Effective Programming Practices for Economists

# Data management with pandas

What is (modern) pandas?

Janoś Gabler and Hans-Martin von Gaudecker

## What is pandas?

- Industry standard DataFrame library in Python
- Covers all you need for data management
  - Loading datasets in many formats
  - Cleaning data
  - Generating variables
  - Reshaping datasets
- Compatible with all plotting and statistics libraries

#### What is a DataFrame?

country	continent	year	life_exp
<b>0</b> Cuba	Americas	2002	77.16
<b>1</b> Cuba	Americas	2007	78.27
<b>2</b> Spain	Europe	2002	79.78
<b>3</b> Spain	Europe	2007	80.94

- Tabular data format
- Variables are columnsObservations are rows

  - Can be manipulated in Python

## What is **modern** pandas?

- Pandas was created in 2008 and has some baggage
- With version 3.0 many things will improve
- Those features can already be enabled now:
  - More speed and less memory usage through better dtypes
  - Less confusion through copy-on-write
  - Better handling of missing values
  - Removal of the `inplace` argument

### How to use modern pandas

- Install version 2.1 or higher of pandas
- Install version 13.0 or higher of pyarrow
- Set some options after import

```
import pandas as pd

pd.options.mode.copy_on_write = True
pd.options.future.infer_string = True
```

■ When loading datasets, use `engine="pyarrow"` if available