



IPUMS Data Training Exercise:

An introduction to IPUMS DHS

(Exercise 1 for Stata)



Learning goals

- Understand how IPUMS DHS dataset is structured
- Create and download an IPUMS data extract
- Decompress the data file and read the data into a statistical package
- Understand how to select between IPUMS DHS variables to explore research questions

Summary

In this exercise, you will look at various indicators of maternal health care from Benin 2006 and India 2005, and gain basic familiarity with the IPUMS DHS data exploration and extract system. You will create a data extract that includes the variables `ANCARENONE_ALL`, `ANVISMO_ALL`, `ANCAREBLD_ALL`, `ANTETNUSNO_ALL`, `ANNITE_ALL`, `DELNONE_ALL`, and `DELREL_ALL`; then you will use the sample code to analyze the data. The DHS data on women include all (or all ever-married) women of childbearing age, while the maternal health indicators in IPUMS DHS relate only to women whose last birth (`_01`) occurred in the 3-5 years prior to the survey.

Stata Code to Review

Code	Purpose
<u>generate</u>	Creates a new variable, "replace" specifies a value according to cases
mean	Displays a simple tabulation and frequency of one variable
<u>tabulate</u>	Displays a cross-tabulation for up to 2 variables
!=	Not equal to

Common Mistakes to Avoid

- Not changing the working directory to the folder where your data is stored.
- Mixing up = and ==; to assign a value in generating a variable, use "=". Use "==" to specify a case when a variable is a desired value using an *if* statement.
- Not using svy suite of commands for appropriate variance estimation.

Register as a DHS Program User

Whether you make your own extract or use a pre-made file, you will need to log in using an email and password approved by the Demographic and Health Surveys Program to access data from Benin and India.

- Go to <https://dhsprogram.com/>, click on Login. On the login screen, click on Register for Dataset Access. Complete and submit the registration form. Please note that The DHS Program reviews user applications, and may take several business days.

Make a Data Extract

If you make your own data extract, which requires a statistical package and software to unzip a file on your own computer, follow the directions below. If you use a premade data file, just note the variables included and you may begin work on the exercises. Answers are at the end of the handout.



- Navigate to the IPUMS DHS homepage (<https://www.idhsdata.org/idhs/>), login, and click on "Select Data." Select women as the unit of analysis.

Select Samples

- Click on the "Select Samples" box and check the following boxes:
 - Benin 2006
 - India 2005
- Submit your sample selections by clicking the Submit sample selections box.
- Note that by selecting samples first, you will now only see variables available for Benin 2006 and India 2005.

Select Variables

- The variable drop-down menus allow you to explore variables by topic. For example, you might find variables about education under the "Socioeconomic status" topic.
- The search tool allows you to search for variables. Observe the options for limiting your search results by variable characteristics.
- Add a variable to your cart by clicking on the plus sign in the "Add to Cart" column of the topical variable list, or list of search results.
- View more information about the variable by clicking on the variable name, and navigating through the tabs that include a description of the variable, codes, and value labels, the universe of persons asked the question, and information on the comparability of the variable, among other pieces of information. If you are viewing variable-specific information, you may click on the "Add to Cart" button near the top of the screen to add this variable to your data cart.
- From the drop-down menu under Topics, choose Maternal and infant health, and select maternal antenatal care, general. Click on the plus sign in the "Add to Cart" column to the left of the following variables to add them to your data cart:

ANCARENONE_ALL (received no prenatal care)



ANVISMO_ALL (timing of first antenatal visit for the pregnancy: months)

ANCAREBLD_ALL (antenatal care received: blood sample taken)

ANTETNUSNO_ALL (number of tetanus injections during pregnancy)

ANNITE_ALL (had difficulty with night blindness during pregnancy)

- From the drop-down menu under Topics, choose Maternal and infant health, and select maternal delivery care, general. Add the following variables to your data cart:

DELNONE_ALL (no one gave delivery care)

DELREL_ALL (relative gave delivery care)

Review and submit your extract

- Click on the "View Cart" button underneath your data cart.
- Review your variable and sample selection to ensure your extract is complete.
 - Your data cart should show 8 variables and 2 samples. If you use a ready-made data file, these 2 samples and variables are included.
 - You may notice a number of additional variables you did not select are in your cart; IPUMS preselects a number of key technical variables, which are automatically included in your data extract. These variables indicate the sample (SAMPLE), are needed for variance estimation (PSU, STRATA), allow you to link to other DHS files (CASEID, HHNUM, DISTRICT), and are used for weighting the variables (PERWEIGHT, DVWEIGHT).
- Add additional variables or samples if they are missing from your extract, or click the "Create Data Extract" button.
- Review the Extract Request screen that summarizes your extract. For data format, choose Stata. Add a description of your extract (e.g., "Maternal and infant health in Benin (2006) and India (2005)") and click "Submit Extract."



- The email account used to log in is sent a message when the data extract is ready to download.

Getting the Data Into Your Statistics Software

The IPUMS DHS extract builder provides raw ASCII data files and the command files necessary for reading the raw data into a stats package. Note that these instructions are for Stata. If you would like to use a different stats package, see:

<https://ipums.org/support/exercises>

Download the data

- Follow the link in the email notifying you that your extract is ready, or by clicking on the "My Data Extracts" link on the left-hand side of the IPUMS DHS homepage.
- Right-click on the data link next to the extract you created.
- Choose "Save Link As..."
- Save into your preferred working directory. This tutorial assumes you will save the file into "Documents" (which should pop up as the default location).

Decompress the data

- All IPUMS extracts are compressed. We recommend 7zip for Windows users. Macs can open these types of files without additional software.
- Find the "Documents" folder under the Start menu.
- Double click on the ".dta.gz" file.
- In the window that pops up, press the "Extract" button.

Read in the data

- Open the idhs_0001.dta folder.
- Double click on the file to open it in Stata.



Analyze the Data

Part I. Variables Documentation

For each variable below, search through the tabbed sections of the variable description to answer each question.

1. From the drop-down menu under Topics, choose Maternal and infant health, select maternal antenatal care, general, and click on the variable ANCARENONE_ALL. The variable reports the women who gave birth in the 5 years before the survey who received no antenatal care. What is the universe for ANCARENONE_ALL in each country?
 - a. Benin 2006: _____
 - b. India 2005: _____
2. What are some of the samples that have a different universe? In what ways are the universes different? _____

Part II. Weighted frequencies

We will be comparing India 2005 and Benin 2006 on various aspects of antenatal care, limiting the sample to women who gave birth in the 5 years before the survey, adding survey weights, and excluding missing and unknown cases. The Stata code written below will exclude "not in universe" cases, such as childless women and women whose last birth occurred more than 5 years before the survey.

Note that the weight PERWEIGHT supplies numbers equal to the total number of women surveyed, not the total number of women in the population. (Ignore the numbers after the decimal point in the weighted results).



3. What percent of women who gave birth in the past 4 years had no antenatal care?
 - a. Benin 2006: _____
 - b. India 2005: _____

```
tab ancarenone_01 sample [aw=perweight] if ancarenone_01<7, col
```

4. How early in the pregnancy antenatal care begins is an important dimension of maternal healthcare. For women who received at least some antenatal care, what percent had their first antenatal care in months 4 or later?
 - a. Benin 2006: _____
 - b. India 2005: _____

```
tab anvismo_01 sample [aw=perweight] if anvismo_01<10, col
```

5. The thoroughness of monitoring the pregnant woman's health during antenatal care is another dimension of maternal healthcare. Two possible actions would be drawing a blood sample (to check for gestational diabetes, anemia, and/or malarial parasites, for example) and administering Tetanus Toxoid vaccine (at least 2 doses in most settings).

What percent of women in the two countries had a blood sample taken during antenatal care?

- a. Benin 2006: _____
- b. India 2005: _____

```
tab ancarebld_01 sample [aw=perweight] if ancarebld_01<7, col
```

What percent of women had at least 1, and at least 2, tetanus shots before birth?

- c. Benin 2006: _____
- d. India 2005: _____



Note that the universe for antetnusno_01 is not limited to women who had other antenatal care, only to women who recently gave birth.

```
tab antetnusno_01 sample [aw=perweight] if antetnusno_01<8, col
```

6. Nutritional deficiencies are a threat to pregnant women and their infants in many poor countries. Maternal night blindness suggests Vitamin A deficiency and has been associated with low birthweight and higher morbidity (diarrheal and respiratory disease) in newborns. What proportion of women who recently gave birth in Benin 2006 and India 2005 reported difficulty seeing at night during their last pregnancy?
- Benin 2006: _____
 - India 2005: _____

```
tab annite_01 sample [aw=perweight] if annite_01<7, col
```

7. Whether a trained health care practitioner is present at the birth is an important issue for the health of the woman and her child, while the absence of such delivery assistance increases the risk of maternal mortality. What proportion of women who recently gave birth had either no one or a relative/friend assisting during delivery?
- Benin 2006: _____
 - India 2005: _____

```
tab delnone_01 sample [aw=perweight] if delnone_01<7, col
```

```
tab delrel_01 sample [aw=perweight] if delrel_01<7, col
```

8. For this question, please refer to your previous answers.
- How good is this last measure? Look at the variable description for DELREL_01 and check the question wording for this variable in the two samples. _____



- b. Does DELREL_01 indicate that only friends or relatives gave help during delivery? If not, what other variables should you examine to determine whether women received help from a trained medical practitioner during their most recent delivery? _____



Answers

Part 1: Variable documentation

1. What is the universe for ANCARENONE_ALL in each country?
 - a. Benin 2006: Women age 15-49 who gave birth in the 5 years before the survey.
 - b. India 2005: Women age 15-40 who gave birth in the 5 years before the survey.
2. What are some of the samples that have a different universe? In what ways are the universes different?

Different reference period of 3 years before the survey: Bangladesh 2014, Benin 1996, Cameroon 1998, Cote d'Ivoire 1994, Ghana 1993, India 1998, Kenya 1998, Madagascar 1997, Mali 1995, Mozambique 1997, Nepal 1996, Niger 1998, Nigeria 1999, Zimbabwe 1994. Different reference period of four years before the survey: Uganda 1995.

Limiting sample to ever-married women: Afghanistan 2015, all Bangladesh samples, all Egypt samples, India 1998, all Jordan samples, Nepal 1996 and 2001, all Pakistan samples, Tunisia 1988, all Yemen samples.

Different age range for women of childbearing age: Bangladesh 1994 includes women age 10-49, Bangladesh 1997 includes women age 10-49, Bangladesh 2004 includes women age 10-49, Bangladesh 2011 includes women age 12-49, Nigeria 1999 includes women age 10-49, Yemen 1991 includes women age 15-54.

Part II. Weighted frequencies

3. What percent of women who gave birth in the last 5 years had no antenatal care?
 - a. Benin 2006: 11.25%
 - b. India 2005: 22.78%
4. What percent had their first antenatal care in month 4 or later in their pregnancy?
 - a. Benin 2006: 52.62%
 - b. India 2005: 42.54%



5. What percent of women in the two countries had a blood sample taken during antenatal care?

a. Benin 2006: 39.80%

b. India 2005: 59.53%

What percent of women had at least 1, and at least 2, tetanus shots before birth?

c. Benin 2006: At least 1: 76.99%; at least 2: 57.35%

d. India 2005: At least 1: 83.73%; at least 2: 77%

6. What proportion of women who recently gave birth in Benin 2006 and India 2005 reported difficulty seeing at night during their last pregnancy?

a. Benin 2006: 12.57%

b. India 2005: 8.90%

7. What proportion of women who recently gave birth had either no one or a relative/friend assisting during delivery?

a. Benin 2006: 4.02% had no help during delivery; 22.86% had help from a friend or relative.

b. India 2005: 0.52% had no help during delivery; 40.94% had help from a friend or relative.

8.

a. Does DELREL_01 indicate that only friends or relatives gave help during delivery? No, the question asks women to report all types of persons who gave delivery care, and can report more than one type of healthcare or traditional provider.

b. What other variables should you examine to determine whether women received help from a trained medical practitioner during their most recent



delivery? A more thorough investigation would determine whether women who mentioned relatives were also helped by a doctor, midwife, nurse, traditional birth attendant, or other individual. Relevant include:

- DELPRE_01 indicates the type of person who assisted with the delivery, but is not available for our currently selected samples
- DELDOC_01 indicates whether a doctor gave delivery care
- DELNURM_01 indicates whether a nurse/midwife gave delivery care
- DELAUXMW_01 indicates whether an auxiliary midwife gave delivery care
- DELTBA_01 indicates whether a traditional birth attendant gave delivery care
- DELTRBA_01 indicates whether a trained traditional birth attendant gave delivery care
- DELOTH_01 indicates whether another person gave delivery care

