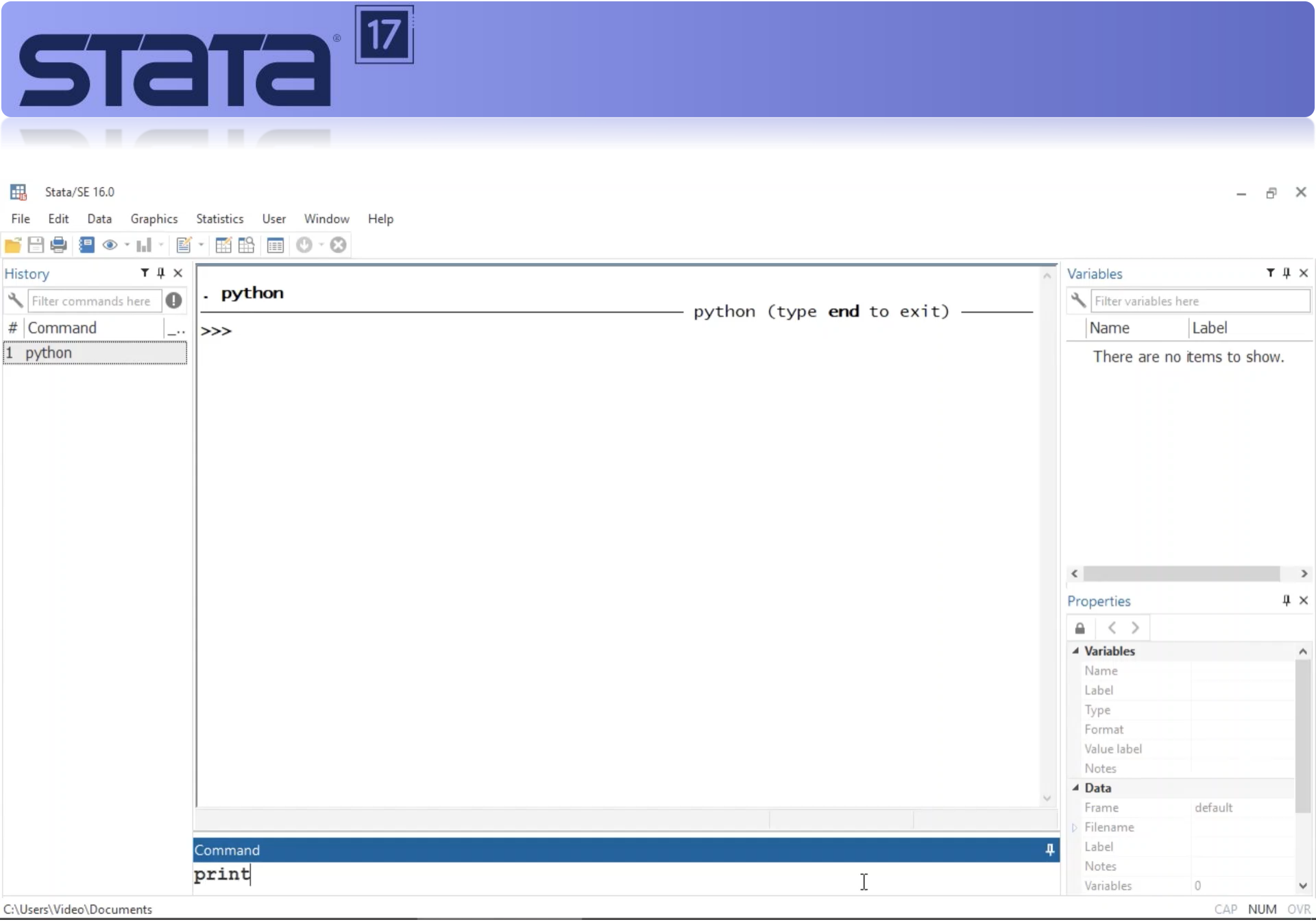
Using Stata in Python/ Jupyter Notebook

Meghan Cain | October 5th, 2021

You can download the slides and other materials here:
https://tinyurl.com/PyStata21


STATA 17
Stata/SE 16.0
File Edit Data Graphics Statistics User Window Help
History
Filter commands here
Command _...
1 python
. python
python (type end to exit)
>>>
Variables
Filter variables here
Name Label
There are no items to show.
Properties
Variables
Name
Label
Type
Format
Value label
Notes
Data
Frame default
Filename
Label
Notes
Variables 0
Command
print
C:\Users\Video\Documents
CAP NUM OVR

The **pystata** Python package

API functions

```
stata.run("didregress (satisfaction_score) (procedure), group(hospital_id) time(month)")
```

The magic commands

```
%stata didregress (satisfaction_score) (procedure), group(hospital_id) time(month)
```

The **pystata** Python package

API functions

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stata.run("didregress (satisfaction_score) (procedure), group(hospital_id) time(month)")
```

- Slightly more functionality

The magic commands

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```

- Easier to use

The **pystata** Python package

API functions

```
stata.run("didregress (satisfaction_score) (procedure), group(hospital_id) time(month)")
```

- Slightly more functionality
- Available anywhere you can access Python

The magic commands

```
%stata didregress (satisfaction_score) (procedure), group(hospital_id) time(month)
```

- Easier to use
- Only available in IPython kernel-related environments

Use Stata in …

- Any interactive Python (IPython) kernel-related environment
  - Jupyter Notebook/ JupyterLab
  - Spyder IDE
  - PyCharm IDE
- Any Shell that can access Python
  - Windows Command Prompt
  - macOS terminal
  - Unix terminal

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magic or API

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API

For more information

https://www.stata.com/python/pystata/

https://github.com/StataMeghan/PyStata/blob/main/JupyterPractice.ipynb

Workflow

1. Installation
2. Configuration
3. Launch Jupyter Notebook, etc.
4. Magic commands
5. API functions
6. Resources for advanced usage

Installation

- Stata 17.0+
- Python 3.4+
- Python packages: pandas, NumPy, IPython, Jupyter Notebook

In Command Prompt/Terminal:

```
> pip install pandas numpy ipython notebook
```

Installation

- Stata 17.0+
- Python 3.4+
- Python packages: pandas, NumPy, IPython, Jupyter Notebook

In Command Prompt/Terminal:

```
> py -m pip install pandas numpy ipython notebook
```

Launch Jupyter Notebook

```
> jupyter notebook
```

Configuration

- First, you need to know where Stata is on your computer.

```
. display c(sysdir_stata)
C:\Program Files\Stata17/
```

- We refer to this as STATA_SYSDIR

Configuration

1. Use the Python module stata_setup

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2. Add pystata's location to Python's module search path

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Configuration

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2. Add pystata's location to Python's module search path
3. Change the current working directory to pystata's location
4. Permanently add pystata's location to Python's module search path

The magic commands

`%pystata`

configure the system and display current system information and settings

`%stata`

execute Stata commands

`%mata`

execute Mata code

PyStata magic

```
%pystata status

%pystata set graph_show True|False [, perm]

%pystata set graph_size w|h #[in|px|cm] [, perm]

%pystata set graph_format svg|png|pdf [, perm]
```

Stata magic

`%stata` *command*

- Executes one line of Stata code, as it would in Stata's Command window

`%%stata`
commands

- Executes a block of Stata code, as it would in a Stata do-file

Stata magic

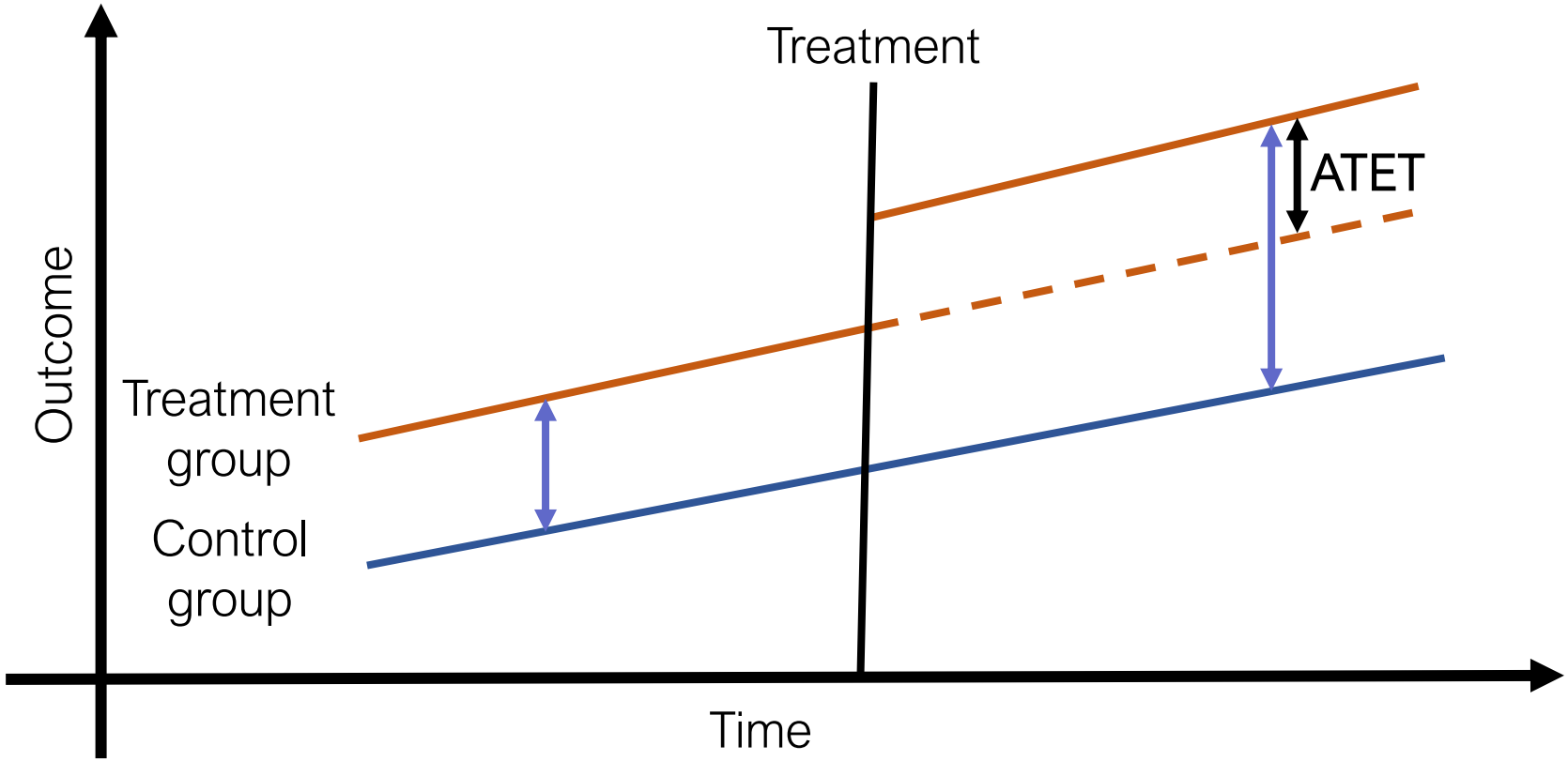
%%stata [-d DATA] [-f DFLIST|ARRLIST] [-force]
[-doutd DATAFRAME] [-douta ARRAY] [-foutd FRAMELIST]
[-fouta FRAMELIST] [-ret DICTIONARY] [-eret DICTIONARY]
[-sret DICTIONARY] [-qui] [-nogr] [-gw WIDTH] [-gh HEIGHT]

Python → Stata

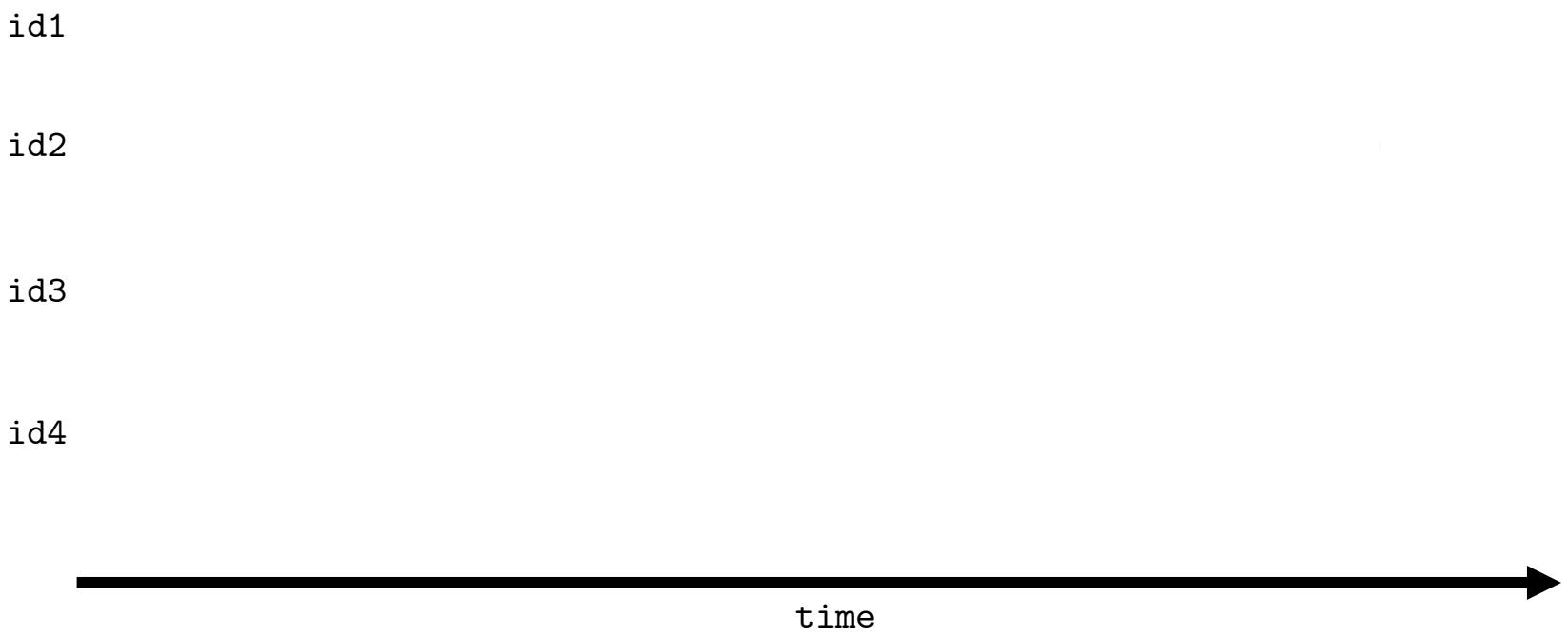
Stata → Python

Output

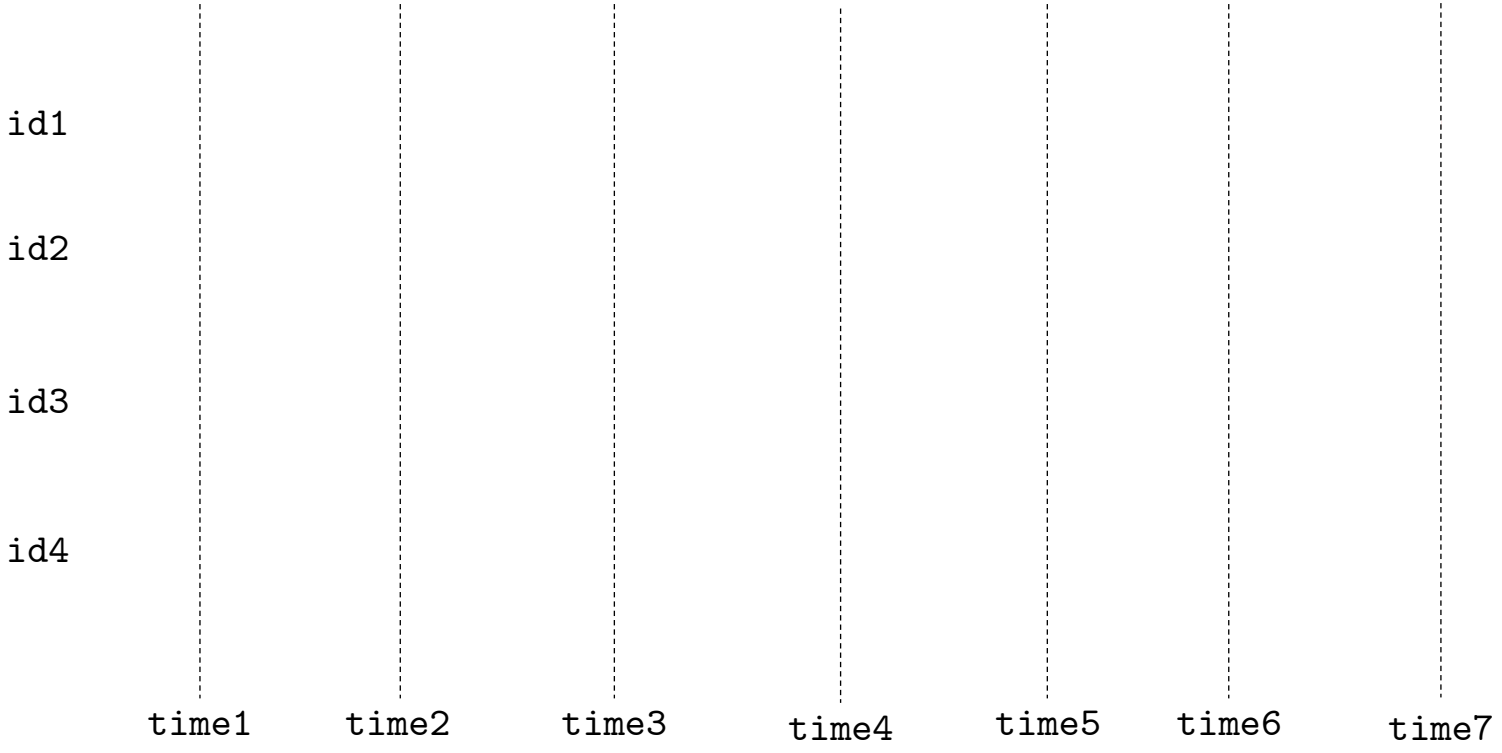
Difference in differences (DID)



Survival analysis



Interval-censored Cox models



$$h(t;\boldsymbol{x}) = h_0(t)\exp(\boldsymbol{x}\boldsymbol{\beta})$$

Mata magic

`%mata` *command*

- Executes one line of Mata code, similar to specifying `mata: istmt` within Stata

`%%mata` [`-m` ARRAYLIST] [`-outm` MATLIST] [`-qui`] [`-c`] *commands*

- Executes a block of Mata code, as it would in a Stata do-file

API functions

Two modules

`config`

- Configure the system and display current system information and settings

`stata`

- Interact with Stata

config

init(*edition*)
is_stata_initialized()
status()
set_graph_format(svg | png | pdf [, perm])
set_graph_size([*width*, *height*, perm])
set_graph_show(True | False [, perm])
set_output_file(*filename* [, replace])
close_output_file()

stata

run(*cmd* [, *quietly*, *echo*, *inline*])
nparray_to_data(*arr* [, *prefix*, *force*])
pdataframe_to_data(*df* [, *force*])
nparray_to_frame(*arr*, *stfr* [, *prefix*, *force*])
pdataframe_to_frame(*df*, *stfr* [, *force*])
nparray_from_data([*var*, *obs*, *selectvar*, *valuelabel*, *missingval*])
pdataframe_from_data([*var*, *obs*, *selectvar*, *valuelabel*, *missingval*])
nparray_from_frame(*stfr* [, *var*, *obs*, *selectvar*, *valuelabel*, …])
pdataframe_from_frame(*stfr* [, *var*, *obs*, *selectvar*, *valuelabel*,…])
get_return()
get_ereturn()
get_sreturn()

`nparray_from_data(`[*var*, *obs*, *selectvar*, *valuelabel*, *missingval*]`)`
`pdataframe_from_data(`[*var*, *obs*, *selectvar*, *valuelabel*, *missingval*]`)`

`var=None`, *integer*, *string*, or *list*

- Variables to access.

`obs=None`, *integer*, or *list*

- Observations to access.

`selectvar=None`, *integer*, or *string*

- Observations for which *selectvar!=0* will be selected.

`valuelabel=False` or `True`

- Use the value label when available.

`missingval=` *default_mis*, *number* or *string*

- If *missingval* is specified, all the missing values in the returned list are replaced by this value.

Resources for advanced usage

- The **Stata Function Interface (sfi)** module allows users to interact Python's capabilities with core features of Stata.
- Many of these functions are used in the background for the PyStata package.
- This will be your main tool if you would like to write wrapper modules or packages.
- For more information: https://www.stata.com/python/api17/

Thank you!

Questions?

You can download the slides and other materials here:
https://tinyurl.com/PyStata21

You can contact tech support at tech-support@stata.com