

# the replication principle

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## outline

the idea

replication+stata=dofile

get code from others!

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## bad excel

- ◇ never trust numbers that come from excel
  - no way to find out what happened, there's no code!
    - [\*]<http://www.statisticalengineering.com/Weibull/excel.html>
    - [\*][http://www.texasoft.com/excel/Should\\_You\\_Use\\_Excel\\_for\\_Statistics.pdf](http://www.texasoft.com/excel/Should_You_Use_Excel_for_Statistics.pdf)
    - [\*]<http://andrewgelman.com/2013/04/17/excel-bashing/>
- ◇ tell a story about excel when I learned it hard way:
  - my first paper for ecological economics, done in excel
  - reviewers got back after 6mo, i had dozens of excel files
  - couldn't replicate my own results!
- ◇ “Talk is cheap. Show me the code” –Linus

## replication, replication

- ◇ replication=write computer code that will do  
\*everything\*
  - from raw data (eg FED, IMF) to results (eg regression)
- ◇ necessary for science
- ◇ otherwise we don't know what happened
- ◇ how was it calculated? is there a mistake? who knows?
- ◇ pol sci perspective  
[\*]<http://gking.harvard.edu/files/gking/files/replication.pdf>
- ◇ IT perspective [\*]<http://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.1001745>

## humans and mistakes

- ◇ a part of human nature is that we make mistakes
  - can't avoid it no matter what's your skills, experience, etc.
  - same pertains to academic research
- ◇ computers, on the other hand, never make mistakes
  - they just do whatever humans tell them to do
  - sometimes they execute our mistakes

## rules for everyday practice [revisit/stress later!!]

- ◇ once you have coded everything, double/triple-check it
  - leave it aside and check again
  - show it to other people, post on your website
- ◇ the more times it is checked, the fewer mistakes
- ◇ cross-check end output with raw data—e.g. are there the same numbers for randomly chosen data points
- ◇ does it make sense?
- ◇ check with alternative data sources? do they tell the same story?
  - i always google tables and graphs of what i study
- ◇ everything has been already studied by others
  - and so it's good to cross-check

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## dofile

- ◇ GUI and command window OK for playing around
- ◇ sometimes handy to use command window or GUI
- ◇ but in the end, everything must be in dofile
- ◇ can write in dofile and run from there: highlight+Ctrl-d
- ◇ dofile must do \*everything\*:
  - produce final output (usually descr and inferential stats)
  - from the very raw data (data someone gave you)
- ◇ so always first load raw data, manage, organize, manipulate
  - and only then produce some results

## dofile

- ◇ just a text file (.do)
- ◇ click “new do-file editor” icon: new window pops up
- ◇ file-open...and open dofile for today
- ◇ it has all the code we will use today
- ◇ highlight code you want to run and press Ctrl-d
- ◇ can have many dofiles opened at the same time
- ◇ can copy-paste between dofile and:
  - command window, review window, and results window
- ◇ don't forget to save your dofile: file-save as

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## examples: dofiles

- ◇ examples for intl, country level, comparative:
  - <https://www.prio.org/JPR/Datasets/>
  - <http://www.isanet.org/Publications/ISQ/Replication-Data>
  - <https://huber.research.yale.edu/writings.html>

## the easiest way to do research in 21st century

- ◇ start with code others wrote, and build on their work
- ◇ this is the fastest, most efficient way to do research
- ◇ any research very close to yours, just email author and ask her to share code with you
- ◇ even if it sas or spss etc—you'll be able to figure it out quickly what is going on there and then implement something similar in stata
- ◇ don't reinvent the wheel: almost as if you were to start research without reading literature and had to come up with all theories and ideas on your own!