

ECOG 315 / ECON 181, Summer 2025
Advanced Research Methods and Statistical Programming
Week 4 Lecture Slides

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Week 4 Administrivia

- ▶ If you did not successfully issue a PR for your survey, please do that
 - ▶ Ronald!
- ▶ Email me if you need help with GitHub (etc)
- ▶ Did the revised example Python code work for Mac users?
- ▶ Alan and I were pretty impressed with your presentations

Workflow Management: Branches on GitHub (1/2)

- ▶ Quite often, there is **a lot** going on with a project
- ▶ Some things might not work out, but want to experiment with them
- ▶ And/or multiple people are working on the project
- ▶ Can organize git workflow in **branches** of your repo
- ▶ Split off a mini-copy of the project, make commits, maybe merge into `main`
- ▶ Merging happens via pull request, just like when making a PR from your fork
- ▶ Branches are cheap as free: if something doesn't work out, just toss it!
- ▶ Mature project could have a lot of branches (and PRs!)

Workflow Management: Branches on GitHub (2/2)

- ▶ On GitHub desktop, click the arrow on the “Current branch” button
- ▶ Will see a list of all branches; can click “New branch” and name it
- ▶ Commits are specific **to a branch**
- ▶ GitHub Desktop can “stash” one set of uncommitted changes
- ▶ But best practice is to commit (or discard) changes before changing branches
- ▶ Don’t forget to push back to the origin after committing!
- ▶ When issuing a PR, verify the branch you’re merging and the target

Anaconda and Virtual Environments

- ▶ There are a lot of Python packages, and you will have multiple projects
- ▶ Project A requires CoolPackage v0.8 or higher; Project B requires v0.7 or lower
- ▶ Not a problem! conda can manage virtual Python environments
- ▶ Can have multiple collections/configurations of packages on your computer
- ▶ Manage each separately, switch between them with a single command
- ▶ We probably won't use this much, but will install more packages
- ▶ Open up Anaconda Prompt (from Windows start menu, e.g.); terminal will open

Installing New Packages

- ▶ Example: installing HARK, Econ-ARK's primary software package
- ▶ In Anaconda prompt, type `pip install econ-ark`, accept
- ▶ `pip` is the most common **package manager**, draws on Python Package Index
- ▶ `conda` is also a package manager, but **slightly** fussier
- ▶ HARK is now available for use on your computer
- ▶ But we won't be working with it yet

Introduction to Jupyter Notebooks

- ▶ Communicating scientific ideas is sometimes aided by reader interaction
- ▶ **Jupyter notebooks** provide a way to integrate text, math, and code
- ▶ Sync your fork with the course repo, and pull down from remote
- ▶ In Anaconda prompt, type `jupyter notebook`
- ▶ Navigate to your fork on your computer, then go to `/code/`
- ▶ Open `ExampleNotebook.ipynb`
- ▶ Cells can be run individually with `Shift+Enter`

What Should You Use Jupyter Notebooks For?

- ▶ Notebooks are very good at conveying **mixed information**
- ▶ E.g. want to explain a model **and** its computational representation
- ▶ Or document a code feature and explain it with examples
- ▶ Or have **interactive figures** to show model interactions (ipywidgets)
- ▶ Avoid: “This notebook could have been a PDF”
- ▶ sGood example: `TractableBufferStock-Interactive.ipynb`