

C: Pickling, stacking and unstacking

1. Pickling (feature of Python in general):

- Saves an **internal copy of a data object to disk**
- Faster to reload than rebuilding from text
- Not human-readable

```
data.to_pickle("filename.pkl")      Standard pickle
data = pd.read_pickle("filename.pkl")
```

```
data.to_pickle("filename.zip")      Adds compression
data = pd.read_pickle("filename.zip")
```

- Pickling can be done for other Python objects as well, not just Pandas

2. Unstacking (feature of Pandas):

- Converts an **index level** to a **set of columns**

Example:

- Series `expend_long`
- Indexed by year and state

Year	State	
2018	NY	335
2019	NY	400
2020	NY	290
2018	CA	349

2019	CA	326
2020	CA	228
2018	FL	174
2019	FL	290
2020	FL	176

```
expend_wide = expend_long.unstack('State')
```

- Dataframe `expend_wide`
- Indexed by year
- Columns for states

Year	NY	CA	FL
2018	335	349	174
2019	400	326	290
2020	290	228	176

- To go the other direction:

```
new_long = expend_wide.stack()
```