printcase: A new Stata command for visualizing single observations

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**Abstract.** In this report, we introduce the printcasecommand for outputting data from a specific observation or case into an easy-to-read Microsoft Word or PDF document. printcaseallows analysts to focus on a single observation within a dataset and view that observation in its entirety. The output displays all fields associated with one particular observation in table format, with all variables identified by their corresponding label and all codes their corresponding value labels. We 1) explain how *printcase* works, 2) give examples of circumstances under which this type of table-based, quasi-questionnaire would be useful to analysts, and 3) provide Stata code for “printing” single cases.

**Keywords.** survey research, fieldwork, data quality, interviewer training, printcase

# Introduction

printcaseis a Stata command analysts can use to generate a table of variables and responses, specific to a uniquely identified observation from any .dta file.

There are times when examining a copy of a single survey is valuable to improve comprehension and generate new insights. But in the era of e-tablet modes of data collection, producing something that allows one to look at a single survey in a format resembling a paper questionnaire is surprisingly difficult. *printcase* addresses this need by providing researchers with an abbreviated quasi-questionnaire generated from responses for a particular case in a data file. When survey items (questions and value labels) are fully labeled, the printed case can proxy a completed survey, much like what we used in the days of pencil-and-paper questionnaires.

We can think of at least four reasons why researchers would want to skim or study responses from a particular questionnaire.

First, examining individual surveys in their entirety is useful for data cleaning and making judgment calls about unusual values. One of the ways this is done is through examining other responses in the questionnaire to aid in data cleaning to make sure that the answers are inherently consistent Researchers disagree about whether and how to go about editing data (Sana & Weinreb 2008), but most agree that leveraging information provided by respondents themselves is superior to even the most sophisticated approaches to imputation (Leahey 2008; Leahey, Entwistle, and Einaudi 2003; Waal, Pannekoek, and Schotus 2011). By looking at the complete answers, it can become clear how to recode an outlier. An example comes from our own data-collection effort in Balaka, Malawi, is that of a woman who said she had never had sex and was “not at all worried about HIV” reported that she had been tested 6 times in the past month. The value was unusual and seemed to be a mistake. However upon closer examination of the questionnaire, we learned that this woman was part of a peer-to-peer counseling group, in which she would encourage friends to get tested, accompany them to the testing facility, and go through the entire process with them as part of a district-wide effort to increase voluntary testing. This shows us how a particular case, read vertically, can generate insights that are concealed when we only examine data using measures of central tendency. When the relevant datasets themselves have already been de-identified, researchers can produce a specific case for contemplation, and that case will also be fully anonymized.

Another reason a researcher would want to study all the answers from one respondent is to look at numeric responses in conjunction with the interviewers’ notes or other open-ended responses, which may have been be collected during interviews or after, to help analysts geographically and temporally separated from the interview understand other aspects of the moment or the interaction to inform the answers gathered. Bledsoe et al. (1998) cite their “analytical effort” being “enhanced” when they were able to juxtapose “open-ended commentary as variables alongside… quantifiable responses.” Sometimes these open-ended responses provide information that can subsequently be coded up into close-ended responses or may in fact require changing a response value. Take, for example, a survey question that asked respondents how many hours of television they watched per day in the past week. The responses range between 0 and 11, with an average of 2.2. The 95th percentile is 5, and analysts are left with questions about how to manage the values of 6 and over. By examining the particular case, the analyst may be able to identify an erroneous response (the “fat fingers” problem) in which the 11 should have been a 1 = “the 8 o’clock news every night,” from a true value of 11, e.g. “Since accident, R is bed-ridden & watches all day.” Given a well-labeled dataset, *printcase* provides similar functionality, in which analysts can better leverage interviewer notes, write-in responses, and other qualitative descriptions as a complement to the quantitative data.

Third, although survey data is almost always examined in the aggregate, the responses of particular individuals are critical for longitudinal data collection or other data collection which engages with the same respondent multiple times as it allows the interviewer to review what the respondent shared previously before reengaging with a respondent. One example of this can be found in Pearce’s (2002) approach to Systematic Anomalous Case Analysis. In this method, analysts analyze aggregate data using traditional, regression-based methods, identifying patterns and selecting cases that deviate from the trends for in-depth follow-up research, especially in-depth interviews and ethnography. A careful read of the completed questionnaire is an essential step for preparing to conduct a valuable follow-up interview with the same individual. In the absence of a paper questionnaire to consult, *printcase* can be used to generate a file that sketches the earlier conversation between interviewer and respondent. This would serve as the basis upon which new questions for a follow-up conversation could be generated.

Finally, paper questionnaires are valuable for training interviewers and enumerators. Most studies still use a blank, paper version of their questionnaire for interviewer training, emphasizing the scripts that structure transitions between modules and the introductions that cue particular questions and clarify whether responses should be read. Paper versions are easier to browse and skim as a full document, rather than item-by item. This is important for teaching skip-patterns and familiarizing interviewers with the overarching goals of the particular study they are fielding.

*printcase* cannot replace the designed questionnaire, but it can quickly produce a set of responses – actual or theoretical (i.e., from synthetic data) – that interviewers can study as part of interviewer training. In our experience, it is particularly valuable to have interviewers study a completed questionnaire collected while piloting the instrument; this exercise helps prepare interviewers for the kinds of responses they might encounter in the field, and it also helps train them to think about the internal consistency of a narrative during the administration of the tool.

Fieldwork supervisors, responsible for ensuring data quality, may also want to browse printed cases to check the quality of interviewers’ work and provide additional support and training where necessary. For example, if one interviewer is entering more “refused to answer” responses than others, they may need to introduce a particular topic with more sensitivity or learn how to probe more effectively. By browsing particular questionnaires with a focus on the interviewer’s work, supervisors can catch and remedy interviewer-specific errors before they are manifest too deeply in the entire data-collection enterprise.

# The printcase command

*printcase* is meant to be used with a dataset that has been painstakingly labeled with variable names and corresponding variable labels. The dataset must be organized by unique id (numeric, of any number format) assigned to each individual/case. The output of *printcase* is a table three columns wide, which displays: 1) variable name, 2) variable label, and 3) response value. The first row contains the column labels, and one row is generated for every variable in the dataset, unless otherwise specified (see below).

### Syntax

printcase*id\_variable id\_val* *[, options]*

where *id\_variable* is the name of the unique identifying variable in the dataset, and *id\_val* is the value of *id\_variable* to analyze. *id\_variable­* and *id\_*val both must contain no spaces. Options are the following:

*pdf* sets the output of *printcase* to be a PDF file instead of the default Microsoft Word file. All other options are unaffected by selecting *pdf*, however page numbers and footers are not generated, whereas they are in Microsoft Word.

font(string) sets the font to be used for the entire document of the output of printcase. Any installed font can be specified. If not set, the default is Calibri.

file*(string)* initializes the name of the output document. For example, specifying *file(“example”)*, will result in the output being either “example.docx” or “example.pdf”. Otherwise, the default filename “`*id\_variable’`id\_val’*” will be used. For example, if ­*id\_variable* was “id” and *id\_val* was 13, then not specifying the option would result in the output file being called “id13.docx” or "id13.pdf".

location(string) sets the folder to save the printed case. To save the output into a subfolder of the current open folder, specify location(subfolder1\subfolder2). To save the output in the root folder of the current directory, the option would be specified: location(..\..\subfolder). If location is not specified, the output file will be saved in the current working directory, usually that of the open dataset.

noempty specifies to suppress empty responses and their variables from the resulting

table, if the value label is an empty string (i.e., “”) or a Stata missing value

code (“.”, “.d”, etc.). If not specified, all empty responses will be included.

# Conclusion

There are many reasons that reading questionnaires vertically has never caught on as standard practice in survey research. Questionnaires need to be stored carefully and kept confidential. Paper is heavy and difficult to transport. Oftentimes, the paper questionnaires have already been destroyed as part of the data security protocols. And the quantitative scholar’s goal of make inferences fundamentally rests on our ability to identify statistical regularities -- not over-interpret particular cases. Still, the ability to look closely at a single case is sometimes valuable. In particular, being able to produce a neat, readable quasi-questionnaire directly from a dataset – without headache – when necessary will enhance the workflow of data collection for many fieldworkers.

4 Brief Example

In this example, the researcher first loads the model births recode dataset from the DHS (ICF 2020). The researcher would like to vertically read the answers provided by the 100th individual using printcase, so they then generate an ID variable called “id”, simply sequentially numbering each response. Finally, the researcher uses printcase, with the arguments “id” for the ID variable, and 100 for the chosen ID to analyze. The options chosen are a pdf output format, Arial font, naming the file “sample.pdf”, to save it in the subfolder called “Output”, and to remove any responses which are empty from the output document.

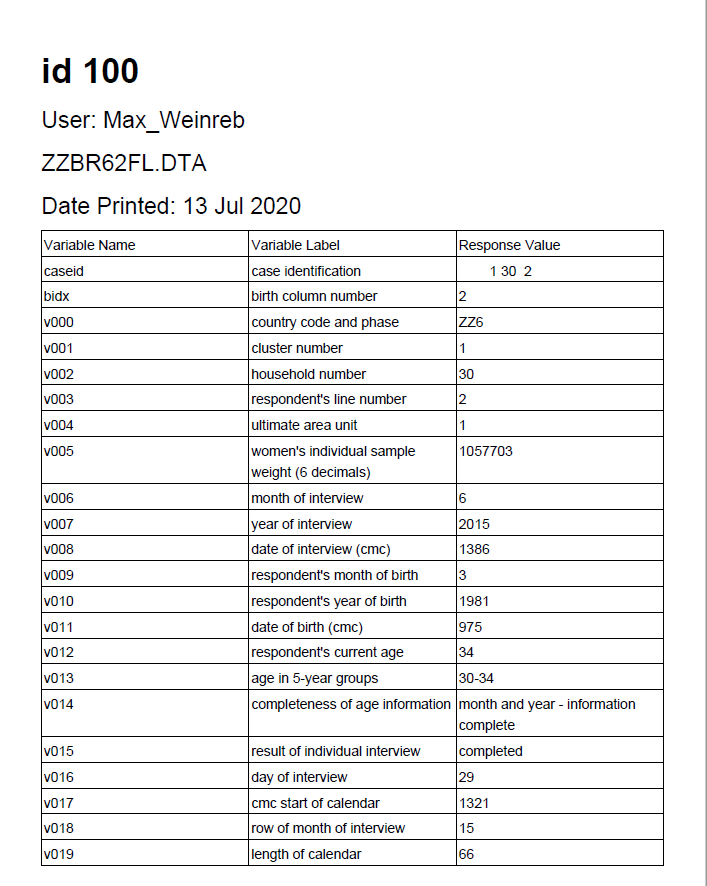


Figure 1. Screenshot of sample.pdf, the output of *printcase* command from the example.

# 5 Acknowledgements

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# 7 About the authors

Max Weinreb is a high school student at the Liberal Arts and Science Academy in Austin, Texas. His interests include studying computer science and business, and he hopes to continue his education in those fields in college. He was the creator of the printcase command.

Jenny Trinitapoli is associate professor of sociology at the University of Chicago. Since 2009, she has been PI of the Tsogolo La Thanzi project, through which she has spearheaded the collection of 12 rounds of data from over 3000 respondents in Balaka, Malawi. She envisioned and commissioned the printcase command out of necessity, when transitioning from paper-based to e-tablet data collection with an experienced data collection team.

# 8 Appendix A: Full example from the Demographic and Health Surveys Program

**id 100**

User: Max\_Weinreb

ZZBR62FL.DTA

Date Printed: 13 Jul 2020

|  |  |  |
| --- | --- | --- |
| Variable Name | Variable Label | Response Value |
| caseid | case identification | 1 30 2 |
| bidx | birth column number | 2 |
| v000 | country code and phase | ZZ6 |
| v001 | cluster number | 1 |
| v002 | household number | 30 |
| v003 | respondent's line number | 2 |
| v004 | ultimate area unit | 1 |
| v005 | women's individual sample weight (6 decimals) | 1057703 |
| v006 | month of interview | 6 |
| v007 | year of interview | 2015 |
| v008 | date of interview (cmc) | 1386 |
| v009 | respondent's month of birth | 3 |
| v010 | respondent's year of birth | 1981 |
| v011 | date of birth (cmc) | 975 |
| v012 | respondent's current age | 34 |
| v013 | age in 5-year groups | 30-34 |
| v014 | completeness of age information | month and year - information complete |
| v015 | result of individual interview | completed |
| v016 | day of interview | 29 |
| v017 | cmc start of calendar | 1321 |
| v018 | row of month of interview | 15 |
| v019 | length of calendar | 66 |

|  |  |  |
| --- | --- | --- |
| v019a | number of calendar columns | 2 |
| v020 | ever-married sample | all woman sample |
| v021 | primary sampling unit | 1 |
| v022 | sample strata for sampling errors | 26 |
| v023 | stratification used in sample design | region 2 - rural |
| v024 | region | region 2 |
| v025 | type of place of residence | rural |
| v027 | number of visits | 1 |
| v028 | interviewer identification | 225 |
| v029 | keyer identification | 7 |
| v030 | field supervisor | 221 |
| v031 | field editor | 222 |
| v032 | office editor | 1 |
| v034 | line number of husband | 1 |
| v042 | household selected for hemoglobin | selected |
| v044 | selected for domestic violence module | woman not selected |
| v101 | region | region 2 |
| v102 | type of place of residence | rural |
| v106 | highest educational level | no education |
| v113 | source of drinking water | protected well |
| v115 | time to get to water source | 60 |
| v116 | type of toilet facility | pit latrine with slab |
| v119 | household has: electricity | no |
| v120 | household has: radio | yes |
| v121 | household has: television | no |
| v122 | household has: refrigerator | no |
| v123 | household has: bicycle | no |
| v124 | household has:  motorcycle/scooter | no |

|  |  |  |
| --- | --- | --- |
| v125 | household has: car/truck | no |
| v127 | main floor material | earth, sand |
| v128 | main wall material | bricks |
| v129 | main roof material | metal sheets |
| v130 | religion | religion 2 |
| v131 | ethnicity | ethnic group 4 |
| v133 | education in single years | 0 |
| v135 | usual resident or visitor | usual resident |
| v136 | number of household members  (listed) | 4 |
| v137 | number of children 5 and under in household (de jure) | 1 |
| v138 | number of eligible women in household (de facto) | 1 |
| v139 | de jure region of residence | region 2 |
| v140 | de jure type of place of residence | rural |
| v149 | educational attainment | no education |
| v150 | relationship to household head | wife |
| v151 | sex of household head | male |
| v152 | age of household head | 42 |
| v153 | household has: telephone  (land-line) | no |
| awfactt | all woman factor - total | 100 |
| awfactu | all woman factor - urban/rural | 100 |
| awfactr | all woman factor - regional | 100 |
| awfacte | all woman factor - educational | 100 |
| awfactw | all woman factor - wealth index | 100 |
| v155 | literacy | cannot read at all |
| v157 | frequency of reading newspaper or magazine | not at all |
| v158 | frequency of listening to radio | at least once a week |
| v159 | frequency of watching television | not at all |

|  |  |  |
| --- | --- | --- |
| v160 | toilet facilities shared with other households | yes |
| v161 | type of cooking fuel | wood |
| v167 | number of trips in last 12 months | 3 |
| v168 | away for more than one month in last 12 months | yes |
| v190 | wealth index | middle |
| v191 | wealth index factor score (5 decimals) | -22522 |
| ml101 | type of mosquito bed net(s) slept under last night | no net |
| v201 | total children ever born | 2 |
| v202 | sons at home | 1 |
| v203 | daughters at home | 1 |
| v204 | sons elsewhere | 0 |
| v205 | daughters elsewhere | 0 |
| v206 | sons who have died | 0 |
| v207 | daughters who have died | 0 |
| v208 | births in last five years | 1 |
| v209 | births in past year | no births |
| v210 | births in month of interview | 0 |
| v211 | date of first birth (cmc) | 1276 |
| v212 | age of respondent at 1st birth | 25 |
| v213 | currently pregnant | no or unsure |
| v215 | time since last menstrual period | 105 |
| v216 | menstruated in last six weeks | yes |
| v217 | knowledge of ovulatory cycle | don't know |
| v218 | number of living children | 2 |
| v219 | living children + current pregnancy | 2 |
| v220 | living children + current pregnancy (grouped) | 2 |
| v221 | marriage to first birth interval | 90 |

|  |  |  |
| --- | --- | --- |
|  | (months) |  |
| v222 | last birth to interview (months) | 36 |
| v224 | entries in birth history | 2 |
| v226 | time since last period (comp)  (months) | 0 |
| v227 | flag for last period | no flag |
| v228 | ever had a terminated pregnancy | no |
| v235 | index last child prior to maternity-health (calendar) | 2 |
| v237 | birth between last and interview | no |
| v238 | births in last three years | 0 |
| v312 | current contraceptive method | not using |
| v313 | current use by method type | no method |
| v361 | pattern of use | never used |
| v362 | intention to use | does not intend |
| v364 | contraceptive use and intention | does not intend to use |
| v367 | wanted last child | wanted then |
| v384a | heard family planning on radio last few months | yes |
| v384b | heard family planning on tv last few months | no |
| v384c | heard family planning in newspaper/magazine last few months | no |
| v393 | visited by family planning worker last 12 months | yes |
| v394 | visited health facility last 12  months | yes |
| v395 | at health facility, told of family planning | yes |
| v3a00a | source of family planning for non-users: government hospital | no |
| v3a00b | source of family planning for | no |

|  |  |  |
| --- | --- | --- |
|  | non-users: government health center |  |
| v3a00c | source of family planning for non-users: family planning clinic | no |
| v3a00d | source of family planning for non-users: public mobile clinic | no |
| v3a00e | source of family planning for non-users: public health worker | no |
| v3a00f | source of family planning for non-users: other public | no |
| v3a00j | source of family planning for non-users: private hospital/clinic | no |
| v3a00k | source of family planning for non-users: pharmacy | no |
| v3a00l | source of family planning for non-users: private doctor | no |
| v3a00m | source of family planning for non-users: private mobile clinic | no |
| v3a00n | source of family planning for non-users: private health worker | no |
| v3a00o | source of family planning for non-users: other private | no |
| v3a00s | source of family planning for non-users: shop | no |
| v3a00t | source of family planning for non-users: church | no |
| v3a00u | source of family planning for non-users: friend/relative | no |
| v3a00x | source of family planning for non-users: other | no |
| v3a00y | source of family planning for non-users: no source | yes: knows no source |
| v3a00z | source of family planning for non-users: any source | no |
| v401 | last birth a caesarean section | no |

|  |  |  |
| --- | --- | --- |
| v404 | currently breastfeeding | no |
| v405 | currently amenorrheic | no |
| v406 | currently abstaining | no |
| v416 | heard of oral rehydration | heard of ors |
| v417 | entries in maternity table | 1 |
| v418 | entries in health table | 1 |
| v419 | entries in height/weight table | 1 |
| v426 | when child put to breast | 202 |
| v437 | respondent's weight in kilograms  (1 decimal) | 417 |
| v438 | respondent's height in centimeters (1 decimal) | 1602 |
| v439 | height/age percentile | 2782 |
| v440 | height/age standard deviation | -59 |
| v441 | height/age percent ref. median | 9786 |
| v442 | weight/height percent ref.  median (dhs) | 6660 |
| v443 | weight/height percent ref.  median (fog) | 7910 |
| v444 | weight/height percent ref.  median (who) | 8516 |
| v444a | weight/height standard deviation  (dhs) | -278 |
| v445 | body mass index | 1625 |
| v446 | rohrer's index | 1014 |
| v447 | result of measurement height/weight | measured |
| v447a | women's age in years (from household questionnaire) | 34 |
| v452a | under age 18 (from household questionnaire) | age 18 or older |
| v452c | read consent statement hemoglobin | granted |

|  |  |  |
| --- | --- | --- |
| v453 | hemoglobin level (g/dl - 1 decimal) | 137 |
| v454 | currently pregnant (from household questionnaire) | no/don't know |
| v455 | result of measurement hemoglobin | measured |
| v456 | hemoglobin level adjusted for altitude and smoking (g/dl - 1 decimal) | 137 |
| v457 | anemia level | not anemic |
| v459 | have mosquito bed net for sleeping (from household questionnaire) | no |
| v460 | children under 5 slept under mosquito bed net last night (household questionnair | no net in household |
| v461 | respondent slept under mosquito bed net | no |
| v463a | smokes cigarettes | no |
| v463b | smokes pipe | no |
| v463c | uses chewing tobacco | no |
| v463d | uses snuff | no |
| v463x | smokes other | no |
| v463z | does not use tobacco | yes, smokes nothing |
| v465 | disposal of youngest child's stools when not using toilet | put/rinsed in toilet/latrine |
| v467b | getting medical help for self:  getting permission to go | no problem |
| v467c | getting medical help for self: getting money needed for treatment | no problem |
| v467d | getting medical help for self:  distance to health facility | not a big problem |
| v467f | getting medical help for self: not wanting to go alone | no problem |

|  |  |  |
| --- | --- | --- |
| v468 | record for last birth | last birth only |
| v473a | read consent statement - hiv | granted |
| v473b | result of measurement - hiv | blood taken |
| v477 | number of injections in last 12 months | none |
| v481 | covered by health insurance | no |
| v481a | health insurance type:  mutual/community organization | no |
| v481b | health insurance type: provided by employer | no |
| v481c | health insurance type: social security | no |
| v481d | health insurance type:  private/commercially purchased | no |
| v481x | health insurance type: other | no |
| v501 | current marital status | married |
| v502 | currently/formerly/never in union | currently in union/living with a  man |
| v503 | number of unions | once |
| v504 | currently residing with husband/partner | living with her |
| v505 | number of other wives | no other wives |
| v507 | month of first cohabitation | 10 |
| v508 | year of first cohabitation | 1998 |
| v509 | date of first cohabitation (cmc) | 1186 |
| v510 | completeness of date information in v509 | year - age/month imputed |
| v511 | age at first cohabitation | 17 |
| v512 | years since first cohabitation | 16 |
| v513 | cohabitation duration (grouped) | 15-19 |
| v525 | age at first sex | at first union |
| v527 | time since last sex | 106 |
| v528 | time since last sex (in days) | 6 |

|  |  |  |
| --- | --- | --- |
| v529 | time since last sex (in months) | 0 |
| v530 | flag for v529 | no flag |
| v531 | age at first sex (imputed) | 17 |
| v532 | flag for v531 | no flag |
| v536 | recent sexual activity | active in last 4 weeks |
| v613 | ideal number of children | 5 |
| v614 | ideal number of children  (grouped) | 5 |
| v621 | husband's desire for children | both want same |
| v623 | exposure | fecund |
| v625 | exposure (definition 2) | fecund |
| v625a | exposure to need for contraception (definition 3) | fecund |
| v627 | ideal number of boys | 2 |
| v628 | ideal number of girls | 3 |
| v629 | ideal number of either sex | 0 |
| v633b | reason for not having sex: husband has other women | no |
| v701 | husband/partner's education level | no education |
| v704 | husband/partner's occupation | market-oriented skilled agricultural and fishery workers |
| v705 | husband/partner's occupation  (grouped) | agricultural - self employed |
| v714 | respondent currently working | yes |
| v715 | husband/partner's total number of years of education | 0 |
| v716 | respondent's occupation | market-oriented skilled agricultural and fishery workers |
| v717 | respondent's occupation  (grouped) | agricultural - self employed |
| v719 | respondent works for family, others, self | self-employed |

|  |  |  |
| --- | --- | --- |
| v729 | husband/partner's educational attainment | no education |
| v730 | husband/partner's age | 42 |
| v731 | respondent worked in last 12 months | currently working |
| v732 | respondent employed all year/seasonal | seasonal |
| v741 | type of earnings from respondent's work | not paid |
| v743a | person who usually decides on respondent's health care | husband/partner alone |
| v743b | person who usually decides on large household purchases | husband/partner alone |
| v743d | person who usually decides on visits to family or relatives | husband/partner alone |
| v743f | person who usually decides what to do with money husband earns | husband/partner alone |
| v744a | beating justified if wife goes out without telling husband | no |
| v744b | beating justified if wife neglects the children | no |
| v744c | beating justified if wife argues with husband | no |
| v744d | beating justified if wife refuses to have sex with husband | no |
| v744e | beating justified if wife burns the food | no |
| v745a | owns a house alone or jointly | jointly only |
| v745b | owns land alone or jointly | jointly only |
| bord | birth order number | 1 |
| b0 | child is twin | single birth |
| b1 | month of birth | 4 |
| b2 | year of birth | 2006 |

|  |  |  |
| --- | --- | --- |
| b3 | date of birth (cmc) | 1276 |
| b4 | sex of child | female |
| b5 | child is alive | yes |
| b8 | current age of child | 9 |
| b9 | child lives with whom | respondent |
| b10 | completeness of information | month and year - information complete |
| b12 | succeeding birth interval  (months) | 74 |
| b16 | child's line number in household | 3 |
| g100 | ever heard of female circumcision | yes |
| g102 | respondent circumcised | yes |
| g103 | flesh removed from genital area | yes |
| g105 | genital area sewn closed | yes |
| g106 | age at circumcision (in years) | 15 |
| g107 | person who performed circumcision | traditional "circumciser" |
| g108 | number of daughters circumcised | no daughter circumcised |
| g116 | intends to have daughter(s) circumcised in future | yes |
| g117a | cleanliness/hygiene: female circumcision benefit | no |
| g117b | social acceptance: female circumcision benefit | yes |
| g117c | better marriage prospects: female circumcision benefit | yes |
| g117d | virginity/prevent premarital sex:  female circumcision benefit | no |
| g117e | greater sexual pleasure for men:  female circumcision benefit | no |
| g117f | religious approval: female circumcision benefit | no |

|  |  |  |
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| g117j | no opinion/don't know: female circumcision benefit | no |
| g117x | other: female circumcision benefit | no |
| g117y | no benefit from female circumcision | no |
| g118 | female circumcision required by religion | yes |
| g119 | female circumcision: continue or be stopped | continued |
| szone | geographical zone | central |
| shreg | health regions | periphery |
| id |  | 100 |