#### **Effective Programming Practices for Economists**

## Data management with pandas

Loading and saving data

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### **Example: Loading a csv file**

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

```
`gapminder.csv` looks like this
```

```
country, continent, year, life_exp
Cuba, Americas, 2002, 77.158
Cuba, Americas, 2007, 78.273
Spain, Europe, 2002, 79.780
Spain, Europe, 2007, 80.941
```

- first argument is path
- 'engine="pyarrow" 'ensures we are getting modern pandas dtypes
- Many other optional arguments

### Other read functions

reader	extension	comment
`pd.read_csv`	`.CSV`	Often need to use optional arguments to make it work
`pd.read_pickle`	`.pkl`	Good for intermediate files; Python specific.
`pd.read_feather`	`.arrow`	Very modern and powerful file format.
`pd.read_stata`	`.dta`	Stata's proprietary format. Avoid if you can.
`pd.read_fwf`	`.fwf`	Avoid this whenever you can!

Each read function has a corresponding write function

# **Example: Write an Apache Arrow file**

```
df.to_feather(path="gapminder.arrow")
```

- First argument is a file path
- More keyword arguments would allow for specifying compression level, format version
- Methods for other file formats tend to require more options

### File format recommendations

- Use `.pkl` format for processed datasets that you do not share with others
  - Very fast to read and write
  - Preserves every aspect of your DataFrame (e.g. dtypes)
- Use `.arrow` to save files you want to share with others
  - Can be read by many languages and programs
  - Efficient compression
- Use `.dta` iff sharing with Stata users