

Creating LaTeX and HTML documents from within Stata using texdoc and webdoc

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Motivation

- As Stata users, we create many documents that include pieces of Stata output, graphs, or other Stata results in one way or the other.
- Manual inclusion of such elements in documents can be tedious and error prone.
- Good—and efficient—practice is to automate such tasks.

Motivation

- Some candidates for automation:
 - ▶ Yearly reports with a given structure but changing results
 - ▶ Research articles containing tables and graphs
 - ▶ Documentations of datasets or data analyses
 - ▶ Stata Journal articles illustrating the use of Stata commands
 - ▶ Stata Press books or other textbooks
 - ▶ Solutions to Stata exercises
 - ▶ Presentations and class notes
 - ▶ Websites ...
 - ★ ... reporting results computed by Stata
 - ★ ... documenting datasets or data analyses
 - ★ ... documenting the use of Stata commands

Motivation

- There are two main reasons for automation.

1. Efficiency

- ▶ Do manual work only once.

2. Reproducibility

- ▶ As scientists, we want complete documentation of data production and data analysis.
- ▶ Automation makes errors less likely (and makes the detection of errors more likely).
- ▶ As a side effect, automation leads to standardization, which is usually a good idea for high quality and reliable science.

The texdoc and webdoc commands

- `texdoc` and `webdoc` are commands that support such automation.
 - ▶ `texdoc` is for \LaTeX , the final product usually being a PDF
 - ▶ `webdoc` is for HTML (or Markdown)
- With `texdoc/webdoc` you can maintain a single do-file that contains
 - ▶ the Stata code of your data analysis and
 - ▶ the text for your report/article/book/website etc.
- Processing the do-file with `texdoc/webdoc` will run the analysis and create the source file of your document, containing text and results.

Usage of texdoc

- The basic procedure is to write a do-file including Stata commands and sections of L^AT_EX code and then process the do-file by:

```
texdoc do filename [, options]
```

- The output of `texdoc do` will be a source file that can then be processed by a L^AT_EX compiler to generate the final document.
- To facilitate the workflow, a good idea is to set up a keyboard shortcut in your text editor, say Ctrl+R, that grabs the current do-file and processes it by `texdoc do`.
- `texdoc do` can be nested. In complex documents it may be desirable to include parts of the code in separate files. Use `texdoc do` to call these files within your master do-file. This also works if the master do-file itself is processed by `texdoc do`.

Structure of a texdoc do-file

- The basic structure of a do-file to be processed by texdoc do is

```
texdoc init [docname] [, options]
... Stata commands ...
/**
... LATEX section ...
***/
... Stata commands ...
/**
... LATEX section ...
***/
etc.
texdoc close
```

Structure of a texdoc do-file

- The command

```
texdoc init [docname] [, options]
```

initializes the \LaTeX document and specifies general settings.

- ▶ *docname* is the name of the \LaTeX file be written to
- ▶ *options* may be used, e.g., to specify folders for log files and graphs and determine the rules for naming the files. Furthermore, the default behavior of the `texdoc stlog` (see below) can be set.
- ▶ `texdoc init` can be applied repeatedly within a do-file (omitting *docname*) to change the settings between different sections of the do-file.
- ▶ If `texdoc init` is omitted, `texdoc do` will automatically initialize the output document using the name of the do-file.

Structure of a texdoc do-file

- Inserts such as

```
/***/  
... LATEX section ...  
***/
```

are used to include sections of text and L^AT_EX code in the document. The sections will be copied to the output document as is (without expanding Stata macros).

- The command

```
texdoc close
```

closes the L^AT_EX document. As texdoc do automatically closes the L^AT_EX document, texdoc close is usually not needed.

Including output from Stata commands

- The syntax to include output from Stata commands in the \LaTeX document is

```
...  
texdoc stlog [name] [, options]  
... Stata commands ...  
texdoc stlog close  
...
```

- ▶ All output from the commands between `texdoc stlog` and `texdoc stlog close` will be written to a separate log file that is then included in the \LaTeX document with proper formatting.
- ▶ You may provide a stable `name` for the output section or have `texdoc` make a name up on the fly.

Including output from Stata commands

- The *options* of `texdoc stlog` determine what exactly is done with the commands in the output section.
- Some options are:
 - ▶ `nodo` to skip executing the commands. This is an extremely useful option as it allows you to skip rerunning the commands once an output section is all set.
 - ▶ `cmdstrip` to remove the command lines from the output (i.e. only print the output without commands).
 - ▶ `cmdlog` to print the Stata code instead of a Stata log.
 - ▶ etc.
- All options can also be specified with `texdoc init` to set the default behavior. Each option has a complementary form so that the chosen defaults can be overridden.
 - ▶ For example, specify option `nodo` with `texdoc init` to turn all commands off, but then specify option `do` with `texdoc stlog` to turn the commands back on in a specific output section.

The logall option

- Alternatively, if you want to automatically include all Stata output in the \LaTeX document, you can use the `logall` option:

```
texdoc init [docname], logall [options]
/**
...  $\text{\LaTeX}$  section ...
***/
... Stata commands ...
/**
...  $\text{\LaTeX}$  section ...
***/
... Stata commands ...
etc.
texdoc close
```

Including graphs

- Graphs created within a `texdoc stlog` section can be included in the document as follows:

```
texdoc stlog [name] [, options]  
... Stata commands creating a graph ...  
texdoc stlog close  
texdoc graph [name] [, graph_options]
```

- ▶ By default, `texdoc graph` exports the graph from the topmost graph window and includes code in the \LaTeX document to display the graph.
- ▶ `texdoc graph` takes account of the settings of `texdoc stlog`. For example, if the `nodo` option has been specified (and, hence, no graph was created), `texdoc graph` only includes appropriate code in the \LaTeX document without trying to export the graph.

Including graphs

- *graph_options* determine how the graph is exported and how it is embedded in the \LaTeX document. Default graph options can also be specified with `texdoc init`.
- Some options are:
 - ▶ `as(fileformats)` to set the output format(s). The default is `as(pdf)`.
 - ▶ `name(name)` to specify the name of the graph window to be exported.
 - ▶ `optargs(args)` to pass optional arguments through to the \LaTeX graph command.
 - ▶ `figure[(args)]` to include the graph in a (floating) figure environment.
 - ▶ `caption(string)` to provide a caption for the figure.
 - ▶ `label(string)` to provide a cross-reference label for the figure.
 - ▶ etc.

Some further commands

- \LaTeX :

- ▶ `texdoc write textline` to write a single line of \LaTeX code. Stata macros within *textline* will be interpreted.
- ▶ `texdoc append filename` to include \LaTeX code from an external file.

- Output sections:

- ▶ `texdoc stlog [name] using do-file [, options]` to include Stata output from an external do-file.
- ▶ `texdoc stlog oom command` to suppress output from a command and include an output-omitted tag.
- ▶ `texdoc stlog cnp` to include a continued-on-next-page tag.

- Other:

- ▶ `// texdoc exit` to exit a texdoc do-file.
- ▶ `texdoc strip filename newname` to remove all texdoc elements from a do-file.

Examples

- Example 1
- Example 2

Usage of webdoc

- `webdoc` is very similar to `texdoc`, but the output is a HTML file instead of a \LaTeX file.
- `webdoc` also has a number of useful extra features.
 - ▶ `webdoc init` provides a `header` option to make things easier.
 - ★ Basic CSS settings.
 - ★ Support for Bootstrap (including Bootswatch themes).
 - ★ Color schemes for Stata output.
 - ▶ `webdoc toc` creates a table of contents.
 - ▶ `webdoc stlog` has an `sthlp` option to translate help files including clickable navigation.
 - ▶ `webdoc stlog` has a `dosave` option to create a do-file from an output section.
 - ▶ `webdoc graph` can embed graphs in the output documents (using Base64 encoding or SVG).
 - ▶ `webdoc set` can be used to define custom HTML settings.

Examples

- Formatting
 - ▶ Basic CSS header
 - ▶ Stata color schemes
 - ▶ Bootstrap/Bootswatch
- Stata output
 - ▶ Contents of output sections
 - ▶ Setting the screen width
 - ▶ Displaying Stata code
 - ▶ Saving Stata code
 - ▶ Displaying help files
- Table of contents
 - ▶ Basic usage
 - ▶ Adding section numbers
 - ▶ Formatting the TOC
- Graphs
 - ▶ The hardcode option
 - ▶ SVG format
 - ▶ Cross-referencing
- Tables
 - ▶ Using esttab (or similar)
 - ▶ Improved esttab tables
 - ▶ Creating custom tables
- Using Markdown
 - ▶ Basic procedure
 - ▶ Table of contents

Some limitations

- Much effort has been put into making `texdoc` and `webdoc` general and robust (for example, inline comments or commands such as `cd` or `clear all` do not disturb `texdoc` and `webdoc`).
- Nonetheless, there are a number of limitations. Some of these limitations are:
 - ▶ `texdoc` and `webdoc` commands should always start on a new line, with `texdoc` or `webdoc` being the first (non-comment) word on the line.
 - ▶ `texdoc` and `webdoc` only provide limited support for the semicolon command delimiter. Do not use semicolons to delimit `texdoc` and `webdoc` commands.
 - ▶ `texdoc` and `webdoc` do not parse the contents of a do-file that is called from the main do-file using the `do` command. Use `texdoc do` and `webdoc do` to include nested do-files.
 - ▶ `texdoc` closes the default log if it is on. Use a named log to log a Stata session in which `texdoc` is applied.

Documentation and software

- Working papers:
 - ▶ <http://ideas.repec.org/p/bss/wpaper/14.html> (texdoc)
 - ▶ <http://ideas.repec.org/p/bss/wpaper/22.html> (webdoc)
- Stata Journal:
 - ▶ Jann, Ben (2016). Creating LaTeX documents from within Stata using texdoc. The Stata Journal 16(2): 245-263.
 - ▶ Paper on webdoc under review.
- Online documentation:
 - ▶ <http://repec.sowi.unibe.ch/stata/texdoc>
 - ▶ <http://repec.sowi.unibe.ch/stata/webdoc>

Documentation and software

- Installation:

- ▶ texdoc:

- . ssc install texdoc
 - . net install sjlatex, from(<http://www.stata-journal.com/production>)

- ★ To compile a \LaTeX document containing Stata output you also need to install the Stata \LaTeX files on your system and load the stata package in your \LaTeX document (`\usepackage{stata}`).
 - ★ In Stata, use the `sjlatex install` command to download and install the Stata \LaTeX files (either to the working directory or to the local search tree of your \LaTeX installation).

- ▶ webdoc:

- . ssc install webdoc