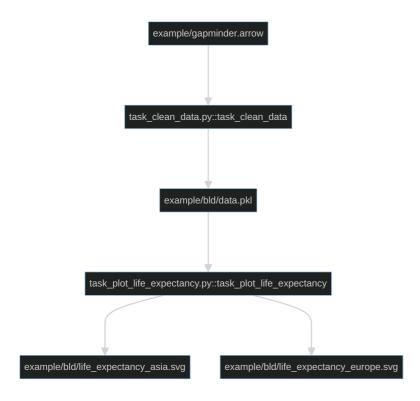
Effective Programming Practices for Economists

Reproducible Research

Writing (py)tasks with multiple outputs

Janoś Gabler and Hans-Martin von Gaudecker

Tiny example, extended



 How do we tell pytask that we have two products for

`task_plot_life_expectancy`?

How would we tell pytask that we had more than one dependency?

Contents of task_clean_data.py

```
from pathlib import Path
import pandas as pd
BLD = Path(__file__).parent / "bld"
def task_clean_data(raw_file=Path("gapminder.arrow"), produces=BLD / "data.pkl"):
    raw = pd.read_feather(raw_file)
    clean = _clean_data(raw)
    clean.to_pickle(produces)
def _clean_data(raw):
    df = raw.rename(
        columns={
            "lifeExp": "life_exp",
            "gdpPercap": "gdp_per_cap",
    return df
```

Contents of task_plot_life_expectancy.py

```
BLD = Path(__file__).parent / "bld"
products = {
    "Asia": BLD / "life_expectancy_asia.svg",
    "Europe": BLD / "life_expectancy_europe.svg"
def task_plot_life_expectancy(
    data_file=BLD / "data.pkl",
    produces=products,
    df = pd.read_pickle(data_file)
    for region, fig_file in produces.items():
        fig = _plot_life_expectancy(df[df["continent"] == region])
        fig.write_image(fig_file)
```

Verify Dependency graph (DAG, tree)

- Inspect function signatures to build a dependency graph
- Both values of `products` dict passed to `produces` argument have become nodes!

Run pytask



Multiple dependencies and products

- Defaults to keyword arguments may hold
 - a single `pathlib.Path`
 - a container of `pathlib.Path` objects
 - Container may be nested, so long as the atomic elements are `pathlib.Path` objects
- For dependencies, can pass as many different arguments with defaults as you like