EC 339

Applied research project – A handout

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`INSTRUCTIONS`: This documents serves as a "helper function" for when thinking about, writing, and/or concluding your `applied research project` for EC 339.

Whenever in doubt, desperation, or joy, read this document to keep yourself on track.

If you have any suggestions for future fellow students, do not hesitate to give feedback.

Thinking about your project

Chicken or egg?

You may wonder: *Do I need to have the data or a question first?*

The answer is very simple: `First, carefully think about your research question`. The necessary data will follow from that.

In case you start playing around with a data set prior to deciding on a question, you will be distracting yourself with no specific purpose. Value your time, and organize your project properly.

When it's time to begin writing

As soon as you have a well-rounded question, you can search for your data and organize your data set.

First, get acquainted with the data. Use your Statistics knowledge to grab summary statistics, and spend some time visualizing your data. Have fun with scatter, box, and line plots. This way, you will know better how the variables behave and will have a better decision on which functional forms to use later on.

Run the models you have in mind, annotate your progress. An advantage is that you can run several different models, even if they do not show up in your final piece. This is the time for trial and error.

Then, look for potential violations of the Classical Assumptions. It is likely that you will spend as much time correcting problems as you will by running your desired model. And that's how actual research looks: it takes seconds to run a model, but hours and days to critically evaluate it.

When it's time to *stop* writing

As soon as you have chosen the most appropriate model and have properly tried to minimize possible violations of the Classical Assumptions, it is time to finish writing.

Your model will still not be perfect.

- No problem!

Identify your model's limitations, and make sure to include all your tests and procedures to deal with these problems.

Some words of advice

- Do not `overthink` your project or research question. This is likely the first (or maybe second) time you are working on a project totally designed and conducted on your own.
    - And that is awesome! Its purpose is not to reinvent the wheel, but to get your hands dirty with some real data and a real question in mind.
- The instructor is here to help you along the way.
- Lastly, always keep in mind:

> "*All models are wrong; some are useful.*" George Box (1976).