First Steps with Stata

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`https://libguides.brown.edu/gis_data_tutorials/stata`

Introduction

This tutorial provides a cursory introduction to working with data in Stata, with a focus on navigating the software interface and learning basic commands for loading, describing, and modifying data. The examples were written using Stata SE 17.

Conventions used in this tutorial:

- Summaries of steps appear in **bold face**.
- Names of windows, tabs, and tools appear in *italic face*.
- Names of files, variables, and commands, and software output appear in `typewriter face`.
- Commands that you are prompted to type appear in `highlighted typewriter face`.

Before you begin, download the sample data that accompanies this tutorial, from the link at the top of this page. The default working directory for Stata is the `documents` subfolder, under your username folder. Move the sample data to this folder, and unzip the ZIP file to extract its contents:

Windows: Select the ZIP, right click, *Extract All*. Modify the path to unzip directly to `C:\Users\youruname\Documents\` to avoid creating a duplicate nested folder. Or, if you have the 7-Zip utility, simply select the ZIP, right click, and choose *7-ZIP - Extract Here*.

Mac: Double-click on the ZIP file to open it. By doing so, it automatically extracts.

The sample data comes from two sources, and is stored in the `stata_sample_data` folder in subfolders named for each source. Documentation is included for both datasets.

ipums_cps_internet2021: Microdata samples from the US Census Current Population Survey (CPS), "Computer and Internet Use Supplement" Nov 2021, extracted from IPUMS CPS in a Stata dta format: `https://cps.ipums.org/cps/`.

acs_internet_2021: State-level summary data from the US Census American Community Survey (ACS), 5-year 2017-2021 series, table B28005 "Age by Presence of Computer and Types of Internet Subscription in Household" in a csv format: `https://data.census.gov/`.

1 User Interface and Loading Data

This section provides an overview of the Stata interface, and demonstrates how to load a Stata dta file. We will work with the sample microdata file from the CPS on internet users. Microdata represents individual survey responses.

1. **Launch Stata**: Use the *Start Menu* (in Windows) or the *Apps* menu (on Mac) to launch Stata.

2. **Load a .dta file**: Data (.dta) files are the default file format for Stata. In menu bar at the top, go to *File - Open*, navigate to the `stata_tutorial_data` folder, and in the `ipums_cps_internet2021` subfolder select the `cps_00008.dta` file to open it.

3. **Overview of the Stata interface**:

   (a) *Results*: displays output of all executed commands.

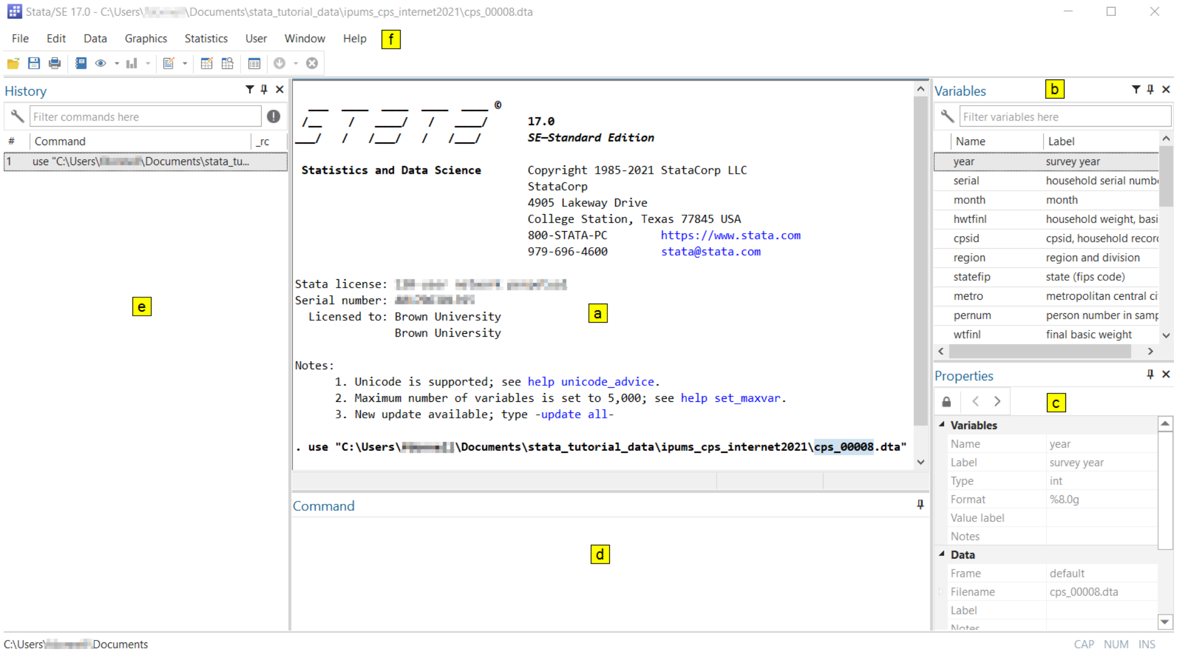
   (b) *Variables*: shows names and labels of all variables in a dataset.

   (c) *Properties*: provides a dataset summary and details for a variable selected in *Properties*.

   (d) *Commands*: prompt for typing commands, pressing enter runs them.

   (e) *History*: a running history of all operations performed during the current session; clicking on an entry inserts that command into the *Commands* window.

   (f) *Menu Bar*: shortcuts for performing several operations (an alternative to typing commands).



Stata/SE 17.0 - C:\Users\[redacted]\Documents\stata_tutorial_data\ipums_cps_internet2021\cps_00008.dta

#	Command	_rc
1	use "C:\Users\[redacted]\Documents\stata_tu...	

```
  ___  ____  ____  ____  ____ ®
 /__    /   ____/   /   ____/      17.0
___/   /   /___/   /   /___/       SE—Standard Edition

 Statistics and Data Science       Copyright 1985-2021 StataCorp LLC
                                   StataCorp
                                   4905 Lakeway Drive
                                   College Station, Texas 77845 USA
                                   800-STATA-PC        https://www.stata.com
                                   979-696-4600        stata@stata.com

Stata license: [redacted]
Serial number: [redacted]
  Licensed to: Brown University
               Brown University

Notes:
      1. Unicode is supported; see help unicode_advice.
      2. Maximum number of variables is set to 5,000; see help set_maxvar.
      3. New update available; type -update all-

. use "C:\Users\[redacted]\Documents\stata_tutorial_data\ipums_cps_internet2021\cps_00008.dta"
```

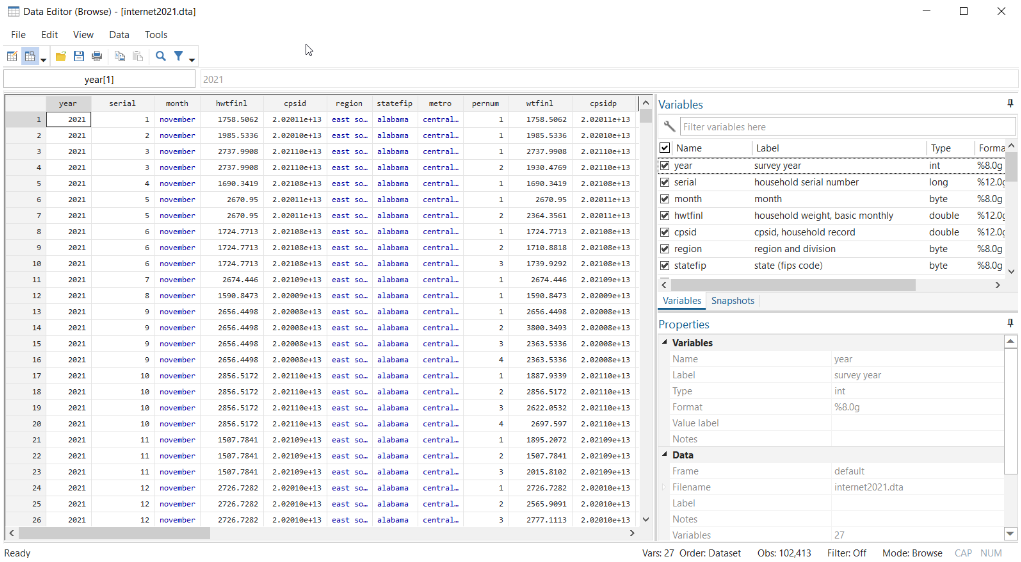
Name	Label
year	survey year
serial	household serial numb
month	month
hwtfinl	household weight, basi
cpsid	cpsid, household recor
region	region and division
statefip	state (fips code)
metro	metropolitan central ci
pernum	person number in samp
wtfinl	final basic weight

Variables	
Name	year
Label	survey year
Type	int
Format	%8.0g
Value label	
Notes	
Data	
Frame	default
Filename	cps_00008.dta
Label	
Notes	

C:\Users\[redacted]\Documents

4. **Save a copy of the file**: It's a best practice to copy your original file, and then work on the copy. On the menu bar go to *File - Save As*. Name the file `internet2021` and save it in the `ipums_cps_internet2021` folder. Notice that the path above the menu bar now indicates that you are working in this new copy.

5. **Open the Data Browser**: To see what the data looks like, on the menu bar go to *Data - Data Editor - Data Editor Browse*. Notice the *Browser* also contains a *Variables* and *Properties* window, which displays variable names, labels, and data types (see the following section for information about data types).



year[1] 2021

	year	serial	month	hwtfinl	cpsid	region	statefip	metro	pernum	wtfinl	cpsidp
1	2021	1	november	1758.5062	2.02011e+13	east so…	alabama	central…	1	1758.5062	2.02011e+13
2	2021	2	november	1985.5336	2.02010e+13	east so…	alabama	central…	1	1985.5336	2.02010e+13
3	2021	3	november	2737.9908	2.02110e+13	east so…	alabama	central…	1	2737.9908	2.02110e+13
4	2021	3	november	2737.9908	2.02110e+13	east so…	alabama	central…	2	1930.4769	2.02110e+13
5	2021	4	november	1690.3419	2.02108e+13	east so…	alabama	central…	1	1690.3419	2.02108e+13
6	2021	5	november	2670.95	2.02011e+13	east so…	alabama	central…	1	2670.95	2.02011e+13
7	2021	5	november	2670.95	2.02011e+13	east so…	alabama	central…	2	2364.3561	2.02011e+13
8	2021	6	november	1724.7713	2.02108e+13	east so…	alabama	central…	1	1724.7713	2.02108e+13
9	2021	6	november	1724.7713	2.02108e+13	east so…	alabama	central…	2	1710.8818	2.02108e+13
10	2021	6	november	1724.7713	2.02108e+13	east so…	alabama	central…	3	1739.9292	2.02108e+13
11	2021	7	november	2674.446	2.02109e+13	east so…	alabama	central…	1	2674.446	2.02109e+13
12	2021	8	november	1590.8473	2.02009e+13	east so…	alabama	central…	1	1590.8473	2.02009e+13
13	2021	9	november	2656.4498	2.02008e+13	east so…	alabama	central…	1	2656.4498	2.02008e+13
14	2021	9	november	2656.4498	2.02008e+13	east so…	alabama	central…	2	3800.3493	2.02008e+13
15	2021	9	november	2656.4498	2.02008e+13	east so…	alabama	central…	3	2363.5336	2.02008e+13
16	2021	9	november	2656.4498	2.02008e+13	east so…	alabama	central…	4	2363.5336	2.02008e+13
17	2021	10	november	2856.5172	2.02110e+13	east so…	alabama	central…	1	1887.9339	2.02110e+13
18	2021	10	november	2856.5172	2.02110e+13	east so…	alabama	central…	2	2856.5172	2.02110e+13
19	2021	10	november	2856.5172	2.02110e+13	east so…	alabama	central…	3	2622.0532	2.02110e+13
20	2021	10	november	2856.5172	2.02110e+13	east so…	alabama	central…	4	2697.597	2.02110e+13
21	2021	11	november	1507.7841	2.02109e+13	east so…	alabama	central…	1	1895.2072	2.02109e+13
22	2021	11	november	1507.7841	2.02109e+13	east so…	alabama	central…	2	1507.7841	2.02109e+13
23	2021	11	november	1507.7841	2.02109e+13	east so…	alabama	central…	3	2015.8102	2.02109e+13
24	2021	12	november	2726.7282	2.02010e+13	east so…	alabama	central…	1	2726.7282	2.02010e+13
25	2021	12	november	2726.7282	2.02010e+13	east so…	alabama	central…	2	2565.9091	2.02010e+13
26	2021	12	november	2726.7282	2.02010e+13	east so…	alabama	central…	3	2777.1113	2.02010e+13

Variables

Filter variables here

☑	Name	Label	Type	Forma
☑	year	survey year	int	%8.0g
☑	serial	household serial number	long	%12.0(
☑	month	month	byte	%8.0g
☑	hwtfinl	household weight, basic monthly	double	%12.0(
☑	cpsid	cpsid, household record	double	%12.0(
☑	region	region and division	byte	%8.0g
☑	statefip	state (fips code)	byte	%8.0g

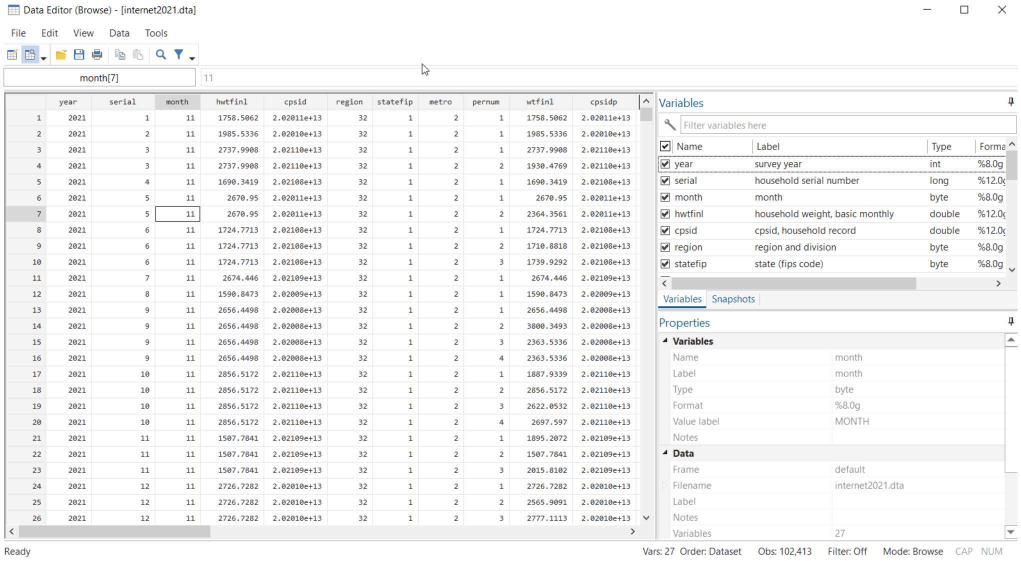
Variables Snapshots

Properties

Variables	
Name	year
Label	survey year
Type	int
Format	%8.0g
Value label	
Notes	
Data	
Frame	default
Filename	internet2021.dta
Label	
Notes	
Variables	27

Ready Vars: 27 Order: Dataset Obs: 102,413 Filter: Off Mode: Browse CAP NUM

6. **Viewing labels**: All variables and values have labels, which are human read-able names that provide context. For example, in the *Properties* window the variable `serial` has the label `household serial number`. If you click on any `November` entry under the `month` column in the table, the actual value of `11` is shown at the top of the table. To display the values instead of the labels, right click on any cell in the table and choose *Data - Value labels - Hide all value labels*. The table now shows the values instead of the labels (when typing commands, you must reference values and not labels). You can repeat the previous operation to un-hide the labels. Close the *Browser* when finished.



month[7] 11

	year	serial	month	hwtfinl	cpsid	region	statefip	metro	pernum	wtfinl	cpsidp
1	2021	1	11	1758.5062	2.02011e+13	32	1	2	1	1758.5062	2.02011e+13
2	2021	2	11	1985.5336	2.02010e+13	32	1	2	1	1985.5336	2.02010e+13
3	2021	3	11	2737.9908	2.02110e+13	32	1	2	1	2737.9908	2.02110e+13
4	2021	3	11	2737.9908	2.02110e+13	32	1	2	2	1930.4769	2.02110e+13
5	2021	4	11	1690.3419	2.02108e+13	32	1	2	1	1690.3419	2.02108e+13
6	2021	5	11	2670.95	2.02011e+13	32	1	2	1	2670.95	2.02011e+13
7	2021	5	11	2670.95	2.02011e+13	32	1	2	2	2364.3561	2.02011e+13
8	2021	6	11	1724.7713	2.02108e+13	32	1	2	1	1724.7713	2.02108e+13
9	2021	6	11	1724.7713	2.02108e+13	32	1	2	2	1710.8818	2.02108e+13
10	2021	6	11	1724.7713	2.02108e+13	32	1	2	3	1739.9292	2.02108e+13
11	2021	7	11	2674.446	2.02109e+13	32	1	2	1	2674.446	2.02109e+13
12	2021	8	11	1590.8473	2.02009e+13	32	1	2	1	1590.8473	2.02009e+13
13	2021	9	11	2656.4498	2.02008e+13	32	1	2	1	2656.4498	2.02008e+13
14	2021	9	11	2656.4498	2.02008e+13	32	1	2	2	3800.3493	2.02008e+13
15	2021	9	11	2656.4498	2.02008e+13	32	1	2	3	2363.5336	2.02008e+13
16	2021	9	11	2656.4498	2.02008e+13	32	1	2	4	2363.5336	2.02008e+13
17	2021	10	11	2856.5172	2.02110e+13	32	1	2	1	1887.9339	2.02110e+13
18	2021	10	11	2856.5172	2.02110e+13	32	1	2	2	2856.5172	2.02110e+13
19	2021	10	11	2856.5172	2.02110e+13	32	1	2	3	2622.0532	2.02110e+13
20	2021	10	11	2856.5172	2.02110e+13	32	1	2	4	2697.597	2.02110e+13
21	2021	11	11	1507.7841	2.02109e+13	32	1	2	1	1895.2072	2.02109e+13
22	2021	11	11	1507.7841	2.02109e+13	32	1	2	2	1507.7841	2.02109e+13
23	2021	11	11	1507.7841	2.02109e+13	32	1	2	3	2015.8102	2.02109e+13
24	2021	12	11	2726.7282	2.02010e+13	32	1	2	1	2726.7282	2.02010e+13
25	2021	12	11	2726.7282	2.02010e+13	32	1	2	2	2565.9091	2.02010e+13
26	2021	12	11	2726.7282	2.02010e+13	32	1	2	3	2777.1113	2.02010e+13

Variables

Filter variables here

☑	Name	Label	Type	Forma
☑	year	survey year	int	%8.0g
☑	serial	household serial number	long	%12.0(
☑	month	month	byte	%8.0g
☑	hwtfinl	household weight, basic monthly	double	%12.0(
☑	cpsid	cpsid, household record	double	%12.0(
☑	region	region and division	byte	%8.0g
☑	statefip	state (fips code)	byte	%8.0g

Variables Snapshots

Properties

Variables	
Name	month
Label	month
Type	byte
Format	%8.0g
Value label	MONTH
Notes	
Data	
Frame	default
Filename	internet2021.dta
Label	
Notes	
Variables	27

Ready Vars: 27 Order: Dataset Obs: 102,413 Filter: Off Mode: Browse CAP NUM

Data Types

Each variable is assigned a data type, which specifies its allowable values and types of operations that can be performed.

str#: text string of a specific number of characters, up to a max of approx 2000

strL: text string that can store up to 2 bil characters

byte: whole number between -100 and 127

int: whole number between -32767 and 32640

long: whole number between -2.1 bil and 2.1 bil

float: a large decimal number

double: an enormous decimal number

2 Commands

Most Stata users use commands to view, process, and analyze data, rather than relying on the point and click tools in the menus. This section illustrates some of the most fundamental commands for describing, summarizing, and modifying data. Commands in Stata have this basic structure:

```
command varname(s) [if varname==value] [,options]
```

Where the command is the operation you want to perform, followed by the name or names of variables you wish to perform them on. This is followed optionally by an if statement that expresses specific criteria, and by optional qualifiers for specific commands (separated from the rest of the statement with a comma).

Typing the command in the *Command* window and pressing <enter> executes the command. Most commands have an abbreviated or short form, such as `tab` for `tabulate` and `desc` for `describe`. The following examples use the long form.

Describing Data

1. **Describe**: Type: `describe` to display information about the dataset in the *Results* window. This information is similar to what appears in the *Variables* and *Properties* windows.

```
    Observations:       102,413
    Variables:            27                  2 Feb 2023 14:12
------------------------------------------------------------------
Variable      Storage   Display    Value
    name         type    format    label      Variable label
------------------------------------------------------------------
year            int     %8.0g                 survey year
```

```
serial          long    %12.0g                household serial number
month           byte    %8.0g      MONTH      month
...
```

2. **Describe short**: Type: `describe, short` to display just the observation and summary counts.

3. **Describe variables**: Get a description for specific variables by listing them. Type: `describe age race`.

```
        Variable      Storage   Display    Value
    name         type     format     label      Variable label
------------------------------------------------------------------
age             byte    %8.0g      AGE        age
race            int     %8.0g      RACE       race
```

4. **Codebook**: Generate a list of all variables, with their values, labels, and counts, by typing: `codebook`.

5. **Variables in codebook**: To print the codebook entry for specific variables, list them. Type: `codebook cinethp`.

```
------------------------------------------------------------------
cinethp                      person accesses internet at home
------------------------------------------------------------------

                  Type: Numeric (byte)
                 Label: CINETHP

                 Range: [1,99]                     Units: 1
         Unique values: 3                      Missing .: 0/102,413

            Tabulation: Freq.   Numeric  Label
                       23,937         1  no
                       75,191         2  yes
                        3,285        99  niu
```

6. **List**: Print records. For big datasets, limit output to the first ten. Type: `list in f/10`.

7. **List specific variables**: To limit the output list to certain variables, add them to the command. Type: `list statefip age sex race cinethp in f/5`.

```
     +--------------------------------------------+
     | statefip   age      sex    race   cinethp |
     |--------------------------------------------|
  1. |  alabama    76   female   white       yes |
  2. |  alabama    68   female   black       yes |
  3. |  alabama    24     male   black        no |
  4. |  alabama    56   female   black        no |
  5. |  alabama    80   female   white       yes |
     |--------------------------------------------|
```

8. **Add conditions**: To limit results you can add conditions with `if`. Use `&` to express AND and `|` to express OR. Use `==` to express equality and `!=` to express inequality. You need to consult the codebook to identify the values you want to reference. Type: `list statefip age sex race cinethp if age <= 18 & statefip == 44 & cinethp != 99`.

```
        | statefip   age      sex       race   cinethp |
        |-----------------------------------------------|
 78550. | rhode is    10     male      white        no |
 78551. | rhode is    13   female      white        no |
 78556. | rhode is     4     male      white        no |
 78585. | rhode is    13   female      white       yes |
 78587. | rhode is    10     male      white       yes |
        |-----------------------------------------------|
```

Summarizing Data

1. **Tabulate**: Summarize a list of variables. The optional `sort` command sorts by frequency. Type: `tabulate cinethp, sort`.

```
     person |
   accesses |
internet at |
       home |      Freq.     Percent        Cum.
------------+-----------------------------------
        yes |     75,191       73.42       73.42
         no |     23,937       23.37       96.79
        niu |      3,285        3.21      100.00
------------+-----------------------------------
      Total |    102,413      100.00
```

2. **Cross tabulate**: Add additional variables. Type: `tabulate cinethp sex`.

```
    person |
  accesses |
  internet |          sex
   at home |      male     female |     Total
-----------+----------------------+----------
        no |    11,881     12,056 |    23,937
       yes |    36,307     38,884 |    75,191
       niu |     1,754      1,531 |     3,285
-----------+----------------------+----------
     Total |    49,942     52,471 |   102,413
```

3. **Tabulate with conditions**: You can also specify criteria. Type: `tabulate cinethp sex if statefip==44`.

```
    person |
  accesses |
  internet |          sex
   at home |      male     female |     Total
-----------+----------------------+----------
        no |       105         98 |       203
       yes |       319        355 |       674
       niu |        15         17 |        32
-----------+----------------------+----------
     Total |       439        470 |       909
```

4. **Frequencies**: Add the option for `row` or `col` to add percentages for rows or columns. Type: `tabulate cinethp sex if statefip==44, col`

```
    person |
  accesses |
  internet |          sex
   at home |      male     female |     Total
-----------+----------------------+----------
        no |       105         98 |       203
           |     23.92      20.85 |     22.33
-----------+----------------------+----------
       yes |       319        355 |       674
           |     72.67      75.53 |     74.15
-----------+----------------------+----------
       niu |        15         17 |        32
           |      3.42       3.62 |      3.52
-----------+----------------------+----------
```

```
     Total |       439        470 |       909
           |    100.00     100.00 |    100.00
```

5. **Sum**: For interval-ratio variables, use `sum` to generate a summary. Type: `sum age`.

```
    Variable |        Obs        Mean    Std. dev.       Min        Max
-------------+---------------------------------------------------------
         age |    102,413    41.18927    23.53935          0         85
```

6. **Sum multiple variables**: Type: `sum age year month`.

7. **Sum with detail**: Add the `detail` option for more information. Type: `sum age, detail`. Note the 50% value represents the median.

```
                             age
-------------------------------------------------------------
      Percentiles      Smallest
 1%            1              0
 5%            4              0
10%            9              0       Obs             102,413
25%           21              0       Sum of wgt.     102,413

50%           41                      Mean           41.18927
                        Largest       Std. dev.      23.53935
75%           61             85
90%           73             85       Variance       554.1011
95%           79             85       Skewness       .0080476
99%           85             85       Kurtosis       1.872457
```

Modifying Data

1. **Create new columns**: Create a new column with a calculated value. Calculate the year each person was born, in a new column called `yrborn`. Type: `generate yrborn=2021-age`. Then type: `list age sex race yrborn in f/5`.

```
       age      sex    race   yrborn |
     |-------------------------------|
  1. |  76   female   white     1945 |
  2. |  68   female   black     1953 |
  3. |  24     male   black     1997 |
  4. |  56   female   black     1965 |
  5. |  80   female   white     1941 |
     +-------------------------------+
```

2. **Add variable label**: Type: `label variable yrborn "birth year"` to add a label for the new column. Then type: `describe yrborn`.

```
        Variable      Storage   Display    Value
    name         type    format     label      Variable label
------------------------------------------------------------------
yrborn          float   %9.0g                  birth year
```

3. **Recode values**: This command allows you to re-classify values, which is often necessary for summarizing data more effectively. It's a best practice to create these in a new variable rather than overwriting an existing one. The notation #/# indicates ("values x through y") inclusive. Recode the metro categories into fewer categories. Type: `recode metro (1=1 "Non-metro") (2/4=2 "Metro") (else=9 "Unknown"), generate(newmetro)`. Then type: `codebook newmetro`.

```
        (58522 differences between metro and newmetro)

------------------------------------------------------------------
newmetro     RECODE of metro (metropolitan central city status)
------------------------------------------------------------------

                  Type: Numeric (byte)
                 Label: newmetro

                 Range: [1,9]                        Units: 1
         Unique values: 3                        Missing .: 0/102,413

            Tabulation: Freq.   Numeric  Label
                       18,971         1  Non-metro
                       82,508         2  Metro
                          934         9  Unknown
```

4. **Replace values**: This command allows you to simply replace values in-place. For example (don't type the following), the syntax is: `replace var1=newvalue if var1==oldvalue`.

5. **Renaming and dropping variables**: The syntax for renaming: `rename varname, newname`, and dropping: `drop varname`.

6. **Dropping records**: Can be accomplished with the `drop / if` commands, if a variable is or is not equal to something, greater or less than, etc. Syntax: `drop if varname [criteria]`.

3 Saving Output

You begin a particular session when you launch Stata. As you modify a data file, you can save it along the way. When you end a session, the output in the *Results* window is lost unless you explicitly capture it. Here are a few options for saving summary output, but first - some general commands to keep in mind:

- `pwd` prints your current working directory, which by default is your `username/documents` folder on your computer. When outputting files, if you specify a file name but no path, your output will be stored in this location. You can change the working directory by going to *File - Change working directory*.
- `cls` clears the contents of the *Results* window.
- `clear` clears the current dataset that is in memory.
- *Copy / Paste*: Manually copy information from your *Results* window, and paste it into a document.
- `Translate`: You can output all content that's currently in the *Results* window, and save it to a text file using `translate @results myfile.txt`.
- `Log`: You can turn on the log, which records all actions that you take in a session. `log using mylog.txt`. When you're finished recording, `close log`.

4 Do Files

Rather than typing commands one by one, you can compile them into a script and run them as a batch program. In Stata these scripts are called Do files, which are a series of Stata commands saved in a plain text document. Stata has a built-in Do file editor that we will use, but Do files can be created in any plain text editor. The example illustrates several methods for adding comments to files (notes that are not executed), as well as triple forward slashes that can break long commands across multiple lines for readability, without impacting execution (remember, the <enter> key indicates that a line should be executed).

1. **Open the Do-File Editor**: Go to *Window - Do-File Editor - New Do-file Editor*.
2. **Open a Do file**: Go to *File - Open*, navigate to the `stata_tutorial_data` folder and `ipums_cps_internet2021` subfolder, and select `region_summary.do` to open it.
3. **Inspect the Do file**: The Do file is printed below. It loads our IPUMS CPS internet dta file, recodes the region column (which actually contains the nine Census divisions of the US) into the four Census regions, computes summaries of internet users by region, writes the results out to a text file, and saves the dta file. It also uses the weights in the CPS file to calculate total population estimates (sample weights are used to indicate how many cases an individual case would represent in a total population).

```
/* Create four census regions from census divisions and summarize internet
users at home from the 2021 CPS from IPUMS */

* Load the file, use forward slashes in paths
cls
use stata_tutorial_data\ipums_cps_internet2021\internet2021.dta, clear

* Create new column called region4
recode region (11/12=1 "Northeast") (21/22=2 "Midwest") ///
(31/33=3 "South") (41/42=4 "West") (97=9 "Unknown"), generate(region4)

* Data summaries
codebook region4
tabulate region4
tabulate region4 cinethp, row
tabulate cinethp region4 [iweight=cisuppwt] // use weight to create pop est

/* Print info in results window to file (saved in the default
directory user/documents)*/

translate @Results region4_summary.txt

save internet2021.dta
```

4. **Run the Do file**: Go to *Tools - Execute*. Close the editor and return to the main Stata interface to see the result. You can also go outside of Stata into your file system, and in your `username/documents` folder click on the `region4_summary.txt` file to open it and view the summary.

5. **Did the Do file fail to run?**: Verify that the Do file refers to the same file name as your dta file, and is stored in the same folder location specified in the path. Alternatively, you could remove the `use` command, and the Do file will attempt to run on the file you have currently loaded in the session. Likewise, you could remove the `save` command, and save the file manually once the operation is complete.

6. **Alternative for executing Do files**: If you don't need to edit or see a Do file but simply want to execute one, you can do that by going to *File - Do*.

5 Importing Data

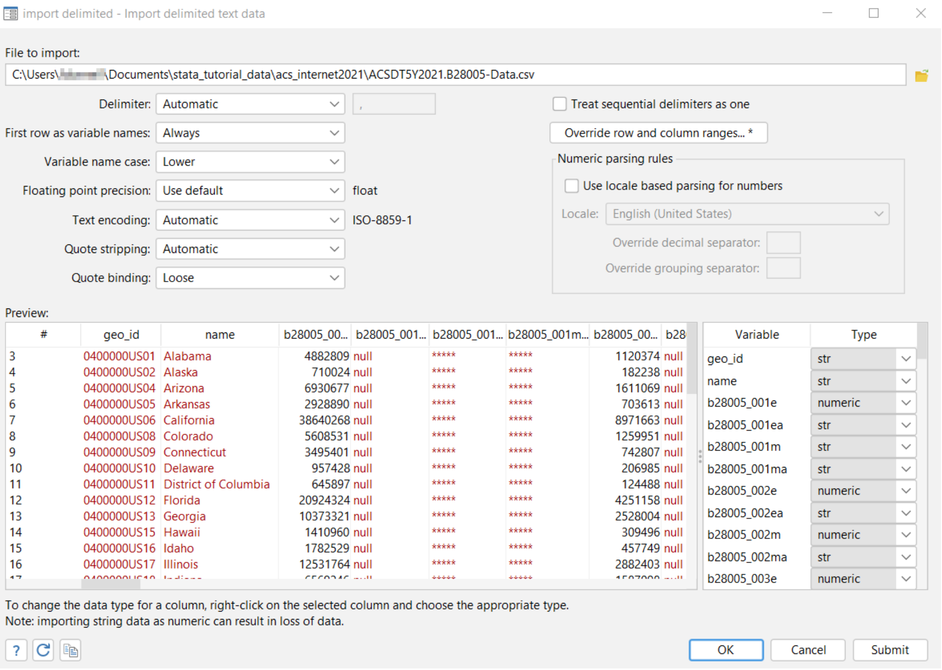
While many large data repositories and government surveys publish data in a Stata .dta format, this is relatively uncommon on smaller platforms and sites geared to the general public. These sources will typically provide Excel spreadsheet files, or plain text formats where records are stored on individual lines, and variables are separated by a character called a delimiter. CSV files (comma separated values) are a common delimited text format.

We will import a csv file of state-level summary data on internet access from the Census ACS. Most of the tables that you download from data.census.gov will come with two header rows: one with variable names and another with labels. We cannot import both, so in the example below we will illustrate how to skip the label row. If you are ever working with csv data that has just a single header row, you can disregard that step.

This section concludes with another example of a Do file. When working with data that's not initially packaged in a .dta format, you will often have to clean and reorganize it prior to use.

1. **Import delimited text data**: Go to *File - Import - Text data*. For *File to import*, hit the folder button and browse to the `stata_tutorial_data` folder, `acs_internet2021` subfolder, and select `ACSDT5Y2021.B28005-Data.csv`.

2. **Specify import parameters**: This csv file has two header rows; we are only allowed to have one. Change *First row variable names* to *Always*. On the right, click *Override row and column ranges*, specify that the *First* rows should be 3 and hit *OK*. This tells Stata to start reading from the 3rd row where the data begins, and allows it to properly identify data types for the variables.



import delimited - Import delimited text data

File to import:
C:\Users\[redacted]\Documents\stata_tutorial_data\acs_internet2021\ACSDT5Y2021.B28005-Data.csv

Delimiter: Automatic ,

First row as variable names: Always

Variable name case: Lower

Floating point precision: Use default float

Text encoding: Automatic ISO-8859-1

Quote stripping: Automatic

Quote binding: Loose

□ Treat sequential delimiters as one

Override row and column ranges... *

Numeric parsing rules

□ Use locale based parsing for numbers

Locale: English (United States)

Override decimal separator:

Override grouping separator:

Preview:

#	geo_id	name	b28005_00...	b28005_001...	b28005_001...	b28005_001m...	b28005_00...	b28
3	0400000US01	Alabama	4882809	null	*****	*****	1120374	null
4	0400000US02	Alaska	710024	null	*****	*****	182238	null
5	0400000US04	Arizona	6930677	null	*****	*****	1611069	null
6	0400000US05	Arkansas	2928890	null	*****	*****	703613	null
7	0400000US06	California	38640268	null	*****	*****	8971663	null
8	0400000US08	Colorado	5608531	null	*****	*****	1259951	null
9	0400000US09	Connecticut	3495401	null	*****	*****	742807	null
10	0400000US10	Delaware	957428	null	*****	*****	206985	null
11	0400000US11	District of Columbia	645897	null	*****	*****	124488	null
12	0400000US12	Florida	20924324	null	*****	*****	4251158	null
13	0400000US13	Georgia	10373321	null	*****	*****	2528004	null
14	0400000US15	Hawaii	1410960	null	*****	*****	309496	null
15	0400000US16	Idaho	1782529	null	*****	*****	457749	null
16	0400000US17	Illinois	12531764	null	*****	*****	2882403	null

Variable	Type
geo_id	str
name	str
b28005_001e	numeric
b28005_001ea	str
b28005_001m	str
b28005_001ma	str
b28005_002e	numeric
b28005_002ea	str
b28005_002m	numeric
b28005_002ma	str
b28005_003e	numeric

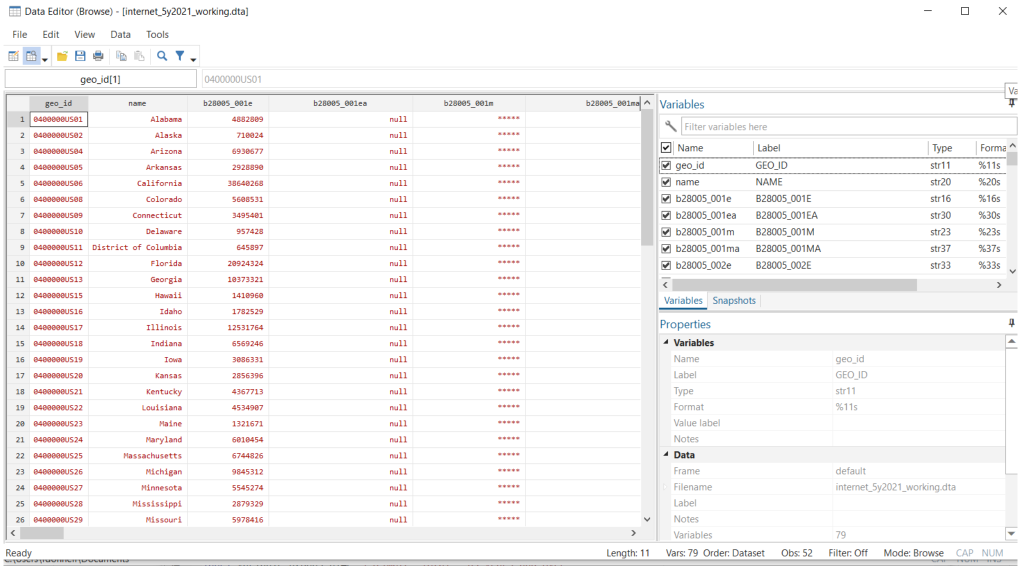
To change the data type for a column, right-click on the selected column and choose the appropriate type.
Note: importing string data as numeric can result in loss of data.

3. **Check other parameters and load**: The *Delimiter* is a comma, so we can leave the automatic setting alone. Likewise, the *Variable case name* is set to *lower*, which is desirable (making it easier to reference variables). Hit *OK* to load the file.

4. **Save the file as a .dta**: Go to *File - Save As*, and in the `acs_internet` subfolder save the file as `internet_5y2021_orig.dta`.

5. **Save the file again!**: The file in our previous step is now our original. We don't want to modify it (if we make a mistake, we'd have to repeat the import step). Save a copy of the file as `internet_5y2021_working.dta`.

6. **Open the Data Browser**: Go to *Data - Data Editor - Data Editor Browse*. Unlike our CPS file which represented microdata, this ACS file represents summary data, aggregated by state. There are four columns for each variable that end in a suffix: estimate (e), annotation (a), margin of error(m), and margin of error annotation (ma). Close the browser.



Data Editor (Browse) - [internet_5y2021_working.dta]
File Edit View Data Tools
geo_id[1]
0400000US01

	geo_id	name	b28005_001e	b28005_001ea	b28005_001m	b28005_001ma
1	0400000US01	Alabama	4882809	null	*****	
2	0400000US02	Alaska	710024	null	*****	
3	0400000US04	Arizona	6930677	null	*****	
4	0400000US05	Arkansas	2928890	null	*****	
5	0400000US06	California	38640268	null	*****	
6	0400000US08	Colorado	5608531	null	*****	
7	0400000US09	Connecticut	3495401	null	*****	
8	0400000US10	Delaware	957428	null	*****	
9	0400000US11	District of Columbia	645897	null	*****	
10	0400000US12	Florida	20924324	null	*****	
11	0400000US13	Georgia	10373321	null	*****	
12	0400000US15	Hawaii	1410960	null	*****	
13	0400000US16	Idaho	1782529	null	*****	
14	0400000US17	Illinois	12531764	null	*****	
15	0400000US18	Indiana	6569246	null	*****	
16	0400000US19	Iowa	3086331	null	*****	
17	0400000US20	Kansas	2856396	null	*****	
18	0400000US21	Kentucky	4367713	null	*****	
19	0400000US22	Louisiana	4534907	null	*****	
20	0400000US23	Maine	1321671	null	*****	
21	0400000US24	Maryland	6010454	null	*****	
22	0400000US25	Massachusetts	6744826	null	*****	
23	0400000US26	Michigan	9845312	null	*****	
24	0400000US27	Minnesota	5545274	null	*****	
25	0400000US28	Mississippi	2879329	null	*****	
26	0400000US29	Missouri	5978416	null	*****	

☑ Name	Label	Type	Forma
☑ geo_id	GEO_ID	str11	%11s
☑ name	NAME	str20	%20s
☑ b28005_001e	B28005_001E	str16	%16s
☑ b28005_001ea	B28005_001EA	str30	%30s
☑ b28005_001m	B28005_001M	str23	%23s
☑ b28005_001ma	B28005_001MA	str37	%37s
☑ b28005_002e	B28005_002E	str33	%33s

Variables	
Name	geo_id
Label	GEO_ID
Type	str11
Format	%11s
Value label	
Notes	
Data	
Frame	default
Filename	internet_5y2021_working.dta
Label	
Notes	
Variables	79

Ready Length: 11 Vars: 79 Order: Dataset Obs: 52 Filter: Off Mode: Browse CAP NUM

7. **Open Do file**. To demonstrate some clean up steps, we will run a do file to drop the annotation columns (as they contain no data in this example), and add labels for the remaining columns. Go to *Window - Do-File Editor - New Do-file Editor*. Go to *File - Open*, and in theacs_internet2021 subfolder, select `acs_labels.do` to open it.

8. **Run Do File**. This Do file drops all variables that end in 'ea' and 'ma' using the asterisk character as a wildcard. The label designations were not created by hand; Excel was used to concatenate data in the `ACSDT5Y2021.B28005-Column-Metadata.csv` file (see the Excel spreadsheet in the project folder that illustrates how this was done). Go to *Tools - Execute* to run the file. Close the editor and return to the main Stata interface to see the result.

```
describe

Contains data from C:\Users\uname\Documents\stata_tutorial_data
\acs_internet2021\internet_5y2021_working.dta
 Observations:           52
    Variables:           41                  4 Feb 2023 17:07
-------------------------------------------------------------------
Variable      Storage   Display    Value
    name         type    format    label      Variable label
```

```
-------------------------------------------------------------------
geo_id          str11   %11s                Geography
name            str20   %20s                Geographic Area Name
b28005_001e     str16   %16s                Estimate!!Total:
b28005_001m     str23   %23s                Margin of Error!!Total:
...
```

9. **Save your file**: Go to *File - Save*, and overwrite the current file to save it. This Do file did not explicitly save the file - or load it. By running it, we assumed it would run on the file in memory.

10. **Next steps...**: Return to sections 1 and 2 in this tutorial, and repeat some of those steps on this current ACS file to describe and summarize it.

Notes about ACS estimates

An example of interpreting an ACS estimate and its margin of error, using data in our sample file: We are 90% confident that the population under 18 in Alaska was 182,238 +/- 272 between the years 2017 and 2021. Alternatively, we could say the under 18 population in Alaska was between 181,966 and 182,510 during this period. When summing ACS estimates across categories or geographies, we can calculate a new margin of error (moe) by taking the square root of the sum of the squares of each moe for the estimates we are combining.

6 Learning More

This tutorial was designed to provide a basic introduction to the Stata interface and commands, primarily for viewing and modifying data. For a fuller treatment, see the following resources.

Stata User Docs: The official docs, brief *Getting Started* introductions and the full *User Guide*.
`https://www.stata.com/features/documentation/`

Stata Cheat Sheets: Concise summaries of commands.
`https://www.stata.com/bookstore/stata-cheat-sheets/`

GSU Library Stata Guide: A concise introduction with examples.
`https://research.library.gsu.edu/Stata`

UCLA Learning Modules : A thorough series of tutorials.
`https://stats.oarc.ucla.edu/stata/modules/`

Bittmann, Felix. (2019). *STATA: A Really Short Introduction.* De Gruyter Oldenbourg: Berlin.

Longest, Kyle C. (2020). *Using STATA for Quantitative Analysis*, 3rd ed. SAGE Publications: Los Angeles.