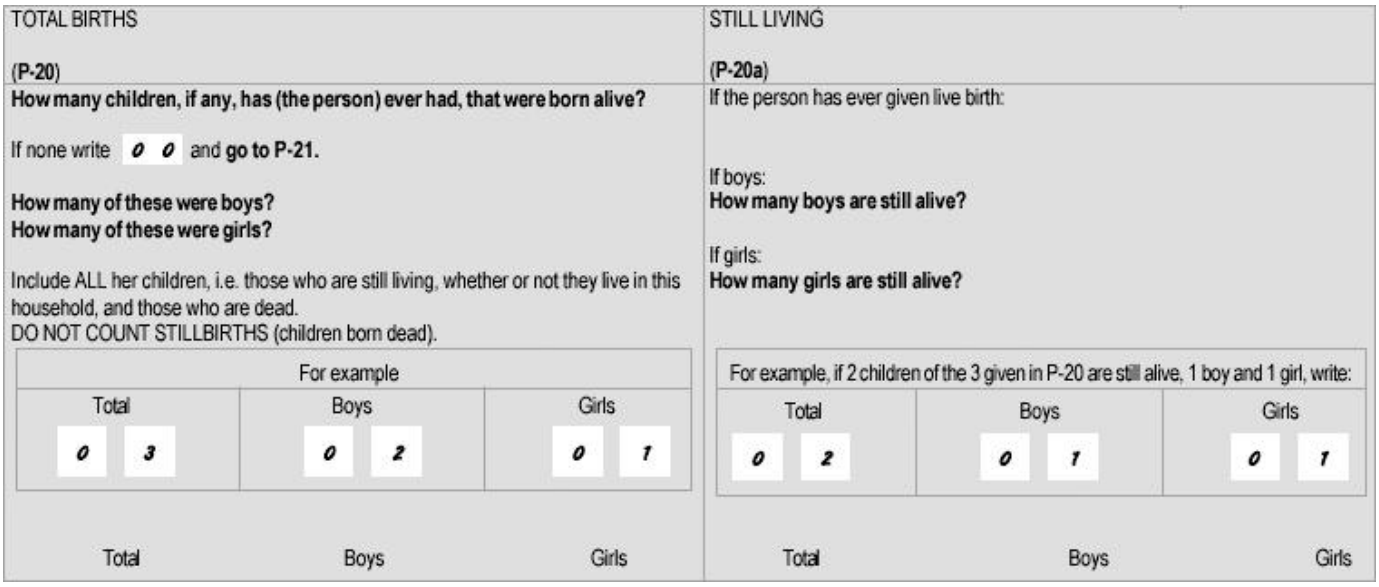
Software:

This edit is implemented in subroutines SV20PREa, SV20PREb, SV20PRE2, SV20, SV20LAST, and SV20POST in the CONCOR programme EDITS3.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-responses are not allowed for these questions.
B. These questions are not applicable for men or for women not 12:50 years.
C. Level of Education, Age, and Sex must be edited before using this edit.

V.20 INST TOTAL BIRTHS (P-20), CHILDREN STILL LIVING (P-20A) AND LAST CHILD BORN (P-20B) (INSTITUTIONS)



TOTAL BIRTHS

(P-20)

How many children, if any, has (the person) ever had, that were born alive?

If none write 0 0 and **go to P-21.**

How many of these were boys?
How many of these were girls?

Include ALL her children, i.e. those who are still living, whether or not they live in this household, and those who are dead.
DO NOT COUNT STILLBIRTHS (children born dead).

For example

Total	Boys	Girls
0 3	0 2	0 1

Total Boys Girls

STILL LIVING

(P-20a)

If the person has ever given live birth:

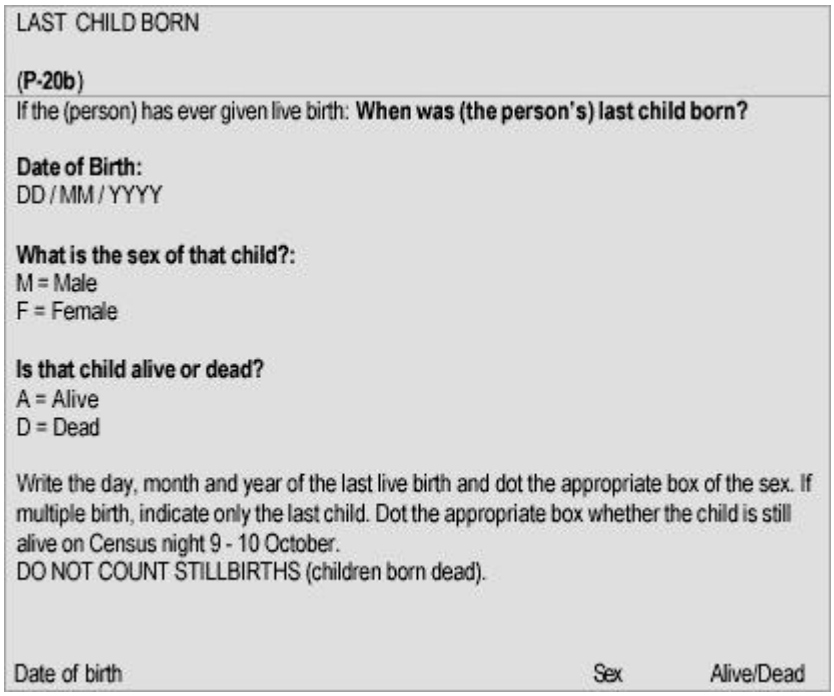
If boys:
How many boys are still alive?

If girls:
How many girls are still alive?

For example, if 2 children of the 3 given in P-20 are still alive, 1 boy and 1 girl, write:

Total	Boys	Girls
0 2	0 1	0 1

Total Boys Girls



LAST CHILD BORN

(P-20b)

If the (person) has ever given live birth: **When was (the person's) last child born?**

Date of Birth:
DD / MM / YYYY

What is the sex of that child?:
M = Male
F = Female

Is that child alive or dead?
A = Alive
D = Dead

Write the day, month and year of the last live birth and dot the appropriate box of the sex. If multiple birth, indicate only the last child. Dot the appropriate box whether the child is still alive on Census night 9 - 10 October.
DO NOT COUNT STILLBIRTHS (children born dead).

Date of birth Sex Alive/Dead

Valid values:

Total Children Ever Born:	00:24
Total Males Ever Born:	00:24
Total Females Ever Born:	00:24
Total Children Surviving:	00:24
Total Males Surviving:	00:24
Total Females Surviving:	00:24

Last Child Born:

Day: 01:31
Month: 01:12
Year: 1962:2001
Sex:

1	male
2	female

Alive/Dead:

1	alive
2	dead

Universe:

women aged 12:50 living in institutions
(see edit V.27 for the corresponding household edit)

Edit checks:

A. Variables must have valid values.
B. Men cannot have responses to these questions.
C. Women not aged 12:50 cannot have responses to these questions.
D. Handle the case where the enumerator only records zero values and blanks for women aged 12:50, but has recorded at least one zero response; this should be interpreted as meaning that all fertility responses should be zero.
E. Women cannot have more than 24 total children ever born, or more than 24 boys ever born, or more than 24 girls ever born.
F. Number of children still living cannot exceed the number of children ever born (when comparing totals, boys, or girls).
G. The number of children a woman has must be consistent with her age (older women can have more children than younger women). A woman's TCEB cannot exceed a rate of 1 child every 19 months, starting from age 12. (This rate accommodates a maximum of 24 children by age 50.)
H. The total number of children ever born must be the same as the sum of boys ever born and girls ever born.
I. The total number of children still living must be the same as the sum of boys still surviving and girls still surviving.
J. A woman who has never had children cannot have responses for the last child born question.
K. Use a hot deck (containing a consistent set of responses to all the fertility questions, based on age, marital status and population group) to impute fertility data when needed.

Resolution:

TCEB = total children ever born
MCEB = male children ever born
FCEB = female children ever born
TCS = total children surviving
MCS = male children surviving
FCS = female children surviving
YRLAST = year of birth of last born child
MOLAST = month of birth of last born child
DAYLAST = day of birth of last born child
SXLAST = sex of last born child
VSLAST = vital status of last-born child (alive/dead)

A. PRE-EDIT 1 (not applicable and zero values):
    a. if the person is a man, then make all fertility responses blank (not applicable);
    b. otherwise, if the person is a woman:
        i. if the person is 12:50 years old:
            1. if all responses for CEB and CS are blank or zero and at least 1 response is zero, then make all responses for CEB and CS zero;
            2. otherwise, do nothing;
        ii. otherwise (not 12:50), make all fertility responses blank (not applicable).

B. PRE-EDIT 2 (easily fixable inconsistencies between CEB/CS and last born):
    a. if TCEB = MCEB+FCEB:
        i. if MCEB = 0 (or blank) and FCEB>0 and SXLAST = 1 (boy), then impute MCEB = 1 and FCEB = FCEB-1; in other words, turn one of the girls into a boy;
        ii. also, if FCEB = 0 (or blank) and MCEB>0 and SXLAST = 2 (girl), then impute FCEB = 1 and MECEB = MCEB-1; in other words, turn one of the boys into a girl;
    b. if TCS = MCS+FCS:
        i. if MCS = 0 (or blank) and FCS>0 and SXLAST = 1 (boy) and VSLAST = 1 (alive), then impute MCS = 1 and FCS = FCS-1; in other words, turn one of the girls into a boy;
        ii. also, if FCS = 0 (or blank) and MCS>0 and SXLAST = 2 (girl) and VSLAST = 1 (alive), then impute FCS = 1 and MCS = MCS-1; in other words, turn one of the boys into a girl;

C. MAIN EDIT – For females of ages 12:50:
    a. PART ONE – CHILDREN EVER BORN AND CHILDREN SURVIVING:
        i. update hot deck AFERTILITY if these responses are all true:
            - ✓ TCEB = MCEB + FCEB, and
            - ✓ TCS = MCS + FCS, and
            - ✓ TCEB >= TCS, and
            - ✓ MCEB >= MCS, and
            - ✓ FCEB >= FCS, and
            - ✓ woman's TCEB does not exceed a rate of 1 child every 19 months, starting from age 12, and
            - ✓ FCEB>0 if SXLAST = female, and
            - ✓ MCEB>0 if SXLAST = male, and
            - ✓ FCS>0 if SXLAST = female and VSLAST = alive, and
            - ✓ MCS>0 if SXLAST = male and VSLAST = alive

        ii. if one or more of the above conditions is not satisfied:
            1. handle children ever born:
                a. if TCEB ≠ MCEB + FCEB, or any of these 3 responses is invalid:
                    i. if TCS = MCS+FCS and TCEB = TCS and MCEB = MCS, then impute FCEB = FCS;
                    ii. otherwise, if TCS = MCS+FCS and TCEB = TCS and FCEB = FCS, then impute MCEB = MCS;
                    iii. otherwise, if TCS = MCS+FCS and MCEB = MCS and FCEB = FCS, then impute TCEB = TCS;

iv. otherwise, if MCEB and FCEB are valid, and MCEB+FCEB = valid, then assign TCEB = MCEB + FCEB;
v. otherwise, if TCEB is valid and one of (MCEB or FCEB) is also valid, then assign the invalid response to TCEB – valid response (if the result gives a valid value);
vi. otherwise (2 out of 3 invalid), impute CEB and CS from hot deck AFERTILITY*;

2. handle children surviving:
   a. if TCEB = TCS:
      i. if MCEB ≠ MCS, then impute MCS = MCEB; also
      ii. if FCEB ≠ FCS, then impute FCS = FCEB;
   b. otherwise, if TCS ≠ MCS + FCS, or any of these responses is invalid:
      i. if MCS and FCS are valid and MCS+FCS = valid, then assign TCS = MCS + FCS;
      ii. otherwise if TCS is valid and one of (MCS or FCS) is also valid, then assign the invalid response to TCS – valid response (assuming result gives a valid value).
      iii. otherwise, impute CEB and CS from hot deck AFERTILITY*.

3. handle consistency between CEB and CS sections:
   a. make sure that children ever born and children surviving are correct; if TCEB<TCS or MCEB<MCS or FCEB<FCS, then impute CEB and CS from hot deck AFERTILITY*;

4. handle age + CEB consistency:
   a. make sure that age agrees with children ever born; if age < (10 + TCEB), then impute CEB and CS from hot deck AFERTILITY*.

* note: after imputing CEB and CS from AFERTILITY, check if SXLAST = 1 and MCEB = 0; if so, then increase MCEB to 1; do the same for FCEB if SXLAST = 2. Also, if SXLAST = 1 and VSLAST = 1 and MCS = 0, then increase MCS to 1; do the same for FCS if SXLAST = 2 and VSLAST = 1.

b. PART TWO – LAST BIRTH:
   i. for men of all ages and women not 12:50, make sure that the last child born information is blank;
   ii. for women 12:50 years old with TCEB = 0, make sure that the last child born information is blank;
   iii. for women 12:50 years old with TCEB>0:
      1. handle date of of birth:
         a. if year of birth is valid and is 12:50 years younger than the woman's YOB, and the month of birth is valid, and the day of birth is valid, and the DOB is earlier than 10 Oct 2001:

i. if the year of birth was not imputed during the pre-edit, then update the last child year of birth section of the hot deck AFERTILITY;
ii. otherwise, do nothing.

b. otherwise, impute a valid DOB from the hot deck AFERTILITY.

2. debug check: handle possible error introduced by separate imputations of year, month, day:
   a. if the last born child is only 11 years younger than the mother, then raise a critical error;
   b. if the last born child is 51 years younger than the mother, then raise a critical error;
   c. if the child was born on or after 10 October 2001 (thus implying an age less than zero), then raise a critical error.

3. handle sex:
   a. if sex is valid, then update the sex section of the hot deck AFERTILITY;
   b. otherwise, if sex is invalid and FCEB = 0 and MCEB>0, then impute SXLAST = 1;
   c. otherwise, if sex is invalid and MCEB = 0 and FCEB>0, then impute SXLAST = 2;
   d. otherwise, if sex is invalid and FCS = 0 and MCS>0 and VSLAST = 1, then impute SXLAST = 1;
   e. otherwise, if sex is invalid and MCS = 0 and FCS>0 and VSLAST = 1, then impute SXLAST = 2;
   f. if sex is invalid, then impute it from the hot deck AFERTILITY;

4. handle vital status:
   a. if vital status is valid, then update the vital status section of the hot deck AFERTILITY;
   b. also: if the last child born is declared as no longer living, but MCEB = MCS (for last child = boy) or FCEB = FCS (for last child = girl), then impute the last child vital status to still alive;
   c. otherwise (VS not valid), if last child born vital status is not valid and TCEB = TCS or MCS = 1 (for last child a boy) or FCS = 1 (for last child a girl), then impute last child born to still living;
   d. otherwise, if last child born vital status is not valid and MCS = 0 (for last child a boy) or FCS = 0 (for last child a girl), then impute last child born to not living;
   e. otherwise, if last child born vital status is not valid, then impute it from the hot deck AFERTILITY;

D. POST-EDIT – last birth:
   a. if SEXLAST = 1 and MCEB = 0, then impute MCEB = 1;
   b. if SEXLAST = 2 and FCEB = 0, then impute FCEB = 1;
   c. if SEXLAST = 1 and VSLAST = 1 and MCS = 0, then impute MCS = 1;
   d. if SEXLAST = 2 and VSLAST = 1 and FCS = 0, then impute FCS = 1;
   e. also, make sure that TCEB = MCEB+FCEB;
   f. also, make sure that TCS = MCS+FCS.

E. POST-EDIT – prepare intermediate data:
   Intermediate fertility data contains logical edits but no hot decks. Variables that would normally be hot-decked are instead replaced with special "invalid" codes (9, 99, or 9999). Note that this does not affect the imputation flags, raw fertility data, or normal edited fertility data.
   a. Copy CEB/CS/LAST data to the intermediate edited fertility variables (IP20TCEB, IP20MCEB, IP20FCEB, IP20TCS, IP20MCS, IP20FCS, IP20LSTDAY, IP20LSTMO, IP20LSTYR, IP20LSTSX, IP20LSTVS).
   b. Convert hot decked variables to "invalid":
      i. if imputation flag for TCEB=3 or 4, then impute IP20TCEB=99;
      ii. if imputation flag for MCEB=3 or 4, then impute IP20MCEB=99;
      iii. if imputation flag for FCEB=3 or 4, then impute IP20FCEB=99;
      iv. if imputation flag for TCS=3 or 4, then impute IP20TCS=99;
      v. if imputation flag for MCS=3 or 4, then impute IP20MCS=99;
      vi. if imputation flag for FCS=3 or 4, then impute IP20FCS=99;
      vii. if imputation flag for LASTDAY=3 or 4, then impute IP20LSTDAY=99;
      viii. if imputation flag for LASTMO=3 or 4, then impute IP20LSTMO=99;
      ix. if imputation flag for LASTYR=3 or 4, then impute IP20LSTYR=9999;
      x. if imputation flag for LASTSX=3 or 4, then impute IP20LSTSX=9;
      xi. if imputation flag for LASTVS=3 or 4, then impute IP20LSTVS=9;

   See edit V.20 above for the structure of the hot deck AFERTILITY.

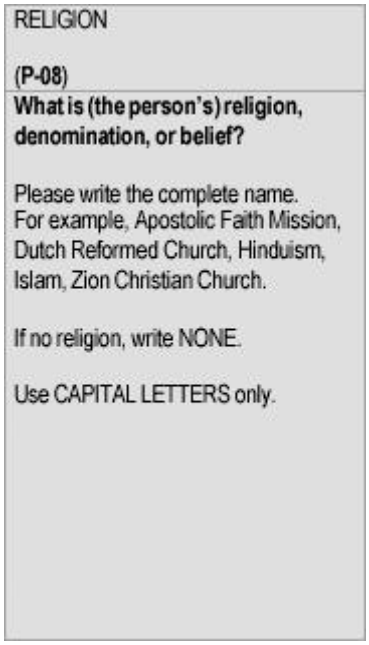
Software:

This edit is implemented in subroutines SV20PRE2, SV20INST, SV20ILAST, and SV20IPOST in the CONCOR programme EDITS3.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non responses are not allowed for these questions.
B. These questions are not applicable for men or for women not 12:50 years.
C. Level of Education, Age, and Sex must be edited before using this edit.

V.21 RELIGION (P-08)


RELIGION

(P-08)

What is (the person's) religion, denomination, or belief?

Please write the complete name.
For example, Apostolic Faith Mission, Dutch Reformed Church, Hinduism, Islam, Zion Christian Church.

If no religion, write NONE.

Use CAPITAL LETTERS only.

Valid values:

see XIII.2 below for religion codes

Universe:

all persons in households

Edit checks:

A. Variable must have a valid value, although "undetermined" values are allowed.
B. If a child (15 years or younger) has an invalid religion response, then try to impute from the child's mother.
C. Impute from the head of household's religion if a member of the semi-immediate family (relationships 2,3,4,5,6,7,9) in the household does not have a valid religion.
D. Impute from the religion of another member of the semi-immediate family (relationships 2,3,4,5,6,7,9) in the household if the head of household does not have a valid religion.
E. Make the religion "undetermined" when no related household member has a valid religion. (In this case, all related members of the household would be assigned "undetermined" religion.)
F. Make religion "undetermined" for non-related persons with invalid religion.

Resolution:

A. For persons with a valid religion: do nothing.

B. For persons without a valid religion:
    a. if the person is 0-15 years and has a valid mother person number and the mother is present in the household, and the child's mother has a valid religion response (other than "undetermined"), then impute the child's religion to the same as the mother's;
    b. otherwise, if this person is a woman and someone's MPN points to her and that person has a valid religion response (other than "undetermined"), then impute the mother's religion to the same as the child's;

c. otherwise, if the person is a head of household:
    i. if another member of the semi-immediate family (P04 = 2,3,4,5,6,7,9) in the household has a valid religion response (other than “undetermined”), then impute religion from the first other relative in the household with a valid reported religion.
    ii. otherwise (no relatives with valid religion) impute religion to “undetermined”;
d. otherwise (not a head of household), if the person is a member of the semi-immediate family (P04 = 2,3,4,5,6,7,9), then impute religion from the head of household;
e. otherwise (not a head of household or member of immediate family), impute religion to “undetermined”.

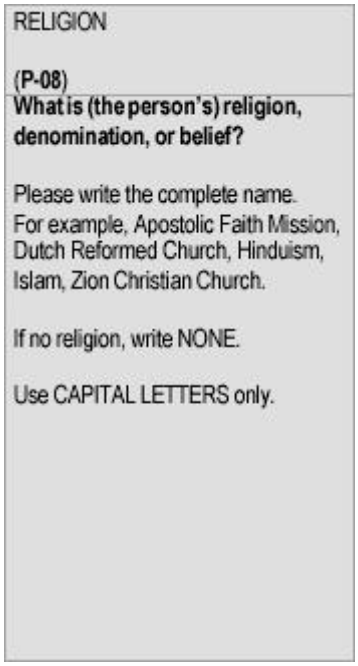
Software:

This edit is implemented in subroutines SV21 in the CONCOR programme CODED1.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Not applicable (blank) is not allowed for this question.
B. This edit can only be implemented after final coded data is available.

V.21 INST RELIGION (P-08) (INSTITUTIONS)


RELIGION

(P-08)

What is (the person's) religion, denomination, or belief?

Please write the complete name.
For example, Apostolic Faith Mission, Dutch Reformed Church, Hinduism, Islam, Zion Christian Church.

If no religion, write NONE.

Use CAPITAL LETTERS only.

Valid values:

see XIII.2 below for religion codes

Universe:

all persons in institutions

Edit checks:

A. Variable must have a valid value, although "undetermined" values are allowed.

Resolution:

A. For persons with a valid religion: do nothing.

B. For persons without a valid religion: impute religion to "undetermined".

Software:

This edit is implemented in subroutines SV21INST in the CONCOR programme CODED1.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Not applicable (blank) is not allowed for this question.
B. This edit can only be implemented after final coded data is available.

V.22 BORN IN SA (P-09), PLACE OF BIRTH (P-09A) AND COUNTRY OF BIRTH (P-09B)

BORN IN SA? (P-09)	PLACE OF BIRTH (P-09a)	COUNTRY OF BIRTH (P-09b)
Was (the person) born in South Africa? Include former "homelands" as South Africa. Y = Yes N = No Dot the appropriate box. **If NO go to P-09b**	If YES to P-09 **In which province was (the person) born?** 1 = Western Cape 2 = Eastern Cape 3 = Northern Cape 4 = Free State 5 = KwaZulu-Natal 6 = North West 7 = Gauteng 8 = Mpumalanga 9 = Northern Province **Go to P-10**	If NO to P-09 **In which country was (the person) born?** Write the present name of the country. Use CAPITAL LETTERS only.

Valid values:

Born in SA:

1 Yes
2 No

Place of Birth:

1 Western Cape
2 Eastern Cape
3 Northern Cape
4 Free State
5 KwaZulu-Natal
6 North West
7 Gauteng
8 Mpumalanga
9 Limpopo

Country of Birth:

see XIII.1 for country codes

Universe:

Born in SA: all persons
Place of Birth: all persons who were born in SA
Country of Birth: all persons who were not born in SA
Note: this edit is used for both households and institutions.

Edit checks:

A. All 3 variables must have valid values, or be not applicable depending on context.
B. Make the 3 variables internally consistent, so that persons born in SA have a valid province of birth and blank country, and people not born in SA have a blank province and valid country of birth.
C. When unable to determine whether or not a person was born in SA, as a last resort try to decide based on their citizenship.
D. When it is necessary to impute a person's country of birth, then determine it by one of the following means (listed in order of priority):
    a. make it the same as the person's country of citizenship;
    b. make it the same as the head of household's country of birth (for immediate family in households only);
    c. make it the same as the head of household's country of citizenship (for immediate family in households only);
    d. make it the same as another related person in the household's country of birth (for related persons only);
    e. impute it from a hot deck (based on population group, age, and sex).
E. Correct for scanning error in province of birth where 7 was misread as a 1.
F. Use a hot deck (based on age, sex, and population group) to impute provinces and born in SA status when needed.
G. Interpret "garbage" country responses (code 996) as invalid responses. ("Garbage" responses contain random characters, invalid writing, or are nonsensical.)
H. Interpret "unknown" and "ambigious" country responses (codes 997 and 998) as valid responses, but requiring imputation of a valid country code. ("Unknown" responses seem valid but the coding team was not able to attribute a valid code; "ambiguous" responses are valid but correspond to more than one code.)

Resolution:

A. PRE-EDIT:
    a. Check for erroneous declaration of country – if country is "South Africa", then impute born in SA = yes (if not already), province from ABP-PROV (if province is invalid), and country = blank;
    b. Resolve "garbage" codes – if country response is "garbage", then impute country = 000 (which will be treated as an invalid response);
    c. Resolve "unknown" and "ambigious" codes – if country response is "unknown" or "ambigious", then impute a valid country from ABP-COUNTRY.

B. For persons with valid response to P09-BORN-RSA:
    a. if the person was born in SA:
        i. if the person's province of birth is valid:
            1. if the person's country of birth is blank, then update hot decks ABP-PROV and ABP-BORNSA;
            2. otherwise (country not blank – must be valid), if the person is not an SA citizen, then impute province of birth = blank and born in SA = no;
            3. otherwise (country not blank, citizenship not "no"), make the country of birth blank;
        ii. otherwise (province of birth not valid), if the person's country of birth is "garbage" or "unknown", then make the province of birth blank and make the person no

iii. otherwise (province of birth not valid), if the person's country of birth is valid, then make the province of birth blank and make the person not born in SA;
iv. otherwise (both province and country of birth not valid), impute the province of birth from the hot deck ABP-PROV and make the country of birth blank;

b. otherwise (person not born in SA), if the person's country of birth is valid:
   i. if the person's province of birth is blank and country was not imputed in the pre-edit, then update the hot decks ABP-COUNTRY and ABP-BORNSA;
   ii. otherwise, make the province of birth blank.
c. otherwise (not born in SA and country not valid), if the person's province of birth is valid, then make the country of birth blank and make the person born in SA;
d. otherwise (not born in SA, both country and province of birth invalid), make the person's province of birth blank. Also, if the person has a valid country of citizenship, then make the country of birth the same as the person's country of citizenship;
e. otherwise (not born in SA, both country and province of birth invalid, country of citizenship not valid), if the head of household (households only) has a valid country of birth and this person is part of the head's immediate family (relationships 2,3,6,7), then make the person's country of birth the same as the head's;
f. otherwise (not born in SA, both country and province of birth invalid, country of citizenship not valid, head's country of birth not valid), if the head of household (households only) has a valid country of citzenship and this person is part of the head's immediate family (relationships 2,3,6,7), then make the person's country of birth the same as the head's country of citizenship;
g. otherwise (not born in SA, both country and province of birth invalid, country of citizenship not valid, and head's country of birth and country of citizenship invalid), if this person is a relative (relationship 2:12, households only) and another relative in the household has a valid country of birth, then make the person's country of birth the same as that other person's;
h. otherwise (out of luck!), impute country of birth from the deck ABP-COUNTRY.

C. For persons with invalid response to P09-BORN-SA:
   a. if the province of birth is valid:
      i. if the country of birth is blank, then make the person born in SA;
      ii. otherwise (country not blank), if the person's citizenship = no, then make the person not born in SA and make the person's province of birth blank;
      iii. otherwise (person's citizenship = yes or invalid), make the person born in SA and make the country of birth blank.
   b. otherwise (province not valid), if the person's country of birth is valid, then make the person not born in SA. Also, make the person's province of birth blank.
   c. otherwise (province and country both invalid), if the citizenship variable has a valid response:
      i. if the person is a citizen of SA, then make the person born in SA and impute their province of birth from the hot deck ABP-PROV. Also, make the country of birth blank;
      ii. otherwise (the person is not an SA citizen) make the person not born in SA and make sure their province of birth is blank. Also:
         1. if the person's country of citizenship is valid, then make their country of birth the same as their country of citizenship;
         2. otherwise, if the head has a valid country of birth (households only) and this person is part of the head's immediate family (relationships

2,3,6,7), then make the person's country of birth the same as the head's;
3. otherwise, if the head has a valid country of citizenship (households only) and this person is part of the head's immediate family (relationships 2,3,6,7), then make the person's country of birth the same as the head's country of citizenship;
4. otherwise, if this person is a relative (relationship 2:12) and another relative in the household has a valid country of birth, then make the person's country of birth the same as that other person's;
5. otherwise, impute the person's country of birth from the hot deck ABP-COUNTRY.

d. otherwise (province, country, citizenship status all invalid), impute the person's born in SA response from the hot deck ABP-BORNSA. If the imputed status is born in SA:
   i. impute the person's province of birth from ABP-PROV and make sure their country is blank;
   ii. otherwise (imputed response is not born in SA), make sure the person's province of birth is blank. Also:
      1. if the person's country of citizenship is valid, then make their country of birth the same as their country of citizenship;
      2. otherwise, if the head has a valid country of birth (households only) and this person is part of the head's immediate family (relationships 2,3,6,7), then make the person's country of birth the same as the head's;
      3. otherwise, if the head has a valid country of citizenship (households only) and this person is part of the head's immediate family (relationships 2,3,6,7), then make the person's country of birth the same as the head's country of citizenship;
      4. otherwise, if this person is a relative (relationship 2:12) and another relative in the household has a valid country of birth, then make the person's country of birth the same as that other person's;
      5. otherwise, impute the person's country of birth from the hot deck ABP-COUNTRY.

D. POST-EDIT (scanning error):
   a. if the household has at least 4 members born in SA, and all of these have province of birth = 1 (WC) or 7 (GT), and all but one of these has province of birth = 7 (GT), then change the lone 1 to a 7 (WC to GT).

Structure for hot decks ABP-PROV, ABP-BORNSA, and ABP-COUNTRY:

POPULATION GROUP					
1	2	3	4	5	AGE
MALES					
value	value	value	value	value	00-09
value	value	value	value	value	10-19
value	value	value	value	value	20-29
value	value	value	value	value	30-39
value	value	value	value	value	40-49
value	value	value	value	value	50-59
value	value	value	value	value	60+
FEMALES					
value	value	value	value	value	00-09
value	value	value	value	value	10-19
value	value	value	value	value	20-29
value	value	value	value	value	30-39
value	value	value	value	value	40-49
value	value	value	value	value	50-59
value	value	value	value	value	60+

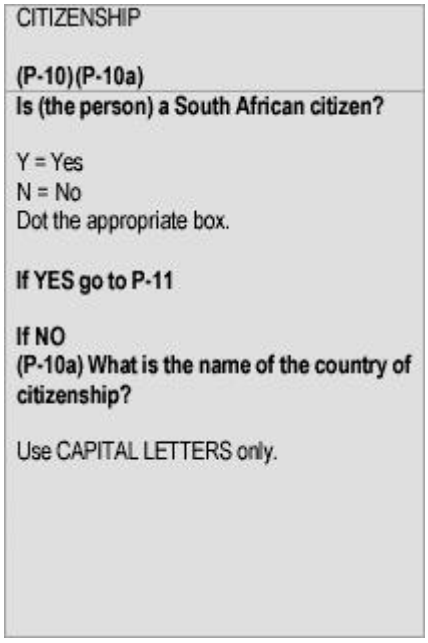
Software:

This edit is implemented in subroutines SV22PRE, SV22, and SV22POST in the CONCOR programme CODED1.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) is not allowed for any of these questions
B. Not applicable (blank) is allowed, depending on the skip pattern.

V.23 CITIZENSHIP (P-10) AND COUNTRY OF CITIZENSHIP (P-10A)


CITIZENSHIP

(P-10)(P-10a)

Is (the person) a South African citizen?

Y = Yes
N = No
Dot the appropriate box.

If YES go to P-11

If NO
(P-10a) What is the name of the country of citizenship?

Use CAPITAL LETTERS only.

Valid values:

Citizenship:

1 Yes
2 No

Country of Citizenship:

see XIII.1 for country codes

Universe:

Citizenship: all persons
Country of Citizenship: all persons who are not South African citizens.
Note: this edit is used for both households and institutions

Edit checks:

A. Both variables must have valid values (although the Country of Citizenship can be not applicable, depending on context).
B. Make the 2 variables internally consistent, so that persons who are South African citizens have a blank country of citizenship, and non-South African citizens have a valid country of citizenship.
C. When unable to determine whether or not a person is a South African citizen, as a last resort try to decide based on their country of birth (note that this precludes having to use a hot deck for citizenship status).
D. When someone's country of citizenship is invalid and they are not a South African citizen, try to determine it by one of the following means (listed in order of priority):
    a. make it the same as the person's country of birth;
    b. make it the same as the head of household's country of citizenship (for immediate family only);
    c. make it the same as the head of household's country of birth (for immediate family only);
    d. make it the same as another related person in the household's country of citizenship (for related persons only);
    e. impute it from a hot deck (based on population group, age, and sex).

E. Interpret “garbage” country responses (code 996) as invalid responses. (“Garbage” responses contain random characters, invalid writing, or are nonsensical.)
F. Interpret “unknown” and “ambigious” country responses (codes 997 and 998) as valid responses, but requiring imputation of a valid country code. (“Unknown” responses seem valid but the coding team was not able to attribute a valid code; “ambiguous” responses are valid but correspond to more than one code.)

Resolution:

A. PRE-EDIT: Check for erroneous declaration of country:
    a. Check for erroneous declaration of country – if country is “South Africa”, then impute SA citizen = yes and country of citizenship = blank;
    b. Resolve “garbage” codes – if country response is “garbage”, then impute country = 000 (which will be treated as an invalid response);
    c. Resolve “unknown” and “ambigious” codes – if country response is “unknown” or “ambigious”, then impute a valid country from ACITIZEN-COUNTRY.

B. For persons with valid citizenship response:
    a. if the person is an SA citizen:
        i. if the country of citizenship is blank, do nothing (good data);
        ii. otherwise (country not blank), make the country of citizenship blank.
    b. otherwise (not an SA citizen), if the country of citizenship is valid, then update the hotdeck ACITIZEN-COUNTRY;
    c. otherwise (not an SA citizen and country of citizenship invalid), if the country of birth is valid, then impute country of citizenship = country of birth;
    d. otherwise (not an SA citizen and country of citizenship and country of birth invalid), if the head of household has a valid country of citizenship and this person is part of the head’s immediate family (relationships 2,3,6,7), then make the person’s country of citizenship the same as the head’s;
    e. otherwise, (not an SA citizen, country of citizenship and country of birth invalid, head’s country of citizenship invalid), if the head of household has a valid country of birth and this person is part of the head’s immediate family (relationships 2,3,6,7), then make the person’s country of citizenship the same as the head’s country of birth;
    f. otherwise (not an SA citizen, country of citizenship and country of birth invalid, head’s country of citizenship and country of birth invalid), if this person is a relative (relationship 2:12) and another relative in the household has a valid country of birth, then make the person’s country of citizenship the same as that other person’s;
    g. otherwise (not an SA citizen, country of citizenship and country of birth invalid, head’s country of citizenship and country of birth invalid), if this person is a relative (relationship 2:12) and another relative in the household has a valid country of citizenship, then make the person’s country of citizenship the same as that other person’s;
    h. otherwise (out of luck!), impute the country of citizenship from the deck ACITIZEN-COUNTRY.

C. For persons with an invalid citizenship response:
    a. if the country of citizenship is valid, then impute citizenship to no.
    b. otherwise (both status and country invalid), if the person was born in SA, then impute SA citizenship to yes and make sure that the country of citizenship is blank.
    c. otherwise (both citizenship status and country invalid, and not born in SA), impute SA citizenship to no and make the country of citizenship the same as where the person was born.

Structure for hot deck ACITIZEN:

POPULATION GROUP					
1	2	3	4	5	AGE
MALES					
value	value	value	value	value	00-09
value	value	value	value	value	10-19
value	value	value	value	value	20-29
value	value	value	value	value	30-39
value	value	value	value	value	40-49
value	value	value	value	value	50-59
value	value	value	value	value	60+
FEMALES					
value	value	value	value	value	00-09
value	value	value	value	value	10-19
value	value	value	value	value	20-29
value	value	value	value	value	30-39
value	value	value	value	value	40-49
value	value	value	value	value	50-59
value	value	value	value	value	60+

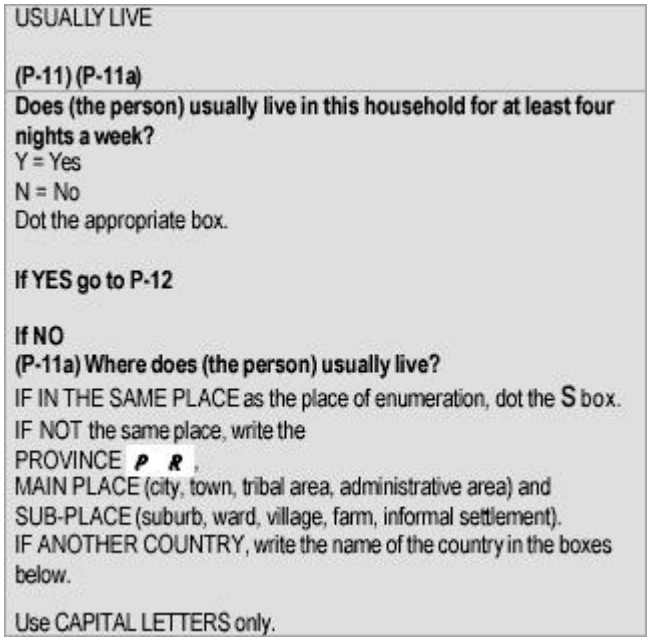
Software:

This edit is implemented in subroutines SV23PRE and SV23 in the CONCOR programme CODED1.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non-response (9) is not allowed for any of these questions
B. Not applicable (blank) is allowed for Country of Citizenship, depending on the skip pattern responses.

V.24 USUALLY LIVE (P-11), PLACE OF USUAL RESIDENCE (P-11A) AND SAME PLACE RESIDENCE (P-11B)


USUALLY LIVE

(P-11) (P-11a)

Does (the person) usually live in this household for at least four nights a week?
Y = Yes
N = No
Dot the appropriate box.

If YES go to P-12

If NO
(P-11a) Where does (the person) usually live?
IF IN THE SAME PLACE as the place of enumeration, dot the S box.
IF NOT the same place, write the
PROVINCE P R ,
MAIN PLACE (city, town, tribal area, administrative area) and
SUB-PLACE (suburb, ward, village, farm, informal settlement).
IF ANOTHER COUNTRY, write the name of the country in the boxes below.

Use CAPITAL LETTERS only.

Valid values:

Usual residence:

1	Yes
2	No

Same place:

1	Yes
2	No

Province:

1	WC
2	EC
3	NC
4	FS
5	KZ
6	NW
7	GP
8	MP
9	LP
0	undetermined

Place of usual residence:

see XIII.3 below for place name codes

Universe:

Usually live (usual resident): all persons
Place of usual residence (PUR): all persons who are not usual residents of the HH
Same place residence (SPR): all persons who are not usual residents of the household
Province of usual residence (PRUR): all persons who are not usual residents of the household
Note: this edit is used for both households and institutions

Edit checks:

A. All 4 variables must have valid values (although the PUR and SPR can be not applicable, depending on context, and PUR/PRUR can be "undetermined").
B. Handle consistency for PUR and PRUR as follows:
    a. If a valid PUR is given but the PRUR is blank or invalid, then determine the PRUR as a function of the PUR;
    b. If a valid PRUR is given but the PUR is blank or invalid, then determine a province-level PUR as a function of the PRUR;
    c. If both the PRUR and PUR are valid but inconsistent, then impute PRUR as a function of PUR.
C. If the PUR indicates a foreign country, then the PRUR must be blank.
D. Usual residents don't have a PUR or PRUR (it is not applicable for them), and people with a place of usual residence can't be usually resident in the household.
E. Usual residents don't respond to the SPR question (it is not applicable for them), and people with an SPR response can't be usually resident in the household.
F. If a specific PUR/PRUR is given (for non-residents), then the SPR response must be "No".
G. If the SPR response is "Yes" (for non-residents), then the PUR and PRUR both must be blank.
H. If the person has the sub place of the household listed as their PUR/PRUR, then the same place residence (SPR) status should be "Yes" and the PUR and PRUR should both be made blank.
I. When someone's PUR and PRUR are both invalid, try to determine PUR by one of the following means (listed in order of priority):
    a. make it the same as the head of household's PUR (for immediate family only);
    b. make it the same as another related person in the household's PUR (for related persons only);
    c. impute it to "undetermined"

    Also, make the PRUR consistent with the newly imputed PUR.
J. Use a hot deck to impute the usual residence status (based on age, sex and population group) when needed.
K. Interpret "garbage" and "unknown" place name responses (codes 00000004 and 00000005, respectively) as invalid responses. ("Garbage" responses contain random characters, invalid writing, or are nonsensical; "unknown" responses seem valid but the coding team was not able to attribute a valid code.) If the person is determined not to be a usual resident, "garbage" and "unknown" place names will be imputed to valid place names or converted to "undetermined".
L. Interpret "unknown" and "garbage" province responses (both share code 0) as invalid responses. If the person is determined not to be a usual resident, "unknown" and "garbage" provinces will be imputed to valid provinces or converted to "undetermined."
M. Handle place name responses for former provinces by attributing them to present-day provinces in the following proportions:

coding response	**Province**
Transvaal (00000001)	Gauteng (40%)
	Mpumulanga (15%)
	North West (18%)
	Limpopo (27%)
Cape Province (00000002)	Western Cape (36%)
	Eastern Cape (56%)
	Northern Cape (8%)

Resolution:

A. PRE-EDIT: Handle garbage and unknown place name codes
    a. Resolve "garbage" PUR codes – if PUR is "garbage" (00000004), then impute PUR to "undetermined" (00000000).
    b. Resolve "unknown" PUR codes – if PUR is "unknown" (00000005), then impute PUR to "undetermined" (00000000).
    c. Report on "unknown" and "garbage" PRUR codes (both 0), but do not impute a new value.

B. PRE-EDIT: Handle former provinces
    a. if PUR is Transvaal (00000001):
        i. if the HH is in one of the Transvaal provinces (GT, MP, NW, or LP), then impute PRUR and PUR to the HH's province;
        ii. otherwise, convert the PRUR and PUR based on the lookup table ATBVC;
    b. otherwise, if PUR is Cape Province (00000002):
        i. if the HH is in one of the Cape Province provinces (WC, EC, or NC), then impute PRUR and PUR to the HH's province;
        ii. otherwise, convert the PRUR and PUR based on the lookup table ATBVC;

C. PRE-EDIT: Make PUR and PRUR consistent:
    a. if the PUR is valid but PRUR is invalid:
        i. if the PUR indicates a foreign country, then make sure PRUR is blank,
        ii. otherwise, impute PRUR to the first digit of PUR;
    b. otherwise, if the PRUR is valid but PUR is invalid, then impute PUR to the province-level placename corresponding to the PRUR;
    c. otherwise, if both PUR and PRUR are valid but inconsistent:
        i. if the PUR indicates a foreign country, then impute PRUR to blank,
        ii. otherwise, impute PRUR to the first digit of PUR.
    d. otherwise, if PRUR is "undetermined" and PUR is blank, or PUR is "undetermined" and PRUR is blank, then make both PUR and PRUR blank.

    Note: after making PUR and PRUR consistent, the rest of the edit checks can proceed based only on PUR.

Note: From this point forward, PUR can have one of three possibilities: blank, undetermined (00000000), or a valid place name response. Similarly, PRUR can be one of three possibilities: blank, undetermined (0), or valid (1-9). For purposes of the edit, undetermined and blank are not considered valid responses.

MAIN EDIT STARTS HERE:

D. For persons with valid usual residence status:
    a. if usually a resident:
        i. if the PUR is blank:
            1. if the SPR is blank, then update hot deck AUSUAL;
            2. otherwise (SPR must be "yes"), then impute SPR to blank;
        ii. otherwise (PUR not blank), if the PUR is valid, then make the residency status "no" and make sure the SPR is "no";
        iii. otherwise (PUR invalid), make the PUR, PRUR, and SPR all blank.
    b. otherwise (not usually a resident):
        i. if the PUR is blank:
            1. if the SPR is "yes", then update the hot deck AUSUAL;
            2. otherwise (PUR and SPR both blank), if the head of household's PUR is valid and non-blank (implying that the head is not usually resident)

and this person is part of the head's immediate family (relationships 2,3,6,7), then make this person's PUR and PRUR the same as the head's and make the SPR "no";
3. otherwise (head doesn't have a valid PUR), if this person is a relative (relationship 2:12) and another relative in the household has a valid and non-blank PUR, then make this person's PUR and PRUR the same as that other person's;
4. otherwise (out of luck!) impute PUR and PRUR to "undetermined";

ii. otherwise (PUR not blank), if the PUR is valid:
1. if the SPR is not "no", then impute SPR to "no";
2. otherwise, update the deck AUSUSAL;

iii. otherwise (PUR invalid), if the SPR is "yes", then make the PUR and PRUR blank;

iv. otherwise (PUR invalid and SPR is blank), if the head of household's PUR is valid and this person is part of the head's immediate family (relationships 2,3,6,7), then make this person's PUR and PRUR the same as the head's and make the SPR "no";

v. otherwise (head doesn't have a valid PUR), if this person is a relative (relationship 2:12) and another relative in the household has a valid PUR, then make this person's PUR and PRUR the same as that other person's;

vi. otherwise (out of luck), impute PUR and PRUR to "undetermined" and SPR "no".

E. For persons with invalid usual residence status:
a. if the PUR is valid and was not imputed as part of a pre-edit, then impute the residency status and SPR both to "no";
b. otherwise (PUR invalid or blank) if the SPR is "yes", then make sure the PUR/PRUR are both blank and impute usual residence status to "no".
c. otherwise (PUR invalid and SPR blank), impute the residency status from the hot deck AUSUAL. In addition:
i. if the newly imputed value is "yes", then make sure that the PUR, PRUR, and SPR are all blank;
ii. otherwise (imputed "no"), if the head of household's PUR is valid and this person is part of the head's immediate family (relationships 2,3,6,7), then make this person's PUR and PRUR the same as the head's and make the SPR "no";
iii. otherwise (head doesn't have a valid PUR), if this person is a relative (relationship 2:12) and another relative in the household has a valid PUR, then make this person's PUR and PRUR the same as that other person's;
iv. otherwise (out of luck) impute PUR and PRUR to "undetermined" and SPR "no".

F. POST-EDIT: If PUR indicates a foreign country, then make sure that PRUR is blank.

Structure for AUSUAL:

POPULATION GROUP				
1	2	3	4	AGE
MALES				
value	value	value	value	00-09
value	value	value	value	10-19
value	value	value	value	20-29
value	value	value	value	30-39
value	value	value	value	40-49
value	value	value	value	50-59
value	value	value	value	60+
FEMALES				
value	value	value	value	00-09
value	value	value	value	10-19
value	value	value	value	20-29
value	value	value	value	30-39
value	value	value	value	40-49
value	value	value	value	50-59
value	value	value	value	60+

Structure for lookup table ATBVC:

place code	pct range (from/to)		recoded place	notes
00000001	01	27	90000000	Transvaal --> LP (27%)
00000001	28	45	60000000	Transvaal --> NW (18%)
00000001	46	60	80000000	Transvaal --> MP (15%)
00000001	61	100	70000000	Transvaal --> GT (40%)
00000002	01	56	20000000	Cape Prov --> EC (56%)
00000002	57	92	10000000	Cape Prov --> WC (36%)
00000002	93	100	30000000	Cape Prov --> NC (8%)

Software:

This edit is implemented in subroutines SV24PRE and SV24 in the CONCOR programme CODED1.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. “Undetermined” values are allowed for PUR (00000000) and PRUR (0) in some situations, but not for any of the other variables.
B. Not applicable (blank) is required for PUR if the person is usually resident or in the “same” area.
C. Not applicable (blank) is required for PRUR if the person is usually resident, or in the “same” area, or has usual residence in a foreign country.
D. SPR will be captured as either “yes” or blank; “no” responses will be added by the edit and imputation from blank to no will not trigger an imputation flag set.
E. This edit can only be implemented after final coded data is available.

V.25 RESIDENCE FIVE YEARS AGO (P-12), PLACE OF PREVIOUS RESIDENCE (P-12A) AND YEAR MOVED (P-12B)

FIVE YEARS AGO **(P-12)**	FROM WHERE MOVED **(P-12a)**	IN WHICH YEAR **(P-12b)**
Five years ago (at the time of Census '96), was (the person) living in this place (i.e. this suburb, ward, village, farm, informal settlement)? Y = Yes N = No B = Born after October 1996 Dot the appropriate box. **If Y or B go to P-13**	If NO to P-12 **Where did (the person) move from?** If more than one move, give details of the last move. Write the PROVINCE ***P R*** , MAIN PLACE (city, town, tribal area, administrative area) and SUB-PLACE (suburb, ward, village, farm, informal settlement). IF ANOTHER COUNTRY, write the name of the country. Use CAPITAL LETTERS only.	If NO to P-12 **In which year did (the person) move to this place?** 1 = 1996 2 = 1997 3 = 1998 4 = 1999 5 = 2000 6 = 2001 If more than one move, write the code for the year of the last move

Valid values:

Residence 5 years ago:

1	yes
2	no
3	born after 1996

Province of previous residence:

1	WC
2	EC
3	NC
4	FS
5	KZ
6	NW
7	GP
8	MP
9	LP
0	undetermined

Year moved:

1	1996
2	1997
3	1998
4	1999
5	2000
6	2001

Place of previous residence:

see XIII.3 below for place name codes

Universe:

Residence 5 years ago: all persons

Place of Previous Residence (PPR), Province of Previous Residence (PRPR), and Year Moved (YM): all persons who were not resident 5 years ago (moved here or were born after 1996).

Note: this edit is used for both households and institutions

Edit checks:

A. All 4 variables must have valid values (although the PPR and YM can be not applicable depending on context, and PPR/PRPR can be "unknown").
B. Handle consistency for PPR and PRPR as follows:
    a. If a valid PPR is given but the PRPR is blank or invalid, then determine the PRPR as a function of the PPR;
    b. If a valid PRPR is given but the PPR is blank or invalid, then determine a province-level PPR as a function of the PRPR;
    c. If both the PRPR and PPR are valid but inconsistent, then impute PRPR as a function of PPR.
C. If the PPR indicates a foreign country, then the PRPR must be blank.
D. People who were resident in 1996 or were born on or after 10 October 1996 don't have a PPR/PRPR or a YM.
E. People who were not resident in 1996 and were born before 10 October 1996 must have a PPR, PRPR, and YM.
F. People with a PPR/PRPR and YM can't have been resident in 1996.
G. Handle enumeration errors where the head was not resident and has a valid PPR/PRPR and YM, but other related people in the household with either blank or "no" residence in 1996 all have blank PPRs, PRPRs, and YMs. In these cases, propagate the head's PPR/PRPR/YM information down to those other related household members.
H. When someone's PPR/PRPR or YM is invalid, try to determine it by one of the following means (listed in order of priority):
    a. make it the same as the head of household's PPR/PRPR or YM (for immediate family only);
    b. make it the same as another related person in the household's PPR/PRPR or YM (for related persons only);
    c. impute YM from a hot deck (based on age, sex, and population group) and make PPR/PRPR "unknown".
I. Use a hot deck to impute 1996 residence (based on age, sex and population group) when needed.
J. Interpret "garbage" and "unknown" place name responses (codes 00000004 and 00000005, respectively) as invalid responses. ("Garbage" responses contain random characters, invalid writing, or are nonsensical; "unknown" responses seem valid but the coding team was not able to attribute a valid code.) If the person is determined not to be a usual resident, "garbage" and "unknown" place names will be imputed to valid place names or converted to "undetermined".
K. Interpret "unknown" and "garbage" province responses (both share code 0) as invalid responses. If the person is determined not to be a usual resident, "unknown" and "garbage" provinces will be imputed to valid provinces or converted to "undetermined."
L. Handle place name responses for former provinces by attributing them to present-day provinces:

coding response	province
Transvaal (00000001)	Gauteng (40%)
	Mpumulanga (15%)
	North West (18%)
	Limpopo (27%)
Cape Province (00000002)	Western Cape (36%)
	Eastern Cape (56%)
	Northern Cape (8%)

Resolution:

A. PRE-EDIT: Handle garbage and unknown place name codes
   a. Resolve "garbage" PPR codes – if PPR is "garbage" (00000004), then impute PPR to "undetermined" (00000000).
   b. Resolve "unknown" PPR codes – if PPR is "unknown" (00000005), then impute PPR to "undetermined" (00000000).
   c. Report on "unknown" and "garbage" PRPR codes (both 0), but do not impute a new value.

B. PRE-EDIT: Handle former provinces
   a. if PUR is Transvaal (00000001):
      i. if the HH is in one of the Transvaal provinces (GT, MP, NW, or LP), then impute PRPR and PPR to the HH's province;
      ii. otherwise, convert the PRPR and PPR based on the lookup table ATBVC;
   b. otherwise, if PUR is Cape Province (00000002):
      i. if the HH is in one of the Cape Province provinces (WC, EC, or NC), then impute PRPR and PPR to the HH's province;
      ii. otherwise, convert the PRPR and PPR based on the lookup table ATBVC;

C. PRE-EDIT: Make PPR and PRPR consistent:
   a. if the PPR is valid but PRPR is invalid:
      i. if the PPR indicates a foreign country, then make sure PRPR is blank,
      ii. otherwise, impute PRPR to the first digit of PPR;
   b. otherwise, if the PRPR is valid but PPR is invalid, then impute PPR to the province-level placename corresponding to the PRPR;
   c. otherwise, if both PPR and PRPR are valid but inconsistent:
      i. if the PPR indicates a foreign country, then impute PRPR to blank,
      ii. otherwise, impute PRPR to the first digit of PPR.
   d. otherwise, if PRPR is "undetermined" and PPR is blank, or PPR is "undetermined" and PRPR is blank, then make both PPR and PRPR blank.

   Note: after making PPR and PRPR consistent, the rest of the edit checks can proceed based only on PPR.

D. PRE-EDIT:
   a. if the head of household was not resident in 1996 and has valid PPR and YM responses:
      i. consider all other related household members (P04 = 1:12) who have 1996 residence responses of "no" or blank. If all of these people have blank PPRs and YMs, then impute their PPR and YM responses to the same as the head's.

Note: From this point forward, PPR can have one of three possibilities: blank, undetermined (00000000), or a valid place name response. Similarly, PRPR can be one of three possibilities: blank, undetermined (0), or valid (1-9). For purposes of the edit, undetermined and blank are not considered valid responses.

MAIN EDIT STARTS HERE:
note: "old enough" below means that the person was born before 10 October 1996.

E. For persons with valid 1996 residence:
   a. if 1996 residence = born after 1996:
      i. if the person was born after 10-Oct-1996, make sure that the PPR, PRPR and YM are all blank;
      ii. otherwise (old enough), if the PPR is blank, then make sure that the YM is blank too, and make 1996 residence = "yes";
      iii. otherwise (old enough, PPR not blank), if the PPR is valid:
         1. if the YM is valid, impute 1996 residence = "no";
         2. otherwise (YM not valid), impute 1996 residence = "no". Also:
            a. if the head of household has a valid YM and this person is part of the head's immediate family (relationships 2,3,6,7), then make this person's YM the same as the head's;
            b. otherwise (head doesn't have a valid YM), if this person is a relative (relationship 2:12) and another relative in the household has a valid YM, then make this person's YM the same as that other person's;
            c. otherwise (out of luck!), impute YM from hot deck APREV-MOVED.
      iv. otherwise (old enough and PPR not valid), impute 1996 residence to "yes" and make sure that PPR, PRPR, and YM are all blank.

   b. otherwise, if 1996 residence = yes:
      i. if the person was born after 10-Oct-1996, then impute 1996 residency to "born after 1996" and make sure that the PPR, PRPR, and YM are all blank;
      ii. otherwise (old enough), if the PPR is blank:
         1. if the YM is blank, then update APREV-RESID;
         2. otherwise, impute YM to blank;
      iii. otherwise (old enough, PPR not blank), if the PPR is valid and was not imputed as part of the pre-edits, then make 1996 residency = "no". Also, if YM is not valid:
         1. if the head of household has a valid YM and this person is part of the head's immediate family (relationships 2,3,6,7), then make this person's YM the same as the head's;
         2. otherwise (head doesn't have a valid YM), if this person is a relative (relationship 2:12) and another relative in the household has a valid YM, then make this person's YM the same as that other person's;
         3. otherwise (out of luck!), impute 1996 residency = "yes", PPR/PRPR = blank, and make sure that YM = blank.
      iv. otherwise (old enough, PPR not valid), impute PPR and PRPR both to blank and make sure YM is blank.

   c. otherwise (1996 residence = no):
      i. if the person was born after 10-Oct-1996, then impute 1996 residency to "born after 1996" and make sure that the PPR, PRPR, and YM are all blank;

ii. otherwise (old enough), if the PPR is blank:
    1. if the YM is blank, then impute 1996 residency to "yes";
    2. otherwise (YM not blank, PPR blank):
        a. if the head of household has a valid PPR and this person is part of the head's immediate family (relationships 2,3,6,7), then make this person's PPR/PRPR the same as the head's;
        b. otherwise (head doesn't have a valid PPR), if this person is a relative (relationship 2:12) and another relative in the household has a valid PPR, then make this person's PPR/PRPR the same as that other person's;
        c. otherwise (out of luck!), impute PPR and PRPR to "undetermined";
    3. also, if YM is not valid:
        a. if the head of household has a valid YM and this person is part of the head's immediate family (relationships 2,3,6,7), then make this person's YM the same as the head's;
        b. otherwise (head doesn't have a valid YM), if this person is a relative (relationship 2:12) and another relative in the household has a valid YM, then make this person's YM the same as that other person's;
        c. otherwise (out of luck!), impute YM from hot deck APREV-MOVED.

iii. otherwise (old enough, PPR not blank), if PPR is valid:
    1. if YM is valid, then update hot decks APREV-MOVED, APREV-RESID, and APREV-PLACE;
    2. otherwise (YM not valid), if the head of household has a valid YM and this person is part of the head's immediate family (relationships 2,3,6,7), then make this person's YM the same as the head's;
    3. otherwise (head doesn't have a valid YM), if this person is a relative (relationship 2:12) and another relative in the household has a valid YM, then make this person's YM the same as that other person's;
    4. otherwise (out of luck!), impute YM from hot deck APREV-MOVED.

iv. otherwise (PPR not valid), if YM is valid:
    1. if the head of household has a valid PPR and this person is part of the head's immediate family (relationships 2,3,6,7), then make this person's PPR and PRPR the same as the head's;
    2. otherwise (head doesn't have a valid PPR), if this person is a relative (relationship 2:12) and another relative in the household has a valid PPR, then make this person's PPR and PRPR the same as that other person's;
    3. otherwise (out of luck!), impute PPR and PRPR to "undetermined".

v. otherwise (PPR not valid, YM not valid), make 1996 residence = "yes", PPR, PRPR and YM all blank.

F. For persons with invalid 1996 residency:
    a. if the person was born after 10-Oct-1996, impute 1996 residency = born after 1996, make sure that PPR/PRPR and YM are both blank;
    b. otherwise (old enough), if PPR is blank, them impute 1996 residency = "yes" and make sure that YM is blank;
    c. otherwise (old enough, PPR not blank), if PPR is valid:
        i. if YM is valid, impute 1996 residency = "no";

ii. otherwise, impute 1996 residency = "no"; also:
    1. if the head of household has a valid YM and this person is part of the head's immediate family (relationships 2,3,6,7), then make this person's YM the same as the head's;
    2. otherwise (head doesn't have a valid YM), if this person is a relative (relationship 2:12) and another relative in the household has a valid YM, then make this person's YM the same as that other person's;
    3. otherwise (out of luck!), impute YM from hot deck APREV-MOVED.

d. otherwise (PPR is invalid), make PPR and YM blank, impute 1996 residency = "yes".

G. POST-EDIT: If PPR indicates a foreign country, then make sure that PRPR is blank.

Structure for APREV-MOVED:

POPULATION GROUP					
1	2	3	4	5	AGE
MALES					
value	value	value	value	value	05-09
value	value	value	value	value	10-19
value	value	value	value	value	20-29
value	value	value	value	value	30-39
value	value	value	value	value	40-49
value	value	value	value	value	50-59
value	value	value	value	value	60+
FEMALES					
value	value	value	value	value	05-09
value	value	value	value	value	10-19
value	value	value	value	value	20-29
value	value	value	value	value	30-39
value	value	value	value	value	40-49
value	value	value	value	value	50-59
value	value	value	value	value	60+

Software:

This edit is implemented in subroutines SV25PRE and SV25 in the CONCOR programme CODED1.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. "Undetermined" values are allowed for PPR (00000000) and PRPR (0) in some situations, but not for any of the other variables.
B. Not applicable (blank) is required for PPR and YM if the person was not resident at this place in 1996, or if the person was born after 1996.
C. Not applicable (blank) is required for PRPR if the person was not resident at this place in 1996, or was born after 1996, or was resident in a foreign country in 1996.
D. Sex, age, and population group must have been edited prior to using this edit.
E. See also edit V.2 above; the responses to this question are considered when imputing month and/or day of birth for 4 year olds or people born in 1996.
F. This edit can only be implemented after final coded data is available.

V.26 WORK IN THE PRECEDING WEEK (P-18), WHY NOT WORKING (P-18A), ACTIVE STEPS TO FIND WORK (P-18B), AVAILABILITY FOR WORK (P-18C), WORK STATUS (P-19), BUSINESS/COMPANY ACTIVITY (P-19B), OCCUPATION (P-19C), HOURS WORKED (P-19D), WORK AT SAME PLACE (P-19E), PLACE OF WORK (P-19F) AND PROVINCE OF WORK (P-19F)

Valid values:

Work in the Preceding Week

1	yes; formal registered (non-farming)
2	yes; informal unregisterd (non-farming)
3	yes; farming
4	yes; has work but was temporarily absent
5	no; did not have work

Why not Working

1	scholar or student
2	home-maker or housewife
3	pensioner or retired person/too old to work
4	unable to work due to illness or disability
5	Seasonal worker not working presently
6	does not choose to work
7	could not find work

Active Steps

1	yes
2	no

Availability

1	within one week
2	more than 1 week, up to 2 weeks
3	more than 2 weeks, up to 4 weeks
4	some time after 4 weeks
5	does not choose to work

Work Status

1	paid employee or paid family worker
2	paid family worker
3	self-employed
4	Employer
5	unpaid family worker

Occupation

see **Error! Reference source not found.** for occupation codes

Industry (company/business activity)

see XIII.5 below for industry codes

ANY WORK IN THE 7 DAYS BEFORE 10 OCTOBER (P-18)	DID NOT HAVE ANY WORK			HAD WORK	
	REASON WHY NOT WORKING (P-18a)	ACTIVE STEPS (P-18b)	AVAILABILITY (P-18c)	WORK STATUS (P-19)	BUSINESS/COMPANY NAME (P-19a)
In the SEVEN DAYS before 10 October did (the person) do any work for PAY (in cash or in kind) PROFIT or FAMILY GAIN, for one hour or more? 1 = Yes: formal registered (non-farming) 2 = Yes: informal unregistered (non-farming) 3 = Yes: farming 4 = Yes: has work but was temporarily absent 5 = No: did not have work **If YES go to P-19**	If NO to P-18 **What is the main reason why (the person) did not have work in the seven days before 10 October?** 1 = Scholar or student 2 = Home-maker or housewife 3 = Pensioner or retired person/ too old to work 4 = Unable to work due to illness or disability 5 = Seasonal worker not working presently 6 = Does not choose to work 7 = Could not find work If more than one reason, write the code of the MAIN (most important) reason.	If NO to P-18 **In the PAST FOUR WEEKS before 10 October has (the person) taken active steps to find employment?** Y = Yes N = No For example, (the person) went to visit factories or other employment places, placed or answered advertisements, looked for land or a building or equipment to start own business or farm.	If NO to P-18 **If offered work, how soon could (the person) start?** 1 = Within one week 2 = More than 1 week, up to 2 weeks 3 = More than 2 weeks, up to 4 weeks 4 = Some time after 4 weeks 5 = Does not choose to work **Go to P-20**	If YES to P-18 **How can one best describe (the person's) main activity or work status?** 1 = Paid employee 2 = Paid family worker 3 = Self-employed 4 = Employer 5 = Unpaid family worker 6 = Other (specify)	If YES to P-18 **What is the FULL name of the business/company or organisation for whom (the person) works?** If the person works for him/herself, and the business does not have a name, write SELF in the appropriate row. If doing PAID domestic work in a private household, write DOMESTIC SERVICE. Use CAPITAL LETTERS only.

COMPANY/BUSINESS ACTIVITY (P-19b)	OCCUPATION (P-19c)	HOURS WORKED (P-19d)	PLACE OF WORK (P-19e) (P-19f)
If YES to P-18 **What does the business do (main economic activity)?** Write the MAIN INDUSTRY, economic activity, product or service of (the person's) employer or company. For example, gold mining, road construction, supermarket, police service, healthcare, hairdressing, banking. OR Write the activity of the person if self-employed. For example, subsistence farming. If doing PAID domestic work in a private household, write DOMESTIC SERVICE. Use CAPITAL LETTERS only.	If YES to P-18 **What is the main occupation of (the person) in this workplace?** Occupation refers to the type of work (the person) performed in the seven days before 10 October. Use two or more words. For example, street trader, cattle farmer, primary school teacher, domestic worker, fruit vendor, truck driver, warehouse manager, filing clerk, etc. Use CAPITAL LETTERS only.	If YES to P-18 **How many hours did (the person) work in the seven days before 10 October?** If (the person) was absent from work those seven days, but usually works, write the number of hours s/he usually works.	If YES to P-18 **Does (the person) work in the same sub-place in which s/he usually lives?** Y = Yes N = No Dot the appropriate box. If NO, **where is this place of work?** If NOT the same place, write PROVINCE **P R** , MAIN PLACE (city, town, tribal area, administrative area) and SUB-PLACE (suburb, ward, village, farm, informal settlement). If another country, write the name of the country in the boxes below.

Hours Worked

01:95 total hours worked during the week

Work at Same Place:

1 yes
2 no

Place of Work

see XIII.3 below for place name codes

Province of work:

1 WC
2 EC
3 NC
4 FS
5 KZ
6 NW
7 GP
8 MP
9 LP
0 undetermined

Universe:

Work in the Preceding Week: all persons 10 years and older
Why not Working, Active Steps, Availability: all persons 10 years and older who did not work during the preceding week
Work Status, Occupation, Industry, Hours Worked, Work at Same Place, Place of Work (PLWORK), Province of Work (PRWORK): all persons 10 years and older who worked during the preceding week
Note: this edit is used for both households and institutions.

Edit checks:

A. Variables must have valid values, although place of work can be "undetermined". Note that "other" responses for Work Status (value 6) are removed during editing.
B. Handle consistency for PLWORK and PRWORK as follows:
    - If a valid PLWORK is given but the PRWORK is blank or invalid, then determine the PRWORK as a function of the PLWORK;
    - If a valid PRWORK is given but the PLWORK is blank or invalid, then determine a province-level PLWORK as a function of the PRWORK;
    - If both the PRWORK and PLWORK are valid but inconsistent, then impute PRWORK as a function of PLWORK.
C. If PLWORK indicates a foreign country, then PRWORK must be blank.
D. People younger than 10 cannot have economic activity (these questions are not applicable for them).
E. The questions P-18a,b,c are not applicable for people who worked during the previous week.
F. Conversely, the P-19 questions are not applicable for people who did not work during the previous week.
G. Use hot decks (based on 5 year age groups, level of education, sex, and sometimes school attendance) to impute responses to these questions (except for industry, occupation, and

place of work) when needed. For industry, occupation, and place of work, impute "undetermined" for inconsistent or invalid responses.

H. Handle "unknown" and "ambigious" industries and occupations, by converting them to "undetermined".

I. Handle "garbage" industries and occupations, by treating them as blank for purposes of consistency analysis. (They might then subsequently be made "undetermined," however.)

J. Interpret "garbage" and "unknown" place name responses (codes 00000004 and 00000005, respectively) as invalid responses. ("Garbage" responses contain random characters, invalid writing, or are nonsensical; "unknown" responses seem valid but the coding team was not able to attribute a valid code.) If the person is determined not to be a usual resident, "garbage" and "unknown" place names will be imputed to valid place names or converted to "undetermined".

K. Interpret "unknown" and "garbage" province responses (both share code 0) as invalid responses. If the person is determined not to be a usual resident, "unknown" and "garbage" provinces will be imputed to valid provinces or converted to "undetermined."

L. Handle place name responses for former provinces by attributing them to present-day provinces in the following proportions:

coding response	**province**
Transvaal (00000001)	Gauteng (40%)
	Mpumulanga (15%)
	North West (18%)
	Limpopo (27%)
Cape Province (00000002)	Western Cape (36%)
	Eastern Cape (56%)
	Northern Cape (8%)

Resolution:

A. PRE-EDIT: Handle garbage and unknown place name codes
   a. Resolve "garbage" PLWORK codes – if PLWORK is "garbage" (00000004), then impute PLWORK to "undetermined" (00000000).
   b. Resolve "unknown" PLWORK codes – if PLWORK is "unknown" (00000005), then impute PLWORK to "undetermined" (00000000).
   c. Report on "unknown" and "garbage" PRWORK codes (both 0), but do not impute a new value.

B. PRE-EDIT: Handle former provinces
   a. if PLWORK is Transvaal (00000001):
      i. if the HH is in one of the Transvaal provinces (GT, MP, NW, or LP), then impute PRWORK and PLWORK to the HH's province;
      ii. otherwise, convert the PRWORK and PLWORK based on the lookup table ATBVC;
   b. otherwise, if PLWORK is Cape Province (00000002):
      i. if the HH is in one of the Cape Province provinces (WC, EC, or NC), then impute PRWORK and PLWORK to the HH's province;
      ii. otherwise, convert the PRWORK and PLWORK based on the lookup table ATBVC;

C. PRE-EDIT: Make PLWORK and PRWORK consistent:
   a. if the PLWORK is valid but PRWORK is invalid:
      i. if the PLWORK indicates a foreign country, then make sure PRWORK is blank,

ii. otherwise, impute PRWORK to the first digit of PLWORK;

b. otherwise, if the PRWORK is valid but PLWORK is invalid, then impute PLWORK to the province-level placename corresponding to the PRWORK;
c. otherwise, if both PLWORK and PRWORK are valid but inconsistent:
    i. if the PLWORK indicates a foreign country, then impute PRWORK to blank
    ii. otherwise, impute PRWORK to the first digit of PLWORK.
d. otherwise, if PRWORK is "undetermined" and PLWORK is blank, or PLWORK is "undetermined" and PRWORK is blank, then make both PLWORK and PRWORK blank.

Note: after making PLWORK and PRWORK consistent, the rest of the edit checks can proceed based only on PLWORK.

Note: From this point forward, PLWORK can have one of three possibilities: blank, undetermined (00000000), or a valid place name response. Similarly, PRWORK can be one of three possibilities: blank, undetermined (0), or valid (1-9). For purposes of the edit, undetermined and blank are not considered valid responses.

D. PRE-EDIT: Handle garbage, unknown, and ambiguous industry and occupation codes
    a. if the industry response is "unknown" or "ambiguous" or 90 (other activities not adequately defined), then impute industry to "undetermined;"
    b. if the industry response is "garbage", then make industry blank. (Note that it might later be converted to "undetermined".)
    c. if the occupation response is "unknown" or "ambiguous" or 81, 83:85 (Occupations unspecified, Occupations in the informal sector not elsewhere classified, Occupations not elsewhere classified, and Occupations not adequately defined), then impute occupation to "undetermined;"
    d. if the occupation response is "garbage" or 82 (Unemployed, occupation unspecified), then make occupation blank. (Note that it might later be converted to "undetermined".)
    e. if the occupation response is 91:97 (Homemakers housewives/ house husbands; Children, not scholars or students (younger than 15 years); Scholars, students; Pensioners and other not economically active (65 years and older); Labour-disabled persons (15 to 64 years old); Not economically active persons not elsewhere classified; and Foreign visitors; or 999 (beggar), then make occupation not applicable by imputing it to blank.

E. PRE-EDIT: For persons younger than 10 years, make sure that all items are blank.

F. PRE-EDIT: For persons 10 years and older who have a valid response for Working during the Preceding Week:
    a. if the person declared that they did not work, but there is one or more valid responses in the "had work" section (based on the responses for work status, industry {including undetermined}, and occupation {including undetermined}) and no valid responses in the "did not have work" section (based on the responses for why not working, active steps, availability), then impute the Working during the Preceding Week response from the deck AWORKEMP (giving a response 1:4);
    b. otherwise, if the person declared that they did work, but there is one or more valid responses for the "did not have work" section and no valid responses for the "had work" section, then impute the Working during the Preceding Week response to 5 (no).

MAIN EDIT STARTS HERE:

G. For persons 10 years and older with a valid response (that was not imputed during the pre-edits) for work during the preceding week, update the hot deck AWORK. Also:
    a. if person did not have work:
        i. pre-edit: if why not working = "does not choose to work" and availability is not valid, then impute availability = "does not choose to work".
        ii. if reason why not working is valid:
            1. update the hot deck AWHYNOT;
            2. otherwise, impute reason why not working from deck AWHYNOT;
        iii. Also: if active steps looking is valid:
            1. update the hot deck ALOOKING;
            2. otherwise, impute active steps looking for work from the hot deck ALOOKING;
        iv. Also: if available for work is valid:
            1. update the hot deck AAVAILABLE;
            2. otherwise, impute availability for work from the hot deck AAVAILABLE.
    b. otherwise (person had work), update the hot deck AWORK-EMP. Also:
        i. if work status is valid:
            1. update the hot deck AWORKSTATUS;
            2. otherwise, impute work status from the hot deck AWORKSTATUS;
        ii. Also: if occupation is not valid, then impute occupation to "undetermined";
        iii. Also: if industry is not valid, then impute industry to "undetermined";
        iv. Also: if hours worked is valid:
            1. update the hot deck AHOURS;
            2. otherwise, impute hours worked from the hot deck AHOURS;
        v. Also: if working at same place has a valid response:
            1. if working at same place is "yes":
                a. if PLWORK is valid and was not imputed as part of the pre-edits, then impute working at same place to "no";
                b. otherwise, if PLWORK is blank, then update the hot deck AWORKSAMEPLACE;
                c. otherwise, impute PLWORK and PRWORK both to blank;
            2. otherwise (not working at same place and work place not same as current residence), if the place of work is valid, then update the hot deck AWORKSAMEPLACE;
            3. otherwise (not working at same place and work place invalid), impute PLWORK and PRWORK both to "undetermined".
        vi. otherwise (working at same place is not valid):
            1. if PLWORK is blank, then impute work at same place to "yes";
            2. if place of work is valid, then impute working at same place to "no";
            3. otherwise, impute working at same place from the deck AWORKSAMEPLACE. Also:
                a. if the newly imputed working at same place response is "yes", then make PLWORK and PRWORK both blank;
                b. otherwise, impute PLWORK and PRWORK both to "undetermined."

H. For persons 10 years and older without a valid response for working during the preceding week:
    a. determine which set of questions (P-18 for people without work, P-19 for people with work) has a greater number of valid responses. For this, compare the number of valid responses for why not working, active steps, and availability with the number of valid responses for work status, industry (including undetermined), and occupation (including undetermined).
        i. if it is more likely that the person is working, impute work during preceding week from the hot deck AWORKEMP (giving a value 1:4). Also:
            1. if work status is not valid, impute work status from the hot deck AWORKSTATUS;
            2. Also: if occupation is not valid, impute occupation to "undetermined";
            3. Also: if industry is not valid, impute industry to "undetermined";
            4. Also: if hours worked is not valid, impute hours worked from the hot deck AHOURS;
            5. Also: if working at same place has a valid response:
                a. if working at same place is "yes":
                    i. if PLWORK is valid, then impute working at same place to "no";
                    ii. otherwise, make sure that PLWORK and PRWORK are both blank.
                b. otherwise (working at same place = "no"):
                    i. if place of work is valid, then do nothing;
                    ii. otherwise (place of work invalid), then impute PLWORK and PRWORK both to "undetermined".
            6. otherwise (working at same place is not valid):
                a. if PLWORK is blank, then impute work at same place to "yes";
                b. otherwise, if PLWORK is valid, then impute working at same place to "no";
                c. otherwise, impute working at same place from the deck AWORKSAMEPLACE. Also:
                    i. if the newly imputed working at same place response is "yes", then make PLWORK and PRWORK both blank;
                    ii. otherwise, impute PLWORK to "undetermined";
        ii. otherwise, if it is more likely that the person is not working, impute work during the previous week = "no". Also:
            1. pre-edit: if why not working = "does not choose to work" and availability is not valid, then impute availability = "does not choose to work".
            2. if reason why not working is not valid, impute reason why not working from deck AWHYNOT;
            3. Also: if active steps looking is not valid, impute active steps looking for work from the hot deck ALOOKING;
            4. Also: if available for work is not valid, impute availability for work from the hot deck AAVAILABLE.
        iii. otherwise (it is equally likely that the person is working as not working), impute work status using the hot deck AWORK (giving a value 1:5). Also:

1. if the newly imputed value indicates that the person worked during the preceding week:
    a. if work status is not valid, impute work status from the hot deck AWORKSTATUS;
    b. Also: if occupation is not valid, impute occupation to "undetermined";
    c. Also: if business activity is not valid, impute industry to "undetermined";
    d. Also: if hours worked is not valid, impute hours worked from the hot deck AHOURS;
    e. Also: if working at same place has a valid response:
        i. if working at same place is "yes":
            1. if PLWORK is valid, then impute working at same place to "no";
            2. otherwise, make sure that PLWORK and PRWORK are both blank.
        ii. otherwise (working at same place = "no"):
            1. if PLWORK is valid, then do nothing;
            2. otherwise (PLWORK invalid), impute PLWORK and PRWORK both to "undetermined".
    f. otherwise (working at same place is not valid):
        i. if PLWORK is blank, then impute work at same place to "yes";
        ii. otherwise, if PLWORK is valid, then impute working at same place to "no";
        iii. otherwise, impute working at same place from the deck AWORKSAMEPLACE. Also:
            1. if the newly imputed working at same place response is "yes", then make PLWORK and PRWORK both blank;
            2. otherwise, impute PLWORK and PRWORK both to "undetermined".
2. otherwise (newly imputed value indicates that the person did not work):
    a. pre-edit: if why not working = "does not choose to work" and availability is not valid, then impute availability = "does not choose to work".
    b. if reason why not working is not valid, impute reason why not working from deck AWHYNOT;
    c. Also: if active steps looking for work is not valid, impute active steps looking for work from the hot deck ALOOKING;
    d. Also: if available for work is not valid, impute availability for work from the hot deck AAVAILABLE.

I. POST-EDIT:
    a. if the person worked during the preceding week, then make sure that reason not working, active steps looking, and work availability are all blank;
    b. otherwise, make sure that work status, occupation, industry, hours worked, work at same place, PLWORK, and PRWORK are all blank.

J. POST-EDIT: If PLWORK indicates a foreign country, then make sure that PRWORK is blank

K. POST-EDIT – Clean up specific internal inconsistencies:
   a. if work status = 1 (paid employee) and industry is 911:913 (government activities), then make sure that work in the preceding week is "formal registered" (1).
   b. make sure that persons with industry = 010 (private households with employed persons), 020 (exterritorial organisations), 030 (representatives of foreign governments) have work status = "paid employee" (1).

Structure for hot decks: AWORK, AWORKEMP, AHOURS, AWORKSAMEPLACE:

MALE					FEMALE					
EDUCATIONAL LEVEL GROUP (*)										
G1	G2	G3	G4	G5	G1	G2	G3	G4	G5	AGE
RACE: BLACK AFRICAN										
val	val	val	val	val	val	val	val	val	val	10-19
val	val	val	val	val	val	val	val	val	val	20-29
val	val	val	val	val	val	val	val	val	val	30-39
val	val	val	val	val	val	val	val	val	val	40-49
val	val	val	val	val	val	val	val	val	val	50-59
val	val	val	val	val	val	val	val	val	val	60+
RACE: COLOURED										
(age groups continue for this race)										
RACE: INDIAN OR ASIAN										
(age groups continue for this race)										
RACE: WHITE										
(age groups continue for this race)										

(*) Educational level groups are:

group	Levels
G1	99
G2	01,02,03,04,05,06,07
G3	08,09,10,11,13,14
G4	12
G5	15,16,17,18,19,20

Structure for hot deck AWHYNOT:

MALE					FEMALE					
EDUCATIONAL LEVEL GROUP (*)										
G1	G2	G3	G4	G5	G1	G2	G3	G4	G5	AGE
RACE: BLACK AFRICAN (attending school)										
val	val	val	val	val	val	val	val	val	val	10-19
val	val	val	val	val	val	val	val	val	val	20-29
val	val	val	val	val	val	val	val	val	val	30-39
val	val	val	val	val	val	val	val	val	val	40-49
val	val	val	val	val	val	val	val	val	val	50-59
val	val	val	val	val	val	val	val	val	val	60+

RACE: BLACK AFRICAN (not attending school)
(age groups continue for this race)
RACE: COLOURED (attending school)
(age groups continue for this race)
RACE: COLOURED (not attending school)
(age groups continue for this race)
RACE: INDIAN OR ASIAN (attending school)
(age groups continue for this race)
RACE: INDIAN OR ASIAN (not attending school)
(age groups continue for this race)
RACE: WHITE (attending school)
(age groups continue for this race)
RACE: WHITE (not attending school)
(age groups continue for this race)

Structure for hot decks ALOOKING and AAVAILABLE:

MALE					FEMALE					
EDUCATIONAL LEVEL GROUP (*)										WHY NOT
G1	G2	G3	G4	G5	G1	G2	G3	G4	G5	
RACE: BLACK AFRICAN										
val	val	val	val	val	val	val	val	val	val	1
val	val	val	val	val	val	val	val	val	val	2
val	val	val	val	val	val	val	val	val	val	3
val	val	val	val	val	val	val	val	val	val	4
val	val	val	val	val	val	val	val	val	val	5
val	val	val	val	val	val	val	val	val	val	6
val	val	val	val	val	val	val	val	val	val	7

RACE: COLOURED
(age groups continue for this race)
RACE: INDIAN OR ASIAN
(age groups continue for this race)
RACE: WHITE
(age groups continue for this race)

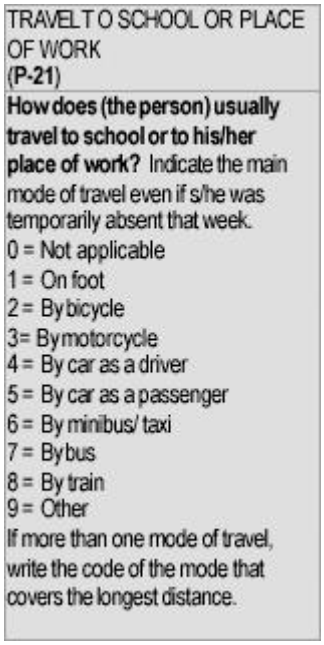
Software:

This edit is implemented in subroutines SV26PRE, SV26PREP, SV26a, SV26b, SV26c, and SV26POST in the CONCOR programme CODED2.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non response is only allowed for the occupation (999), industry (999), place of work (00000000), and province of work (0) questions.
B. Not applicable (blank) is required for P18a, P18b, P18c if the person worked during the preceding week.
C. Not applicable (blank) is required for the P19 questions if the person did not work during the preceding week.
D. Not applicable (blank) is required for PLWORK and PRWORK if the person worked at the same place.
E. Not applicable (blank) is also required for the PRWORK if the person worked in a foreign country.
F. Level of Education, Age, and Sex must be edited before using this edit.

V.27 TRAVEL TO SCHOOL OR PLACE OF WORK (P-21)


TRAVEL TO SCHOOL OR PLACE OF WORK
(P-21)

How does (the person) usually travel to school or to his/her place of work? Indicate the main mode of travel even if s/he was temporarily absent that week.

0 = Not applicable
1 = On foot
2 = By bicycle
3= By motorcycle
4 = By car as a driver
5 = By car as a passenger
6 = By minibus/ taxi
7 = By bus
8 = By train
9 = Other

If more than one mode of travel, write the code of the mode that covers the longest distance.

Valid values:

0	not applicable
1	on foot
2	by bicycle
3	by motorcycle
4	by car as a driver
5	by car as a passenger
6	by minibus/taxi
7	by bus
8	by train
9	other

Universe:

all persons in households and institutions

Edit checks:

A. Variable must have a valid value.
B. People younger than 16 cannot travel by car as driver; their responses should be converted to “travel by car as passenger” instead.
C. Blind people (with sight disability) cannot ride bicycles, motorcycles, or drive cars (responses 2,3 or 4).
D. This question is not applicable for people not attending school and not working.
E. Use a hot deck to impute this (based on age groups, level of education groupings, population group, and employment status) when needed.

Resolution:

A. If the person is not attending school (P16 = 1) and not working (P18 = 5), and has a travel response other than 0 (not applicable), then impute travel response to 0 (not applicable).

B. otherwise, if the travel response is valid:
    a. if the travel response is 4 (driver) and the person is younger than 16, then impute travel to 5 (passenger);

b. otherwise, if the travel response is 2:4 (bicycle, motorcycle, car driver) and the person is blind (P13-SIGHT = 1), then impute travel to 5 (passenger);
c. otherwise, update the hot deck ATRAVEL.

C. Otherwise, impute the travel to place of work from the hot deck ATRAVEL.

D. POST-EDIT: *(note: this is necessary for some decking situations)*
   a. if the travel response is 4 (driver) and the person is younger than 16, then impute travel to 5 (passenger);
   b. otherwise, if the travel response is 2:4 (bicycle, motorcycle, car driver) and the person is blind (P13-SIGHT = 1), then impute travel to 5 (passenger).

Structure for ATRAVEL:

AGE GROUP									
00-04	05-09	10-14	15-17	18-49	50-54	55-59	60-64	65+	RACE and EMPLOYMENT STATUS
val	val	val	val	val	val	val	val	val	black african employed
val	val	val	val	val	val	val	val	val	black african unemployed (or <10 years)
val	val	val	val	val	val	val	val	val	coloured employed
val	val	val	val	val	val	val	val	val	coloured unemployed (or <10 years)
val	val	val	val	val	val	val	val	val	indian or asian employed
val	val	val	val	val	val	val	val	val	indian or asian unemployed (or <10 years)
val	val	val	val	val	val	val	val	val	white employed
val	val	val	val	val	val	val	val	val	white unemployed (or <10 years)

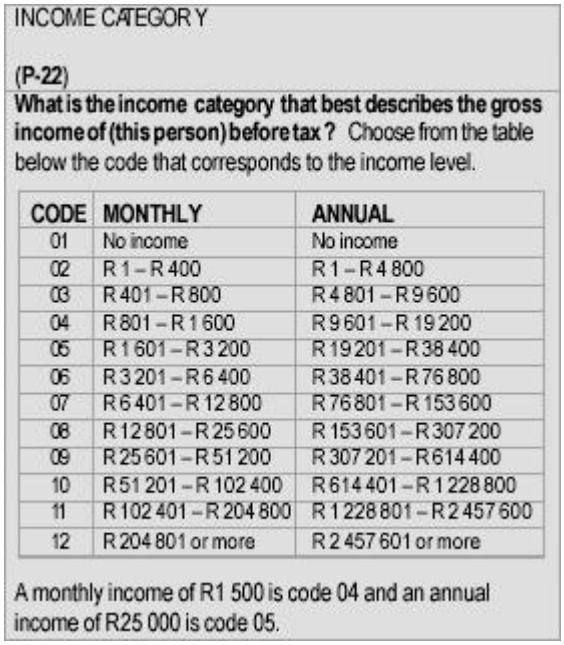
Software:

This edit is implemented in subroutine SV27 in the CONCOR programme CODED2.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non response and not applicable (blank) are not allowed for this question.

V.28 INCOME (P-22)



INCOME CATEGORY

(P-22)

What is the income category that best describes the gross income of (this person) before tax? Choose from the table below the code that corresponds to the income level.

CODE	MONTHLY	ANNUAL
01	No income	No income
02	R 1 – R 400	R 1 – R 4 800
03	R 401 – R 800	R 4 801 – R 9 600
04	R 801 – R 1 600	R 9 601 – R 19 200
05	R 1 601 – R 3 200	R 19 201 – R 38 400
06	R 3 201 – R 6 400	R 38 401 – R 76 800
07	R 6 401 – R 12 800	R 76 801 – R 153 600
08	R 12 801 – R 25 600	R 153 601 – R 307 200
09	R 25 601 – R 51 200	R 307 201 – R 614 400
10	R 51 201 – R 102 400	R 614 401 – R 1 228 800
11	R 102 401 – R 204 800	R 1 228 801 – R 2 457 600
12	R 204 801 or more	R 2 457 601 or more

A monthly income of R1 500 is code 04 and an annual income of R25 000 is code 05.

Valid values:

1	no income
2	R1-R400
3	R401-R800
4	R801-R1 600
5	R1 601-R3 200
6	R3 201-R6 400
7	R6 401-R12 800
8	R12 801-R25 600
9	R25 601-R51 200
10	R51 201-R102 400
11	R10 401-R204 800
12	R204 801 or more

Universe:

all persons in households and institutions

Edit checks:

A. Variable must have a valid value.
B. Use a hot deck to impute this (based on age groups, level of education groupings, employment status, and population group) when needed.

Resolution:

A. For persons with a valid income response, update the hot deck AINCOME.

B. Otherwise, impute the income response from the hot deck AINCOME.

Structure for AINCOME:

MALE						FEMALE						
EDUCATIONAL LEVEL GROUP (*)												
G1	G2	G3	G4	G5	G6	G1	G2	G3	G4	G5	G6	AGE
RACE: BLACK AFRICAN (employed)												
val	val	Val	val	val	val	val	val	val	val	val	val	00-14
val	val	Val	val	val	val	val	val	val	val	val	val	15-19
val	val	Val	val	val	val	val	val	val	val	val	val	20-29
val	val	Val	val	val	val	val	val	val	val	val	val	30-44
val	val	Val	val	val	val	val	val	val	val	val	val	45-59
val	val	Val	val	val	val	val	val	val	val	val	val	60+
RACE: BLACK AFRICAN (not employed or <10 years)												
val	val	Val	val	val	val	val	val	val	val	val	val	00-14
val	val	Val	val	val	val	val	val	val	val	val	val	15-19
val	val	Val	val	val	val	val	val	val	val	val	val	20-29
val	val	Val	val	val	val	val	val	val	val	val	val	30-44
val	val	Val	val	val	val	val	val	val	val	val	val	45-59
val	val	Val	val	val	val	val	val	val	val	val	val	60+

RACE: COLOURED (employed)
(age groups continue for this race)
RACE: COLOURED (not employed or <10 years)
(age groups continue for this race)
RACE: INDIAN OR ASIAN (employed)
(age groups continue for this race)
RACE: INDIAN OR ASIAN (not employed or <10 years)
(age groups continue for this race)
RACE: WHITE (employed)
(age groups continue for this race)
RACE: WHITE (not employed or <10 years)
(age groups continue for this race)

(*) Educational level groups are:

group	Levels
G1	99 or N/A
G2	01,02,03,04,05,06
G3	07
G4	08,09,10,11,13,14
G5	12
G6	15,16,17,18,19,20

Software:

This edit is implemented in subroutine SV28 in the CONCOR programme CODED2.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. Non response and not applicable (blank) are not allowed for this question.
B. Level of Education, Age, Sex, and Population group must be edited before using this edit.

V.29 OVERALL FAMILY STRUCTURE – RELATIONSHIP, SPOUSE/ MOTHER/ FATHER PERSON NUMBERS, AND MARITAL STATUS

This edit is a confirmation test of the rest of the specifications, specifically relationship to head of household and spouse/mother/father person numbers. It will make sure that consistent family structures exist in the household. This will be done by cycling through the household confirming that every member's relationship, spouse person number (SPN), mother person number (MPN), and father person number (FPN) are consistent. (For example, suppose a person with relationship "child" has a valid MPN link. The mother must therefore be a spouse of the head, or the head herself.)

Also, when a person has SPN, MPN, or FPN links, the person's age must be consistent with their spouse, mother or father.

The edit also verifies the marital status of each household member, taking into account the rules for polygamous marriages.

Errors found here signal problems in the edit specifications or computer programs, which will need to be resolved.

Valid values:

for Relationship to Head:

01	Head/acting head
02	Husband/wife/partner
03	Son/daughter
04	Adopted son/daughter
05	Stepson/stepdaughter
06	Brother/sister
07	Parent
08	Parent-in-law
09	Grand/greatgrand child
10	Son/daughter-in-law
11	Brother/sister-in-law
12	Other relative
13	Non related person

for Marital Status:

1	Married civil/religious
2	Married traditional/customary
3	Polygamous marriage
4	Living together as unmarried partners
5	Never married
6	Widower/widow
7	Separated
8	Divorced

for Spouse's Person Number:

01: highest person number in the household

99 for mother who does not live in the household

for Mother Alive:

1	Yes
2	No
3	don't know

for Mother's Person Number:

01: highest person number in the household
99 for mother who is not present in the household

for Father Alive:

1	Yes
2	no
3	don't know

for Father's Person Number:

01: highest person number in the household
99 for father who is not present in the household

for Marital Status:

1	Married civil/religious
2	Married traditional/customary
3	Polygamous marriage
4	Living together as unmarried partners
5	Never married
6	Widower/widow
7	Separated
8	Divorced

for Spouse person number (SPN):

01 through maximum person number in the household
99 for spouse who is not present in the household

Universe:

all persons in households

Edit checks:

A. The household's structure must be consistent in terms of:
   - relationships to head of household for spouses, mothers and fathers;
   - marital statuses for couples (or polygamous households).

Resolution:
For each member of the household:

A. Ensure that the person has a valid relationship to head of household.

B. Also, if the person's mother is living and there is an MPN, then ensure that the mother has a consistent relationship to the household head (using the cold deck APARENT-REL).

C. Also, if the person's father is living and there is an FPN, then ensure that the father has a consistent relationship to the household head (using the cold deck APARENT-REL).

D. Also, verify the person's marital status (MS) and SPN:
   - MS must be valid
   - SPN must be consistent with MS
   - marriages indicated by SPN must be consistent in terms of age, sex, and relationship (using ASPOUSE-REL).
   - head and spouse(s) (relationships 1 and 2) must have SPNs that point to each other.
   - only men can have polygamous marriages
   - (female) spouses of polygamous husbands must have MS 1 or 2
   - spouses in non-polygamous marriages must have MS 1, 2, or 4.
   - polygamous men must have SPN that indicates the first-reported wife (or 99).
   - wives in polygamous marriages have SPNs that point to their husband (or 99).

Structures for cold decks ASPOUSE-REL and APARENT-REL are defined in edit V.9 above.

V.30 FERTILITY SECTION CHECK

This edit is a confirmation test of the fertility section, and tests the correctness of the fertility edits (see V.20 above).

Valid values:

Total Children Ever Born:	00:24
Total Males Ever Born:	00:24
Total Females Ever Born:	00:24
Total Children Surviving:	00:24
Total Males Surviving:	00:24
Total Females Surviving:	00:24

Last Child Born:

Day:	01:31	
Month:	01:12	
Year:	1962:2001	
Sex:		
	1	male
	2	female
Alive/Dead:		
	1	alive
	2	dead

Edit Checks:

See edit V.20 above.

Resolution:

TCEB = total children ever born
MCEB = male children ever born
FCEB = female children ever born
TCS = total children surviving
MCS = male children surviving
FCS = female children surviving
YRLAST = year of birth of last born child
MOLAST = month of birth of last born child
DAYLAST = dayt of birth of last born child
SXLAST = sex of last born child
VSLAST = vital status of last-born child (alive/dead)

A. For men, and for women not aged 12:50:
    a. ensure that all fertility responses are blank.

B. For women aged 12:50:
    a. ensure that the following conditions are all true:
        - ✓ TCEB = MCEB + FCEB, and
        - ✓ TCS = MCS + FCS, and
        - ✓ TCEB >= TCS, and
        - ✓ MCEB >= MCS, and
        - ✓ FCEB >= FCS, and
        - ✓ number of boys in the household who declared this person as their mother (using mother person number) ≤ MCS, and
        - ✓ number of girls in the household who declared this person as their mother (using mother person number) ≤ FCS, and
        - ✓ woman's age ≥ (11 + TCEB), and
        - ✓ FCEB>0 if SXLAST = female, and
        - ✓ MCEB>0 if SXLAST = male, and
        - ✓ FCS>0 if SXLAST = female and VSLAST = alive, and
        - ✓ MCS>0 if SXLAST = male and VSLAST = alive, and
        - ✓ all responses for last child born information (YRLAST, MOLAST, SXLAST, VSLAST) are complete and valid, or else they are all blank (indicating no births).

VI MORTALITY EDITS

VI.1 DEATHS (H-31) AND ASSOCIATED DATA (H-31A)

Valid values:

Any Deaths:

1	yes
2	no

Number of deaths: 0:9

Month of Death: 01:12

Year of Death: 2000, 2001

Sex (of deceased):

1	male
2	female

Age (of deceased): 000:120

Accidental death:

1	yes
2	no

Pregnant when died:

1	yes
2	no

Universe:

all households
(institutions do not record mortality information)

ANYBODY DIED **(H-31)**
Has any member of this household died in the past 12 months, i.e. between 10 October 2000 and 10 October 2001? Y = Yes N = No Dot the appropriate box. Y N **If YES, how many?** **Go to H-31a.** **If NO,** the questionnaire is completed.

DECEASED **(H-31a)**					
(If YES to H-30) **What was the first name of the deceased?**	**What was the month and year of death?** Write the month and year of death. Month Year	**What is the sex of the deceased?** M = Male F = Female Dot the appropriate box.	**What was the age in years at death?** For example, if 2 years of age write 0 0 2	**Did (the person) die from an accident or through violence?** Y = Yes N = No Dot the appropriate box.	**If the deceased was a woman under 50 years, did (the person) die while pregnant or within six weeks after delivery?** Y = Yes N = No Dot the appropriate box.

Edit checks:

A. Variables must have valid values.
B. No death information should be provided for households without deaths (items should be blank in that case).
C. Mortality records are minimally processable if they have responses for at least 3 of the following variables: name, month, year, age, sex, accidental death, pregnant. Non-minimally processable mortality records are deleted if the "how many deaths" response is invalid or the number of death records is greater than the "how many deaths" response. If "how many deaths" is greater than or equal to the number of death records for the household, then all death records are processed.
D. If deaths were declared, then information for at least 1 death should be provided.
E. At most 5 deaths can be reported on a questionnaire, although a continuation household can have up to 20 total deaths.
F. The date of death must have been some time during the preceding 12 months; otherwise assume it is incorrect and remove that death.
G. A household with no death records is considered as not having had any deaths.
H. The number of deaths reported in the question "How many?" must correspond with the number of death records in the household.
I. Use a hot deck (based on population group of head and death occurrence number) to impute mortality data when needed.

Resolution:

A. Process each death:
    a. MINIMUM PROCESSABILITY:
        i. if "how many deaths" is not valid, or the number of death records is greater than the "how many deaths" response:
            1. if fewer than 3 of the following responses is present: name, month, year, sex, age, accidental death, pregnant, and the other responses are all blank, then delete the mortality record.

    b. PART 1: DATE OF DEATH:
        i. MONTH AND YEAR OF DEATH:
            1. if the death occurred in October-December 2000 or January-October 2001:
                a. if the responses for sex, age, and accidental death are all valid, then update the deck AMORTALITY; also:
                b. if the person who died was a woman 12:50 years and the pregnant at death response is valid, then update the hot deck APREGNANT.
            2. otherwise, if the month is January-September and the year is not valid, then impute the year to 2001;
            3. otherwise, if the month is October-December and the year is not valid, then impute the year to 2000;
            4. otherwise, if the month is not valid and the year is valid, then impute a valid month that is consistent with the given year;
            5. otherwise, if both the month and year are not valid, then impute a valid month/year combination;
            6. otherwise, delete the death record.

    c. PART 2: SEX OF DECEASED:
        i. if the sex of the deceased is not valid:

1. if the pregnant at death question has a valid response (yes/no), the impute sex = female;
2. otherwise, then impute from the hot deck AMORTALITY.

d. PART 3: AGE OF DECEASED:
    i. if the age of death is not valid:
        1. if the pregnant at death question has a valid response (yes/no), then impute an age 12:50 from the hot deck AMORTALITY;
        2. otherwise, impute an age of death 000:120 from the hot deck AMORTALITY.

e. PART 4: ACCIDENTAL DEATH:
    i. if the response to accidental death is not valid, then impute accidental death from the hot deck AMORTALITY.

f. PART 5: DEATH DURING PREGNANCY:
    i. if the person who died was a woman of age 12:50:
        1. if the response to death while pregnant is not valid, then impute from the hot deck APREGNANT;
        2. otherwise, do nothing.
    ii. otherwise, make sure that death while pregnant is blank.

B. Post edit: ANY DEATHS
    a. if the household had 1 or more deaths but the “any deaths?” response is not yes, then impute “any deaths?” = yes;
    b. otherwise (no deaths), if the “any deaths?” response is not no, then impute “any deaths?” = no;

C. Post edit: NUMBER OF DEATHS
    a. if the “how many deaths?” response is not valid, then impute number of deaths = number of death records;
    b. otherwise, if the “how many deaths?” response is greater than the number of valid death records:
        i. if there are 5 death records, then do nothing;
        ii. otherwise (less than 5 death records), impute number of deaths = number of death records;
    c. otherwise, if the “how many deaths?” response is less than the number of death records, then impute number of deaths = number of death records.

Structure for hot deck AMORTALITY:

head pop group: BLACK AFRICAN								
MM-ALL	MM-2000	MM-2001	YYYY	SEX	AGE-ALL	AGE-FERT	ACC	death
value	value	value	value	value	value	value	value	1
value	value	value	value	value	value	value	value	2
value	value	value	value	value	value	value	value	3
value	value	value	value	value	value	value	value	4
value	value	value	value	value	value	value	value	5+
COLOURED								
value	value	value	value	value	value	value	value	1
value	value	value	value	value	value	value	value	2
value	value	value	value	value	value	value	value	3
value	value	value	value	value	value	value	value	4
value	value	value	value	value	value	value	value	5+
INDIAN OR ASIAN								
value	value	value	value	value	value	value	value	1
value	value	value	value	value	value	value	value	2
value	value	value	value	value	value	value	value	3
value	value	value	value	value	value	value	value	4
value	value	value	value	value	value	value	value	5+
WHITE								
value	value	value	value	value	value	value	value	1
value	value	value	value	value	value	value	value	2
value	value	value	value	value	value	value	value	3
value	value	value	value	value	value	value	value	4
value	value	value	value	value	value	value	value	5+

notes: MM-ALL returns any valid month (1:12); MM-2001 returns 1:10; MM-2000 returns 10:12; AGE-ALL returns any valid age (000:120); AGE-FERT returns a child-bearing age (12:50).

Structure for hot deck APREGNANT:

DEATH NUMBER					
1	2	3	4	5+	head population group
value	value	value	value	value	1
value	value	value	value	value	2
value	value	value	value	value	3
value	value	value	value	value	4

Software:

This edit is implemented in subroutine SVI1a and SVI1b in the CONCOR programme MRTDER.CN (stored in the subdirectory \\postcap_svr\census\cn), and compiled with the IMPS 3.1 data dictionary CENSUS.DD (stored in the subdirectory \\postcap_svr\census).

Notes:

A. The “number of deaths” is always given a value, which contradicts the skip pattern (i.e., no deaths will be set to zero instead of being left blank).
B. The death information is not applicable if no deaths occurred in the household during the preceding 12 months.

VII IMPUTATION FLAGS

Imputation flags are produced by the automated editing system in order to allow users to know what imputations, if any, were performed on each variable. Imputation flags have the following valid values:

0 no imputation was performed; raw data was preserved
1 logical imputation was performed, raw data was blank
2 logical imputation was performed, raw data was not blank
3 hot-deck imputation was performed, raw data was blank
4 hot-deck imputation was performed, raw data was not blank

A logical imputation is one that does not use a hot-deck; generally, this would include situations where a consistent value is either calculated, deduced, or derived from characteristics of the household and/or its occupants.

Imputation flags are maintained at the individual field level. The following table shows the imputation flags for each variable:

variable	imputation flag	corresponding edit(s)
P01-PERS-NUM	FP01	V.1, V.3
P02DAY	FP02DAY	V.2, V.5, V.7, V.8, V.11
P02MO	FP02MO	V.2, V.5, V.7, V.8, V.11
P02YR	FP02YR	V.2, V.5, V.7, V.8, V.11
P02-AGE	FP02	V.2, V.5, V.7, V.8, V.11
P03-SEX	FP03	V.2, V.4, V.10
P04-RELATION	FP04	V.3, V.6, V.9, V.11, V.16, V.17, V.20
P05-MARITAL-ST	FP05	V.2, V.3, V.6, V.7, V.8, V.12
P05A-SPN	FP05A	V.2, V.3, V.6, V.7, V.8, V.12
P06-POP-GROUP	FP06	V.13
P07-LANGUAGE	FP07	V.14
P08-RELIGION	FP08	V.21
P09-BORN-RSA	FP09	V.22
P09A-PROV-POB	FP09A	V.22
P09B-COUNTRY	FP09B	V.22
P10-CITIZENSHIP	FP10	V.23
P10A-COUNTRY	FP10A	V.23
P11-USUAL	FP11	V.24
P11A-PUR	FP11A	V.24
P11B-PUR-SAME	FP11B	V.24
P11C-PRUR	FP11C	V.24
P12-RESID96	FP12	V.25
P12A-PPR	FP12A	V.25
P12B-PRPR	FP12B	V.25
P12C-MOVE-HERE	FP12C	V.25
P13A-NONE	FP13A	V.15
P13B-SIGHT	FP13B	V.15
P13C-HEARING	FP13C	V.15
P13D-COMM	FP13D	V.15

P13E-PHYSICAL	FP13E	V.15
P13F-INTEL	FP13F	V.15
P13G-EMOTIONAL	FP13G	V.15
P14-MOTHER	FP14	V.16, V.20
P14A-MPN	FP14A	V.16, V.20
P15-FATHER	FP15	V.17
P15A-FPN	FP15A	V.17
P16-INSTITUTION	FP16	V.19
P16A-TYPE	FP16A	V.19
P17-LEVEL-EDUC	FP17	V.18
P17A-FIELD-EDUC	FP17A	V.18
P18-WORK	FP18	V.26
P18A-WHY-NOT	FP18A	V.26
P18B-STEPS	FP18B	V.26
P18C-AVAILABLE	FP18C	V.26
P19-WORK-STATUS	FP19	V.26
P19A-OCCUPATION	FP19A	V.26
P19C-INDUSTRY	FP19C	V.26
P19D-HOURS	FP19D	V.26
P19E-WORK-USUAL	FP19E	V.26
P19F-PLWORK	FP19F	V.26
P19G-PRWORK	FP19G	V.26
P20TCEB	FP20TCEB	V.20
P20MCEB	FP20MCEB	V.20
P20FCEB	FP20FCEB	V.20
P20TCS	FP20TCS	V.20
P20MCS	FP20MCS	V.20
P20FCS	FP20FCS	V.20
P20LASTDAY	FP20LSTDA	V.20
P20LASTMO	FP20LSTMO	V.20
P20LASTYR	FP20LSTYR	V.20
P20LASTSX	FP20LSTSX	V.20
P20LASTVS	FP20LSTVS	V.20
P21-TRAVEL	FP21	V.27
P22-INCOME	FP22	V.28
H23-QUARTERS	FH23	0IV.1
H23A-HU	FH23A	IV.2
H23B-MULTI	FH23B	IV.4
H24-ROOMS	FH24	IV.5
H24A-SHARING	FH24A	IV.6
H25-TENURE	FH25	IV.3
H26-PIPED-WATER	FH26	IV.8
H26A-SOURC-WATER	FH26A	IV.7
H27-TOILET-FACIL	FH27	IV.9
H28A-COOKING	FH28A	IV.10
H28B-HEATING	FH28B	IV.11
H28C-LIGHTING	FH28C	IV.12
H29RADIO	FH29RADIO	IV.13, IV.14

H29TELEVISION	FH29TELEVISION	IV.13, IV.15
H29COMPUTER	FH29COMPUTER	IV.13, IV.16
H29FRIDGE	FH29FRIDGE	IV.13, IV.17
H29TELEPHONE	FH29PHONE	IV.13, IV.18
H29CELL	FH29CELL	IV.13, IV.18
H29A-ACCESS	FH29A	IV.18
H30-REFUSE	FH30	IV.19
H31-DEATHS	FH31	VI.1
H31A-HOW-MANY	FH31A	0VI.1
H31NAME	(no imputation flag)	0VI.1
H31MO	FH31MO	0VI.1
H31YR	FH31YR	0VI.1
H31SX	FH31SX	0VI.1
H31AGE	FH31AGE	0VI.1
H31ACC	FH31ACC	0VI.1
H31PR	FH31PR	0VI.1
QN-TYPE	(no imputation flag)	not edited
TOTPOP	FTOTPOP	III.7
MALEPOP	FMALEPOP	III.7
FEMPOP	FFEMPOP	III.7
NUMQSTS	(no imputation flag)	III.2
THISQST	(no imputation flag)	III.2
WHOCOMPLETED	(no imputation flag)	III.2
HOMELESS	(no imputation flag)	IV.2
CONTINUE-FIRST	(no imputation flag)	III.2
SECOND-QST	(no imputation flag)	III.2
THIRD-QST	(no imputation flag)	III.2
FOURTH-QST	(no imputation flag)	III.2
PROV	(no imputation flag)	not edited
MUNIC	(no imputation flag)	not edited
PLACE	(no imputation flag)	not edited
GEO-TYPE	(no imputation flag)	not edited
EA	(no imputation flag)	not edited
EATYPE	(no imputation flag)	not edited
RECNUM	(no imputation flag)	not edited
INSTNUM	(no imputation flag)	not edited
HHID	(no imputation flag)	not edited
SN	(no imputation flag)	not edited

VIII RAW DATA

In order to accommodate analysts who might need access to raw census data, copies of the raw data for several key variables are stored on the final data file. The following variables are included:

raw variable	corresponding edited variable and reference	
RP02-AGE	age (P02-AGE)	edit V.2, V.5, V.7, V.8, V.11
RP03-SEX	sex (P03-SEX)	edit V.4, V.10
RP04-RELATION	relationship (P04-RELATION)	edit V.3, V.9
RP05-MARITAL-ST	marital status (P05-MARITAL-ST)	edit V.6, V.7, V.8, V.12
RP06-POP-GROUP	population group (P06-POP-GROUP)	edit V.13
RP14-MOTHER	mother alive (P14-MOTHER)	edit V.16
RP15-FATHER	father alive (P15-FATHER)	edit V.17
RP17-LEVEL-EDUC	highest level of education (P17-LEVEL-EDUC)	edit V.18
RP20TCEB	total children ever born (P20TCEB)	edit V.20
RP20MCEB	male children ever born (P20MCEB)	edit V.20
RP20FCEB	female children ever born (P20FCEB)	edit V.20
RP20TCS	total children surviving (P20TCS)	edit V.20
RP20MCS	male children surviving (P20MCS)	edit V.20
RP20FCS	female children surviving (P20FCS)	edit V.20
RP20LSTDAY	last child born day of birth (P20LASTDAY)	edit V.20
RP20LSTMO	last child born month of birth (P20LASTMO)	edit V.20
RP20LSTYR	last child born year of birth (P20LASTYR)	edit V.20
RP20LSTSX	last child born sex (P20LASTSX)	edit V.20
RP20LSTVS	last child born vital status (P20LASTVS)	edit V.20
RH23-QUARTERS	type of living quarters (H23-QUARTERS)	edit IV.1

IX DERIVED AND SUPPLEMENTARY VARIABLES

A set of derived variables will be calculated from the final edited census data, and stored on the final data file. The supplementary variables for PES adjustment of person and housing records are also stored on the final edited data file.

The following sections describe each of these variables

IX.1 DERIVED VARIABLE: DER1_URBAN_RURAL

Description:

DER1_URBAN_RURAL indicates whether an EA falls in an urban or rural area.

Usage:

This derived variable DER1_URBAN_RURAL will be used in Census 2001 products.

Universe:

This derived variable DER1_URBAN_RURAL is applicable to households (A-type QNs) and institutions (B- and C-type QNs).

Data Record:

The derived variable DER1_URBAN_RURAL is stored in the questionnaire information record on the final data file.

Valid Values:

The derived variable DER1_URBAN_RURAL has the following valid values:

1 Urban
2 Rural

Source Variables:

The derived variable DER1_URBAN_RURAL is based on the variable GEO_TYPE, which is described in the design specification document DS-GEOGRAPHY. The source variable has the following valid values:

Geography type:

1 Urban formal
2 Urban informal
4 Tribal area
5 Rural formal

Note: the value 3 was not assigned

Software

This edit is implemented in subroutine SIX1 in the CONCOR programme MRTDER.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. PRE-EDIT: Perform the following debug checks:
    a. Geography type contains a valid value.

   If the above debug check is not satisfied, then raise a critical internal error.

B. For all households and institutions:
    a. if the household or institution has a GEO_TYPE = 1 or 2, then assign DER1_URBAN_RURAL = 1 (urban);
    b. if the household or institution has a GEO_TYPE = 4 or 5, then assign DER1_URBAN_RURAL = 2 (rural).

IX.2 DERVIED VARIABLE: DER2_HHSIZE

Description:

DER2_HHSIZE indicates the total number of persons in a household or institution.

Usage:

This derived variable DER2_HHSIZE will be used in Census 2001 products.

Universe:

This derived variable DER2_HHSIZE is applicable to households (A-type QNs) and institutions (B- and C-type QNs).

Data Record:

The derived variable DER2_HHSIZE is stored in the questionnaire information record of the final data file.

Valid Values:

The derived variable DER2_HHSIZE has the following valid values:

001:998	number of persons
999	999 or more persons

Source Variables:

The derived variable DER2_HHSIZE is the number of person records contained in the household or institution.

Software

This edit is implemented in subroutines SIX2a and SIX2b in the CONCOR programme MRTDER.CN (stored in \\postcap_svr\census\cn).

Derivation:

Note that only non-bogus person records are retained in the data file, and considered for this derived variable.

A. PRE-EDIT: Perform the following debug checks:
    a. confirm that the household or institution is not vacant;

If the above debug check is not satisfied, then raise a critical internal error.

B. For all households and institutions:
    a. if the household or institution has between 001 and 998 person records, then assign DER2_HHSIZE to the number of person records;
    b. otherwise (999 or more person records found), assign DER2_HHSIZE = 999.

IX.3 DERIVED VARIABLE: DER3_WATER

Description:

DER3_WATER indicates what type of water source a household has.

Usage:

This derived variable DER3_WATER will be used in Census 2001 products.

Universe:

This derived variable DER3_WATER is applicable to households (A-type QNs) and institutions (B- and C-type QNs), except for "homeless" (those with institution type = 31).

Data Record:

The derived variable DER3_WATER is stored on the housing record of the final data file.

Valid Values:

The derived variable DER3_WATER has the following valid values:

1	Piped water (tap) inside dwelling
2	Piped water (tap) inside yard
3	Piped water on community stand: distance less than 200m
4	Piped water on community stand: distance greater than 200m
5	Borehole
6	Spring
7	Rain-water tank
8	Dam/pool/stagnant water
9	River/stream
10	Water vendor
11	Other
99	not applicable (homeless in institutions)

Source Variables:

The derived variable DER3_WATER is based on the variables H26_PIPED_WATER (piped water for domestic use; see edit IV.8) and H26A_SOURCE_WATER (source of water for domestic use; see edit IV.7).

These two variables have the following valid values:

Piped water (H26):

1	no access to piped (tap) water
2	piped (tap) water on community stand: distance greater than 200 m from dwelling
3	piped (tap) water on community stand: distance less than 200 m from dwelling
4	Piped (tap) water inside yard
5	Piped (tap) water inside dwelling

Source of water (H26A):

1 regional water scheme
2 Borehole
3 Spring
4 rain-water tank
5 dam/pool/stagnant water
6 river/stream
7 water vendor
8 Other

Software

This edit is implemented in subroutine SIX3 in the CONCOR programme MRTDER.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. PRE-EDIT: Perform the following debug checks:
   a. Verify that piped water contains a valid value;
   b. Verify that source of water contains a valid value.

   If any of the above debug checks is not satisfied, then raise a critical internal error.

B. For homeless institutions, assign DER3_WATER = 99 (not applicable).

C. For households and institutions:
   a. if the household has no access to piped (tap) water (H26 = 1):
      i. if water source is “regional water scheme”, then assign DER3_WATER = 11 (other);
      ii. otherwise, if water source is “borehole”, then assign DER3_WATER = 5 (borehole);
      iii. otherwise, if water source is “spring”, then assign DER3_WATER = 6 (spring);
      iv. otherwise, if water source is “rain-water tank”, then assign DER3_WATER = 7 (rain-water tank);
      v. otherwise, if water source is “dam/pool/stagnant water”, then assign DER3_WATER = 8 (dam/pool/stagnant water);
      vi. otherwise, if water source is “river/stream”, then assign DER3_WATER = 9 (river/stream);
      vii. otherwise, if water source is “water vendor”, then assign DER3_WATER = 10 (water vendor);
      viii. otherwise, if water source is “other”, then assign DER3_WATER = 11 (other);
   b. if the household has piped (tap) water on community stand: distance greater than 200m from dwelling (H26 = 2), then assign DER3_WATER = 4 (Piped water on community stand: distance greater than 200m);
   c. if the household has piped (tap) water on community stand: distance less than 200m from dwelling (H26 = 3), then assign DER3_WATER = 3 (Piped water on community stand: distance less than 200m);
   d. if the household has piped (tap) water inside yard (H26 = 4), then assign DER3_WATER = 2 (piped (tap) water inside yard);
   e. if the household has piped (tap) water inside dwelling (H26 = 5), then assign DER3_WATER = 1 (piped (tap) water inside dwelling);

IX.4 DERIVED VARIABLE: DER4_TELEPHONE

Description:

DER4_TELEPHONE indicates what type of phone service a household has.

Usage:

This derived variable DER4_TELEPHONE will be used in Census 2001 products.

Universe:

This derived variable DER4_TELEPHONE is only applicable to households (A-type QNs). It is not applicable to institutions (B- and C-type QNs).

Data Record:

The derived variable DER4_TELEPHONE is stored on the housing record of the final data file.

Valid Values:

The derived variable DER4_TELEPHONE has the following valid values:

1	Telephone in dwelling and cell-phone
2	Telephone in dwelling only
3	Cell-phone only
4	At a neighbour nearby
5	At a public telephone nearby
6	At another location nearby
7	At another location, not nearby
8	No access to a telephone
9	not applicable (institutions)

Source Variables:

The derived variable DER4_TELEPHONE is based on the variables H29PHONE (telephone in dwelling; see edit IV.18), H29CELL (cell-phone; also see edit IV.18), and H29a (access to a telephone; also see edit IV.18). The three source variables have the following valid values:

Telephone in dwelling:

1	yes
2	no

Cell-phone:

1	Yes
2	No

Access to a telephone:

1	At a neighbour nearby
2	At a public telephone nearby
3	At another location nearby
4	At another location, not nearby
5	No access to a telephone

The questionnaire skip pattern ensures that Access to a telephone is blank unless both telephone in dwelling and cell-phone in dwelling are "no".

Software

This edit is implemented in subroutine SIX4 in the CONCOR programme MRTDER.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. PRE-EDIT: Perform the following debug checks:
   a. telephone in dwelling contains a valid value;
   b. cell-phone in dwelling contains a valid value;
   c. if telephone in dwelling and cell-phone in dwelling are both "no", then access to a telephone contains a valid value;
   d. otherwise, access to a telephone is not applicable and must be blank.

   If any of the above debug checks is not satisfied, then raise a critical internal error.

B. For households:
   a. if the household has both a telephone and a cell-phone, then assign DER4_TELEPHONE = 1 (both);
   b. otherwise, if the household has a telephone but no cell-phone, then assign DER4_TELEPHONE = 2 (telephone only);
   c. otherwise, if the household has a cell-phone but no telephone, then assign DER4_TELEPHONE = 3 (Cell-phone only);
   d. otherwise (the household has neither telephone nor cell phone), if access to a telephone is "at a neighbour nearby", then assign DER4_TELEPHONE = 4 (neighbor nearby);
   e. otherwise, if access to a telephone is "at a public telephone nearby", then assign DER4_TELEPHONE = 5 (public telephone nearby);
   f. otherwise, if access to a telephone is "at another location nearby", then assign DER4_TELEPHONE = 6 (another location nearby);
   g. otherwise, if access to a telephone is "at another location, not nearby", then assign DER4_TELEPHONE = 7 (another location, not nearby);
   h. otherwise, if access to a telephone is "no access", then assign DER4_TELEPHONE = 8 (no telephone access).

C. For institutions: assign DER4_TELEPHONE = 9 (not applicable).

IX.5 DERIVED VARIABLE: DER5_DISABILITY

Description:

DER5_DISABILITY indicates if the person has any serious disability that prevents his/her full participation in life activities (such as education, work, social life).

Usage:

The derived variable DER5_DISABILITY will be used in Census 2001 products.

Universe:

The derived variable DER5_DISABILITY is applicable to households (A-type QNs) and institutions (B- type QNs).

Data Record:

The derived variable DER5_DISABILITY is stored on the person record of the final data file.

Valid Values:

The derived variable DER5_DISABILITY has the following valid values:

0	No disabilities
1	Sight (blind/severe visual limitation)
2	Hearing (deaf, profoundly hard of hearing)
3	Communication (speech impairment)
4	Physical (e.g. needs wheelchair, crutches or prosthesis; limb, hand usage limitations)
5	Intellectual (serious difficulties in learning)
6	Emotional (behavioral, psychological)
7	Multiple (combination of more than one of the above)

Source Variables:

The derived variable DER5_DISABILITY is based on the 7 disability variables, specifically:

variable	**meaning**
P13A_NONE	no disability
P13B_SIGHT	sight
P13C_HEARING	hearing
P13D_COMM	communication
P13E_PHYSICAL	physical
P13F_INTEL	intellectual
P13G_EMOTIONAL	emotional

(see edit V.15)

For each of these, valid values are:

1	yes
2	no

Software

This edit is implemented in subroutine SIX5 in the CONCOR programme MRTDER.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. PRE-EDIT: Perform the following debug checks:

a. verify that all 7 disability variables have valid values (1 = yes or 2 = no);
b. if “no disability” = 1 (yes), then verify that the other 6 disabilities (sight, hearing, communication, physical, intellectual, and emotional) all have value “no”;
c. otherwise (“no disability” = no), verify that one or more of the other 6 disabilities has a “yes” response.

If any of the above debug checks is not satisfied, then raise a critical internal error.

B. For each person record (households or institution):
   a. if person has no disability (P13A_NONE = 2) then assign DER5_DISABILITY = 0;
   b. otherwise, classify the person’s disabilities as follows:
      i. if sight (P13B_SIGHT) is the only disability (all others are “no”), then assign DER5_DISABILITY = 1;
      ii. otherwise, if hearing (P13C_HEARING) is the only disability (all others are “no”), then assign DER5_DISABILITY = 2;
      iii. otherwise, if communication (P13D_COMM) is the only disability (all others are “no”), then assign DER5_DISABILITY = 3;
      iv. otherwise, if physical (P13E_PHYSICAL) is the only disability (all others are “no”), then assign DER5_DISABILITY = 4;
      v. otherwise, if intellectual (P13F_INTEL) is the only disability (all others are “no”), then assign DER5_DISABILITY = 5;
      vi. otherwise, if emotional (P13G_EMOTIONAL) is the only disability (all others are “no”), then assign DER5_DISABILITY = 6;
      vii. otherwise, confirm that the person has multiple disabilities; assign DER5_DISABILITY = 7.

Notes:

A. Any combination of two or more disabilities will result in the person being classified as having multiple disabilities (DER5_DISABILITY = 7).

IX.6 DERIVED VARIABLE: DER6_PROV_BIRTH

Description:

DER6_PROV_BIRTH indicates in which province a person was born.

Usage:

This derived variable DER6_PROV_BIRTH will be used in Census 2001 products.

Universe:

This derived variable DER6_PROV_BIRTH is applicable to all person records in households (A-type QNs) and institutions (B- and C-type QNs).

Data Record:

The derived variable DER6_PROV_BIRTH is stored in the person records of the final data file.

Valid Values:

The derived variable DER6_PROV_BIRTH has the following valid values:

01	Western Cape
02	Eastern Cape
03	Northern Cape
04	Free State
05	KwaZulu-Natal
06	North West
07	Gauteng
08	Mpumalanga
09	Limpopo
10	Not applicable

Source Variables:

The derived variable DER6_PROV_BIRTH is based on the variables P09_BORN_RSA (Born in SA; see edit V.22) and P09_PROV_POB (Place of birth; also see edit V.22). The source variables have the following valid values:

Born in SA:

Y	Yes
N	No

Province of birth:

1	Western Cape
2	Eastern Cape
3	Northern Cape
4	Free State
5	KwaZulu-Natal
6	North West
7	Gauteng
8	Mpumalanga
9	Limpopo

Software

This edit is implemented in subroutine SIX6 in the CONCOR programme CODED2.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. PRE-EDIT: Perform the following debug checks:
    a. born in SA contains a valid value;
    b. if born in SA = 1 (yes), then province of birth must be valid;
    c. if born in SA = 2 (no), then province of birth must be blank.

   If any of the above debug checks is not satisfied, then raise a critical internal error.

B. For all persons:
    a. if born in SA = 2 (no), then assign DER6_PROV_BIRTH = 10 (Not applicable);
    b. otherwise (born in SA = 1), assign DER6_PROV_BIRTH = place of birth (thus giving a value 01-09).

IX.7 DERIVED VARIABLE: DER7_COUNTRY_BIRTH

Description:

DER7_CTRY_BIRTH indicates in which country a person was born.

Usage:

This derived variable DER7_CTRY_BIRTH will be used in Census 2001 products.

Universe:

This derived variable DER7_CTRY_BIRTH is applicable to all person records in households (A-type QNs) and institutions (B- and C-type QNs).

Data Record:

The derived variable DER7_CTRY_BIRTH is stored in the person records of the final data file.

Valid Values:

The derived variable DER7_CTRY_BIRTH has the same values as the country code list (provided in section XIII.1). Note that this is a 3-digit variable.

Source Variables:

The derived variable DER7_CTRY_BIRTH is based on the variables P09_BORN_RSA (Born in SA; see edit V.22) and P09B_COUNTRY (Country of birth; also see edit V.22). The source variables have the following valid values:

Born in SA:

Y	Yes
N	No

Country of birth:

(country code list is specified in section 0)

Software

This edit is implemented in subroutine SIX7 in the CONCOR programme CODED2.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. PRE-EDIT: Perform the following debug checks:
   a. born in SA contains a valid value;
   b. if born in SA = 1 (yes), then country of birth must be blank;
   c. if born in SA = 2 (no), then country of birth must have a valid value

   If the any of the above debug checks is not satisfied, then raise a critical internal error.

B. For all persons:
   a. if born in SA = 1 (yes), then assign DER7_CTRY_BIRTH = 101 (South Africa);
   b. otherwise (not born in SA), assign DER7_COUNTRY_BIRTH = Country of birth.

IX.8 DERIVED VARIABLE: DER8_COUNTRY_CITIZENSHIP

Description:

DER8_CTRY_CITIZ indicates a person's country of citizenship.

Usage:

This derived variable DER8_CTRY_CITIZ will be used in Census 2001 products.

Universe:

This derived variable DER8_CTRY_CITIZ is applicable to all person records in households (A-type QNs) and institutions (B- and C-type QNs).

Data Record:

The derived variable DER8_CTRY_CITIZ is stored in the person records of the final data file.

Valid Values:

The derived variable DER8_CTRY_CITIZ has the same values as the country code list (provided in section XIII.1). Note that this is a 3-digit variable.

Source Variables:

The derived variable DER8_CTRY_CITIZ is based on the variables P10_CITIZENSHIP (South African citizen; see edit V.23) and P10A_COUNTRY (Country of citizenship; also see edit V.23). The source variables has the following valid values:

SA citizen:

Y	Yes
N	No

Country of citizenship:

(country code list is specified in section XIII.1)

Software

This edit is implemented in subroutine SIX8 in the CONCOR programme CODED2.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. PRE-EDIT: Perform the following debug checks:
   a. SA citizen contains a valid value;
   b. if SA citizen = 1 (yes), then country of citizenship must be blank;
   c. if SA citizen = 2 (no), then country of citizenship must have a valid value.

   If the above debug check is not satisfied, then raise a critical internal error.

B. For all persons:
   a. if SA citizen = 1 (yes), then assign DER8_CTRY_CITIZ = 101 (South African citizenship)
   b. otherwise (not a SA citizen), assign DER8_CTRY_CITIZ = Country of citizenship.

IX.9 DERIVED VARIABLE: DER9_PROV_MOVED

Description:

DER9_PROV_MOVED indicates the province from which a person moved.

Usage:

This derived variable DER9_PROV_MOVED will be used in Census 2001 products.

Universe:

This derived variable DER9_PROV_MOVED is applicable to all person records in households (A-type QNs) and institutions (B- and C-type QNs).

Data Record:

The derived variable DER9_PROV_MOVED is stored in the person records of the final data file.

Valid Values:

The derived variable DER9_PROV_MOVED has the following valid values:

01	Western Cape
02	Eastern Cape
03	Northern Cape
04	Free State
05	KwaZulu-Natal
06	North West
07	Gauteng
08	Mpumalanga
09	Limpopo
10	Another country
11	Not applicable, living in the same place
12	Not applicable, born after October 1996
99	Undetermined

Source Variables:

The derived variable DER9_PROV_MOVED is based on the variables P12_RESID96 (Residence five years ago; see edit V.25) and P12B_PPR_PROV (Province from where moved; also see edit V.25). The source variables have the following valid values:

Residence five years ago:

1	Yes
2	No
3	Born after October 1996

Place of previous residence (PPR):

(place names code list is given in section XIII.3)

Province of previous residence (PRPR):

1	Western Cape
2	Eastern Cape
3	Northern Cape
4	Free State
5	KwaZulu-Natal
6	North West
7	Gauteng
8	Mpumalanga
9	Limpopo

Software

This edit is implemented in subroutine SIX9 in the CONCOR programme CODED2.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. PRE-EDIT: Perform the following debug checks:
    a. Residence five years ago must contain a valid value;
    b. if Residence five years ago = 1,3 (yes or born after, then province from where moved must be blank;
    c. if Residence five years ago = 2 (no), then province from where moved must contain a valid value, unless PPR is a foreign country;

   If any of the above debug checks is not satisfied, then raise a critical internal error.

B. For all persons:
    a. if Residence five years ago = 2 (no):
        i. if P12A-PPR = foreign country (00000003), then assign DER9_PROV_MOVED = 10 (another country);
        ii. otherwise, if P12-PPR = undetermined (00000000), then assign DER9_PROV_MOVED = 99 (undetermined);
        iii. otherwise, assign DER9_PROV_MOVED = P12B_PRPR (Province from where moved);
    b. otherwise (if P12_RESID96 ≠ no), if Residence five years ago = 1 (yes), then assign DER9_PROV_MOVED = 11 (Not applicable, living in the same place);
    c. otherwise (if P12_RESID96 ≠ yes, no), assign DER9_PROV_MOVED = 12 (Not applicable, born after October 1996).

IX.10 DERIVED VARIABLE: DER10_EMPL_ST1 (OFFICIAL DEFINITION)

Description:

DER10_EMPL_ST1 indicates the employment status of each person, using the official definition of unemployment. This definition defines the unemployed as those people aged 15-65 years who:

a. did not work during the 7 days prior to the interview, and
b. wanted to work and were available to start work within a week of the interview, and
c. had taken active steps to look for work or to start some form of self-employment in the 4 weeks prior to the interview.

Usage:

This derived variable DER10_EMPL_ST1 will be used in Census 2001 products.

Universe:

This derived variable DER10_EMPL_ST1 is applicable to all person records in households (A-type QNs) and institutions (B- and C-type QNs).

Data Record:

The derived variable DER10_EMPL_ST1 is stored in the person records of the final data file.

Valid Values:

The derived variable DER10_EMPL_ST1 has the following valid values:

00	Not applicable, aged less than 15 or older than 65 years
01	Employed
02	Unemployed
03	Not economically active

Source Variables:

The derived variable DER10_EMPL_ST1 is based on the following variables:

Age (P02_AGE)
Any work in the 7 days before 10 October (P18_WORK)
Reason why not working (P18A_WHY_NOT)
Active steps (P18B_STEPS)
Availability (P18C_AVAILABLE)

These variables are described in edit V.26.

The source variables have the following valid values:

Age:

000:120

Any work in the 7 days before 10 October (P18_WORK):

1	Yes: formal registered (non-farming)
2	Yes: Informal unregistered (non-farming)
3	Yes: farming
4	Yes: has work but was temporarily absent
5	No: did not have work

Reason why not working (P18A_WHY_NOT):

1	Scholar or student
2	Home-maker or housewife
3	Pensioner or retired person/ too old to work
4	Unable to work due to illness or disability
5	Seasonal worker not working presently
6	Does not choose to work
7	Could not find work

Active steps (P18B_STEPS):

Y	Yes
N	No

Availability (P18C_AVAILABLE):

1	Will start within one week
2	Will start more than 1 week, up to 2 weeks
3	Will start more than 2 week, up to 3 weeks
4	Will start some time after 4 weeks
5	Does not choose to work

Software

This edit is implemented in subroutine SIX10 in the CONCOR programme CODED2.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. PRE-EDIT: Perform the following debug checks:
   a. age must contain a valid value;
   b. if age>= 10:
      i. any work in the 7 days before 10 October must contain a valid value;
      ii. if any work in the 7 days before 10 October = 1:4 (yes):
         1. reason why not working must be blank, and
         2. active steps must be blank, and
         3. availability must be blank;
      iii. otherwise (any work preceding week ≠ 1:4):
         1. reason why not working must contain a valid value, and
         2. active steps must contain a valid value, and
         3. availability must contain a valid value;

   If any of the above debug checks is not satisfied, then raise a critical internal error.

B. For all persons:
   a. If age is less than 15 or greater than 65 years then assign DER10_EMPL_ST1 = 00 (Not applicable, age less than 15 or older than 65 years);
   b. otherwise (age = 15:65), if P18_WORK = 1:4 (yes responses), then assign DER10_EMPL_ST1 = 01 (Employed);
   c. otherwise (P18_WORK = 5), if P18A_WHY_NOT = 7 (could not find work) and P18B_STEPS (yes) = 1 and P18C_AVAILABLE = 1 (within 1 week), then assign DER10_EMPL_ST1 = 02 (Unemployed);
   d. otherwise, assign DER10_EMPL_ST1 = 3 (Not economically active).

IX.11 DERIVED VARIABLE: DER11_EMPL_ST2 (EXPANDED DEFINITION)

Description:

DER11_EMPL_ST2 indicates the employment status of each person, using the expanded definition of unemployment. This definition defines the unemployed as those people aged 15-65 years who:

a. did not work during the 7 days prior to the interview, and
b. wanted to work and were available to start work within a week.

Usage:

This derived variable DER11_EMPL_ST2 will be used in Census 2001 products.

Universe:

This derived variable DER11_EMPL_ST2 is applicable to all person records in households (A-type QNs) and institutions (B- and C-type QNs).

Data Record:

The derived variable DER11_EMPL_ST2 is stored in the person records of the final data file.

Valid Values:

The derived variable DER11_EMPL_ST2 has the following valid values:

00	Not applicable, aged less than 15 or older than 65 years
01	Employed
02	Unemployed
03	Not economically active

Source Variables:

The derived variable DER11_EMPL_ST2 is based on the following variables:

Age (P02_AGE)
Any work in the 7 days before 10 October (P18_WORK)
Reason why not working (P18A_WHY_NOT)
Availability (P18C_AVAILABLE)

These variables are described in edit V.26.

The source variables have the following valid values:

Age:

000:120

Any work in the 7 days before 10 October (P18_WORK):

1	Yes: formal registered (non-farming)
2	Yes: Informal unregistered (non-farming)
3	Yes: farming
4	Yes: has work but was temporarily absent
5	No: did not have a work

Reason why not working (P18A_WHY_NOT):

1	Scholar or student
2	Home-maker or housewife
3	Pensioner or retired person/ too old to work
4	Unable to work due to illness or disability
5	Seasonal worker not working presently
6	Does not choose to work
7	Could not find work

Active steps (P18B_STEPS):

Y	Yes
N	No

Availability (P18C_AVAILABLE):

1	Will start within one week
2	Will start more than 1 week, up to 2 weeks
3	Will start more than 2 week, up to 3 weeks
4	Will start some time after 4 weeks
5	Does not choose to work

Software

This edit is implemented in subroutine SIX11 in the CONCOR programme CODED2.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. PRE-EDIT: Perform the following debug checks:
   a. age must contain a valid value;
   b. any work in the 7 days before 10 October must contain a valid value;
   c. if any work in the 7 days before 10 October = 1:4 (yes):
      i. reason why not working must be blank, and
      ii. active steps must be blank, and
      iii. availability must be blank;
   d. otherwise (any work preceding week ≠ 1:4):
      i. reason why not working must contain a valid value, and
      ii. active steps must contain a valid value, and
      iii. availability must contain a valid value;

   If any of the above debug checks is not satisfied, then raise a critical internal error.

B. For all persons:
   a. If age is less than 15 or greater than 65 years then assign DER11_EMPL_ST2 = 0 (Not applicable, age less than 15 or older than 65 years);
   b. otherwise (age = 15:65), if P18_WORK = 1:4 (yes responses), then assign DER11_EMPL_ST2 = 01 (employed);
   c. otherwise (P18_WORK = 5 {no work}), if P18A_WHY_NOT = 7 (could not find work) and P18C_AVAILABLE = 1:4 (available sometime or another), then assign DER11_EMPL_ST2 = 02 (unemployed);
   d. otherwise, DER11_EMPL_ST2 = 03 (not economically active).

IX.12 DERIVED VARIABLE: DER12_LIV_QTRS

Description:

DER12_LIV_QTRS indicates the type of living quarters of households or of persons in institutions.

Usage:

This derived variable DER12_LIV_QTRS will be used in Census 2001 products.

Universe:

This derived variable DER12_LIV_QTRS is applicable to all households (A-type QNs) and institutions (B- and C-type QNs).

Data Record:

The derived variable DER12_LIV_QTRS is stored in the household records of the final data file.

Valid Values:

The derived variable DER12_LIV_QTRS has the following valid values:

1 Housing unit
2 Residential hotel
3 Students' residence
4 Home for the aged
5 Workers' hostel
6 Institution
7 Homeless

Source Variables:

The derived variable DER12_LIV_QTRS is based on the variables QN_TYPE (Questionnaire type), H23_QUARTERS (Type of living quarters) and H23A_HU (Type of housing unit/institution). The source variables have the following valid values:

Questionnaire type:

1 Household
2 Institution

Type of living quarters:

1 Housing unit
2 Residential hotel
3 Students' residence
4 Home for the aged
5 Workers' hostel

Type of housing unit/institution:

01 House or brick structure on a separate stand or yard
02 Traditional dwelling/hut/structure made of traditional materials
03 Flat in block of flats
04 Tow/cluster/semi-detached house (simplex, duplex, triplex)
05 House/flat/room in backyard
06 Informal dwelling/shack in backyard
07 Informal dwelling/shack NOT in backyard
08 Room/flatlet not in backyard but on shared property
09 Caravan or tent
10 Private ship/boat
20 Tourist hotel/motel/inn
21 Hospital/medical facility/clinic/frailcare centre
22 Childcare institution/orphanage
23 Home for the disabled
24 Boarding school hostel
25 Initiation school
26 Convent/monastery/religious retreat
27 Defence force barracks/camp/ship in harbour
28 Prison/correctional institution/police cells
29 Community or church hall
30 Refugee camp/shelter for the homeless
31 Homeless

Software

This edit is implemented in subroutine SIX12 in the CONCOR programme MRTDER.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. PRE-EDIT: Perform the following debug checks:
    a. questionnaire type contains a valid value;
    b. if QN type = 1 (household), then:
        i. type of living quarters contains a valid value;
        ii. if living quarters = 1, then type of housing unit/institution must be 01:10;
        iii. otherwise (if living quarters = 1), type of housing unit/institution must be blank;
    c. otherwise (QN type = 2):
        i. type of living quarters must be blank;
        ii. type of housing unit/institution must be 20:31.

If the above debug check is not satisfied, then raise a critical internal error.

B. For all housing records:
    a. if questionnaire type = 1 (household), then assign DER12_LIV_QTRS = type of living quarters (giving a value 1:5);
    b. otherwise (QN type must be 2):
        i. if type of housing unit/ institution = 31 (homeless), then assign DER12_LIV_QTRS = 7(homeless);
        ii. otherwise, assign DER12_LIV_QTRS = 6 (Institution).

IX.13 DERIVED VARIABLE: DER13_TYPE_HU

Description:

DER13_TYPE_HU indicates the type of housing unit.

Usage:

This derived variable DER13_TYPE_HU will be used in Census 2001 products.

Universe:

This derived variable DER13_TYPE_HU is applicable to all households (A-type QNs). Institutions (B- and C-type QNs) have a special "not applicable" code for this variable.

Data Record:

The derived variable DER13_TYPE_HU is stored in the household records of the final data file.

Valid Values:

The derived variable DER13_TYPE_HU has the following valid values:

01	House or brick structure on a separate stand or yard
02	Traditional dwelling/hut/structure made of traditional materials
03	Flat in block of flats
04	Town/cluster/semi-detached house (simplex, duplex, triplex)
05	House/flat/room in backyard
06	Informal dwelling/shack in backyard
07	Informal dwelling/shack NOT in backyard
08	Room/flatlet not in backyard but on shared property
09	Caravan or tent
10	Private ship/boat
11	Not applicable (institution)
99	Not applicable (living quarters is not housing unit)

Source Variables:

The derived variable DER13_TYPE_HU is based on the variables QN_TYPE (Questionnaire type), H23_QUARTERS (Type of living quarters) and H23A_HU (Type of housing unit/institution). The source variables have the following valid values:

Questionnaire type:

1	Household
2	Institution

Type of living quarters:

1	Housing unit
2	Residential hotel
3	Students' residence
4	Home for the aged
5	Workers' hostel

Type of housing unit/institution:

01 House or brick structure on a separate stand or yard
02 Traditional dwelling/hut/structure made of traditional materials
03 Flat in block of flats
04 Tow/cluster/semi-detached house (simplex, duplex, triplex)
05 House/flat/room in backyard
06 Informal dwelling/shack in backyard
07 Informal dwelling/shack NOT in backyard
08 Room/flatlet not in backyard but on shared property
09 Caravan or tent
10 Private ship/boat
20 Tourist hotel/motel/inn
21 Hospital/medical facility/clinic/frailcare centre
22 Childcare institution/orphanage
23 Home for the disabled
24 Boarding school hostel
25 Initiation school
26 Convent/monastery/religious retreat
27 Defence force barracks/camp/ship in harbour
28 Prison/correctional institution/police cells
29 Community or church hall
30 Refugee camp/shelter for the homeless
31 Homeless

Software

This edit is implemented in subroutine SIX13 in the CONCOR programme MRTDER.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. PRE-EDIT: Perform the following debug checks:
    a. questionnaire type contains a valid value;
    b. if QN type = 1 (household), then:
        i. type of living quarters contains a valid value;
        ii. if type of living quarters = 1, then type of housing unit/institution must be 01:10;
    c. otherwise (QN type = 2):
        i. type of living quarters must be blank;
        ii. type of housing unit/ institution must be 20:31.

If the above debug check is not satisfied, then raise a critical internal error.

B. For all housing records:
    a. if questionnaire type = 1 (household):
        i. if living quarters = 1 (housing unit), then assign DER13_TYPE_HU = type of housing unit/institution (thus giving a value 01:10);
        ii. otherwise (living quarters must be 2:5), assign DER13_TYPE_HU = 99 (not applicable, living quarters is not housing unit);
    b. otherwise (QN type must be 2), assign DER13_TYPE_HU = 11 (not applicable; institution).

IX.14 DERIVED VARIABLE: DER14_TYPE_INST

Description:

DER14_TYPE_INST indicates the type of institution.

Usage:

This derived variable DER14_TYPE_INST will be used in Census 2001 products.

Universe:

This derived variable DER14_TYPE_INST is applicable to institutions (B- and C-type QNs). Households (A-type QNs) have a special "not applicable" code for this variable.

Data Record:

The derived variable DER14_TYPE_INST is stored in the household records of the final data file.

Valid Values:

The derived variable DER14_TYPE_INST has the following valid values:

01	Tourist hotel/motel/inn
02	Hospital/medical facility/clinic/frailcare centre
03	Childcare institution/orphanage
04	Home for the disabled
05	Boarding school hostel
06	Initiation school
07	Convent/monastery/religious retreat
08	Defence force barracks/camp/ship in harbour
09	Prison/correctional institution/police cells
10	Community or church hall
11	Refugee camp/shelter for the homeless
12	Homeless
13	Not applicable (household)

Source Variables:

The derived variable DER14_TYPE_INST is based on the variables QN_TYPE (Questionnaire type), H23_QUARTERS (Type of living quarters) and H23A_HU (Type of housing unit/institution). The source variables have the following valid values:

Questionnaire type:

1	Household
2	Institution

Type of living quarters:

1	Housing unit
2	Residential hotel
3	Students' residence
4	Home for the aged
5	Workers' hostel

Type of housing unit/institution:

01 House or brick structure on a separate stand or yard
02 Traditional dwelling/hut/structure made of traditional materials
03 Flat in block of flats
04 Tow/cluster/semi-detached house (simplex, duplex, triplex)
05 House/flat/room in backyard
06 Informal dwelling/shack in backyard
07 Informal dwelling/shack NOT in backyard
08 Room/flatlet not in backyard but on shared property
09 Caravan or tent
10 Private ship/boat
20 Tourist hotel/motel/inn
21 Hospital/medical facility/clinic/frailcare centre
22 Childcare institution/orphanage
23 Home for the disabled
24 Boarding school hostel
25 Initiation school
26 Convent/monastery/religious retreat
27 Defence force barracks/camp/ship in harbour
28 Prison/correctional institution/police cells
29 Community or church hall
30 Refugee camp/shelter for the homeless
31 Homeless

Software

This edit is implemented in subroutine SIX14 in the CONCOR programme MRTDER.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. PRE-EDIT: Perform the following debug checks:
    a. questionnaire type contains a valid value;
    b. if QN type = 1 (household), then:
        i. type of living quarters contains a valid value;
        ii. type of housing unit/institution must be 01:10;
    c. otherwise (QN type = 2):
        i. type of living quarters must be blank;
        ii. type of housing unit/institution must be 20:31.

    If the above debug check is not satisfied, then raise a critical internal error.

B. For all housing records:
    a. if QN type = 1 (household), then assign DER14_TYPE_INST = 13 (not applicable; household);
    b. otherwise (QN type must be 2), assign DER14_TYPE_INST = type of housing unit/institution minus 19 (thus giving a value 01:12).

IX.15 DERIVED VARIABLE: DER15_WGT_HHSIZE

Description:

DER15_WGT_HHSIZE is the weighted household size and the sum of the person weights for the household.

Usage:

This derived variable DER15_WGT_HHSIZE will be used in Census 2001 products.

Universe:

This derived variable DER15_WGT_HHSIZE is applicable to households (A-type QNs) and institutions (B- and C-type QNs).

Data Record:

The derived variable DER15_WGT_HHSIZE is stored in the questionnaire information record of the final data file.

Valid Values:

The derived variable DER15_WGT_HHSIZE is a strictly positive number in the range 0 to 9999.999999 (although no values should be as large as this).

Source Variables:

The derived variable DER15_WGT_HHSIZE is based on the variable PERS_WGT (person adjustment factor). This source variable is a strictly positive number in the range 0 to 2.999999.

Software

This edit is implemented in subroutines SIX15a and SIX15b in the CONCOR programme MRTDER.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. Compute the sum of the variable PERS_WGT over all the person records in the household or institituton.
B. if this sum is less than or equal to 9999.999999 then assign the sum to the derived variable DER15_WGT_HHSIZE;
C. otherwise set DER15_WGT_HHSIZE = 9999.999999.

IX.16 DERIVED VARIABLE: DER16_HH_INCOME

Description:

DER16_HH_INCOME is a coding of household income, which is calculated by adding together the individual incomes of household members.

Usage:

This derived variable DER16_HH_INCOME will be used in Census 2001 products.

Universe:

This derived variable DER16_HH_INCOME is applicable to all persons living in households (A-type QNs). Institutions (B- and C-type QNs) have a special "not applicable" household income code.

Data Record:

The derived variable DER16_HH_INCOME is stored in the questionnaire info records of the final data file.

Valid Values:

The derived variable DER16_HH_INCOME has the following valid values:

01	No income
02	R1 – R 4 800
03	R 4 801– R 9 600
04	R9 601 – R 19 200
05	R19 201 – R38 400
06	R38 401 – R76 800
07	R76 801 – R153 600
08	R153 601 – R307 200
09	R307 200 – R614 400
10	R614 401 – 1 228 800
11	R1 228 801 – R2 457 600
12	R2 457 601 and more
13	Not applicable (institutions)

Source Variables:

The derived variable DER16_HH_INCOME is based on the variables QN_TYPE (Questionnaire type) from the questionnaire file and P22_INCOME (Annual income) from the Person file. The source variables have the following valid values:

Questionnaire type:

1	Household
2	Institution

Annual income:

01	no income
02	R1-R400
03	R401-R800
04	R801-R1 600
05	R1 601-R3 200
06	R3 201-R6 400
07	R6 401-R12 800
08	R12 801-R25 600
09	R25 601-R51 200
10	R51 201-R102 400
11	R102 401-R204 800
12	R204 801 or more

Software

This edit is implemented in subroutine SIX16 in the CONCOR programme CODED2.CN (stored in \\postcap_svr\census\cn).

Derivation:

D. PRE-EDIT: perform the following debug checks:
   a. questionnaire type contains a valid value;
   b. annual income contains a valid value.

   If the above debug check is not satisfied, then raise a critical internal error.

E. For households (QN type = 1):
   a. for each person record in the household, determine the "mid point value" for the person's annual income range response, using the following lookup table:

income range code	mid point value
01	0
02	3 200
03	7 200
04	13 576
05	27 153
06	54 306
07	108 612
08	217 223
09	434 446
10	868 893
11	1 737 786
12	4 915 200

(See notes below for details on how the mid point values were determined.)

b. sum the mid point values of each person's income response, then recode this sum to DER16_HH_INCOME:

sum of mid point values	DER16_HH_INCOME
0	01
1 – 4 800	02
4 801– 9 600	03
9 601 – 19 200	04
19 201 – 38 400	05
38 401 – 76 800	06
76 801 – 153 600	07
153 601 – 307 200	08
307 200 – 614 400	09
614 401 – 1 228 800	10
1 228 801 – 2 457 600	11
2 457 601+	12

c. For institutions (QN type = 2), assign DER16_HH_INCOME = 13 (not applicable; institution).

Notes:

Because individual income was recorded in intervals rather than exact amounts, an approximate amount (the mid point used above) had to be estimated for the calculations as follows:

- households claiming that they had no income were not adjusted,
- for the first class among those with incomes, the amount is R3 196 (i.e. two thirds of the top cut-off of this bracket),
- for the second class, the amount is the midpoint of the class interval,
- for the last class, the amount is R4 915 200,
- for the other classes, the amount is calculated as the logarithmic mean of the top and bottom of the given interval.

Users should be warned to use this variable with caution and be aware of its limitations. Household income has been derived from personal incomes collected in ranges. For each range, an assumption had to be made as to the appropriate point to use for the calculations. This has made the results tentative. Household income does not provide a measure of total income and its accuracy in representing relative income is unknown. Direct comparisons with other data sets cannot be made. The main reason for releasing this variable in the data is to show patterns and trends, rather then precise estimates.

IX.17 DERIVED VARIABLE: DER17_SHARING

Description:

DER_SHARING_ROOM is calculated by adding together all the persons in households sharing one room.

Note:

This derived variable has not yet been implemented.

IX.18 DERIVED VARIABLE: DER18_FAM_INCOME

Description:

DER_FAMILY_INCOME is calculated by adding together all the income from individual families.

Note:

This derived variable has not yet been implemented.

IX.19 DERIVED VARIABLE: DER19_HH_EXPEND

Description:

DER_HOUSEHOLD_EXPENDITURE is derived by fusing Census data with Income and Expenditure and Labour Force Survey data and imputing household expenditure from this fused data set by using prediction models. The basic methodology of imputing expenditures for each household in the census is conceptually simple. It involves creating an association model between per capita household expenditure (or income) and household characteristics that are common to both the census and the household survey. Prediction models are derived for consumption or income as the endogenous variable, on the basis of the survey. The selection of exogenous variables is restricted to those variables that can be found in both Labour Force Surveys and the census. The parameter estimates derived from the prediction models were then applied to the census data.

Note:

This derived variable has not yet been implemented.

IX.20 DERIVED VARIABLE: DER20_HH_INDIC

Description:

DER_HOUSEHOLD_INDICATOR is calculated from household goods i.e. if a household has a radio, television, computer, refrigerator, telephone in the dwelling, cell-phone or any of the combinations thereof.

Note:

This derived variable has not yet been implemented.

IX.21 DERIVED VARIABLE: DER21_POVERTY

Description:

DER_POVERTY_INDICATOR measures the rate of poverty of households.

This indicator goes hand in hand with imputed expenditure (DER_HOUSEHOLD_EXPENDITURE) and will be calculated at a later stage.

Note:

This derived variable has not yet been implemented.

IX.22 DERIVED VARIABLE: DER22_FAMILY

Description:

DER_FAMILY_STRUCTURE is calculated for persons using family number and relationship, as describe in the UN Handbook.

Note:

This derived variable has not yet been implemented.

IX.23 DERIVED VARIABLE: DER23_AGE_LB

Description:

DER_AGE_LB indicates the age when a woman last gave birth, and is calculated for women aged between 12 and 50 years who have ever given birth.

Usage:

This derived variable DER23_AGE_LB will be used in Census 2001 products.

Universe:

This derived variable DER23_AGE_LB is applicable to all females aged 12:50 years who have at least one child ever born, in both households (A-type QNs) and institutions (B- and C-type QNs). Special not applicable values are used for women 12:50 who have never had children, and for women not 12:50 years and for men.

Data Record:

The derived variable DER23_AGE_LB is stored in the person records of the final data file.

Valid Values:

The derived variable DER23_AGE_LB has the following valid values:

12	woman was 12 at last birth
13	woman was 13 at last birth
14	woman was 14 at last birth
15	woman was 15 at last birth
16	woman was 16 at last birth
17	woman was 17 at last birth
18	woman was 18 at last birth
19	woman was 19 at last birth
20	woman was 20 at last birth
21	woman was 21 at last birth
22	woman was 22 at last birth
23	woman was 23 at last birth
24	woman was 24 at last birth
25	woman was 25 at last birth
26	woman was 26 at last birth
27	woman was 27 at last birth
28	woman was 28 at last birth
29	woman was 29 at last birth
30	woman was 30 at last birth
31	woman was 31 at last birth
32	woman was 32 at last birth
33	woman was 33 at last birth
34	woman was 34 at last birth
35	woman was 35 at last birth
36	woman was 36 at last birth
37	woman was 37 at last birth
38	woman was 38 at last birth
39	woman was 39 at last birth
40	woman was 40 at last birth
41	woman was 41 at last birth
42	woman was 42 at last birth
43	woman was 43 at last birth
44	woman was 44 at last birth
45	woman was 45 at last birth
46	woman was 46 at last birth
47	woman was 47 at last birth
48	woman was 48 at last birth
49	woman was 49 at last birth
50	woman was 50 at last birth
98	Not applicable (no children ever born)
99	Not applicable (male, or female not 12:50)

Source Variables:

The derived variable DER23_AGE_LB is based on the variables P02YR (year of birth), P02MO (month of birth), P02DAY (day of birth), P03_SEX (sex), P20TCEB (total children ever born), P20LASTYR (last born child year of birth), P20LASTMO (last born child month of birth), and P20LASTDAY (last born child day of birth). The source variables has the following valid values:

P02-AGE (age):

000-120

P02YR (year of birth):

1880-2001

P02MO (month of birth):
01-12

P02DAY (day of birth):
01-31

P03-SEX (sex):
1 male
2 female

P20TCEB (total children ever born)
00-24

P20LASTYR (last born child year of birth):
1962-2001

P20LASTMO (last born child month of birth):
01-12

P20LASTDAY (last born child day of birth):
01-31

Note: P02-AGE and P20TCEB are included for debug checking purposes only.

Software

This edit is implemented in subroutine SIX23 in the CONCOR programme MRTDER.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. PRE-EDIT: Perform the following debug checks:
   a. year of birth contains a valid value;
   b. month of birth contains a valid value;
   c. day of birth contains a valid value;
   d. age contains a valid value;
   e. sex contains a valid value;
   f. if sex = 2 (female) and age = 12:50, then:
      i. total children ever born contains a valid value;
      ii. if total children ever born>0, then:
         1. last born year of birth contains a valid value;
         2. last born month of birth contains a valid value;
         3. last born day of birth contains a valid value;
      iii. if total children ever born = 0, then:
         1. last born year of birth is blank;
         2. last born month of birth is blank;
         3. last born day of birth is blank;
   g. otherwise (must be a male, or a woman not 12:50 years old):
      i. total children ever born is blank;
      ii. last born year of birth is blank;
      iii. last born month of birth is blank;
      iv. last born day of birth is blank;

If any of the above debug checks is not satisfied, then raise a critical internal error.

B. If sex = 2 (female) and age = 12:50, then:
    a. if total children ever born>0, then:
        i. calculate the age of the child on census night: *age of child* = 2001 – last born year of birth;
        ii. if last born month = 11:12, then decrement *age of child* by 1 year;
        iii. if last born month = 10 and last born day >= 10, then decrement *age of child* by 1 year;
        iv. assign DER23_AGE_LB = age of woman – *age of child*.
    b. otherwise, assign DER23_AGE_LB = 98 (not applicable; no children ever born).

C. otherwise (male or female not 12:50), assign DER23_AGE_LB = 99 (not applicable; male or female not 12:50).

Note:

A. For Census 2006, a more accurate calculation can be made by comparing full dates of birth instead of just ages.

IX.24 DERIVED VARIABLE: DER24_TIME_LB

Description:

DER24_TIME_LB indicates the number of years that have elapsed since a woman aged 12:50 last gave birth.

Usage:

This derived variable DER24_TIME_LB will be used in Census 2001 products.

Universe:

This derived variable DER24_TIME_LB is applicable to all females aged 12:50 years who have at least one child ever born, in both households (A-type QNs) and institutions (B- and C-type QNs). Special not applicable values are used for women 12:50 who have never had children, for women not 12:50 years and for men.

Data Record:

The derived variable DER24_TIME_LB is stored in the person records of the final data file.

Valid Values:

The derived variable DER24_TIME_LB has the following valid values:

00	00 years since last birth
01	01 year since last birth
02	02 years since last birth
03	03 years since last birth
04	04 years since last birth
05	05 years since last birth
06	06 years since last birth
07	07 years since last birth
08	08 years since last birth
09	09 years since last birth
10	10 years since last birth
11	11 years since last birth
12	12 years since last birth
13	13 years since last birth
14	14 years since last birth
15	15 years since last birth
16	16 years since last birth
17	17 years since last birth
18	18 years since last birth
19	19 years since last birth
20	20 years since last birth
21	21 years since last birth
22	22 years since last birth
23	23 years since last birth
24	24 years since last birth
25	25 years since last birth
26	26 years since last birth
27	27 years since last birth
28	28 years since last birth
29	29 years since last birth
30	30 years since last birth
31	31 years since last birth
32	32 years since last birth
33	33 years since last birth
34	34 years since last birth
35	35 years since last birth
36	36 years since last birth
37	37 years since last birth
38	38 years since last birth
98	Not applicable (no children ever born)
99	Not applicable (male, or female not 12:50)

Source Variables:

The derived variable DER23_AGE_LB is based on the variables P02YR (year of birth), P02MO (month of birth), P02DAY (day of birth), P03_SEX (sex), P20TCEB (total children ever born), P20LASTYR (last born child year of birth), P20LASTMO (last born child month of birth), and P20LASTDAY (last born child day of birth). The source variables has the following valid values:

P02-AGE (age):

000-120

P03-SEX (sex):

1	male
2	female

P20TCEB (total children ever born)

00-24

P20LASTYR (last born child year of birth):

1962-2001

P20LASTMO (last born child month of birth):

01-12

P20LASTDAY (last born child day of birth):

01-31

Note: P02-AGE and P20TCEB are included for debug checking purposes only.

Software

This edit is implemented in subroutine SIX24 in the CONCOR programme MRTDER.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. PRE-EDIT: Perform the following debug checks:
   a. age contains a valid value;
   b. sex contains a valid value;
   c. if sex = 2 (female) and age = 12:50, then:
      i. total children ever born contains a valid value;
      ii. if total children ever born>0, then:
         1. last born year of birth contains a valid value;
         2. last born month of birth contains a valid value;
         3. last born day of birth contains a valid value;
      iii. if total children ever born = 0, then:
         1. last born year of birth is blank;
         2. last born month of birth is blank;
         3. last born day of birth is blank;
   d. otherwise (must be a male, or a female not 12:50 years old):
      i. total children ever born is blank;
      ii. last born year of birth is blank;
      iii. last born month of birth is blank;
      iv. last born day of birth is blank;

   If any of the above debug checks is not satisfied, then raise a critical internal error.

B. If sex = 2 (female) and age = 12:50, then:
   a. if total children ever born>0, then:
      i. assign DER24_TIME_LB = (2001) minus (last born year of birth);
      ii. if (last born month of birth)>10, then decrement DER24_TIME_LB by 1;
      iii. if (last born month of birth) = 10 and (last born day of birth)>= 10, then decrement DER24_TIME_LB by 1;
   b. otherwise, assign DER24_TIME_LB = 98 (not applicable; no children ever born).

C. otherwise (male, or female not 12:50), assign DER24_TIME_LB = 99 (not applicable; male, or female not 12:50).

IX.25 DERIVED VARIABLE: DER25_RELIGION

Description:

DER25_RELIGION is a recoding of religion into broad groupings.

Usage:

This derived variable DER25_RELIGION will be used in Census 2001 products.

Universe:

This derived variable DER25_RELIGION is applicable to all person records in households (A-Type QNs) and institutions (B- and C-type QNs).

Data Record:

The derived variable DER25_RELIGION is stored in the person records of the final data file.

Valid Values:

The derived variable DER25_RELIGION has the following valid values:

01	Dutch Reformed churches
02	Zion Christian churches
03	Catholic churches
04	Methodist churches
05	Pentecostal/ charismatic churches
06	Anglican churches
07	Apostolic Faith Mission
08	Lutheran churches
09	Presbyterian churches
10	Bandla Lama Nazaretha
11	Baptist churches
12	Congregational churches
13	Orthodox churches
14	Other Apostolic churches
15	Other Zionist churches
16	Ethiopian type churches
17	Other Reformed churches
18	Other African independent churches
19	Other Christian churches
20	African traditional belief
21	Judaism
22	Hinduism
23	Islam
24	Other beliefs
25	No religion
26	Undetermined

Source Variables:

The derived variable DER25_RELIGION is based on the variables P08_RELIGION (Religion) from the Person file. Valid values for the source variable are given in section XIII.2.

Software

This edit is implemented in subroutine SIX25 in the CONCOR programme CODED2.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. PRE-EDIT: Perform the following debug check:
   a. Religion contains a valid value;

   If the above debug check is not satisfied, then raise a critical internal error.

B. For all persons:

   Recode religion to DER25_RELIGION using the following correspondance table:

religion code(s)	DER25_RELIGION code
1	01
25, 26	02
11, 48	03
7, 44, 28	04
6,15,17,20,50,24,30,54,58,61,62,23	05
4,5	06
12	07
10,47	08
8, 45	09
27	10
14,49	11
9,46	12
18,51	13
13,29,53	14
55,56	15
59,60	16
2,3,16	17
31	18
32,57,21,22,52,19	19
33	20
34	21
38	22
39	23
35,36,37,40,41,42,43	24
63	25
64,65,99	26

IX.26 DERIVED VARIABLE: DER26_AGE_GRP1

Description:

DER26_AGE_GRP1 is a recoding of the variable P02_AGE into five-year age groups from 0 to 85+.

Usage:

This derived variable DER26_AGE_GRP1 will be used in Census 2001 products.

Universe:

This derived variable DER26_AGE_GRP1 is applicable to all persons in households (A-type QNs) and institutions (B- and C-type QNs).

Data Record:

This derived variable DER26_AGE_GRP1 is stored in the person records of the final data file.

Valid Values:

This derived variable DER26_AGE_GRP1 has the following valid values:

01	0–4
02	5–9
03	10–14
04	15–19
05	20–24
06	25–29
07	30–34
08	35–39
09	40–44
10	45–49
11	50–54
12	55–59
13	60–64
14	65–69
15	70–74
16	75–79
17	80–84
18	85+

Source Variables:

This derived variable DER26_AGE_GRP1 is based on the variable P02_AGE (Age). This source variable has the valid values 0:120.

Software

This edit is implemented in subroutine SIX26 in the CONCOR programme MRTDER.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. PRE-EDIT: Perform the following debug check:
   a. P02_AGE must have a valid value.

   If the above debug check is not satisfied, then raise a critical internal error.

B. For all person records:
   Recode P02_AGE to DER26_AGE_GRP1 according to the table given above.

IX.27 DERIVED VARIABLE: DER27_EDUC_GRP1

Description:

DER27_EDUC_GRP1 is a recoding of the variable P17_LEVEL_EDUC (Level of Education) into six groups.

Usage:

This derived variable DER27_EDUC_GRP1 will be used in Census 2001 products.

Universe:

This derived variable DER27_EDUC_GRP1 is applicable to all persons aged 5 years and older in households (A-type QNs) and institutions (B- and C-type QNs). A special "not applicable" code is assigned to persons younger than 5.

Data Record:

This derived variable DER27_EDUC_GRP1 is stored in the person records of the final data file.

Valid Values:

This derived variable DER27_EDUC_GRP1 has the following valid values:

0	Not applicable
1	No schooling
2	Some primary,
3	Complete primary
4	Some secondary
5	Std 10 / Grade 12
6	Higher

Source Variables:

This derived variable DER27_EDUC_GROUP1 is based on the variable P17_LEVEL_EDUC (Level of Education). This variable has the following valid values:

01	Grade 1/ Sub A (completed or in process)
02	Grade 2/ Sub B
03	Grade 3/ Standard 1
04	Grade 4/ Standard 2
05	Grade 5/ Standard 3
06	Grade 6/ Standard 4
07	Grade 7/ Standard 5
08	Grade 8/ Standard 6/Form 1
09	Grade 9/ Standard 7/Form 2
10	Grade 10/ Standard 8/Form 3/NTC I
11	Grade 11/ Standard 9/Form 4/NTC II
12	Grade 12/ Standard 10/Form 5/Matric./NTC III
13	Certificate with less than grade 12
14	Diploma with less than grade 12
15	Certificate with grade 12
16	Diploma with grade 12
17	Bachelor's degree
18	Bachelor's degree and diploma
19	Honours degree
20	Higher degree (Master's, Doctorate)
99	No schooling

Software

This edit is implemented in subroutine SIX27 in the CONCOR programme MRTDER.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. PRE-EDIT: Perform the following debug check:
    a. For all persons aged 5 years and older, P17_LEVEL_EDUC must have a valid value.

   If the above debug check is not satisfied, then raise a critical internal error.

B. For all persons:
    a. if age is less than 5, then assign DER27_EDUC_GRP1 = 0 (Not applicable);
    b. otherwise (age >= 5):
        i. If P17_LEVEL_EDUC = 99, then assign DER27_EDUC_GRP1 = 1 (No schooling);
        ii. otherwise if P17_LEVEL_EDUC = 1:6, then assign DER27_EDUC_GRP1 = 2 (Some primary);
        iii. otherwise if P17_LEVEL_EDUC = 7, then assign DER27_EDUC_GRP1 = 3 (Complete primary);
        iv. otherwise if P17_LEVEL_EDUC = 8:11, 13, 14, then assign DER27_EDUC_GRP1 = 4 (Some secondary);
        v. otherwise if P17_LEVEL_EDUC = 12, then assign DER27_EDUC_GRP1 = 5 (Std 10 / Grade 12);
        vi. otherwise (P17_LEVEL_EDUC = 15:20), assign DER27_EDUC_GRP1 = 6 (Higher).

This recode is summarised in the following table:

P17_LEVEL_EDUC	DER27_EDUC_GRP1
01	2
02	2
03	2
04	2
05	2
06	2
07	3
08	4
09	4
10	4
11	4
12	5
13	4
14	4
15	6
16	6
17	6
18	6
19	6
20	6
99	1

IX.28 DERIVED VARIABLE: DER28_BIRTH_GRP1

Description:

DER28_BIRTH_GRP1 is a recoding of the variable P09B_COUNTRY (Country of Birth).

Usage:

The derived variable DER28_BIRTH_GRP1 will be used in Census2001 products.

Universe:

The derived variable DER28_BIRTH_GRP1 is applicable to all persons in households (A-type QNs) and institutions (B- and C-type QNs).

Data Record:

The derived variable DER28_BIRTH_GRP1 is stored in the person records of the final data file.

Valid Values:

This derived variable DER28_BIRTH_GRP1 has the following valid values:

1	South Africa
2	SADC Countries
3	Rest of Africa
4	Europe
5	Asia
6	North America
7	Central and South America
8	Australia and New Zealand

Source Variables:

The derived variable DER28_BIRTH_GRP1 is based on the variables P09_BORN_RSA (Born in South Africa) and P09B_COUNTRY (Country of Birth). The variable P09_BORN_RSA takes the valid values:

1	Yes
2	No

See section 0 for the list of valid country codes for variable P09B_COUNTRY.

Software

This edit is implemented in subroutine SIX28 in the CONCOR programme CODED2.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. Perform the following debug check:
   a. the variable P09_BORN_RSA contains a valid value;
   b. if P09_BORN_RSA = 1 (yes), then:
      i. P09A_PROV_POB contains a valid value;
      ii. P09B_COUNTRY is blank;
   c. otherwise (not born in SA):
      i. P09A_PROV_POB is blank;
      ii. P09B_COUNTRY contains a valid value.

   If the above debug check is not satisfied, then raise a critical internal error.

B. For all persons:

a. if P09_BORN_RSA = 1 (yes), then assign DER28_BIRTH_GRP1 = 1 (South Africa);
b. otherwise (P09_BORN_RSA = 2 {no}), assign the values of DER28_BIRTH_GRP1 according to the values given in the following recode table:

P09B_COUNTRY		DER28_BIRTH_GRP1
111	LESOTHO	2
112	NAMIBIA	2
113	BOTSWANA	2
114	ZIMBABWE	2
115	MOZAMBIQUE	2
116	SWAZILAND	2
121	ANGOLA	2
122	DRC (ZAIRE)	2
123	MALAWI	2
124	MAURITIUS	2
125	SEYCHELLES	2
126	TANZANIA	2
127	ZAMBIA	2
130	ALGERIA	3
131	BENIN	3
132	BURKINA FASO	3
133	BURUNDI	3
134	CAMEROON	3
135	CAPE VERDE	3
136	CENTRAL AFRICAN REPUBLIC	3
137	CHAD	3
138	COMOROS	3
139	CONGO	3
140	COTE D'IVOIRE	3
141	DJIBOUTI	3
142	EGYPT	3
143	EQUATORIAL GUINEA	3
144	ERITREA	3
145	ETHIOPIA	3
146	GABON	3
147	GAMBIA	3
148	GHANA	3
149	GUINEA	3
150	GUINEA-BISSAU	3
151	KENYA	3
152	LIBERIA	3
153	LIBYAN ARAB JAMAHIRIYA	3
154	MADAGASCAR	3
155	MALI	3
156	MAURITANIA	3
157	MOROCCO	3
158	NIGER	3
159	NIGERIA	3
160	REUNION	3
161	RWANDA	3
162	SAINT HELENA	3
163	SAO TOME AND PRINCIPE	3

P09B_COUNTRY		DER28_BIRTH_GRP1
164	SENEGAL	3
165	SIERRA LEONE	3
166	SOMALIA	3
167	SUDAN	3
168	TOGO	3
169	TUNISIA	3
170	UGANDA	3
171	WESTERN SAHARA	3
199	OTHER AFRICA	3
201	UNITED STATES OF AMERICA	6
202	ANGUILLA	7
203	ANTIGUA AND BARBUDA	7
204	ARGENTINA	7
205	ARUBA	7
206	BAHAMAS	7
207	BARBADOS	7
208	BELIZE	7
209	BERMUDA	7
210	BOLIVIA	7
211	BRAZIL	7
212	BRITISH VIRGIN ISLANDS	7
213	CANADA	6
214	CARIBBEAN	7
215	CAYMAN ISLANDS	7
216	CHILE	7
217	COLOMBIA	7
218	COSTA RICA	7
219	CUBA	7
220	DOMINICA	7
221	DOMINICAN REPUBLIC	7
222	ECUADOR	7
223	EL SALVADOR	7
224	FALKLAND ISLANDS (MALVINAS)	7
225	FRENCH GUIANA	7
226	GREENLAND	4
227	GRENADA	7
228	GUADELOUPE	7
229	GUATEMALA	7
230	GUYANA	7
231	HAITI	7
232	HONDURAS	7
233	JAMAICA	7
234	LATIN AMERICA AND THE CARIBBEAN	7
235	MARTINIQUE	7
236	MEXICO	7
237	MONTSERRAT	7
238	NETHERLANDS ANTILLES	7
239	NICARAGUA	7
240	PANAMA	7
241	PARAGUAY	7
242	PERU	7
243	PUERTO RICO	7

P09B_COUNTRY		DER28_BIRTH_GRP1
244	SAINT KITTS AND NEVIS	7
245	SAINT LUCIA	7
246	SAINT PIERRE AND MIQUELON	7
247	SAINT VINCENT AND THE GRENADINES	7
248	SURINAME	7
249	TRINIDAD AND TOBAGO	7
250	TURKS AND CAICOS ISLANDS	7
251	UNITED STATES VIRGIN ISLANDS	7
252	URUGUAY	7
253	VENEZUELA	7
299	OTHER NORTH AND SOUTH AMERICA	7
301	CHINA	5
302	AFGHANISTAN	5
303	ARMENIA	5
304	AZERBAIJAN	5
305	BAHRAIN	5
306	BANGLADESH	5
307	BHUTAN	5
308	BRUNEI DARUSSALAM	5
309	CAMBODIA	5
310	CYPRUS	4
311	DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA	5
312	EAST TIMOR	5
313	GEORGIA	5
314	HONG KONG SPECIAL REGION OF CHINA	5
315	INDIA	5
316	INDONESIA	5
317	IRAN (ISLAMIC REPUBLIC OF)	5
318	IRAQ	5
319	ISRAEL	5
320	JAPAN	5
321	JORDAN	5
322	KAZAKHSTAN	5
323	KUWAIT	5
324	KYRGYZSTAN	5
325	LAO PEOPLE'S DEMOCRATIC REPUBLIC	5
326	LEBANON	5
327	MACAO SPECIAL ADMIN REGION OF CHINA	5
328	MALAYSIA	5
329	MALDIVES	5
330	MONGOLIA	5
331	MYANMAR	5
332	NEPAL	5
333	OCCUPIED PALESTINIAN TERRITORY	5
334	OMAN	5
335	PAKISTAN	5
336	PHILIPPINES	5
337	QATAR	5
338	REPUBLIC OF KOREA	5
339	SAUDI ARABIA	5
340	SINGAPORE	5
341	SRI LANKA	5

P09B_COUNTRY		DER28_BIRTH_GRP1
342	SYRIAN ARAB REPUBLIC	5
343	TAIWAN PROVINCE OF CHINA	5
344	TAJIKISTAN	5
345	THAILAND	5
346	TURKEY	5
347	TURKMENISTAN	5
348	UNITED ARAB EMIRATES	5
349	UZBEKISTAN	5
350	VIET NAM	5
351	YEMEN	5
399	OTHER ASIA	5
401	UNITED KINGDOM/GREAT BRITAIN	4
402	ALBANIA	4
403	ANDORRA	4
404	AUSTRIA	4
405	BELARUS	4
406	BELGIUM	4
407	BOSNIA AND HERZEGOVINA	4
408	BULGARIA	4
409	CHANNEL ISLANDS	4
410	CROATIA	4
411	CZECH REPUBLIC	4
412	DENMARK	4
413	ESTONIA	4
414	FAEROE ISLANDS	4
415	FINLAND	4
416	FRANCE	4
417	GERMANY	4
418	GIBRALTAR	4
419	GREECE	4
420	HOLY SEE	4
421	HUNGARY	4
422	ICELAND	4
423	IRELAND	4
424	ISLE OF MAN	4
425	ITALY	4
426	LATVIA	4
427	LIECHTENSTEIN	4
428	LITHUANIA	4
429	LUXEMBOURG	4
430	MALTA	4
431	MONACO	4
432	NETHERLANDS	4
433	NORWAY	4
434	POLAND	4
435	PORTUGAL	4
436	REPUBLIC OF MOLDOVA	4
437	ROMANIA	4
438	RUSSIAN FEDERATION	4
439	SAN MARINO	4
440	SLOVAKIA	4
441	SLOVENIA	4

P09B_COUNTRY		DER28_BIRTH_GRP1
442	SOUTHERN EUROPE	4
443	SPAIN	4
444	SVALBARD AND JAN MAYEN ISLANDS	4
445	SWEDEN	4
446	SWITZERLAND	4
447	THE FORMER YUGOSLAV REP OF MACEDONIA	4
448	UKRAINE	4
449	YUGOSLAVIA	4
499	OTHER EUROPE	4
501	AUSTRALIA	8
502	AMERICAN SAMOA	8
503	COOK ISLANDS	8
504	FIJI	8
505	FRENCH POLYNESIA	8
506	GUAM	8
507	KIRIBATI	8
508	MARSHALL ISLANDS	8
509	MELANESIA	8
510	MICRONESIA	8
511	MICRONESIA (FEDERATED STATES OF)	8
512	NAURU	8
513	NEW CALEDONIA	8
514	NEW ZEALAND	8
515	NIUE	8
516	NORFOLK ISLAND	8
517	NORTHERN MARIANA ISLANDS	8
518	PALAU	8
519	PAPUA NEW GUINEA	8
520	PITCAIRN	8
521	POLYNESIA	8
522	SAMOA	8
523	SOLOMON ISLANDS	8
524	TOKELAU	8
525	TONGA	8
526	TUVALU	8
527	VANUATU	8
528	WALLIS AND FUTUNA ISLANDS	8
599	OTHER OCEANIA	8

IX.29 DERIVED VARIABLE: DER29_CITIZ_GRP1

Description:

DER29_CITIZ_GRP1 is a recoding of the variable P10A_COUNTRY (Country of Birth).

Usage:

The derived variable DER29_CITIZ_GRP1 will be used in Census 2001 products.

Universe:

The derived variable DER29_CITIZ_GRP1 is applicable to all persons in households (A-type QNs) and institutions (B- and C-type QNs).

Data Record:

The derived variable DER29_CITIZ_GRP1 is stored in the person records of the final data file.

Valid Values:

The derived variable DER29_CITIZ_GRP1 has the following valid values:

1	South Africa
2	SADC Countries
3	Rest of Africa
4	Europe
5	Asia
6	North America
7	Central and South America
8	Australia and New Zealand

Source Variables:

The derived variable DER29_CITIZ_GRP1 is based on the variables P10_CITIZENSHIP (Citizen of South Africa) and P10B_COUNTRY (Country of Citizenship). The variable P10_CITIZENSHIP takes the valid values:

1	Yes
2	No

See section XXX.1 for the list of valid country codes for variable P09B_COUNTRY.

Software:

This edit is implemented in subroutine SIX29 in the CONCOR programme CODED2.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. Perform the following debug check:
   a. the variable P10_CITIZENSHIP contains a valid value;
   b. if P10_CITIZENSHIP = 1 (yes), then P10_COUNTRY must be blank;
   c. otherwise (not a SA citizen), P10_COUNTRY contains a valid value.

   If the above debug check is not satisfied, then raise a critical internal error.

B. For all persons:
   a. if P10_CITIZENSHIP = 1 (yes), then assign DER29_CITIZ_GRP1 = 1 (South Africa);
   b. otherwise (P10_CITIZENSHIP = 2 (no)), assign the values of DER29_CITIZ_GRP1 according to the values given in the lookup table in section IX.28 (DER28_BIRTH_GRP1).

IX.30 DERIVED VARIABLE: DER30_ECON_ACT

Description:

DER30_ECON_ACT is a recoding of the variable P18_WORK (Any work in the 7 days before 10 October).

Usage:

The derived variable DER30_ECON_ACT will be used in Census 2001 products.

Universe:

The derived variable DER30_ECON_ACT is applicable to all persons aged 10 years old and over in both households (A-type QNs) and institutions (B- and C-type QNs). A special "not applicable" code is assigned to persons younger than 10 years.

Data Record:

The derived variable DER30_ECON_ACT is stored in the person records in the final data file.

Valid Values:

The derived variable DER30_ECON_ACT takes the following valid values:

0	not applicable
1	Yes
2	No

Source Variables:

The derived variable DER30_ECON_ACT is based on the variable P18_WORK (Any work in the 7 days before 10 October). This variable has the following valid values:

1	Yes: formal registered (non-farming)
2	Yes: informal unregistered (non-farming)
3	Yes: farming
4	Yes: temporarily absent from work
5	no: did not have work

Software:

This edit is implemented in subroutine SIX30 in the CONCOR programme CODED2.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. Perform the following debug checks:
   a. if age>=10, then P18_WORK must have a valid value;
   b. otherwise, P18_WORK must be blank.

   If the above debug check is not satisfied, then raise a critical internal error.

B. For all persons:
   a. If age is less than 10 (P02_AGE < 10), then assign DER30_ECON_ACT = 0 (Not applicable);
   b. otherwise (P02_AGE >= 10):
      i. if P18_WORK = 1:4 (Yes, had work in the 7 days before 10 October), then assign DER30_ECON_ACT = 1 (Yes, economically active);
      ii. otherwise (P18_WORK = 5 (No, did not have work)), assign DER30_ECON_ACT = 2 (No, not economically active).

IX.31 DERIVED VARIABLE: DER31_OCC_GRP1

Description:

DER31_OCC_GRP1 is a recoding of the variable P19C_OCCUPATION (Occupation).

Usage:

The derived variable DER31_OCC_GRP1 will be used in Census 2001 products.

Universe:

The derived variable DER31_OCC_GRP1 is applicable to all economically active persons (P18_WORK = 1:4), in both households (A-type QNs) and institutions (B- and C-type QNs).

Data Record:

The derived variable DER31_OCC_GRP1 is stored in the person records of the final edited data file.

Valid Values:

The derived variable DER31_OCC_GRP1 has the following valid values:

00	Not applicable
01	Legislators, senior officials and managers
02	Professionals
03	Technicians and associate professionals
04	Clerks
05	Service workers, ship and market sales workers
06	Skilled agricultural and fishery workers
07	Craft and related trades workers
08	Plant and machine operators and assemblers
09	Elementary occupations
10	Occupations NEC (not otherwise codable)

Source Variables:

The derived variable DER31_OCC_GRP1 is based on the variables P18_WORK (Any work in the 7 days before 10 October) and P19C_OCCUPATION (Occupation). The variable P18_WORK has the following valid values:

1	yes: formal registered (non-farming)
2	yes: informal unregistered (non-farming)
3	yes: farming
4	yes: temporarily absent from work
5	no: did not have work

For the list of valid values of the variable P19C_OCCUPATION see section **Error! Reference source not found.**.

Software

This edit is implemented in subroutine SIX31 in the CONCOR programme CODED2.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. PRE-EDIT: Perform the following debug checks:
    a. if age>=10, then:
        i. P18_WORK must contain a valid value;

ii. if P18_WORK = 1:4 (Yes had work) then P19C_OCCUPATION must have valid value;
iii. otherwise, P19C_OCCUPATION must be blank.

b. otherwise (younger than 10), P18_WORK must be blank;

If the above debug check is not satisfied then raise a critical error.

B. For all persons:

a. if P02_AGE < 10 (age<10 years), then assign DER31_OCC_GRP1 = 0 (Not applicable);

b. otherwise (P02_AGE>=10):

i. if P18_WORK = 5 (No, did not have work) then assign DER31_OCC_GRP1 = 0 (Not applicable);

ii. otherwise, recode P19C_OCCUPATION to DER31_OCC_GRP1 according to the values given in the table below:

P19C_OCCUPATION	DER31_OCC_GRP1
110:139, 150:159	01
210:249	02
310:359	03
410:429	04
510:539	05
610:629	06
710:749	07
810:839	08
910:939	09
990:999	10

IX.32 SUPPLEMENTARY VARIABLE: PERS_WGT (PES)

Description:

PERS_WGT provides the Post-Enumeration Survey (PES) person-record adjustment factor.

Usage:

This supplementary variable will be used in all Census 2001 person-record tabulations.

Universe:

The supplementary variable PERS_WGT exists on all person records.

Persons living in households with living quarters = housing unit or workers' hostel (based on the raw value for the living quarters variable) and PES EA type = tribal settlement, farm, small holding, urban settlement, informal settlement, or hostel (1:5 or 9) are adjusted by the PES, and follow the lookup procedure described below. All other persons have an adjustment factor of 1.0000.

Note: PES EA type is the set of EA type values that were used when the PES sample was drawn in August 2001. Raw, as opposed to edited, values for the living quarters are also used to determine the universe.

Data Record:

The supplementary variable PERS_WGT is stored on the person record of the final data file.

Valid Values:

The person factor is a number between 1.0000 and 2.9999 (although adjustment factors that large should not be needed).

Source Variables:

The supplementary variable PERS_WGT is supplied by the PES team, and varies according to the adjustment class, which is a lookup table determined by the province, PES Geo type, raw sex, raw age, and raw population group. PES geo type is the set of geo type values that were used when the PES sample was drawn in 2001. Raw, as opposed to edited, values are used for the other variables.

Technical documentation describing the PES and its methodology is available from Statistics South Africa.

PES weights depend on the following variables:

Province:

1 Western Cape
2 Eastern Cape
3 Northern Cape
4 Free State
5 KwaZulu-Natal
6 North West
7 Gauteng
8 Mpumulanga
9 Limpopo

RAW Population group:

1	Black African
2	Coloured
3	Indian or Asian
4	White
5	Other
other	invalid

RAW Sex:

1	Male
2	Female
other	invalid

RAW Living quarters:

1	Housing unit
2	Residential hotel
3	Students' residence
4	Home for the aged
5	Workers' hostel
6	other
other	invalid

PES Geo type:

1	Urban formal
2	Urban non-formal
4	Tribal area
5	Rural formal

PES EA type:

0	Vacant
1	Tribal settlement
2	Farm
3	Small holding
4	Urban settlement
5	Informal settlement
6	Recreational
7	Industrial area
8	Institution
9	Hostel

RAW Age:

000:120	value values
Other	invalid

Software:

This edit is implemented in subroutine SIX32 in the CONCOR programme MRTDER.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. For households where raw living quarters = 1 or 5 and PES EA type = 1:5 or 9:

Calculate a 3-digit "lookup key" based on a combination of the province and other source variables. Note that the first digit of the key corresponds to the province, and the other 2 digits correspond to the unique ID within that province (see XIV.1 for more information):

a. PROVINCE 1 (WC):
   i. if PES geo type = 2 and raw sex = 1,2 and raw age = 0:120 and raw pop group = 1:5, then assign key = 101;
   ii. otherwise, if PES geo type = 5 and raw sex = 1,2 and raw age = 0:120 and raw pop group = 1,5, then assign key = 102;
   iii. otherwise, if PES geo type = 5 and raw sex = 1,2 and raw age = 0:120 and raw pop group = 2,3,4, then assign key = 103;
   iv. otherwise, if PES geo type = 1 and raw sex = 1,2 and raw age = 0:44 and raw pop group = 1,3,4, then assign key = 104;
   v. otherwise, if PES geo type = 1 and raw sex = 1,2 and raw age = 0:44 and raw pop group = 2,5, then assign key = 105;
   vi. otherwise, if PES geo type = 1 and raw sex = 1,2 and raw age = 45:120 and raw pop group = 1:5, then assign key = 106;
   vii. otherwise, assign key = 199;

b. PROVINCE 2 (EC):
   i. if PES geo type = 5 and raw sex = 1,2 and raw age = 0:120 and raw pop group = 1:5, then assign key = 201;
   ii. otherwise, if PES geo type = 2 and raw sex = 1,2 and raw age = 0:19 and raw pop group = 1:5, then assign key = 202;
   iii. otherwise, if PES geo type = 2 and raw sex = 1,2 and raw age = 20:29 and raw pop group = 1:5, then assign key = 203;
   iv. otherwise, if PES geo type = 2 and raw sex = 1 and raw age = 30:120 and raw pop group = 1:5, then assign key = 204;
   v. otherwise, if PES geo type = 2 and raw sex = 2 and raw age = 30:120 and raw pop group = 1,2,3,4,5, then assign key = 205;
   vi. otherwise, if PES geo type = 4 and raw sex = 1,2 and raw age = 0:44 and raw pop group = 1,2,3,4,5 then assign key = 206;
   vii. otherwise, if PES geo type = 4 and raw sex = 1,2 and raw age = 45:120 and raw pop group = 1,2,3,4,5 then assign key = 207;
   viii. otherwise, if PES geo type = 1 and raw sex = 1,2 and raw age = 0:120 and raw pop group = 3,4 then assign key = 208;
   ix. otherwise, if PES geo type = 1 and raw sex = 1,2 and raw age = 0:120 and raw pop group = 1,2,5 then assign key = 209;
   x. otherwise, assign key = 299;

c. PROVINCE 3 (NC):
   i. if PES geo type = 5 and raw sex = 1,2 and raw age = 0:120 and raw pop group = 2,3,4 then assign key = 301;
   ii. otherwise, if PES geo type = 5 and raw sex = 1,2 and raw age = 0:120 and raw pop group = 1,5 then assign key = 302;
   iii. otherwise, if PES geo type = 1,2,4 and raw sex = 1,2 and raw age = 0:120 and raw pop group = 4,5 then assign key = 303;

iv. otherwise, if PES geo type = 1,2,4 and raw sex = 1,2 and raw age = 0:120 and raw pop group = 2, then assign key = 304;
v. otherwise, if PES geo type = 1,2,4 and raw sex = 1,2 and raw age = 0:19 and raw pop group = 1,3, then assign key = 305;
vi. otherwise, if PES geo type = 1,2,4 and raw sex = 1,2 and raw age = 20:44 and raw pop group = 1,3, then assign key = 306;
vii. otherwise, if PES geo type = 1,2,4 and raw sex = 1,2 and raw age = 45:120 and raw pop group = 1,3 then assign key = 307;
viii. otherwise, assign key = 399;

d. PROVINCE 4 (FS):
i. if PES geo type = 2,5 and raw sex = 1,2 and raw age = 0:120 and raw pop group = 1:5, then assign key = 401;
ii. otherwise, if PES geo type = 1,4 and raw sex = 1,2 and raw age = 0:120 and raw pop group = 2,3,4, then assign key = 402;
iii. otherwise, if PES geo type = 1,4 and raw sex = 1 and raw age = 0:120 and raw pop group = 1,5, then assign key = 403;
iv. otherwise, if PES geo type = 1,4 and raw sex = 2 and raw age = 0:120 and raw pop group = 1,5 then assign key = 404;
v. otherwise, assign key = 499;

e. PROVINCE 5 (KZN):
i. if PES geo type = 5 and raw sex = 1 and raw age = 0:19 and raw pop group = 1:5 then assign key = 501;
ii. otherwise, if PES geo type = 5 and raw sex = 1 and raw age = 20:120 and raw pop group = 1:5 then assign key = 502;
iii. otherwise, if PES geo type = 5 and raw sex = 2 and raw age = 0:120 and raw pop group = 1:5 then assign key = 503;
iv. otherwise, if PES geo type = 2 and raw sex = 1,2 and raw age = 0:120 and raw pop group = 1:5, then assign key = 504;
v. otherwise, if PES geo type = 4 and raw sex = 1,2 and raw age = 0:44 and raw pop group = 1:5, then assign key = 505;
vi. otherwise, if PES geo type = 4 and raw sex = 1,2 and raw age = 45:120 and raw pop group = 1:5, then assign key = 506;
vii. otherwise, if PES geo type = 1 and raw sex = 1,2 and raw age = 0:44 and raw pop group = 2,4, then assign key = 507;
viii. otherwise, if PES geo type = 1 and raw sex = 1,2 and raw age = 0:19 and raw pop group = 1,5, then assign key = 508;
ix. otherwise, if PES geo type = 1 and raw sex = 1,2 and raw age = 0:19 and raw pop group = 1,5 then assign key = 509;
x. otherwise, if PES geo type = 1 and raw sex = 1 and raw age = 20:44 and raw pop group = 1,5 then assign key = 510;
xi. otherwise, if PES geo type = 1 and raw sex = 2 and raw age = 45:120 and raw pop group = 1,5 then assign key = 511;
xii. otherwise, if PES geo type = 1 and raw sex = 1 and raw age = 45:120 and raw pop group = 1,5 then assign key = 512;
xiii. otherwise, if PES geo type = 1 and raw sex = 2 and raw age = 45:120 and raw pop group = 1,5 then assign key = 513;
xiv. otherwise, if PES geo type = 1 and raw sex = 1,2 and raw age = 0:120 and raw pop group = 3 then assign key = 514;
xv. otherwise, assign key = 599;

f. PROVINCE 6 (NW):
   i. if PES geo type = 1,2,4,5 and raw sex = 1,2 and raw age = 0:120 and raw pop group = 4,5 then assign key = 601;
   ii. otherwise, if PES geo type = 5 and raw sex = 1,2 and raw age = 0:120 and raw pop group = 1,2,3 then assign key = 602;
   iii. otherwise, if PES geo type = 2 and raw sex = 1,2 and raw age = 0:120 and raw pop group = 1,2,3 then assign key = 603;
   iv. otherwise, if PES geo type = 4 and raw sex = 1,2 and raw age = 0:19 and raw pop group = 1,2,3, then assign key = 604;
   v. otherwise, if PES geo type = 1 and raw sex = 1,2 and raw age = 0:19 and raw pop group = 1,2,3, then assign key = 605;
   vi. otherwise, if PES geo type = 1,4 and raw sex = 1 and raw age = 20:29 and raw pop group = 1,2,3, then assign key = 606;
   vii. otherwise, if PES geo type = 1,4 and raw sex = 2 and raw age = 29:29 and raw pop group = 1,2,3, then assign key = 607;
   viii. otherwise, if PES geo type = 1,4 and raw sex = 1 and raw age = 30:44 and raw pop group = 1,2,3, then assign key = 608;
   ix. otherwise, if PES geo type = 1,4 and raw sex = 2 and raw age = 45:120 and raw pop group = 1,2,3, then assign key = 609;
   x. otherwise, if PES geo type = 1,4 and raw sex = 1 and raw age = 45:64 and raw pop group = 1,2,3, then assign key = 610;
   xi. otherwise, if PES geo type = 1,4 and raw sex = 2 and raw age = 45:64 and raw pop group = 1,2,3, then assign key = 611;
   xii. otherwise, if PES geo type = 1,4 and raw sex = 1,2 and raw age = 65:120 and raw pop group = 1,2,3, then assign key = 612;
   xiii. otherwise, assign key = 699;

g. PROVINCE 7 (GT):
   i. if PES geo type = 5 and raw sex = 1,2 and raw age = 0:120 and raw pop group = 1:5, then assign key = 701;
   ii. otherwise, if PES geo type = 1 and raw sex = 1,2 and raw age = 0:4 and raw pop group = 1:5, then assign key = 702;
   iii. otherwise, if PES geo type = 1 and raw sex = 1,2 and raw age = 5:19 and raw pop group = 4, then assign key = 703;
   iv. otherwise, if PES geo type = 1 and raw sex = 1,2 and raw age = 5:14 and raw pop group = 1,2,3,5, then assign key = 704;
   v. otherwise, if PES geo type = 1 and raw sex = 1,2 and raw age = 15:19 and raw pop group = 1,2,3,5, then assign key = 705;
   vi. otherwise, if PES geo type = 1 and raw sex = 1 and raw age = 20:29 and raw pop group = 1:5, then assign key = 706;
   vii. otherwise, if PES geo type = 1 and raw sex = 1,2 and raw age = 20:29 and raw pop group = 1:5, then assign key = 707;
   viii. otherwise, if PES geo type = 1 and raw sex = 1,2 and raw age = 30:44 and raw pop group = 3,4,5, then assign key = 708;
   ix. otherwise, if PES geo type = 1 and raw sex = 1 and raw age = 30:44 and raw pop group = 1,2, then assign key = 709;
   x. otherwise, if PES geo type = 1 and raw sex = 2 and raw age = 30:44 and raw pop group = 1,2, then assign key = 710;
   xi. otherwise, if PES geo type = 1 and raw sex = 1,2 and raw age = 45:64 and raw pop group = 3,4,5, then assign key = 711;
   xii. otherwise, if PES geo type = 1 and raw sex = 1,2 and raw age = 45:64 and raw pop group = 1,2, then assign key = 712;

xiii. otherwise, if PES geo type = 1 and raw sex = 1,2 and raw age = 65:120 and raw pop group = 1:5, then assign key = 713;
xiv. otherwise, if PES geo type = 2 and raw sex = 1,2 and raw age = 0:19 and raw pop group = 1:5, then assign key = 714;
xv. otherwise, if PES geo type = 2 and raw sex = 1 and raw age = 20:120 and raw pop group = 1:5, then assign key = 715;
xvi. otherwise, if PES geo type = 2 and raw sex = 2 and raw age = 20:120 and raw pop group = 1:5, then assign key = 716;
xvii. otherwise, assign key = 799;

h. PROVINCE 8 (MP):
   i. if PES geo type = 5 and raw sex = 1,2 and raw age = 0:19 and raw pop group = 1:5, then assign key = 801;
   ii. otherwise, if PES geo type = 5 and raw sex = 1,2 and raw age = 0:44 and raw pop group = 1:5, then assign key = 802;
   iii. otherwise, if PES geo type = 4 and raw sex = 1,2 and raw age = 0:44 and raw pop group = 1:5, then assign key = 803;
   iv. otherwise, if PES geo type = 4 and raw sex = 1,2 and raw age = 45:120 and raw pop group = 1:5, then assign key = 804;
   v. otherwise, if PES geo type = 2 and raw sex = 1,2 and raw age = 0:19 and raw pop group = 1, then assign key = 805;
   vi. otherwise, if PES geo type = 2 and raw sex = 1,2 and raw age = 0:19 and raw pop group = 1, then assign key = 806;
   vii. otherwise, if PES geo type = 1 and raw sex = 1,2 and raw age = 20:29 and raw pop group = 1, then assign key = 807;
   viii. otherwise, if PES geo type = 1,2 and raw sex = 1,2 and raw age = 20:29 and raw pop group = 1, then assign key = 808;
   ix. otherwise, if PES geo type = 1,2 and raw sex = 1,2 and raw age = 30:120 and raw pop group = 1, then assign key = 809;
   x. otherwise, if PES geo type = 1,2 and raw sex = 1,2 and raw age = 0:120 and raw pop group = 3,5, then assign key = 810;
   xi. otherwise, assign key = 899;

i. PROVINCE 9 (LP):
   i. if PES geo type = 2,5 and raw sex = 1,2 and raw age = 0:120 and raw pop group = 1:5, then assign key = 901;
   ii. otherwise, if PES geo type = 1 and raw sex = 1,2 and raw age = 0:120 and raw pop group = 3,4, then assign key = 902;
   iii. otherwise, if PES geo type = 1 and raw sex = 1,2 and raw age = 0:14 and raw pop group = 1,2,5, then assign key = 903;
   iv. otherwise, if PES geo type = 1 and raw sex = 1,2 and raw age = 15:44 and raw pop group = 1,2,5, then assign key = 904;
   v. otherwise, if PES geo type = 1 and raw sex = 1,2 and raw age = 45:120 and raw pop group = 1,2,5, then assign key = 905;
   vi. otherwise, if PES geo type = 4 and raw sex = 1,2 and raw age = 0:19 and raw pop group = 1:5, then assign key = 906;
   vii. otherwise, if PES geo type = 4 and raw sex = 1,2 and raw age = 20:29 and raw pop group = 1:5, then assign key = 907;
   viii. otherwise, if PES geo type = 4 and raw sex = 1 and raw age = 30:120 and raw pop group = 1:5, then assign key = 908;
   ix. otherwise, if PES geo type = 4 and raw sex = 2 and raw age = 30:120 and raw pop group = 1:5, then assign key = 909;

x. otherwise, assign key = 999.

Search the lookup table APERSWGT, and determine the adjustment factor that corresponds to the key (see section XIV.1 for the factors used for each class). The person weight value on the matched record is copied to the PERS_WGT field on the edited data file.

If the match in the preceding step fails, then raise a critical internal error.

B. For institutions and households where raw living quarters is not 1 or 5 or PES EA type is not 1:5 or 9: assign PERS_WGT = 1.0000.

IX.33 SUPPLEMENTARY VARIABLE: HOUSING_WGT (PES)

Description:

HH_WGT provides the Post-Enumeration Survey (PES) household-record adjustment factor.

Usage:

This supplementary variable will be used in all Census 2001 household-record tabulations.

Universe:

The supplementary variable HH_WGT exists on all household records.

Households with living quarters = housing unit or workers' hostel (based on the raw value for the living quarters variable) and PES EA type = tribal settlement, farm, small holding, urban settlement, informal settlement, or hostel (1:5 or 9) are adjusted by the PES, and follow the lookup procedure described below. All other households have an adjustment factor of 1.0000.

Note: PES EA type is the set of EA type values that were used when the PES sample was drawn in August 2001. Raw, as opposed to edited values for the living quarters are also used to determine the universe.

Data Record:

The supplementary variable HH_WGT is stored on the household record of the final data file.

Valid Values:

The household factor is a number between 1.0000 and 2.9999 (although adjustment factors that large should not be needed).

Source Variables:

The supplementary variable HH_WGT is supplied by the PES team, and varies according to the adjustment class, which is a lookup table determined by the province, PES geo type, raw sex, raw age, and raw population group. PES geo type is the set of geo type values that were used when the PES sample was drawn in 2001. Raw, as opposed to edited values are used for the other variables.

Technical documentation describing the PES and its methodology is available from Statistics South Africa.

Household PES weights depend on the following variables:

Province:

1 Western Cape
2 Eastern Cape
3 Northern Cape
4 Free State
5 KwaZulu-Natal
6 North West
7 Gauteng
8 Mpumulanga
9 Limpopo

RAW Population group of first person record (usually the head, but not always):

1	Black
2	Coloured
3	Indian/Asian
4	White
5	Other
other	Invalid

RAW Living quarters:

1	Housing unit
2	Residential hotel
3	Students' residence
4	Home for the aged
5	Workers' hostel
6	Other
other	Invalid

PES Geo type:

1	Urban formal
2	Urban non-formal
4	Tribal area
5	Rural formal

PES EA type:

0	Vacant
1	Tribal settlement
2	Farm
3	Smallholding
4	Urban settlement
5	Informal settlement
6	Recreational
7	Industrial area
8	Institution
9	Hostel

Household size categories

1	1
2	2
3	3–4
4	5–6
5	7–8
6	9–99

Software

This edit is implemented in subroutine SIX33 in the CONCOR programme MRTDER.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. For households where raw living quarters = 1 or 5 and PES EA type = 1:5 or 9:

Calculate a 2-digit "lookup key" based on a combination of the province and other source variables. (see section XIV.2 for more information):

a. if PES geo type = 5 and PROV = 5,7,9 and HHsize cat. = 1,2 and raw pop group HOH = 1:5, then assign key = 01;
b. otherwise, if PES geo type = 5 and PROV = 5,7,9 and HHsize cat. = 3,4,5,6 and raw pop group HOH = 1:5, then assign key = 02;
c. otherwise, if PES geo type = 5 and PROV = 4,6 and HHsize cat. = 1:6 and raw pop group HOH = 1:5, then assign key = 03;
d. otherwise, if PES geo type = 5 and PROV = 2,3,8 and HHsize cat. = 1,2 and raw pop group HOH = 1:5, then assign key = 04;
e. otherwise, if PES geo type = 5 and PROV = 2,3,8 and HHsize cat. = 3,4,5,6 and raw pop group HOH = 1:5, then assign key = 05;
f. otherwise, if PES geo type = 5 and PROV = 1 and HHsize cat. = 1:6 and raw pop group HOH = 1:5, then assign key = 06;
g. otherwise, if PES geo type = 2 and PROV = 4,9 and HHsize cat. = 1:6 and raw pop group HOH = 1:5, then assign key = 07;
h. otherwise, if PES geo type = 2 and PROV = 1,2,5 and HHsize cat. = 1,2 and raw pop group HOH = 1:5, then assign key = 08;
i. otherwise, if PES geo type = 2 and PROV = 1,2,5 and HHsize cat. = 3,4,5,6 and raw pop group HOH = 1:5, then assign key = 09;
j. otherwise, if PES geo type = 2 and PROV = 3,6,7,8 and HHsize cat. = 1:6 and raw pop group HOH = 1:5, then assign key = 10;
k. otherwise, if PES geo type = 1,4 and PROV = 6 and HHsize cat. = 1 and raw pop group HOH = 1:5, then assign key = 11;
l. otherwise, if PES geo te = 1,4 and PROV = 5 and HHsize cat. = 1 and raw pop group HOH = 1:5, then assign key = 12;
m. otherwise, if PES geo type = 1,4 and PROV = 7 and HHsize cat. = 1 and raw pop group HOH = 1:5, then assign key = 13;
n. otherwise, if PES geo type = 1 and PROV = 1,8,9 and HHsize cat. = 1 and raw pop group HOH = 1:5, then assign key = 14;
o. otherwise, if PES geo type = 1 and PROV = 2,3,4 and HHsize cat. = 1 and raw pop group HOH = 1:5, then assign key = 15;
p. otherwise, if PES geo type = 4 and PROV = 1,2,3,4,8,9 and HHsize cat. = 1 and raw pop group HOH = 1:5, then assign key = 16;
q. otherwise, if PES geo type = 1,4 and PROV = 5,7 and HHsize cat. = 2 and raw pop group HOH = 1:5, then assign key = 17;
r. otherwise, if PES geo type = 1 and PROV = 1,2,3,4,6,8,9 and HHsize cat. = 2 and raw pop group HOH = 1:5, then assign key = 18;
s. otherwise, if PES geo type = 4 and PROV = 1,2,3,4,6,8,9 and HHsize cat. = 2 and raw pop group HOH = 1:5, then assign key = 19;
t. otherwise, if PES geo type = 1,4 and PROV = 5,7 and HHsize cat. = 3 and raw pop group HOH = 1:5, then assign key = 20;
u. otherwise, if PES geo type = 1,4 and PROV = 2 and HHsize cat. = 3 and raw pop group HOH = 1:5, then assign key = 21;

v. otherwise, if PES geo type = 1,4 and PROV = 1,3,6,8,9 and HHsize cat. = 3 and raw pop group HOH = 1:5, then assign key = 22;
w. otherwise, if PES geo type = 1,4 and PROV = 4 and HHsize cat. = 3 and raw pop group HOH = 1:5, then assign key = 23;
x. otherwise, if PES geo type = 1,4 and PROV = 5 and HHsize cat. = 4,5,6 and raw pop group HOH = 1:5, then assign key = 24;
y. otherwise, if PES geo type = 4 and PROV = 2,7 and HHsize cat. = 4,5,6 and raw pop group HOH = 1:5, then assign key = 25;
z. otherwise, if PES geo type = 1 and PROV = 7 and HHsize cat. = 4,5,6 and raw pop group HOH = 1:5, then assign key = 26;
aa. otherwise, if PES geo type = 1 and PROV = 2 and HHsize cat. = 4,5,6 and raw pop group HOH = 1:5, then assign key = 27;
bb. otherwise, if PES geo type = 4 and PROV = 1,6,9 and HHsize cat. = 4,5,6 and raw pop group HOH = 1:5, then assign key = 28;
cc. otherwise, if PES geo type = 1 and PROV = 1,6,9 and HHsize cat. = 4,5,6 and raw pop group HOH = 1:5, then assign key = 29;
dd. otherwise, if PES geo type = 4 and PROV = 3,4,8 and HHsize cat. = 4,5,6 and raw pop group HOH = 1:5, then assign key = 30;
ee. otherwise, if PES geo type = 1 and PROV = 3,4,8 and HHsize cat. = 4,5,6 and raw pop group HOH = 1:5, then assign key = 31;
ff. otherwise, otherwise, assign key = 99

Search the lookup table AHHWGT, and determine the adjustment factor that corresponds to the key (see section XIV.2 for the factors used for each class). The household weight value on the matched record is copied to the HH_WGT field on the edited data file.

If the match in the preceding step fails, then raise a critical internal error.

B. For institutions and households where raw living quarters is not 1 or 5 or PES EA type is not 1:5 or 9, assign HH_WGT = 1.0000.

IX.34 DERIVED VARIABLES: DER51_POP_HEAD AND DER52_MAJ_POP

Description:

DER51_POP_HEAD contains the population group of the head of household.
DER52_MAJ_POP contains the majority, or most frequent, population group of the household.

Usage:

The derived variables DER51_POP_HEAD and DER52_MAJ_POP will be used in Census 2001 products.

Universe:

The derived variables DER51_POP_HEAD and DER52_MAJ_POP are applicable to households (A-type QNs), and not applicable to institutions (B- and C-type QNs).

Data Record:

The derived variables DER51_POP_HEAD and DER52_MAJ_POP are stored in the questionnaire records of the final edited data file.

Valid Values:

The derived variables DER51_POP_HEAD and DER52_MAJ_POP have the following valid values:

blank	Not applicable
1	Black African
2	Coloured
3	Indian or Asian
4	White

Source Variables:

The derived variables DER51_POP_HEAD and DER52_MAJ_POP are based on the variables P06_POP_GROUP (population group) and P04_RELATION (relationship to head of house).

Software:

This edit is implemented in subroutine SIX51 in the CONCOR programme MRTDER.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. PRE-EDIT: Perform the following debug checks:
   a. if population group ≠ valid, then raise a critical error.

B. For A-type questionnaires:
   a. if P04_RELATION=1 (head), then impute DER51_POP_HEAD= P06_POP_GROUP
   b. also, determine the most common population group for all the persons in the household; impute DER52_MAJ_POP to the most frequently occurring population group. If multiple population groups occur with the same frequency, then choose the one that occurs first in the household.

C. For B- and C-type questionnaires:
   a. impute DER51_POP_HEAD=blank;
   b. also, impute DER52_MAJ_POP=blank.

IX.35 DERIVED VARIABLE: DER53_SEX_HEAD

Description:

DER53_SEX_HEAD contains the sex of the head of household.

Usage:

The derived variable DER53_SEX_HEAD will be used in Census 2001 products.

Universe:

The derived variable DER53_SEX_HEAD is applicable to households (A-type QNs), and not applicable to institutions (B- and C-type QNs).

Data Record:

The derived variable DER53_SEX_HEAD is stored in the questionnaire records of the final edited data file.

Valid Values:

The derived variable DER53_SEX_HEAD has the following valid values:

blank	Not applicable
1	Male
2	Female

Source Variables:

The derived variable DER53_SEX_HEAD is based on the variables P03_SEX (sex) and P04_RELATION (relationship to head of house).

Software:

This edit is implemented in subroutine SIX53 in the CONCOR programme MRTDER.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. For A-type questionnaires:
   a. if P04_RELATION=1 (head), then impute DER53_SEX_HEAD= P03_SEX

B. For B- and C-type questionnaires:
   a. impute DER53_SEX_HEAD=blank.

IX.36 DERIVED VARIABLE: DER54_IND_GRP1

Description:

DER54_IND_GRP1 is a recoding of the variable P19B_INDUSTRY (Industry).

Usage:

The derived variable DER54_IND_GRP1 will be used in Census 2001 products.

Universe:

The derived variable DER54_IND_GRP1 is applicable to all economically active persons (P18_WORK = 1:4), in both households (A-type QNs) and institutions (B- and C-type QNs).

Data Record:

The derived variable DER54_IND_GRP1 is stored in the person records of the final edited data file.

Valid Values:

The derived variable DER54_IND_GRP1 has the following valid values:

00	Not applicable
01	Agriculture, hunting, forestry and fishing
02	Mining and quarrying
03	Manufacturing
04	Electricity, gas and water supply
05	Construction
06	Wholesale and retail trade, repairs, hotels and restaurants
07	Transport, storage and communication
08	Financial intermediation, insurance, real estate and business services
09	Community, social and personal services
10	Private households
11	Extraterritorial organisations
12	Representatives of foreign governments
13	Other and not adequately defined
14	Undetermined

Source Variables:

The derived variable DER54_IND_GRP1 is based on the variables P18_WORK (Any work in the 7 days before 10 October) and P19B_INDUSTRY (Industry). The variable P18_WORK has the following valid values:

1	yes: formal registered (non-farming)
2	yes: informal unregistered (non-farming)
3	yes: farming
4	yes: temporarily absent from work
5	no: did not have work

For the list of valid values of the variable P19B_INDUSTRY see section XIII.5.

Software

This edit is implemented in subroutine SIX54 in the CONCOR programme CODED2.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. For all persons:

a. if P02_AGE < 10 (age<10 years), then assign DER54_IND_GRP1 = 00 (Not applicable);
b. otherwise (P02_AGE>=10):
    i. if P18_WORK = 5 (No, did not have work) then assign DER54_IND_GRP1 = 00 (Not applicable);
    ii. otherwise, recode P19B_INDUSTRY to DER54_IND_GRP1 according to the values given in the table below:

P19B_INDUSTRY	**DER54_IND_GRP1**
100:199	01
200:299	02
300:399	03
400:499	04
500:599	05
600:699	06
700:799	07
800:899	08
900:997, 999	09
10	10
20	11
30	12
90	13
998, 5	14

IX.37 DERIVED VARIABLES: DER55_OCC_HEAD AND DER56_IND_HEAD

Description:

DER55_OCC_HEAD contains the occupation group of the head of household.
DER56_IND_HEAD contains the industry group of the head of household.

Usage:

The derived variables DER55_OCC_HEAD and DER56_IND_HEAD will be used in Census 2001 products.

Universe:

The derived variables DER55_OCC_HEAD and DER56_IND_HEAD are applicable to households (A-type QNs), and not applicable to institutions (B- and C-type QNs).

Data Record:

The derived variables DER55_OCC_HEAD and DER56_IND_HEAD are stored in the questionnaire records of the final edited data file.

Valid Values:

The derived variable DER55_OCC_HEAD has the same valid values as derived variable DER31_OCC_GRP1 (described in section IX.31).

The derived variable DER56_IND_HEAD has the same valid values as derived variable DER54_IND_GRP1 (described in section IX.36).

Source Variables:

The derived variable DER55_OCC_HEAD is based on the variables DER31_OCC_GRP1 and P04-RELATION (relationship to head of household).

The derived variable DER56_IND_HEAD is based on the variables DER54_IND_GRP1 and P04-RELATION (relationship to head of household).

Software

This edit is implemented in subroutine SIX55 in the CONCOR programme CODED2.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. For A-type questionnaires:
    a. if P04_RELATION=1 (head), then impute DER55_OCC_HEAD = DER31_OCC_GRP1 and DER_56_IND_GRP = DER54_IND_GRP1.

B. For B- and C-type questionnaires:
    a. impute DER55_OCC_HEAD=blank and DER56_IND_HEAD=blank.

IX.38 DERIVED VARIABLE: DER57_EMPLOY_ST

Description:

DER57_EMPLOY_ST indicates the detailed employment status of each person 10 years and older, using the official definition of unemployment for all persons. This derived variable provides additional information about non-economically active persons.

Usage:

The derived variable DER57_EMPLOY_ST will be used in Census 2001 products.

Universe:

The derived variable DER57_EMPLOY_ST is applicable to all persons.

Data Record:

The derived variable DER57_EMPLOY_ST is stored in the person records of the final edited data file.

Valid Values:

The derived variable DER57_EMPLOY_ST has the following valid values:

1	Employed
2	Unemployed
3	Scholar or student
4	Home-maker
5	Pensioner or retired person/too old to work
6	Unable to work due to illness or disability
7	Seasonal worker not working presently
8	Does not choose to work
9	Could not find work
0	Not applicable (younger than 15 or older than 65)

Source Variables:

The derived variable DER57_EMPLOY_ST is based on the following variables:

Age (P02_AGE)
Reason why not working (P18A_WHY_NOT)
The derived variable official employment status (DER10_EMPL_ST1)

Age (P02_AGE):

000:120

Reason why not working (P-18a):

1	Scholar or student
2	Home-maker or housewife
3	Pensioner or retired person/ too old to work
4	Unable to work due to illness or disability
5	Seasonal worker not working presently
6	Does not choose to work
7	Could not find work

Employment (DER10):

00	Not applicable, aged less than 15 or older than 65 years
01	Employed
02	Unemployed
03	Not economically active

Software

This edit is implemented in subroutine SIX57 in the CONCOR programme CODED2.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. For all persons:
   a. if age<>15:65, then assign DER57_EMPLOY_ST=0;
   b. otherwise, if DER10 = 1 (employed), then assign DER57_EMPLOY_ST = 1;
   c. otherwise, if DER10 = 2 (unemployed), then assign DER57_EMPLOY_ST = 2;
   d. otherwise (DER10 must be 3), assign DER57_EMPLOY_ST = reason why not working + 2 (giving a result 3:9).

IX.39 DERIVED VARIABLES: DER60_MIG_E_PUR, DER61_MG_E_BIR, DER62_MG_E_PPR, DER63_MG_BIR_CIT, DER64_MG_BIR_PUR, DER65_MG_BIR_PPR, DER66_MG_PUR_PPR, DER67_MG_MULT

Description:

The migration derived variables indicate point-to-point migration information, as follows:

DER60_MG_E_PUR	place of enumeration and place of usual residence
DER61_MG_E_BIR	place of enumeration and birth place
DER62_MG_E_PPR	place of enumeration and place of residence in 1996
DER63_MG_BIR_CIT	birth place and citizenship
DER64_MG_BIR_PUR	place of birth and place of usual residence
DER65_MG_BIR_PPR	place of birth and place of residence in 1996
DER66_MG_PUR_PPR	place of usual residence and place of residence in 1996
DER67_MG_MULT	birth place, place of residence in 1996, and place of enumeration

Usage:

The various migration derived variables will be used in Census 2001 products.

Universe:

The migration derived variables are applicable to all persons.

Data Record:

The migration derived variables are stored in the person records of the final edited data file.

Valid Values:

The migration derived variables have the following valid values:

DER60_MG_E_PUR:

1 same place
2 different places, same province
3 different provinces
4 foreign usual residence
0 undetermined

DER61_MG_E_BIR:

1 same province
2 different provinces
3 foreign birth place

DER62_MG_E_PPR:

1 same place
2 different places, same province
3 different provinces
4 foreign 1996 residence
5 not applicable (born after 1996)
0 undetermined

DER63_MG_BIR_CIT:

1 foreign birth place, not SA citizen
2 foreign birth place, SA citizen
3 SA birth place, not SA citizen
4 SA birth place, SA citizen

DER64_MG_BIR_PUR:

1 birth province same as enumeration province, usual residence same as enumeration place and province
2 birth province same as enumeration province, usual residence different place within enumeration province
3 birth province same as enumeration province, usual residence in different province
4 birth province same as enumeration province, foreign usual residence
5 birth province different from enumeration province, usual residence same as enumeration place and province
6 birth province different from enumeration province, usual residence different place within enumeration province
7 birth province different from enumeration province, usual residence in different province
8 birth province different from enumeration province, foreign usual residence
9 not applicable (foreign birth place)
0 undetermined

DER65_MG_BIR_PPR:

1 birth province same as enumeration province, 1996 residence same as enumeration place and province
2 birth province same as enumeration province, 1996 residence different place within enumeration province
3 birth province same as enumeration province, 1996 residence in different province
4 birth province same as enumeration province, foreign 1996 residence
5 birth province different from enumeration province, 1996 residence same as enumeration place and province
6 birth province different from enumeration province, 1996 residence different place within enumeration province
7 birth province different from enumeration province, 1996 residence in different province
8 birth province different from enumeration province, foreign 1996 residence
9 not applicable (foreign birth place or born after 1996)
0 undetermined

DER66_MG_PUR_PPR:

01 usual residence within enumeration province, 1996 residence within enumeration province
02 usual residence within enumeration province, 1996 residence not in enumeration province but within SA
03 usual residence within enumeration province, foreign 1996 residence
04 usual residence not in enumeration province but in SA, 1996 residence within enumeration province
05 usual residence not in enumeration province but in SA, 1996 residence not in enumeration province but within SA
06 usual residence not in enumeration province but in SA, foreign 1996 residence
07 foreign usual residence, 1996 residence within enumeration province
08 foreign usual residence, 1996 residence not in enumeration province but within SA
09 foreign usual residence, foreign 1996 residence
10 not applicable (born after 1996)
00 undetermined

DER67_MG_MULT:

1 birth province = 1996 residence province, birth province = enumeration province, 1996 residence province = enumeration province
2 birth province = 1996 residence province, birth province = enumeration province, 1996 residence province <> enumeration province
3 birth province = 1996 residence province, birth province <> enumeration province, 1996 residence province = enumeration province
4 birth province = 1996 residence province, birth province <> enumeration province, 1996 residence province <> enumeration province
5 birth province <> 1996 residence province, birth province = enumeration province, 1996 residence province = enumeration province
6 birth province <> 1996 residence province, birth province = enumeration province, 1996 residence province <> enumeration province
7 birth province <> 1996 residence province, birth province <> enumeration province, 1996 residence province = enumeration province
8 birth province <> 1996 residence province, birth province <> enumeration province, 1996 residence province <> enumeration province
9 not applicable (born after 1996 or foreign birth province or foreign 1996 residence)
0 undetermined

Source Variables:

The migration derived variables are based on the following variables:

Province of enumeration (PROV)
Born in SA (P09), Province of birth (P09a), Country of birth (P09b)
Citizenship (P10), Country of citizenship (P10a)
Usual resident (P11), SPR (P11b), PUR (P11a), PRUR (P11c)
1996 residence (P12), PPR (P12a), PRPR (P12b)

Province of enumeration (PROV):

1 Western Cape
2 Eastern Cape
3 Northern Cape
4 Free State
5 KwaZulu-Natal
6 North West
7 Gauteng
8 Mpumalanga
9 Limpopo

Born in SA:

1 Yes
2 No

Place of Birth:

1 Western Cape
2 Eastern Cape
3 Northern Cape
4 Free State
5 KwaZulu-Natal
6 North West
7 Gauteng
8 Mpumalanga
9 Limpopo

Country of Birth:
see XIII.1 for country codes

Citizenship:
1 Yes
2 No

Country of Citizenship:
see XIII.1 for country codes

Usual resident:
1 Yes
2 No

Same place resident (SPR):
1 Yes
2 No

Province of usual residence (PRUR):
1 WC
2 EC
3 NC
4 FS
5 KZ
6 NW
7 GP
8 MP
9 LP
0 undetermined

Place of usual residence (PUR):
see XIII.3 below for place name codes

1996 Residence:
1 yes
2 no
3 born after 1996

Province of previous residence (PRPR):
1 WC
2 EC
3 NC
4 FS
5 KZ
6 NW
7 GP
8 MP
9 LP
0 undetermined

Place of previous residence (PPR):
see XIII.3 below for place name codes

Software:

This edit is implemented in subroutine SIX60 in the CONCOR programme CODED2.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. For DER60_MG_E_PUR:
   a. if usual resident=yes, then assign DER60_MG_E_PUR =1;
   b. otherwise (not usual resident), if SPR=yes, then assign DER60_MG_E_PUR = 1;
   c. otherwise (not usual resident, not same place resident), if PRUR=PROV, then assign DER60_MG_E_PUR = 2;
   d. otherwise, if PRUR=1:9 (a valid province), then assign DER60_MG_E_PUR = 3;
   e. otherwise, if PUR=00000003 (foreign country), then assign DER60_MG_E_PUR = 4;
   f. otherwise, assign DER60_MG_E_PUR = 0.

B. For DER61_MG_E_BIR:
   a. if province of birth=PROV, then assign DER61_MG_E_BIR = 1;
   b. otherwise, if province of birth=1:9 (a valid province), then assign DER61_MG_E_BIR = 2;
   c. otherwise, if born in SA=no, then assign DER61_MG_E_BIR = 3;

C. For DER62_MG_E_PPR:
   a. if 1996 residence=3, them assign DER62_MG_E_PPR = 5;
   b. otherwise, if 1996 residence=1, then assign DER62_MG_E_PPR = 1;
   c. otherwise, if PRPR=PROV, then assign DER62_MG_E_PPR = 2;
   d. otherwise, if PRPR=1:9 (a valid province), then assign DER62_MG_E_PPR = 3;
   e. otherwise, if PPR=00000003 (foreign place), then assign DER62_MG_E_PPR = 4;
   f. otherwise, assign DER62_MG_E_PPR = 0;

D. For DER63_MG_BIR_CIT:
   a. if born in SA=no:
      i. if citizenship=no, then assign DER63_MG_BIR_CIT = 1;
      ii. otherwise, assign DER63_MG_BIR_CIT = 2;
   b. otherwise:
      i. if citizenship = no, then assign DER63_MG_BIR_CIT = 3;
      ii. otherwise, assign DER63_MG_BIR_CIT = 4;

E. For DER64_MG_BIR_PUR:
   a. if born in SA = yes:
      i. if province of birth = PROV:
         1. if usual resident = yes, then assign DER64_MG_BIR_PUR = 1;
         2. otherwise, if SPR = yes, then assign DER64_MG_BIR_PUR = 1;
         3. otherwise, if PRUR = PROV, then assign DER64_MG_BIR_PUR = 2;
         4. otherwise, PRUR = 1:9 (a valid province), then assign DER64_MG_BIR_PUR = 3;
         5. otherwise, if PUR = 00000003 (foreign place), then assign DER64_MG_BIR_PUR = 4;
         6. otherwise, assign DER64_MG_BIR_PUR = 0;
      ii. otherwise (born in a different province):
         1. if usual resident = yes, then assign DER64_MG_BIR_PUR = 5;
         2. otherwise, if SPR = yes, then assign DER64_MG_BIR_PUR = 5;

3. otherwise, if PRUR = PROV, then assign DER64_MG_BIR_PUR = 6;
4. otherwise, PRUR = 1:9 (a valid province), then assign DER64_MG_BIR_PUR = 7;
5. otherwise, if PUR = 00000003 (foreign place), then assign DER64_MG_BIR_PUR = 8;
6. otherwise, assign DER64_MG_BIR_PUR = 0;

b. otherwise (not born in SA), assign DER64_MG_BIR_PUR=9;

F. For DER65_MG_BIR_PPR:
   a. if born in SA = yes:
      i. if province of birth = PROV:
         1. if 1996 residence = born after, then assign DER65_MG_BIR_PPR = 9;
         2. otherwise, if 1996 residence = yes, then assign DER65_MG_BIR_PPR = 1;
         3. otherwise, if PRPR = PROV, then assign DER65_MG_BIR_PPR = 2;
         4. otherwise, if PRPR = 1:9 (a valid province), then assign DER65_MG_BIR_PPR = 3;
         5. otherwise, if PPR=00000003 (foreign place), then assign DER65_MG_BIR_PPR = 4;
         6. otherwise, assign DER65_MG_BIR_PPR = 0;
      ii. otherwise (born in a different province):
         1. if 1996 residence = born after, then assign DER65_MG_BIR_PPR = 9;
         2. otherwise, if 1996 residence = yes, then assign DER65_MG_BIR_PPR = 5;
         3. otherwise, if PRPR = PROV, then assign DER65_MG_BIR_PPR = 6;
         4. otherwise, if PRPR = 1:9 (a valid province), then assign DER65_MG_BIR_PPR = 7;
         5. otherwise, if PPR=00000003 (foreign place), then assign DER65_MG_BIR_PPR = 8;
         6. otherwise, assign DER65_MG_BIR_PPR = 0;
   b. otherwise (not born in SA), assign DER65_MG_BIR_PPR=9;

G. For DER66_MG_PUR_PPR:
   a. if 1996 residence = born after, then assign DER66_MG_PUR_PPR = 10;
   b. otherwise, if usual resident = yes or SPR = yes or PRUR = PROV:
      i. if 1996 resident = yes, then assign DER66_MG_PUR_PPR = 1;
      ii. otherwise, if PRPR = PROV, then assign DER66_MG_PUR_PPR = 1;
      iii. otherwise, if PRPR = 1:9 (a valid province), then assign DER66_MG_PUR_PPR = 2;
      iv. otherwise, if PPR = 00000003 (foreign place), then assign DER66_MG_PUR_PPR = 3;
      v. otherwise, assign DER66_MG_PUR_PPR = 0;
   c. otherwise, if PRUR=1:9 (a valid province):
      i. if 1996 resident = yes, then assign DER66_MG_PUR_PPR = 4;
      ii. otherwise, if PRPR = PROV, then assign DER66_MG_PUR_PPR = 4;
      iii. otherwise, if PRPR = 1:9 (a valid province), then assign DER66_MG_PUR_PPR = 5;
      iv. otherwise, if PPR = 00000003 (foreign place), then assign DER66_MG_PUR_PPR = 6;

v. otherwise, assign DER66_MG_PUR_PPR = 0;

d. otherwise, if PUR=00000003 (foreign place):
   i. if 1996 resident = yes, then assign DER66_MG_PUR_PPR = 7;
   ii. otherwise, if PRPR = PROV, then assign DER66_MG_PUR_PPR = 7;
   iii. otherwise, if PRPR = 1:9 (a valid province), then assign DER66_MG_PUR_PPR = 8;
   iv. otherwise, if PPR = 00000003 (foreign place), then assign DER66_MG_PUR_PPR = 9;
   v. otherwise, assign DER66_MG_PUR_PPR = 0;
e. otherwise, assign DER66_MG_PUR_PPR = 0;

H. For DER67_MG_MULT:
   a. if 1996 residence = born after or PPR=00000003 (foreign place) or born in SA = no, then assign DER67_MG_MULT = 9;
   b. otherwise, if PPR = 00000000 (undetermined), then assign DER67_MG_MULT = 0;
   c. otherwise, if birth province = PRPR:
      i. if birth province = PROV:
         1. if PRPR = PROV, then assign DER67_MG_MULT = 1;
         2. otherwise, assign DER67_MG_MULT = 2;
      ii. otherwise (birth province <> PROV):
         1. if PRPR=PROV, then assign DER67_MG_MULT = 3;
         2. otherwise, assign DER67_MG_MULT = 4;
   d. otherwise (birth province <> PRPR):
      i. if birth province = PROV:
         1. if PRPR = PROV, then assign DER67_MG_MULT = 5;
         2. otherwise, assign DER67_MG_MULT = 6;
      ii. otherwise (birth province <> PROV):
         1. if PRPR=PROV, then assign DER67_MG_MULT = 7;
         2. otherwise, assign DER67_MG_MULT = 8;

IX.40 DERIVED VARIABLES: DER68_PRUR, DER69_PRPR

Description:

DER68_PRUR indicates a person's province of usual residence. DER69_PRPR indicates a person's province of residence in 1996.

Usage:

The derived variables DER68_PRUR and DER69_PRPR will be used in Census 2001 products.

Universe:

The derived variables DER68_PRUR and DER69_PRPR are applicable to all persons.

Data Record:

The derived variables DER68_PRUR and DER69_PRPR are stored in the person records of the final edited data file.

Valid Values:

The derived variable DER68_PRUR has the following valid values:

0	Undetermined
1	Western Cape
2	Eastern Cape
3	Northern Cape
4	Free State
5	KwaZulu-Natal
6	North West
7	Gauteng
8	Mpumulanga
9	Limpopo
Blank	not applicable (foreign country)

The derived variable DER69_PRPR has the following valid values:

0	Undetermined
1	Western Cape
2	Eastern Cape
3	Northern Cape
4	Free State
5	KwaZulu-Natal
6	North West
7	Gauteng
8	Mpumulanga
9	Limpopo
10	not applicable (foreign country)
11	not applicable (born after 1996)

Source Variables:

The derived variables DER68_PRUR and DER69_PRPR are based on the following variables:

Province of enumeration (PROV)
Usual resident (P11), SPR (P11b), PRUR (P11c)
1996 residence (P12), PRPR (P12b)

Province of enumeration (PROV):

1 Western Cape
2 Eastern Cape
3 Northern Cape
4 Free State
5 KwaZulu-Natal
6 North West
7 Gauteng
8 Mpumalanga
9 Limpopo

Usual resident:

1 Yes
2 No

Same place resident (SPR):

1 Yes
2 No

Province of usual residence (PRUR):

1 WC
2 EC
3 NC
4 FS
5 KZ
6 NW
7 GP
8 MP
9 LP
0 undetermined

1996 Residence:

1 yes
2 no
3 born after 1996

Province of previous residence (PRPR):

1 WC
2 EC
3 NC
4 FS
5 KZ
6 NW
7 GP
8 MP
9 LP
0 undetermined

Software

This edit is implemented in subroutine SIX68 in the CONCOR programme CODED2.CN (stored in \\postcap_svr\census\cn).

Derivation:

A. For DER68_PRUR:
    a. if usual resident = 1, then assign DER68_PRUR = PROV;
    b. otherwise (not usual resident), if SPR = 1, then assign DER68_PRUR = PROV;
    c. otherwise, if PRUR = 0:9, then assign DER68_PRUR = PRUR;
    d. otherwise, confirm that PUR=00000003 (foreign place) and assign DER68_PRUR = blank.

B. For DER69_PRPR:
    a. if 1996 residence = 1, then assign DER69_PRPR = PROV;
    b. otherwise (not resident in 1996), if 1996 residence = 3, then assign DER69_PRPR = 11;
    c. otherwise, if PRPR = 0:9, then assign DER69_PRPR = PRPR;
    d. otherwise, confirm that PPR=00000003 (foreign place) and assign DER69_PRPR = 10.

X INTERACTIVE EDITS (post-capture processing)

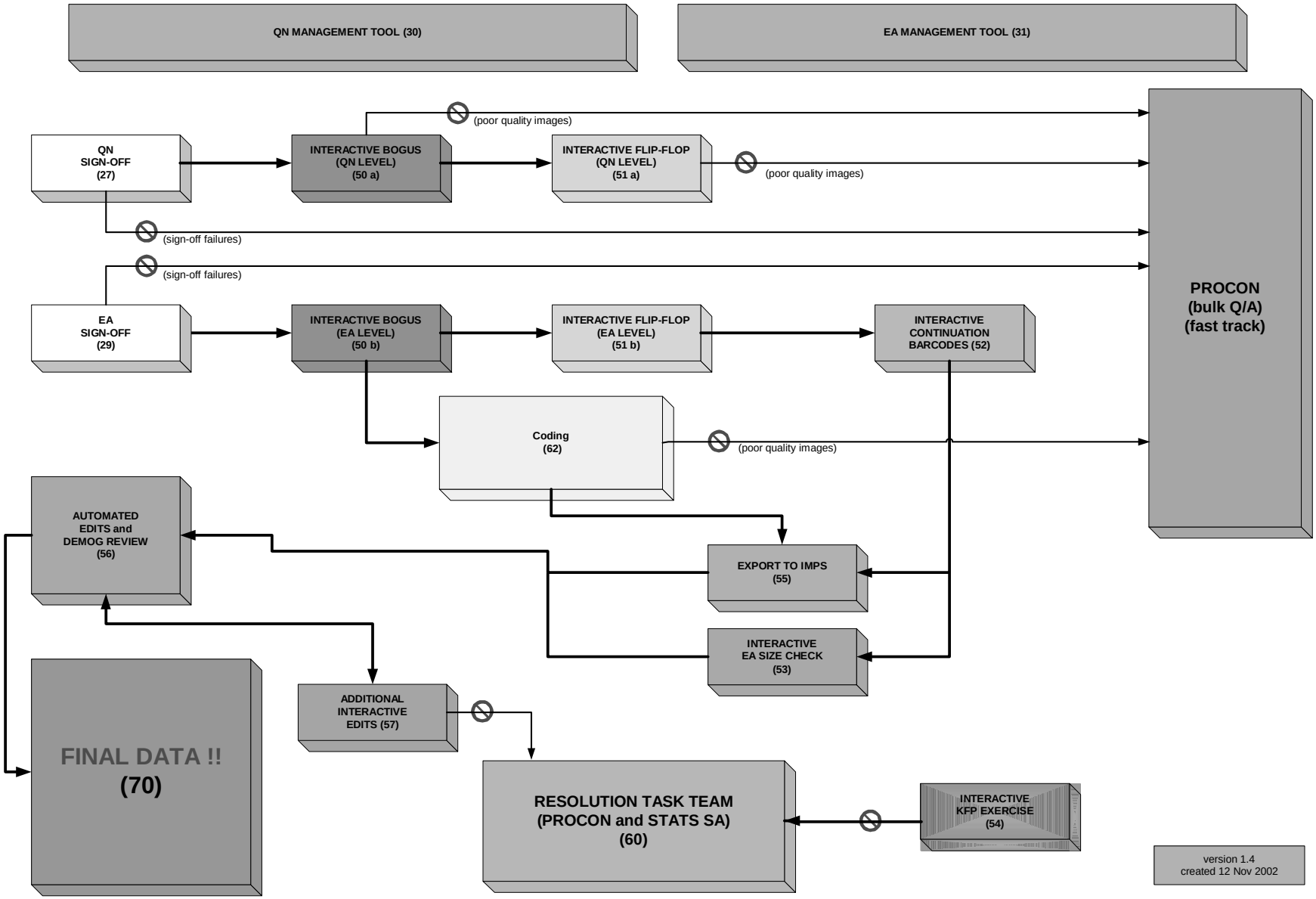
A small set of “interactive edits” is implemented just after data capture, before executing the main automated consistency and correction programs. These post-capture edits signal critical problems with questionnaire structure or content, and require manual review and evaluation, which can be time-consuming.

The diagram on the next page summarises the process flow of the various interactive edits.

For each interactive edit, a design specification and test plan is available in the subdirectories:
\\postcap_svr\way forward\specs\interactive edits and
\\postcap_svr\way forward\test plans\interactive edits

The following sections summarise each of the interactive edits.

POST-CAPTURE DATA PROCESSING OPERATIONS



X.1 QUESTIONNAIRE AND EA SIGN-OFF[11]

Questionnaire and EA sign-off is the first of several post-capture processing phases. Sign-off comprises a series of tests that ensure that a recently transferred questionnaire or EA is complete and does not contain critical capture errors or impossible values. As such, it provides an acknowledgment to Procon that Stats SA has received the transferred data, and that the data passes these tests.

The tests for questionnaires are:

- the questionnaire's barcode and type (A/B/C) are valid and consistent;
- the questionnaire is found in the stores, and has been verified as filled;
- for A type questionnaires:
    - the questionnaire contains 0 – 10 person records;
    - the questionnaire contains 1 and only 1 housing record;
    - the questionnaire contains 1 and only 1 questionnaire info record;
    - the questionnaire contains 0 – 5 mortality records;
- for B type questionnaires:
    - the questionnaire contains 1 and only 1 person record;
    - the questionnaire contains no housing records;
    - the questionnaire contains 1 and only 1 questionnaire info record;
    - the questionnaire contains no mortality records;
- for C type questionnaires:
    - the questionnaire contains no person records;
    - the questionnaire contains 1 and only 1 housing record;
    - the questionnaire contains 1 and only 1 questionnaire info record;
    - the questionnaire contains no mortality records;
- no AFPS-generated data errors are present (-32000 and impossible length values);
- no impossible OMR responses are present.
- the questionnaire is part of a group or batch that passed data Q/A with an accuracy of at least 97%.

The tests for EAs are:

- at least 1 questionnaire exists for this EA;
- all known questionnaires for the EA have been transferred and signed off;
- the EA code is valid and exists in the GIS EA database;

These checks are performed soon after a questionnaire or EA is transferred by Procon, and the results are quickly made available. Database situations notwithstanding, it should not take longer than a half second to sign off a questionnaire and a couple of seconds to sign off an EA.

There are additional quality and coverage tests that Stats SA performs on the data subsequent to the formal tests described in this document, and these can result in questionnaires and/or EAs being rejected after they have passed sign-off. For example, if an EA fails the KFP (key from paper) test or a problem is discovered when reconciling its population and household totals against the 09 book/CAS data, then the EA would have to be corrected and retransferred.

[11] Extracted from DS-QNEASO QN and EA Sign-off Procedures.doc

X.2 BOGUS PERSON AND DEATH RECORDS[12]

The data capture method used for Census 2001 results in many falsely recognised fields, which subsequently cause person and death records to be erroneously created. These "bogus" records need to be removed from the data during post-capture processing, so that they are not included in the final census results. In many cases it is possible to identify bogus records automatically using a computer programme, but not always. For this subset of "possibly bogus" person and death records, human assistance is required.

The bogus interactive edit is a set of tools that identifies possible bogus person and death records. These records are presented to clerks or Stats SA analysts, who review the image and data for the records in question, and decide whether or not each record is bogus. Bogus records are not included in the final census results.

The system also identifies blank questionnaire pages, and presents them for evaluation as possibly poor quality images. Poor quality images are expedited to fast track for rescanning and reprocessing.

The bogus edit works in conjunction with the rest of the Census 2001 data processing system and is integrated with the QN and EA Management Tools. This ensures that questionnaires and EAs pass through the post-capture processing phases in a specific sequence, and that they do not advance until they have successfully completed the bogus interactive edits. The edit is conducted for each questionnaire that has been signed off; once all of the questionnaires for a signed-off EA have completed the edit, the EA is marked as having also completed the edit. Also, the bogus edit uses the DPS Image Viewer to present images to the user.

When questionnaires or EAs are transferred by Procon multiple times, the bogus interactive edit tries to minimise rework by checking each questionnaire's most recent modification date/time; questionnaires that have not changed since they were last checked for bogusness do not need to be redone.

[12] Extracted from DS-BOGUS Bogus Interactive Edit.doc

X.3 FLIP-FOP RECORDS[13]

The flip-flop interactive edit is a set of software tools that identify questionnaires containing possible "flip-flop" person records. Such records occur in A-type questionnaires when the enumerator shifts rows while recording a person's response, usually between pages. For example, consider a household where there are four people:

PN	Name	Sex	Age	…….	page 9		page 10
					Total Births	**Still Living**	**Last Child**
01	Chris	M	36	…….			11 09 1998 M A
02	Maggie	F	29	…….	02 01 01	02 01 01	
03	Allyson	F	5	…….			
04	Edward	M	3	…….			

This household contains a flip-flop in the fertility section of person #2 (Maggie). When the enumerator turned from page 9 to page 10, Maggie's responses were continued on row 1 instead of row 2.

The edit identifies the following situations in A-type questionnaires, each of which could indicate that a flip-flop error has occurred:

1. one of the pages 3-6 contains more answers in a row than the baseline for page 2, and has at least one completely empty row;
2. one of the obligatory pages (2-6) contains a completely empty row above its baseline;
3. the economic activity section responses for a person begin on page 7, but skip to a different row on page 8;
4. the fertility section responses for a person start on page 9, but skip to a different row on page 10;

The edit applies these rules (only considering non-bogus person records) and identifies possible flip-flop person records. The records, along with their images, are then presented to a clerk or Stats SA analyst for review. If the analyst agrees, then the correction can be made using the DPS Image Viewer.

In some cases it is possible for the flip-flop edit to offer "auto-fix" solutions. This occurs only in cases 3 and 4 above, where a highly probable swap resolution can be automatically ascertained. Here, the edit system can offer a suggested remedy for the flip-flop case. A clerk can quickly review the image, and if the suggestion is correct, press an "auto-fix" button to change the data. This feature will vastly reduce the amount of time necessary to complete the flip-flop edit.

The flip-flop interactive edit works in conjunction with the rest of the Census 2001 data processing system and is integrated with the QN Management Tool. This ensures that only questionnaires that have passed the bogus interactive edit are considered for flip-flop analysis.

[13] Extracted from DS-FLIP Flip Flop Interactive Edit.doc

X.4 CONTINUATION BARCODES[14]

In Census 2001, households with more than 10 persons present on the reference night completed multiple "A" questionnaires. These questionnaires were linked by the enumerator, who wrote the first questionnaire's barcode on the last page of the second (and third, if necessary) questionnaire. For example, a household with 14 people would have been enumerated using two questionnaires as follows:

QN 1 (barcode 111111111)	**QN 2 (barcode 111111112)**
person 1 information	person 11 information
person 2 information	person 12 information
person 3 information	person 13 information
person 4 information	person 14 information
person 5 information	
person 6 information	
person 7 information	
person 8 information	
person 9 information	
person 10 information	
total people in HH: 14	total people in HH: 14
continuation barcode left BLANK	continuation barcode 111111111

A similar linking system was used for institutions. There, all of the "B" questionnaires in an institution listed the barcode for their corresponding "C" questionnaire. In general, the barcode used to link questionnaires is called the *continuation barcode* or *parent barcode*.

Unfortunately, this system caused many problems, and as a result there are a large number of households and "B" questionnaires that cannot be properly linked. There are also many questionnaires that appear to belong to continuation households, but do not have a continuation barcode. Some of the problem situations where the continuation barcode is incorrectly reported include:

- questionnaires where the parent barcode points to itself;
- two or more questionnaires form a circular link (X points to Y, Y points to Z, Z points to X);
- continuation barcode is given, but is invalid or indicates a questionnaire from another EA;
- continuation barcode is given, but is not compatible with the QN in terms of type (A points to C, for example);
- all questionnaires in a continuation household have fewer than 10 people;
- a "B" questionnaire has an invalid parent barcode, or the parent barcode does not point to a "C" questionnaire from the same EA.

Some of the problem situations where it could be surmised that a parent barcode should have been reported but was not:

- a questionnaire reports more than 10 people on the front page of the questionnaire, but does not belong to a continuation household;
- all persons in the household have person numbers greater than 10;
- a household does not have a head;

[14] Extracted from DS-CONTBC Continuation Barcodes Interactive Edit.doc

- unlinked questionnaires in an EA with the same record number and the same household number exist;
- the “number of questionnaires” or “this questionnaire number” on the front page is greater than one;
- all household members are younger than 12 years;
- a “B” questionnaire does not have a parent barcode;
- a “C” questionnaire exist with no linked “B” questionnaires.

The continuation barcode interactive edit is a set of tools that identifies questionnaires with problematic continuation barcodes and, whenever possible, other questionnaires from the same EA that could help resolve the problem. These are presented to Stats SA analysts, who review the questionnaires’ data and images, to determine what the correct continuation-barcode values should be. Questionnaires from continuation households are joined together when creating the final census data sets.

The continuation-barcode interactive edit works in conjunction with the rest of the Census 2001 data processing system and is integrated with the EA Management Tool. This ensures that questionnaires and EAs pass through the post-capture processing phases in a specific sequence, and that they do not advance until they have successfully completed the continuation-barcode edit. The edit is conducted for each EA that has been signed off and whose component questionnaires have all passed the flip-flop interactive edit.

X.5 EA SIZE CHECK[15]

Prior to Census 2001, a listing operation was conducted. During this exercise, listing clerks completed "09 books" which included the number of households and the number of males, number of females, and total population for each EA. EAs with significant differences between the captured data and the 09 book totals could indicate problems in either listing, enumeration, reverse logistics, or data capture (or all of these). Such cases should be investigated and resolved whenever possible.

The EA size check interactive edit compares the population and number of households in the captured data against what was listed in the EA's corresponding 09 book (using both absolute and percent differences). If either the population total or number of households differs from what was recorded in the 09 book, then the EA is added to a list for possible investigation by Stats SA analysts and store clerks.

On an ongoing basis, a Stats SA senior manager selects the EAs that have the largest reported census/09 book discrepancies. Reports are generated for these problematic EAs, which are then investigated and resolved by analysts and clerks, usually by consulting other sources of information (the verification database, CAS, neighbouring EAs, questionnaire control sheets, etc.). Resolution information and results are captured, along with any corrections to the 09 book information.

Once the Stats SA senior manager is satisfied that the EA has been satisfactorily resolved, it can pass the EA Size Check.

One additional benefit of this interactive edit is that it will also serve to verify the 09 book totals. Problematic 09 books will be noted and recorded, and this information can later be used by Stats SA Household Surveys.

[15] Extracted from DS-SIZE EA Size Check Interactive Edit.doc

X.6 EXPORT TO IMPS[16]

As part of Census 2001 processing, it is sometimes necessary to export (or re-export) all of the country's 75,000 EAs from Oracle to IMPS. One example would be as coded variables become available. This re-export operation would be very time consuming using the normal incremental export function built into the EA Management Tool. For this reason, a separate set of procedures was developed to make this large export operation run more efficiently.

[16] Extracted from DS-EXPORT Exporting the country.doc

XI EDITING SYSTEM TEST

A final test of the automated editing system was performed before the data was handed over to Stats SA management. These tests are fully described in the hand-over document (\\epsilon1\docs\way forward\specs\automated edits\handover report.doc), and are briefly described in this section.

XI.1 RE-RUN TEST

One important requirement of the editing system is that the data files it produces do not retain any inconsistencies. This can be tested by re-running the system, using edited data as input for the second run. If all of the inconsistencies have been removed, then one would expect to see no imputation occur during the re-run.

XI.2 ACCOUNTING TESTS

The input to the automated editing system is a set of Oracle database tables. The accounting test shows that the raw data was correctly exported from Oracle, and that it matches the contents of the .RAW data files.

In addition, a drop-count report details the reasons why any records were removed during the editing process. The number of raw records, less any that were dropped, must equal the number of edited records.

XI.3 REVIEW OF SUMMARY REPORTS

The editing system produces several types of reports, the most useful of which is the summary report. The computer programmes that implement the editing system include various debug checks and internal error messages. After running the editing system for the last time, a final check was made that no debug messages or internal errors were signaled in the various programs.

XI.4 FORMAL TEST

An independent formal test of the editing system was conducted after editing was completed. This test served to identify any errors that might not have been dealt with correctly by the editing system. A sub-team of Stats SA professionals and consultants designed the formal test, trying as far as possible to complete the task without consulting the main editing specifications document.

XII AUTOMATED CODING SYSTEM

The coding system used for Census 2001 was computer-assisted, and was performed after data capture had ended. This system is fully described in the document "\\epsilon1\docs\way forward\specs\Coding\Automatic Coding - As built document.doc".

Some aspects of the occupation coding were fully automated. However, the rules for this automated coding use a combination of initial occupation and either education level or industry in order to determine an improved occupation code, which was more accurate that the initial code.

The following table summarizes the different rules employed for occupation auto-coding:

rule ID	rule description	method	default occupation code
1049	ACCOUNTANT	education level	412
1053	SOCIALWORKER	education level	346
1058	ASSESSOR	education level	341
1060	NURSERYSCHOOLTEACHER	education level	339
1064	NURSES	education level	323
1088	MANAGEMENTACCOUNTANT	education level	123
1095	TEACHERS	education level	339
5000	DOMESTIC WORKERS	industry	914
5001	CLEANERS	industry	914
5002	DRIVERS	industry	833
5003	GENERAL WORKERS	industry	931
5004	FOREMAN/SUPERVISORS/OPERATORS	industry	711
5005	ADVISORS	industry	242
5006	AGENTS	industry	342
5007	ANALYSTS	industry	241
5008	ARTICLECLERKS	industry	245
5009	MANAGERS	industry	131
5010	CUTTERS	industry	131
5011	DRILLERS	industry	732
5012	ELECTRICIANS	industry	713
5013	ENGINEERS	industry	214
5014	FINISHER	industry	722
5015	STRIPPER	industry	741
5016	GRADER	industry	743
5017	GRINDER	industry	741
5018	INSPECTOR	industry	315
5019	MARKER	industry	614
5020	SETTER	industry	713
5021	SORTER	industry	743
5022	SUPERVISOR	industry	411
5023	TECHNICIAN	industry	311
5024	TRIMMER	industry	744
5025	POLISHER	industry	722

The method "education level" analyses responses to the highest level of education question, and the "industry" method uses the industry code.

For each rule, the method variable (either highest level of education or industry) is compared to a series of values; if the value is within the rule's range, then a new occupation code is imputed. If a match is not found, then the default occupation code (shown above) is used.

The full set of rules are shown below:

rule ID	option	minimum value	maximum value	new occupation code
1049	1	13	16	343
1049	2	17	20	241
1053	1	17	20	244
1058	1	17	20	241
1060	1	13	16	332
1060	2	17	20	233
1064	1	17	20	223
1064	2	17	20	223
1088	1	13	16	343
1088	2	17	20	241
1095	1	13	16	331
1095	2	17	20	233
5000	1	0	199	913
5001	1	0	199	913
5001	2	300	399	722
5002	1	711	711	831
5002	2	712	712	832
5002	3	741	741	832
5003	1	100	199	921
5003	2	300	399	932
5003	3	700	799	933
5003	4	200	299	931
5003	5	500	599	931
5004	1	111	111	611
5004	2	112	112	612
5004	3	113	113	613
5004	4	121	121	614
5004	5	131	131	615
5004	6	131	131	615
5004	7	501	501	719
5004	8	502	502	712
5004	9	503	503	713
5004	10	504	504	714
5004	11	712	712	832
5004	12	721	721	834
5004	13	722	722	834
5004	14	301	306	827
5004	15	301	306	827
5004	16	311	317	826
5004	17	322	322	824
5004	18	391	391	824
5004	19	331	331	812
5004	20	332	334	815

rule ID	option	minimum value	maximum value	new occupation code
5004	21	335	335	822
5004	22	337	338	823
5004	23	341	342	813
5004	24	351	355	821
5004	25	356	358	816
5004	26	375	376	731
5004	27	392	392	829
5005	1	100	199	321
5005	2	920	920	235
5005	3	620	629	341
5006	1	611	611	341
5007	1	862	862	213
5007	2	752	752	214
5008	1	881	881	242
5009	1	991	991	139
5009	2	933	933	139
5009	3	964	964	139
5009	4	911	911	343
5010	1	251	251	711
5010	2	301	301	741
5010	3	306	306	741
5010	4	304	304	921
5010	5	312	315	139
5010	6	316	317	743
5010	7	321	321	744
5010	8	341	341	614
5010	9	352	352	732
5010	10	392	392	731
5011	1	251	251	711
5011	2	341	342	732
5011	3	352	352	731
5011	4	355	355	722
5012	1	711	711	724
5012	2	721	721	724
5012	3	730	730	724
5012	4	882	882	724
5013	1	721	721	314
5013	2	862	862	213
5014	1	251	251	711
5014	2	317	317	744
5014	3	325	325	734
5014	4	341	341	732
5014	5	342	342	712
5014	6	353	355	722
5014	7	357	357	722
5014	8	391	391	742
5015	1	317	317	711
5015	2	351	351	744
5015	3	357	357	734

rule ID	option	minimum value	maximum value	new occupation code
5015	4	381	381	723
5015	5	721	721	723
5015	6	723	723	722
5015	7	730	730	723
5016	1	251	251	711
5016	2	301	301	741
5016	3	306	306	743
5016	4	311	311	743
5016	5	315	315	743
5016	6	317	317	744
5016	7	322	322	742
5017	1	304	304	741
5017	2	306	306	741
5017	3	341	341	732
5017	4	357	357	722
5017	5	342	342	711
5018	1	911	911	344
5019	1	121	122	614
5019	2	322	322	742
5019	3	314	314	743
5019	4	341	341	732
5019	5	355	355	722
5019	6	354	354	721
5020	1	341	342	713
5020	2	311	311	743
5020	3	322	322	742
5020	4	325	325	734
5020	5	357	357	722
5020	6	392	392	731
5021	1	306	306	741
5021	2	315	315	743
5021	3	317	317	744
5022	1	100	199	611
5022	2	200	299	711
5023	1	371	371	724
5023	2	615	615	311
5023	3	730	730	314
5023	4	931	931	321
5024	1	301	301	724
5024	2	315	315	724
5024	3	317	317	314
5025	1	316	317	744
5025	2	341	341	732
5025	3	342	342	711
5025	4	392	392	731

Comparisons are performed in the order indicated by the “option” column, in ascending order (1,2,3,etc.).

Place-name coding was also mostly automated. Due to constraints placed on the time available for coding of places and religions in Census 2001, an automated coding system was developed to automatically code descriptions received from the questionnaire to STATSSA master code lists. A brief description of the process followed is explained below.

The place name comparison list was generated for all the place names in the country. It contained character strings to be used as the baseline to try and map to the various raw descriptions received from the processing system (AFPSPRO). The list was populated with the most meaningful list of descriptions received in the STATSSA master code list. Items like “BLOCK”, “SECTION” and “EXTENSION” and other non-informative name-parts like “FOUNTAIN”, “CITY”, “VILLAGE” were removed.

The following method was used to get comparison sub strings from the above strings, as well as all the various descriptions that were received from the AFPSPRO capturing system.

The descriptions were split into all its 4 character subsets, in 2 ways:

A moving starting position taking 4 characters at a time: for example:

```
PRETORIA -> PRET
PRETORIA -> RETO
PRETORIA -> ETOR
PRETORIA -> TORI
PRETORIA -> ORIA
```

A moving starting position, taking 5 characters at a time, and then dropping out the 2nd, 3rd or 4th characters for a 4 character result: for example:

```
PRETORIA -> PRETO -> PRETO, PRETO, PRETO -> PETO, PRTO, PREO
PRETORIA -> RETOR -> RETOR, RETOR, RETOR -> RTOR, REOR, RETR
PRETORIA -> ETORI -> ETORI, ETORI, ETORI -> EORI, ETRI, ETOI
PRETORIA -> TORIA -> TORIA, TORIA, TORIA -> TRIA, TOIA, TORA
```

This 4 character dissemination was performed for the raw list of data received from the questionnaire as well as the STATSSA master code list. An offset value was carried to indicate the position in the main word of the first character on the 4 character sub string.

Any matches between these 4 character strings and descriptions from the AFPSPRO list and the stats list were marked as a possible matches between the 2 descriptions.

Further calculations were then performed to ascertain the matching level. The code with the highest matching level was then regarded as the best automated description match to the STATSSA master code list and was applied against the relevant code.

Coding of religions was also automated. This followed a similar process to that used for place name coding.

XIII ANNEXE 1: CODE LISTS

The definitive list of codes for countries, places (sub- and main), occupations, industries, and religions can be found in the MS-Access database \\epsilon1\docs\CODELISTS\tabo.mdb.

XIII.1 COUNTRY

This variable is used in the following edits:

V.15 Born in SA (P-09), place of birth (P-09a) and country of birth (P-09b)

V.23 Citizenship (P-10) and country of citizenship (P-10a)

code	Description
101	AZANIA (this code is an alias for South Africa, and is removed during tabulation)
101	SOUTH AFRICA
101	BOPHUTHATSWANA (this code is an alias for South Africa, and is removed during tabulation)
101	CAPE COLONY (this code is an alias for South Africa, and is removed during tabulation)
101	CAPE OF GOOD HOPE (this code is an alias for South Africa, and is removed during tabulation)
101	CAPE PROVINCE (this code is an alias for South Africa, and is removed during tabulation)
101	CISKEI (this code is an alias for South Africa, and is removed during tabulation)
101	GAZANKULU (this code is an alias for South Africa, and is removed during tabulation)
101	KAAP PROVINSIE (this code is an alias for South Africa, and is removed during tabulation)
101	KANGWANE (this code is an alias for South Africa, and is removed during tabulation)
101	KWANDEBELE (this code is an alias for South Africa, and is removed during tabulation)
101	KWAZULU (this code is an alias for South Africa, and is removed during tabulation)
101	LEBOWA (this code is an alias for South Africa, and is removed during tabulation)
101	NATAL (this code is an alias for South Africa, and is removed during tabulation)
101	ORANGE FREE STATE (this code is an alias for South Africa, and is removed during tabulation)
101	ORANGE RIVER COLONY (this code is an alias for South Africa, and is removed during tabulation)
101	ORANJE VRYSTAAT (this code is an alias for South Africa, and is removed during tabulation)
101	QWAQWA (this code is an alias for South Africa, and is removed during tabulation)
101	RSA (this code is an alias for South Africa, and is removed during tabulation)
101	TRANSKEI (this code is an alias for South Africa, and is removed during tabulation)
101	TRANSVAAL (this code is an alias for South Africa, and is removed during tabulation)
101	VENDA (this code is an alias for South Africa, and is removed during tabulation)
101	ZULULAND (this code is an alias for South Africa, and is removed during tabulation)
111	LESOTHO
112	NAMIBIA
112	SOUTH WEST AFRICA (this code is an alias for Namibia, and is removed during tabulation)
112	SUID WES (this code is an alias for Namibia, and is removed during tabulation)
112	SUID WES AFRIKA (this code is an alias for Namibia, and is removed during tabulation)
113	BETSHUANALAND (this code is an alias for Botswana, and is removed during tabulation)
113	BOTSWANA
114	RHODESIA (this code is an alias for Zimbabwe, and is removed during tabulation)
114	ZIMBABWE
115	MOZAMBIQUE
116	SWAZILAND
121	ANGOLA
122	DEMOCRATIC REPUBLIC OF THE CONGO (ZAIRE)

code	Description
122	ZAIRE (this code is an alias for DRC, and is removed during tabulation)
123	MALAWI
124	MAURITIUS
125	SEYCHELLES
126	TANZANIA
127	ZAMBIA
130	ALGERIA
131	BENIN
132	BURKINA FASO
133	BURUNDI
134	CAMEROON
135	CAPE VERDE
136	CENTRAL AFRICAN REPUBLIC
137	CHAD
138	COMOROS
139	CONGO
140	COTE D'IVOIRE
141	DJIBOUTI
142	EGYPT
143	EQUATORIAL GUINEA
144	ERITREA
145	ETHIOPIA
146	GABON
147	GAMBIA
148	GHANA
149	GUINEA
150	GUINEA-BISSAU
151	KENYA
152	LIBERIA
153	LIBYAN ARAB JAMAHIRIYA
154	MADAGASCAR
155	MALI
156	MAURITANIA
157	MOROCCO
158	NIGER
159	NIGERIA
160	REUNION
161	RWANDA
162	SAINT HELENA
163	SAO TOME AND PRINCIPE
164	SENEGAL
165	SIERRA LEONE
166	SOMALIA
167	SUDAN
168	TOGO
169	TUNISIA
170	UGANDA
171	WESTERN SAHARA
199	OTHER AFRICA

code	Description
201	UNITED STATES
202	ANGUILLA
203	ANTIGUA AND BARBUDA
204	ARGENTINA
205	ARUBA
206	BAHAMAS
207	BARBADOS
208	BELIZE
209	BERMUDA
210	BOLIVIA
211	BRAZIL
212	BRITISH VIRGIN ISLANDS
213	CANADA
214	CARIBBEAN
215	CAYMAN ISLANDS
216	CHILE
217	COLOMBIA
218	COSTA RICA
219	CUBA
220	DOMINICA
221	DOMINICAN REPUBLIC
222	ECUADOR
223	EL SALVADOR
224	FALKLAND ISLANDS (MALVINAS)
225	FRENCH GUIANA
226	GREENLAND
227	GRENADA
228	GUADELOUPE
229	GUATEMALA
230	GUYANA
231	HAITI
232	HONDURAS
233	JAMAICA
234	LATIN AMERICA AND THE CARIBBEAN
235	MARTINIQUE
236	MEXICO
237	MONTSERRAT
238	NETHERLANDS ANTILLES
239	NICARAGUA
240	PANAMA
241	PARAGUAY
242	PERU
243	PUERTO RICO
244	SAINT KITTS AND NEVIS
245	SAINT LUCIA
246	SAINT PIERRE AND MIQUELON
247	SAINT VINCENT AND THE GRENADINES
248	SURINAME
249	TRINIDAD AND TOBAGO

code	Description
250	TURKS AND CAICOS ISLANDS
251	UNITED STATES VIRGIN ISLANDS
252	URUGUAY
253	VENEZUELA
299	OTHER NORTH AND SOUTH AMERICA
301	CHINA
302	AFGHANISTAN
303	ARMENIA
304	AZERBAIJAN
305	BAHRAIN
306	BANGLADESH
307	BHUTAN
308	BRUNEI DARUSSALAM
309	CAMBODIA
310	CYPRUS
311	DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA
312	EAST TIMOR
313	GEORGIA
314	HONG KONG SPECIAL ADMINISTRATIVE REGION OF CHINA
315	INDIA
316	INDONESIA
317	IRAN (ISLAMIC REPUBLIC OF)
318	IRAQ
319	ISRAEL
320	JAPAN
321	JORDAN
322	KAZAKHSTAN
323	KUWAIT
324	KYRGYZSTAN
325	LAO PEOPLE'S DEMOCRATIC REPUBLIC
326	LEBANON
327	MACAO SPECIAL ADMINISTRATIVE REGION OF CHINA
328	MALAYSIA
329	MALDIVES
330	MONGOLIA
331	MYANMAR
332	NEPAL
333	OCCUPIED PALESTINIAN TERRITORY
334	OMAN
335	PAKISTAN
336	PHILIPPINES
337	QATAR
338	REPUBLIC OF KOREA
339	SAUDI ARABIA
340	SINGAPORE
341	SRI LANKA
342	SYRIAN ARAB REPUBLIC
343	TAIWAN PROVINCE OF CHINA
344	TAJIKISTAN

code	Description
345	THAILAND
346	TURKEY
347	TURKMENISTAN
348	UNITED ARAB EMIRATES
349	UZBEKISTAN
350	VIET NAM
351	YEMEN
399	OTHER ASIA
401	UNITED KINGDOM/GREAT BRITAIN
402	ALBANIA
403	ANDORRA
404	AUSTRIA
405	BELARUS
406	BELGIUM
407	BOSNIA AND HERZEGOVINA
408	BULGARIA
409	CHANNEL ISLANDS
410	CROATIA
411	CZECH REPUBLIC
412	DENMARK
413	ESTONIA
414	FAEROE ISLANDS
415	FINLAND
416	FRANCE
417	GERMANY
418	GIBRALTAR
419	GREECE
420	HOLY SEE
421	HUNGARY
422	ICELAND
423	IRELAND
424	ISLE OF MAN
425	ITALY
426	LATVIA
427	LIECHTENSTEIN
428	LITHUANIA
429	LUXEMBOURG
430	MALTA
431	MONACO
432	NETHERLANDS
433	NORWAY
434	POLAND
435	PORTUGAL
436	REPUBLIC OF MOLDOVA
437	ROMANIA
438	RUSSIAN FEDERATION
439	SAN MARINO
440	SLOVAKIA
441	SLOVENIA

code	Description
442	SOUTHERN EUROPE
443	SPAIN
444	SVALBARD AND JAN MAYEN ISLANDS
445	SWEDEN
446	SWITZERLAND
447	THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA
448	UKRAINE
449	YUGOSLAVIA
499	OTHER EUROPE
501	AUSTRALIA
502	AMERICAN SAMOA
503	COOK ISLANDS
504	FIJI
505	FRENCH POLYNESIA
506	GUAM
507	KIRIBATI
508	MARSHALL ISLANDS
509	MELANESIA
510	MICRONESIA
511	MICRONESIA (FEDERATED STATES OF)
512	NAURU
513	NEW CALEDONIA
514	NEW ZEALAND
515	NIUE
516	NORFOLK ISLAND
517	NORTHERN MARIANA ISLANDS
518	PALAU
519	PAPUA NEW GUINEA
520	PITCAIRN
521	POLYNESIA
522	SAMOA
523	SOLOMON ISLANDS
524	TOKELAU
525	TONGA
526	TUVALU
527	VANUATU
528	WALLIS AND FUTUNA ISLANDS
599	OTHER OCEANIA
996	GARBAGE RESPONSE (random characters, invalid writing, nonsensical response)
997	UNKNOWN (response seems valid but the coding team was not able to attribute it to a valid code)
998	AMBIGUOUS (valid response, but corresponds to more than one code; example: “USA UK”)

XIII.2 RELIGION

This variable is used in the following edit:

V.21 Religion (P-08)

code	description
01	Dutch Reformed Church
02	Reformed Churches
03	Nederduits Hervormde Kerk
04	Anglican Church
05	Church of England in SA
06	International Fellowship of Christian Churches (Rhema etc.)
07	Methodist Churches of SA
08	Presbyterian Churches
09	United Congregational Church OF SA
10	Lutheran Church of Southern Africa
11	Roman Catholic Church
12	Apostolic Faith Mission of SA
13	Other Apostolic Churches
14	Baptist Churches of Southern Africa
15	Pinkster Protestante Kerk
16	Other Reformed Churches
17	Full Gospel Church of God in Southern Africa
18	Orthodox Churches
19	Church of Christ of Latter Day Saints
20	Other Pentecostal Churches
21	Salvation Army United Church
22	Seventh-Day Adventist Church
23	New Apostolic Church
24	Assemblies of God of SA
25	St Engenas Zion Christian Church
26	Zion Christian Church
27	Bandla Lama Nazaretha
28	African Methodist Episcopal Church
29	St John's Apostolic Church
30	International Pentecost Church
31	Other African Independent Churches
32	Other Christian Churches
33	African Traditional Belief
34	Jewish Faith/Hebrew
35	Buddhism
36	Taoist
37	Confucian
38	Hinduism
39	Muslim Faith
40	Bahais
42	New Age
43	Other Non-Christian Religions
44	Other Methodist Churches

code	description
45	Other Presbyterian Churches
46	Other Congregational Churches
47	Other Lutheran Churches
48	Other Catholic Churches
49	Other Baptist Churches
50	Other Pentecostal Churches
51	Other Orthodox Churches
52	Other (Seventh-Day) Adventist Churches
53	Other African Apostolic Churches
54	Other Assemblies
55	Other Zionist Churches
57	Christian Scientist
58	Christian Centres
59	Ethiopian Type Churches
60	Ethnic Churches
61	Other Evangelical Churches
62	Other Charismatic Churches
63	No religion
64	Refused
65	Other
98	NA: Institution **(note: this code was not used)**
99	unknown/undetermined

XIII.3 SUB-PLACE

This variable is used in the following edits:

V.24 Usually live (P-11), place of usual residence (P-11a) and same place residence (P-11b)

V.25 Residence five years ago (P-12), place of previous residence (P-12A) and year moved (P-12b)

V.26 Work in the preceding week (P-18), why not working (P-18a), active steps to find work (P-18b), availability for work (P-18c), work status (P-19), business/company activity (P-19b), occupation (P-19c), hours worked (P-19d), work at same place (P-19e), place of work (P-19f) and province of work (P-19f)

(*) The complete list of sub-place and main place codes is available in the the MS-Access database \\epsilon1\docs\CODELISTS\tabo.mdb.

Special codes used for places:

code	main place
10000000	Western Cape (province-level)
20000000	Eastern Cape (province-level)
30000000	Northern Cape (province-level)
40000000	Free State (province-level)
50000000	KwaZulu-Natal or Natal (province-level)
60000000	North West (province-level)
70000000	Gauteng (province-level)
80000000	Mpumulanga, KwaNdebele (province-level)
90000000	Limpopo, Venda, Lebowa, Northern Province (province-level)
00000000	UNDETERMINED (as determined by the editing team, when a valid place cannot be determined)
00000004	GARBAGE RESPONSE (random characters, invalid writing, nonsensical response)
00000005	UNKNOWN (response seems valid but the coding team was not able to attribute it to a valid code)
00000003	foreign country
00000001	“Transvaal” (converted to a valid province-level place)
00000002	“Cape Province” (converted to a valid province-level place)
10000000 – 99999999	valid main place codes (*)

Note that place name coding does not use an “ambiguous” code; the coding team was able to complete their work without needing such a code.

XIII.4 OCCUPATION

This variable is used in the following edits:

V.26 Work in the preceding week (P-18), why not working (P-18a), active steps to find work (P-18b), availability for work (P-18c), work status (P-19), business/company activity (P-19b), occupation (P-19c), hours worked (P-19d), work at same place (P-19e), place of work (P-19f) and province of work (P-19f)

code	Description
111	LEGISLATORS
112	SENIOR GOVERNMENT OFFICERS
113	TRADITIONAL CHIEFS AND HEADS OF VILLAGES
114	SENIOR OFFICERS OF SPECIAL-INTEREST ORGANISATIONS
119	LEGISLATORS AND SENIOR OFFICERS NOT ELSEWHERE CLASSIFIED
121	DIRECTORS AND CHIEF EXECUTIVES
122	PRODUCTION AND OPERATIONS MANAGERS/DEPARTMENT MANAGERS
123	OTHER MANAGERS/DEPARTMENT MANAGERS
129	CORPORATE MANAGERS NOT ELSEWHERE CLASSIFIED
131	GENERAL MANAGERS
139	GENERAL MANAGERS NOT ELSEWHERE CLASSIFIED
211	PHYSICISTS, CHEMISTS AND RELATED PROFESSIONALS
212	MATHEMATICIANS, STATISTICIANS AND RELATED PROFESSIONALS
213	COMPUTING PROFESSIONALS
214	ARCHITECTS, ENGINEERS AND RELATED PROFESSIONALS
215	PHYSICAL SCIENCES TECHNOLOGISTS
219	PHYSICAL, MATHEMATICAL AND ENGINEERING SCIENCE PROFESSIONALS NOT ELSEWHERE CLASS
221	LIFE SCIENCE PROFESSIONALS
222	HEALTH PROFESSIONALS (EXCEPT NURSING)
223	NURSING AND MIDWIFERY PROFESSIONALS
229	LIFE SCIENCE AND HEALTH PROFESSIONALS NOT ELSEWHERE CLASSIFIED
231	COLLEGE, UNIVERSITY AND HIGHER EDUCATION INSTITUTIONS TEACHING PROFESSIONALS
232	SECONDARY EDUCATION INSTITUTIONS TEACHING PROFESSIONALS
233	PRIMARY AND PRE-PRIMARY EDUCATION INSTITUTIONS TEACHING PROFESSIONALS
234	SPECIAL EDUCATION INSTITUTIONS TEACHING PROFESSIONALS
235	OTHER TEACHING INSTITUTIONS PROFESSIONALS
239	OTHER EDUCATION PROFESSIONALS NOT ELSEWHERE CLASSIFIED
241	BUSINESS PROFESSIONALS
242	LEGAL PROFESSIONALS
243	ARCHIVISTS, LIBRARIANS AND RELATED INFORMATION PROFESSIONALS
244	SOCIAL SCIENCE AND RELATED PROFESSIONALS
245	WRITERS AND CREATIVE OR PERFORMING ARTISTS
246	RELIGIOUS PROFESSIONALS
249	OTHER PROFESSIONALS NOT ELSEWHERE CLASSIFIED
311	NATURAL AND ENGINEERING SCIENCE TECHNICIANS
312	COMPUTER ASSOCIATE PROFESSIONALS
313	OPTICAL AND ELECTRONIC EQUIPMENT OPERATORS
314	SHIP AND AIRCRAFT CONTROLLERS AND TECHNICIANS

code	Description
315	SAFETY AND QUALITY INSPECTORS
319	PHYSICAL AND ENGINEERING SCIENCE ASSOCIATE PROFESSIONALS NOT ELSEWHERE CLASSIFIE
321	LIFE SCIENCE TECHNICIANS AND RELATED ASSOCIATE PROFESSIONALS
322	MODERN HEALTH ASSOCIATE PROFESSIONALS (EXCEPT NURSING)
323	NURSING AND MIDWIFERY ASSOCIATE PROFESSIONALS
324	TRADITIONAL MEDICINE PRACTITIONERS AND FAITH HEALERS
329	LIFE SCIENCE AND HEALTH ASSOCIATE PROFESSIONALS NOT ELSEWHERE CLASSIFIED
331	PRIMARY EDUCATION TEACHING ASSOCIATE PROFESSIONALS
332	PRE-PRIMARY EDUCATION TEACHING ASSOCIATE PROFESSIONALS
333	SPECIAL EDUCATION TEACHING ASSOCIATE PROFESSIONALS
334	OTHER TEACHING ASSOCIATE PROFESSIONALS
339	TEACHING ASSOCIATE PROFESSIONALS NOT ELSEWHERE CLASSIFIED
341	FINANCE AND SALES ASSOCIATE PROFESSIONALS
342	BUSINESS SERVICES AGENTS AND TRADE BROKERS
343	ADMINISTRATIVE ASSOCIATE PROFESSIONALS
344	CUSTOMS, TAX AND RELATED GOVERNMENT ASSOCIATE PROFESSIONALS
345	POLICE INSPECTORS AND DETECTIVES
346	SOCIAL WORK ASSOCIATE PROFESSIONALS
347	ARTISTIC, ENTERTAINMENT AND SPORTS ASSOCIATE PROFESSIONALS
348	RELIGIOUS ASSOCIATE PROFESSIONALS
349	OTHER ASSOCIATE PROFESSIONALS NOT ELSEWHERE CLASSIFIED
411	SECRETARIES AND KEYBOARD-OPERATING CLERKS
412	NUMERICAL CLERKS
413	MATERIAL-RECORDING AND TRANSPORT CLERKS
414	LIBRARY, MAIL AND RELATED CLERKS
419	OTHER OFFICE CLERKS AND CLERKS NOT ELSEWHERE CLASSIFIED (EXCEPT CUSTOMER SERVICE
421	CASHIERS, TELLERS AND RELATED CLERKS
422	CLIENT INFORMATION CLERKS
429	CUSTOMER SERVICES CLERKS NOT ELSEWHERE CLASSIFIED
511	TRAVEL ATTENDANTS AND RELATED WORKERS
512	HOUSEKEEPING AND RESTAURANT SERVICES WORKERS
513	PERSONAL CARE AND RELATED WORKERS
514	OTHER PERSONAL SERVICES WORKERS
515	ASTROLOGERS, FORTUNE-TELLERS AND RELATED WORKERS
516	PROTECTIVE SERVICES WORKERS
519	PERSONAL AND PROTECTIVE SERVICES WORKERS NOT ELSEWHERE CLASSIFIED
521	FASHION AND OTHER MODELS
522	SHOP SALESPERSONS AND DEMONSTRATORS
523	STALL AND MARKET SALESPERSONS
529	MODELS, SALESPERSONS AND DEMONSTRATORS NOT ELSEWHERE CLASSIFIED
611	MARKET GARDENERS AND CROP GROWERS
612	MARKET-ORIENTED ANIMAL PRODUCERS AND RELATED WORKERS
613	MARKET-ORIENTED CROP AND ANIMAL PRODUCERS
614	FORESTRY AND RELATED WORKERS
615	FISHERY WORKERS, HUNTERS AND TRAPPERS
619	MARKET-ORIENTED SKILLED AGRICULTURAL AND FISHERY WORKERS NOT

code	Description
	ELSEWHERE CLASSIFIE
621	SUBSISTENCE AGRICULTURAL AND FISHERY WORKERS
711	MINERS, SHOT-FIRERS, STONE CUTTERS AND CARVERS
712	BUILDING FRAME AND RELATED TRADES WORKERS
713	BUILDING FINISHERS AND RELATED TRADES WORKERS
714	PAINTERS, BUILDING STRUCTURE CLEANERS AND RELATED TRADES WORKERS
719	EXTRACTION AND BUILDING TRADES WORKERS NOT ELSEWHERE CLASSIFIED
721	METAL MOULDERS, WELDERS, SHEET-METAL WORKERS, STRUCTURAL METAL PREPARERS AND REL
722	BLACKSMITHS, TOOL-MAKERS AND RELATED TRADES WORKERS (EXCLUDING APPRENTICES/TRAIN
723	MACHINERY MECHANICS AND FITTERS
724	ELECTRICAL AND ELECTRONIC EQUIPMENT MECHANICS AND FITTERS
729	METAL, MACHINERY AND RELATED TRADES WORKERS NOT ELSEWHERE CLASSIFIED
731	PRECISION WORKERS IN METAL AND RELATED MATERIALS
732	POTTERS, GLASS-MAKERS AND RELATED TRADES WORKERS
733	HANDICRAFT WORKERS IN WOOD, TEXTILE, LEATHER AND RELATED MATERIALS
734	PRINTING AND RELATED TRADES WORKERS
739	PRECISION, HANDICRAFT, PRINTING AND RELATED TRADES WORKERS NOT ELSEWHERE CLASSIF
741	FOOD PROCESSING AND RELATED TRADES WORKERS
742	WOOD TREATERS, CABINETMAKERS AND RELATED TRADES WORKERS
743	TEXTILE, GARMENT AND RELATED TRADES WORKERS
744	PELT, LEATHER AND SHOEMAKING TRADES WORKERS
749	OTHER CRAFT AND RELATED TRADES WORKERS NOT ELSEWHERE CLASSIFIED
811	MINING AND MINERAL PROCESSING PLANT OPERATORS
812	METAL-PROCESSING PLANT OPERATORS
813	GLASS, CERAMICS AND RELATED PLANT OPERATORS
814	WOOD-PROCESSING AND PAPERMAKING PLANT OPERATORS
815	CHEMICAL-PROCESSING PLANT OPERATORS
816	POWER-PRODUCTION AND RELATED PLANT OPERATORS
817	AUTOMATED ASSEMBLY-LINE AND INDUSTRIAL-ROBOT OPERATORS
819	STATIONARY-PLANT AND RELATED OPERATORS NOT ELSEWHERE CLASSIFIED
821	METAL AND MINERAL-PRODUCTS MACHINE OPERATORS
822	CHEMICAL-PRODUCTS MACHINE OPERATORS
823	RUBBER AND PLASTIC PRODUCTS MACHINE OPERATORS
824	WOOD PRODUCTS MACHINE OPERATORS
825	PRINTING, BINDING AND PAPER PRODUCTS MACHINE OPERATORS
826	TEXTILE, FUR AND LEATHER PRODUCTS MACHINE OPERATORS
827	FOOD AND RELATED PRODUCTS MACHINE OPERATORS
828	ASSEMBLERS
829	OTHER MACHINE OPERATORS AND ASSEMBLERS NOT ELSEWHERE CLASSIFIED
831	LOCOMOTIVE-ENGINE DRIVERS AND RELATED WORKERS
832	MOTOR VEHICLE DRIVERS AND RELATED WORKERS
833	AGRICULTURAL AND OTHER MOBILE PLANT OPERATORS

code	Description
834	SHIPS' DECK CREWS AND RELATED WORKERS
839	DRIVERS AND MOBILE PLANT OPERATORS NOT ELSEWHERE CLASSIFIED
911	STREET VENDORS AND RELATED WORKERS
912	SHOE-CLEANING AND OTHER ELEMENTARY STREET SERVICES OCCUPATIONS
913	DOMESTIC AND RELATED HELPERS, CLEANERS AND LAUNDERERS
914	BUILDING CARETAKERS AND WINDOW AND RELATED CLEANERS
915	MESSENGERS, PORTERS, DOORKEEPERS AND RELATED WORKERS
916	GARBAGE COLLECTORS AND RELATED LABOURERS
919	ELEMENTARY SALES AND SERVICES OCCUPATIONS NOT ELSEWHERE CLASSIFIED
921	AGRICULTURAL, FISHERY AND RELATED LABOURERS
929	AGRICULTURAL, FISHERY AND RELATED LABOURERS NOT ELSEWHERE CLASSIFIED
931	MINING AND CONSTRUCTION LABOURERS
932	MANUFACTURING LABOURERS
933	TRANSPORT LABOURERS AND FREIGHT HANDLERS
939	LABOURERS IN MINING, CONSTRUCTION, MANUFACTURING AND TRANSPORT NOT ELSEWHERE CLA
999	BEGGAR
081	OCCUPATIONS UNSPECIFIED
082	UNEMPLOYED, OCCUPATION UNSPECIFIED
083	OCCUPATIONS IN THE INFORMAL SECTOR NOT ELSEWHERE CLASSIFIED
084	OCCUPATIONS NOT ELSEWHERE CLASSIFIED
085	OCCUPATIONS NOT ADEQUATELY DEFINED
091	HOMEMAKERS (HOUSEWIVES/HOUSEHUSBANDS)
092	CHILDREN, NOT SCHOLARS OR STUDENTS (YOUNGER THAN 15 YEARS)
093	SCHOLARS, STUDENTS
094	PENSIONERS AND OTHER NOT ECONOMICALLY ACTIVE (65 YEARS AND OLDER)
095	LABOUR-DISABLED (15 TO 64 YEARS OLD) PERSONS
096	PRISONER
097	FOREIGN VISITORS
001	GARBAGE RESPONSE (random characters, invalid writing, nonsensical response)
002	UNKNOWN (response seems valid but the coding team was not able to attribute it to a valid code)
003	AMBIGUOUS (valid response, but corresponds to more than one code)
998	UNDETERMINED (note: this code can be assigned by the editing system only)

XIII.5 INDUSTRY

This variable is used in the following edits:

V.26 Work in the preceding week (P-18), why not working (P-18a), active steps to find work (P-18b), availability for work (P-18c), work status (P-19), business/company activity (P-19b), occupation (P-19c), hours worked (P-19d), work at same place (P-19e), place of work (P-19f) and province of work (P-19f)

code	description
111	GROWING OF CROPS; MARKET GARDENING; HORTICULTURE
112	FARMING OF ANIMALS
113	GROWING OF CROPS COMBINED WITH FARMING OF ANIMALS (MIXED FARMING)
114	AGRICULTURAL AND ANIMAL HUSBANDRY SERVICES, EXCEPT VETERINARY ACTIVITIES
115	HUNTING, TRAPPING AND GAME PROPAGATION, INCLUDING RELATED SERVICES
116	PRODUCTION OF ORGANIC FERTILIZER
121	FORESTRY AND RELATED SERVICES
122	LOGGING AND RELATED SERVICES
131	OCEAN AND COASTAL FISHING
132	FISH HATCHERIES AND FISH FARMS
210	MINING OF COAL AND LIGNITE
221	EXTRACTION OF CRUDE PETROLEUM AND NATURAL GAS; SERVICE ACTIVITIES INCIDENTAL TO OIL AND GAS EXTRACTION, EXCLUDING SURVEYING
230	MINING OF GOLD AND URANIUM ORE
241	MINING OF IRON ORE
242	MINING OF NON-FERROUS METAL ORES, EXCEPT GOLD AND URANIUM
251	STONE QUARRYING, CLAY AND SANDPITS
252	MINING OF DIAMONDS (INCLUDING ALLUVIAL DIAMONDS)
253	MINING AND QUARRYING N.E.C.
290	SERVICE ACTIVITIES INCIDENTAL TO MINING OF MINERALS
301	PRODUCTION, PROCESSING AND PRESERVATION OF MEAT, FISH, FRUIT, VEGETABLES, OILS AND FATS
302	MANUFACTURE OF DAIRY PRODUCTS
303	MANUFACTURE OF GRAIN MILL PRODUCTS, STARCHES AND STARCH PRODUCTS AND PREPARED ANIMAL FEEDS
304	MANUFACTURE OF OTHER FOOD PRODUCTS
305	MANUFACTURE OF BEVERAGES
306	MANUFACTURE OF TOBACCO PRODUCTS
311	SPINNING, WEAVING AND FINISHING OF TEXTILES
312	MANUFACTURE OF OTHER TEXTILES
313	MANUFACTURE OF KNITTED AND CROCHETED FABRICS AND ARTICLES
314	MANUFACTURE OF WEARING APPAREL, EXCEPT FUR APPAREL
315	DRESSING AND DYEING OF FUR; MANUFACTURE OF ARTICLES OF FUR
316	TANNING AND DRESSING OF LEATHER; MANUFACTURE OF LUGGAGE, HANDBAGS, SADDLERY AND HARNESS
317	MANUFACTURE OF FOOTWEAR
321	SAWMILLING AND PLANING OF WOOD
322	MANUFACTURE OF PRODUCTS OF WOOD, CORK, STRAW AND PLAITING MATERIALS
323	MANUFACTURE OF PAPER AND PAPER PRODUCTS
324	PUBLISHING

code	description
325	PRINTING AND SERVICE ACTIVITIES RELATED TO PRINTING
326	REPRODUCTION OF RECORDED MEDIA
331	MANUFACTURE OF COKE OVEN PRODUCTS
332	PETROLEUM REFINERIES/SYNTHESISERS
333	PROCESSING OF NUCLEAR FUEL
334	MANUFACTURE OF BASIC CHEMICALS
335	MANUFACTURE OF OTHER CHEMICAL PRODUCTS
336	MANUFACTURE OF MAN-MADE FIBRES
337	MANUFACTURE OF RUBBER PRODUCTS
338	MANUFACTURE OF PLASTIC PRODUCTS
341	MANUFACTURE OF GLASS AND GLASS PRODUCTS
342	MANUFACTURE OF NON-METALLIC MINERAL PRODUCTS N.E.C
351	MANUFACTURE OF BASIC IRON AND STEEL
352	MANUFACTURE OF BASIC PRECIOUS AND NON-FERROUS METALS
353	CASTING OF METALS
354	MANUFACTURE OF STRUCTURAL METAL PRODUCTS, TANKS, RESERVOIRS AND STEAM GENERATORS
355	MANUFACTURE OF OTHER FABRICATED METAL PRO-DUCTS; METALWORK SERVICE ACTIVITIES
356	MANUFACTURE OF GENERAL PURPOSE MACHINERY
357	MANUFACTURE OF SPECIAL PURPOSE MACHINERY
358	MANUFACTURE OF HOUSEHOLD APPLIANCES N.E.C.
359	MANUFACTURE OF OFFICE, ACCOUNTING AND COM-PUTING MACHINERY
361	MANUFACTURE OF ELECTRIC MOTORS, GENERATORS AND TRANSFORMERS
362	MANUFACTURE OF ELECTRICITY DISTRIBUTION AND CONTROL APPARATUS
363	MANUFACTURE OF INSULATED WIRE AND CABLE
364	MANUFACTURE OF ACCUMULATORS, PRIMARY CELLS AND PRIMARY BATTERIES
365	MANUFACTURE OF ELECTRIC LAMPS AND LIGHTING EQUIPMENT
366	MANUFACTURE OF OTHER ELECTRICAL EQUIPMENT N.E.C.
371	MANUFACTURE OF ELECTRONIC VALVES AND TUBES AND OTHER ELECTRONIC COMPONENTS
372	MANUFACTURE OF TELEVISION AND RADIO TRANSMITTERS AND APPARATUS FOR LINE TELEPHONY AND LINE TELEGRAPHY
373	MANUFACTURE OF TELEVISION AND RADIO RECEIVERS, SOUND OR VIDEO RECORDING OR REPRODUCING APPARATUS AND ASSOCIATED GOODS
374	MANUFACTURE OF MEDICAL APPLIANCES AND INSTRUMENTS AND APPLIANCES FOR MEASURING, CHECKING, TESTING, NAVIGATING AND FOR OTHER PURPOSES, EXCEPT OPTICAL INSTRUMENTS
375	MANUFACTURE OF OPTICAL INSTRUMENTS AND PHOTOGRAPHIC EQUIPMENT
376	MANUFACTURE OF WATCHES AND CLOCKS
381	MANUFACTURE OF MOTOR VEHICLES
382	MANUFACTURE OF BODIES (COACHWORK) FOR MOTOR VEHICLES; MANUFACTURE OF TRAILERS AND SEMI-TRAILERS
383	MANUFACTURE OF PARTS AND ACCESSORIES FOR MOTOR VEHICLES AND THEIR ENGINES
384	BUILDING AND REPAIRING OF SHIPS AND BOATS
385	MANUFACTURE OF RAILWAY AND TRAMWAY LOCO-MOTIVES AND ROLLING STOCK
386	MANUFACTURE OF AIRCRAFT AND SPACECRAFT
387	MANUFACTURE OF TRANSPORT EQUIPMENT N.E.C.
391	MANUFACTURE OF FURNITURE
392	MANUFACTURING N.E.C.

code	description
395	RECYCLING N.E.C.
411	PRODUCTION, COLLECTION AND DISTRIBUTION OF ELECTRICITY
412	MANUFACTURE OF GAS, DISTRIBUTION OF GASEOUS FUELS THROUGH MAINS
413	STEAM AND HOT WATER SUPPLY
420	COLLECTION, PURIFICATION AND DISTRIBUTION OF WATER
501	SITE PREPARATION
502	BUILDING OF COMPLETE CONSTRUCTIONS OR PARTS THEREOF; CIVIL ENGINEERING
503	BUILDING INSTALLATION
504	BUILDING COMPLETION
505	RENTING OF CONSTRUCTION OR DEMOLITION EQUIP-MENT WITH OPERATORS
611	WHOLESALE TRADE ON A FEE OR CONTRACT BASIS
612	WHOLESALE TRADE IN AGRICULTURAL RAW MATERIALS, LIVESTOCK, FOOD, BEVERAGES AND TOBACCO
613	WHOLESALE TRADE IN HOUSEHOLD GOODS
614	WHOLESALE TRADE IN NON-AGRICULTURAL INTERMEDIATE PRODUCTS, WASTE AND SCRAP
615	WHOLESALE TRADE IN MACHINERY, EQUIPMENT AND SUPPLIES
619	OTHER WHOLESALE TRADE
621	NON-SPECIALISED RETAIL TRADE IN STORES
622	RETAIL TRADE IN FOOD, BEVERAGES AND TOBACCO IN SPECIALISED STORES
623	OTHER RETAIL TRADE IN NEW GOODS IN SPECIALISED STORES
624	RETAIL TRADE IN SECOND-HAND GOODS IN STORES
625	RETAIL TRADE NOT IN STORES
626	REPAIR OF PERSONAL AND HOUSEHOLD GOODS
631	SALE OF MOTOR VEHICLES
632	MAINTENANCE AND REPAIR OF MOTOR VEHICLES
633	SALE OF MOTOR VEHICLE PARTS AND ACCESSORIES
634	SALE, MAINTENANCE AND REPAIR OF MOTOR CYCLES AND RELATED PARTS AND ACCESSORIES
635	RETAIL SALE OF AUTOMOTIVE FUEL
641	HOTELS, CAMPING SITES AND OTHER PROVISION OF SHORT-STAY ACCOMMODATION
642	RESTAURANTS, BARS AND CANTEENS
711	RAILWAY TRANSPORT
712	OTHER LAND TRANSPORT
713	TRANSPORT VIA PIPELINES
721	WATER TRANSPORT
722	INLAND WATER TRANSPORT
730	AIR TRANSPORT
741	SUPPORTING AND AUXILIARY TRANSPORT ACTIVITIES; ACTIVITIES OF TRAVEL AGENCIES
751	POSTAL AND RELATED COURIER ACTIVITIES
752	TELECOMMUNICATION
811	MONETARY INTERMEDIATION
819	OTHER FINANCIAL INTERMEDIATION N.E.C.
821	INSURANCE AND PENSION FUNDING, EXCEPT COMPULSORY SOCIAL SECURITY
831	ACTIVITIES AUXILIARY TO FINANCIAL INTERMEDIATION, EXCEPT INSURANCE AND PENSION FUNDING
832	ACTIVITIES AUXILIARY TO INSURANCE AND PENSION FUNDING
841	REAL ESTATE ACTIVITIES WITH OWN OR LEASED PROPERTY

code	description
842	REAL ESTATE ACTIVITIES ON A FEE OR CONTRACT BASIS
851	RENTING OF TRANSPORT EQUIPMENT
852	RENTING OF OTHER MACHINERY AND EQUIPMENT
853	RENTING OF PERSONAL AND HOUSEHOLD GOODS N.E.C.
861	HARDWARE CONSULTANCY
862	SOFTWARE CONSULTANCY AND SUPPLY
863	DATA PROCESSING
864	DATA BASE ACTIVITIES
865	MAINTENANCE AND REPAIR OF OFFICE, ACCOUNTING AND COMPUTING MACHINERY
869	OTHER COMPUTER RELATED ACTIVITIES
871	RESEARCH AND EXPERIMENTAL DEVELOPMENT ON NATURAL SCIENCES AND ENGINEERING
872	RESEARCH AND EXPERIMENTAL DEVELOPMENT ON SOCIAL SCIENCES AND HUMANITIES
881	LEGAL, ACCOUNTING, BOOKKEEPING AND AUDITING ACTIVITIES; TAX CONSULTANCY; MARKET RESEARCH AND PUBLIC-OPINION RESEARCH; BUSINESS AND MANAGEMENT CONSULTANCY
882	ARCHITECTURAL, ENGINEERING AND OTHER TECHNICAL ACTIVITIES
883	ADVERTISING
889	BUSINESS ACTIVITIES N.E.C.
911	CENTRAL GOVERNMENT ACTIVITIES
912	REGIONAL SERVICES COUNCIL ACTIVITIES
913	LOCAL AUTHORITY ACTIVITIES
920	EDUCATION
931	HUMAN HEALTH ACTIVITIES
932	VETERINARY ACTIVITIES
933	SOCIAL WORK ACTIVITIES
940	SEWAGE AND REFUSE DISPOSAL, SANITATION AND SIMILAR ACTIVITIES
951	ACTIVITIES OF BUSINESS, EMPLOYERS AND PROFESSIONAL ORGANISATIONS
952	ACTIVITIES OF TRADE UNIONS
959	ACTIVITIES OF OTHER MEMBERSHIP ORGANISATIONS
961	MOTION PICTURE, RADIO, TELEVISION AND OTHER ENTERTAINMENT ACTIVITIES
962	NEWS AGENCY ACTIVITIES
963	LIBRARY, ARCHIVES, MUSEUMS AND OTHER CULTU-RAL ACTIVITIES
964	SPORTING AND OTHER RECREATIONAL ACTIVITIES
990	OTHER SERVICE ACTIVITIES
010	PRIVATE HOUSEHOLDS WITH EMPLOYED PERSONS
020	EXTERRITORIAL ORGANISATIONS
030	REPRESENTATIVES OF FOREIGN GOVERNMENTS
090	OTHER ACTIVITIES NOT ADEQUATELY DEFINED
001	GARBAGE RESPONSE (random characters, invalid writing, nonsensical response)
002	UNKNOWN (response seems valid but the coding team was not able to attribute it to a valid code)
005	AMBIGUOUS (valid response, but corresponds to more than one code)
998	UNDETERMINED (note: this code can be assigned by the editing system only)

XIV ANNEXE 2: PES ADJUSTMENT FACTORS

XIV.1 PERSON RECORD ADJUSTMENT CLASSES AND FACTORS

Adjustment class	Province code	PES geo code	Raw sex	Raw age group	Raw population group	Adjustment factor
			Western Cape			
101	1	2	1,2	0-120	1,2,3,4,5	1.429219
102	1	5	1,2	0-120	1, 5	1.914480
103	1	5	1,2	0-120	2, 3, 4	1.357041
104	1	1	1,2	0 – 44	1, 3, 4	1.219064
105	1	1	1,2	0 – 44	2, 5	1.144944
106	1	1	1,2	45 -120	1,2,3,4,5	1.113719
199	1		Unspecified Cases			1.093316
			Eastern Cape			
201	2	5	1, 2	0 - 120	1, 2, 3, 4, 5	1.500140
202	2	2	1, 2	0 - 19	1, 2, 3, 4, 5	1.356674
203	2	2	1, 2	20 - 29	1, 2, 3, 4, 5	1.498794
204	2	2	1	30 - 120	1, 2, 3, 4, 5	1.381368
205	2	2	2	30 - 120	1, 2, 3, 4, 5	1.285781
206	2	4	1, 2	0 - 44	1, 2, 3, 4, 5	1.170042
207	2	4	1, 2	45 - 120	1, 2, 3, 4, 5	1.119461
208	2	1	1, 2	0 - 120	3, 4	1.206678
209	2	1	1, 2	0 - 120	1, 2, 5	1.144952
299	2		Unspecified Cases			0.986807
			Northern Cape			
301	3	5	1, 2	0 - 120	2, 3, 4	1.576538
302	3	5	1, 2	0 - 120	1, 5	1.332886
303	3	1, 2, 4	1, 2	0 - 120	4, 5	1.265862
304	3	1, 2, 4	1, 2	0 - 120	2	1.106805
305	3	1, 2, 4	1, 2	0 - 19	1, 3	1.066559
306	3	1, 2, 4	1, 2	20 - 44	1, 3	1.094430
307	3	1, 2, 4	1, 2	45- 120	1, 3	1.071153
399	3		Unspecified Cases			1.111149
			Free State			
401	4	2, 5	1,2	0-120	1,2,3,4,5	1.860664
402	4	1, 4	1,2	0-120	2, 3, 4	1.145806
403	4	1, 4	1	0-120	1, 5	1.101816
404	4	1, 4	2	0-120	1, 5	1.078476
499	4		Unspecified Cases			1.031030

KwaZulu-Natal

501	5	5	1	0 - 19	1, 2, 3, 4, 5	1.436310
502	5	5	1	20 - 120	1, 2, 3, 4, 5	1.948318
503	5	5	2	0 - 120	1, 2, 3, 4, 5	1.384581
504	5	2	1, 2	0 - 120	1, 2, 3, 4, 5	1.418578
505	5	4	1, 2	0 - 44	1, 2, 3, 4, 5	1.263292
506	5	4	1, 2	45- 120	1, 2, 3, 4, 5	1.220072
507	5	1	1, 2	0 - 44	2, 4	1.515110
508	5	1	1, 2	45- 120	2, 4	1.338407
509	5	1	1, 2	0 - 19	1, 5	1.235529
510	5	1	1	20 - 44	1, 5	1.412829
511	5	1	2	20 - 44	1, 5	1.321203
512	5	1	1	45- 120	1, 5	1.313313
513	5	1	2	45- 120	1, 5	1.190138
514	5	1	1, 2	0 - 120	3	1.180659
599	5			Unspecified Cases		1.107999

North West

601	6	1, 2, 4, 5	1, 2	0 - 120	4, 5	1.553606
602	6	5	1, 2	0 - 120	1, 2, 3	1.457152
603	6	2	1, 2	0 - 120	1, 2, 3	1.186062
604	6	4	1, 2	0 - 19	1, 2, 3	1.128379
605	6	1	1, 2	0 - 19	1, 2, 3	1.086619
606	6	1, 4	1	20 - 29	1, 2, 3	1.244872
607	6	1, 4	2	20 - 29	1, 2, 3	1.138875
608	6	1, 4	1	30 - 44	1, 2, 3	1.325224
609	6	1, 4	2	30 - 44	1, 2, 3	1.128218
610	6	1, 4	1	45 - 64	1, 2, 3	1.182424
611	6	1, 4	2	45 - 64	1, 2, 3	1.102986
612	6	1, 4	1, 2	65 - 120	1, 2, 3	1.079570
699	6			Unspecified Cases		1.136933

Gauteng

701	7	5	1, 2	0 - 120	1, 2, 3, 4, 5	2.110055
702	7	1	1, 2	0 - 4	1, 2, 3, 4, 5	1.160361
703	7	1	1, 2	5 - 19	4	1.323828
704	7	1	1, 2	5 - 14	1, 2, 3, 5	1.099157
705	7	1	1, 2	15 - 19	1, 2, 3, 5	1.154188
706	7	1	1	20 - 29	1, 2, 3, 4, 5	1.352902
707	7	1	2	20 - 29	1, 2, 3, 4, 5	1.254398
708	7	1	1, 2	30 - 44	3, 4, 5	1.413956
709	7	1	1	30 - 44	1, 2	1.227160
710	7	1	2	30 - 44	1, 2	1.157356
711	7	1	1, 2	45 - 64	3, 4, 5	1.270552
712	7	1	1, 2	45 - 64	1, 2	1.145865
713	7	1	1, 2	65 - 120	1, 2, 3, 4, 5	1.137712
714	7	2	1, 2	0 - 19	1, 2, 3, 4, 5	1.177197
715	7	2	1	20 - 120	1, 2, 3, 4, 5	1.302505
716	7	2	2	20 - 120	1, 2, 3, 4, 5	1.227517
799	7			Unspecified Cases		1.137476

Mpumalanga

801	8	5	1, 2	0 - 19	1, 2, 3, 4, 5	2.161944
802	8	5	1, 2	20 - 120	1, 2, 3, 4, 5	1.807228
803	8	4	1, 2	0 - 44	1, 2, 3, 4, 5	1.137354
804	8	4	1, 2	45- 120	1, 2, 3, 4, 5	1.098843
805	8	1, 2	1, 2	0 - 120	2, 4	1.178791
806	8	2	1, 2	0 - 19	1	1.102956
807	8	1	1, 2	0 - 19	1	1.044622
808	8	1, 2	1, 2	20 - 29	1	1.123598
809	8	1, 2	1, 2	30- 120	1	1.088888
810	8	1, 2	1, 2	0 - 120	3, 5	1.032033
899	8			Unspecified Cases		0.947024

Limpopo

901	9	2, 5	1,2	0-120	1,2,3,4,5	2.411408
902	9	1	1,2	0-120	3, 4	1.377517
903	9	1	1,2	0 - 14	1, 2, 5	1.052402
904	9	1	1,2	15 - 44	1, 2, 5	1.097840
905	9	1	1,2	45-120	1, 2, 5	1.061645
906	9	4	1,2	0 - 19	1,2,3,4,5	1.114189
907	9	4	1,2	20 - 29	1,2,3,4,5	1.164698
908	9	4	1	30-120	1,2,3,4,5	1.152263
909	9	4	2	30-120	1,2,3,4,5	1.111872
999	9			Unspecified Cases		1.090301

XIV.2 HOUSEHOLD RECORD ADJUSTMENT CLASSES AND FACTORS

Adjustment class	PES Geo type	Province code	Household category	Population group household head	Adjustment factor
1	5	5, 7, 9	1, 2	1, 2, 3, 4, 5	2.349612
2	5	5, 7, 9	3, 4, 5, 6	1, 2, 3, 4, 5	1.677441
3	5	4, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5	1.626955
4	5	2, 3, 8	1, 2	1, 2, 3, 4, 5	1.594868
5	5	2, 3, 8	3, 4, 5, 6	1, 2, 3, 4, 5	1.616497
6	5	1	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5	1.366723
7	2	4, 9	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5	2.509135
8	2	1, 2, 5	1, 2	1, 2, 3, 4, 5	1.546494
9	2	1, 2, 5	3, 4, 5, 6	1, 2, 3, 4, 5	1.334128
10	2	3, 6, 7, 8	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5	1.221970
11	1, 4	6	1	1, 2, 3, 4, 5	1.620666
12	1, 4	5	1	1, 2, 3, 4, 5	1.723252
13	1, 4	7	1	1, 2, 3, 4, 5	1.461092
14	1	1, 8, 9	1	1, 2, 3, 4, 5	1.369570
15	1	2, 3, 4	1	1, 2, 3, 4, 5	1.202734
16	4	1, 2, 3, 4, 8, 9	1	1, 2, 3, 4, 5	1.189899
17	1, 4	5, 7	2	1, 2, 3, 4, 5	1.365601
18	1	1, 2, 3, 4, 6, 8, 9	2	1, 2, 3, 4, 5	1.185907
19	4	1, 2, 3, 4, 6, 8, 9	2	1, 2, 3, 4, 5	1.116966
20	1, 4	5, 7	3	1, 2, 3, 4, 5	1.227230
21	1, 4	2	3	1, 2, 3, 4, 5	1.151694
22	1, 4	1, 3, 6, 8, 9	3	1, 2, 3, 4, 5	1.133548
23	1, 4	4	3	1, 2, 3, 4, 5	1.076846
24	1, 4	5	4, 5, 6	1, 2, 3, 4, 5	1.194304
25	4	2, 7	4, 5, 6	1, 2, 3, 4, 5	1.137030
26	1	7	4, 5, 6	1, 2, 3, 4, 5	1.155204
27	1	2	4, 5, 6	1, 2, 3, 4, 5	1.103076
28	4	1, 6, 9	4, 5, 6	1, 2, 3, 4, 5	1.114638
29	1	1, 6, 9	4, 5, 6	1, 2, 3, 4, 5	1.105490
30	4	3, 4, 8	4, 5, 6	1, 2, 3, 4, 5	1.106317
31	1	3, 4, 8	4, 5, 6	1, 2, 3, 4, 5	1.056867
99		Unspecified Cases			1.340852