

final project

(if little time just discuss briefly each TOC item)

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outline

litRev: <https://theaok.github.io/generic/howToGoogSch.html>

opinion/activism v science

how do i produce a final project for this class?

presentations

final paper/project in general [NOT resMet]

a dilemma: publishable project or student project [NOT resMet]

inline response to comments on ps [qm*, dev, swb, dirStu]

links: good research in words of others [NOT resMet]

the end of theory, data is enough, airplane model [datMan, dirStu]

regression [qm2, dirStu]

data management [datMan, dirStu]

GIS (todo)

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intuition

- ◇ many beginning scholars conflate opinion/activism with science
- ◇ youthful passion and excitement are great
- ◇ but we need to force ourselves to be objective because humans are not
- ◇ opinion/op-ed usually surfaces where objective science should appear

opinion/activism v science: a dichotomy?

- ◇ not necessarily a dichotomy
- ◇ and indeed, much of the time ideally both
- ◇ although in practice it seems to be either or

Haidt's book 'Righteous Mind'

- ◇ being right and superior: righteous: (of a person or conduct) morally right or justifiable; virtuous
- ◇ the problem may be that “science” (fake science) is the result of opinion/activism, not the other way round
- ◇ does activism binds and blinds (like morality)?
- ◇ argument building follows passion and intuition, not reason!
 - guns, abortion, etc
- ◇ eg, why is it ok to make fun of Melania Trump and not Michelle Obama?
- ◇ why is antifa better than proud boys?

a serious problem with academics! we're righteous!

- ◇ think we know better, even things we don't study!!
- ◇ like if you're an expert in one area, you think you are one in all areas!
- ◇ how many of you study guns? and yet you sound like experts on the issue
- ◇ why? because you have some expertise in some other area
- ◇ it's one thing to have an opinion
 - another thing to absolutely sure you are right
- ◇ and yet doubt is necessary for science and progress
- ◇ do you even allow a possibility that you may be wrong?
- ◇ if not, then is it belief or science?

anecdotal evidence, stereotyping

- ◇ similar statements, and you think only one is true!
- ◇
- ◇ an undocumented immigrant killed someone: a significant number of undocumented immigrants are criminals
- ◇ a gun was used to commit a crime: a significant number of guns are used to commit a crime
- ◇ same fallacies!! but you just see one depending on which side you're on
- ◇ what about this: residential swimming pools kill more babies than guns (Freakonomics)

easier to be positive than normative

- ◇ are guns good or bad? tough to say!
 - see a philosopher or a priest
- ◇ but if we want to increase public safety, we should increase gun control

<https://www.hsph.harvard.edu/hicrc/firearms-research/gun-threats-and-self-defense-gun-use-2>

- ◇ microaggressions/ political reasoning
- ◇ emotional reasoning
- ◇ Common Cognitive Distortions
- ◇ I'm offended is a trump card!; if sth is unwelcomed, that's it!
- ◇ trigger warnings
- ◇ catastrophize/zero tolerance

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GIS (todo)

start early

- ◇ it's high time now you know what you'll do for the final project
- ◇ if you are not sure, email me
- ◇ if you cannot find data, email me
- ◇ I'd like to meet with each of you **at least twice per your project**

kill 2 birds with one stone

- ◇ analyze something that you study for another class
- ◇ use data from your work
 - no matter where you work—they always have some data

start with good data

- ◇ representative
- ◇ easy to use
- ◇ novel/innovative (eg twitter)
- ◇ local/familiar (so that you can compare to your experience)
- ◇ long term investment (use same data for years)

treat it seriously, don't waste your time

- ◇ not only a big chunk of the final grade
- ◇ use it or lose it!
- ◇ if you don't use tools, you will lose this skill soon
- ◇ be efficient, use this class for something beyond this class
 - do something useful for your work (civic engagement)
 - it could be analysis chapter for your capstone/thesis/dissertation/journal paper
- ◇ **important!:** email me drafts and see me few times in the second half of this class

the good news

- ◇ the good news is that you already have much of it
- ◇ just reuse your problem sets
- ◇ yes, you can reuse past (future) assignments for final project
- ◇ or you can, of course, come up with something new
- ◇ you can also reuse your work from other classes/projects (eg your job)
 - but in that case you need to clearly state what you are reusing
 - state that in the text of the final project, eg at the beginning of it

the bad news

- ◇ there is always bad news accompanying good news...
- ◇ if you are building on your past ps
- ◇ you need to extend them very substantially
 - cannot just glue them all together
- ◇ and they need to form a logical project
- ◇ it needs to be interesting/innovative
- ◇ and discuss your findings—why they are important?
- ◇ what is new there?

consensus creation or consensus shift

- ◇ perhaps your study creates consensus or shifts it
- ◇ great if it does
- ◇ [*] Hollenbeck (2008)

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rules

- ◇ not too much background! cut to the chase asap
- ◇ max 1 slide per 1min; eg present 10min: 10slides
- ◇ max 15 lines of text per slide (ideally ≤ 12)
- ◇ use graphs/pictures/maps as much as possible/practicable

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GIS (todo)

interesting to you– > fun for you

- ◇ study something that is of interest to you
- ◇ say crime if you live in high-crime area
- ◇ or agriculture if you live in high-agriculture area
- ◇ eg I study income inequality, because my family is unequal
- ◇ fun to work on something of great interest to you

be curious

- ◇ curiosity is arguably the most important reason for research
- ◇ do research about something that you are curious about
- ◇ it will be fun and you will be good at it

interesting to others

- ◇ (if interesting to you, more likely also interesting to others)
 - (if you hate your work, others won't love it)
- ◇ research must be interesting
- ◇ i am very much against typical dry research only demonstrating technical proficiency or mastery of material
- ◇ research should read like a story
 - its language should be simple
 - do not write words that you do not use when talking
- ◇ be simple and clear:
 - “person”, not “individual”

the “so what” question?

- ◇ go through your final project and ask yourself “so what?”
- ◇ if what you have just read is not relevant, drop it
- ◇ this rule, as all rules here, pertain not only to text
- ◇ but also to tables, graphs, maps, etc

quality vs quantity

- ◇ do not just dump everything that you know on the topic
- ◇ in fact, the opposite is good:
 - be as brief as possible: i will **decrease grade** for padding:
(putting irrelevant/wordy stuff into your paper)
- ◇ sure, do a lot of stats, reading, mapping
 - but give me only the best of it
 - (have to do a lot to find the best)
- ◇ be thorough—a typical paper is twenty something pages
doublespaced incl references and everything
 - again, don't do boilerplate! better shorter than longer
- ◇ need to beef it up!

make it bulletproof/various robustness checks

- ◇ triangulate (different measurement of the same concept)
 - eg: educ: years, degree, ranking on US News, actual standardized skills (eg PISA scores)
- ◇ exclude alternative hypotheses: be devil's advocate, try to throw out your research out of the window
- ◇ use different datasets: time (eg now v 70s, space (US v UK), aggregation: state v county
- ◇ etc

be smart and ethical

- ◇ do build on your earlier/concurrent work
 - connect it somehow; don't start something completely new
- ◇ have to say if and which parts were written outside of this class,
 - otherwise it is scholastic dishonesty—you can indeed plagiarize yourself!
- ◇ also per code: reuse yours (and others!): eg Glaeser's unhappy cities in JOLE; dataverse, authors websites
 - ie: not just lit rev, but also build on others code: this is the fastest way
 - and do acknowledge that code taken from others, too

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inline response: like a peer-review process

- ◇ inline response: quote **all** comments and reply to each below it
- ◇ i will give you comments on your draft(s) (eg each ps)
 - so each subsequent ps will start with a section where you reply
 - don't forget about verbal comments from me and others in class (if you present or we discuss your research—so make notes!)
 - and i typically email you if you present—include text from that email, too
- ◇ you need to respond to **all** comments
- ◇ you may disagree, but you have to respond (eg say why you disagree)

inline response: like a peer-review process

- ◇ you need to reply inline, ie quote the comment and then respond to it
- ◇ for example see my https://sites.google.com/site/adamokuliczkozaryn/gis_int/rev_ariq.pdf
- ◇ if no tracked changes be specific where the change was made—page and paragraph
- ◇ if you need clarification on my comments (i tend to be overly parsimonious), email me!

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GIS (todo)

i wish i knew it when i was a student

- ◇ instead of rephrasing what i have learned by reading other people description of good academic work
- ◇ i am just linking their writings
- ◇ following their advice should help you producing a good final project for this class
- ◇ we'll quickly scan through them
- ◇ i also list some points in slides
- ◇ read them after the class—they are very useful

Greg Mankiw

- ◇ “My rules of thumb”
- ◇ http://scholar.harvard.edu/files/mankiw/files/my_rules_of_thumb.pdf
- ◇ have productive mentor(s)
 - Scott Long's research shows that a student's productivity depends on mentor's productivity
- ◇ have broad interests, be interdisciplinary
- ◇ your research should be T-shaped: broad, but also deep in one area

Greg Mankiw

- ◇ http://scholar.harvard.edu/files/mankiw/files/my_rules_of_thumb.pdf
- ◇ time management is key! extremely easy to mismanage time in research:
 - ask yourself how what you are doing now gets you to your goal
 - have strategy
- ◇ write well—see other slides; esp: simple, clean

Andrew Gelman

- ◇ “Advice on writing research articles”
- ◇ http://andrewgelman.com/2009/07/30/advice_on_writi
- ◇ be clear about your story
- ◇ give your paper to other people to read
- ◇ ask for comments
-
- ◇ start with the conclusions and work back to abstract

Gary King [do it at home]

◇ “Publication Publication” and some notes under:

◇ <http://gking.harvard.edu/papers>

◇ if needed, criticize others, but step on their shoulders,
not their face

◇ [note: this is about replication; still some good ideas]

great references on academic writing

- ◇ clarity, simplicity, conciseness
- ◇ <http://amzn.com/0060891548>
- ◇ <http://amzn.com/1577660633>

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wired article

- ◇ http://archive.wired.com/science/discoveries/magazine/16-07/pb_theory
- ◇ again, we have data revolution
- ◇ unprecedented amounts of data about pretty much anything
- ◇ with so much data, we can just look at basic correlations
- ◇ without being too serious about theory !
- ◇ note: this is computer science approach to data analysis
- ◇ such view is not mainstream in social science

theory

- ◇ there is no reason to be very serious about existing theory
- ◇ theories are only valid until proved wrong
- ◇ we need new theories
- ◇ remember “all models are false, some are useful”
 - our model and theory is **never** right
 - world is too complicated
 - we just want to show some useful pattern
 - that's all we can do
 - still, we want to be as close to the truth as possible

airplane model

- ◇ models replicate some of the useful features of real objects
- ◇ think of an airplane model
- ◇ there are airplanes models without windows
- ◇ and models that are too heavy to ever fly
- ◇ yet they are useful eg to test airflow in a wind tunnel
- ◇ but these models are not the same as airplanes
- ◇ (and nobody claims they are “true”)
- ◇ but social scientists behave as if they have “true” models
- ◇ your regression model is always false, but hopefully useful

build new theories and models...

- ◇ because all theories and models are wrong, be creative
- ◇ come up with new theories in models
- ◇ don't take well established theories and models for granted just because they are out there for a long time and everybody uses them

...but do your homework

- ◇ cannot produce new theories if don't know the old ones
 - your new theory/model may already be old
 - (reinventing the wheel)
 - rather invent the new given the old—build on other's work
- ◇ you have to defend your theory/model
 - why is it important ? “so what ?”
 - how come millions of other soc sci did not get?
 - why they got it wrong ?
- ◇ again, all models/theories are wrong, some are useful
- ◇ also, some are better than others in terms of
/creativity/logic/argument/robustness

conclusion: theory and modeling

- ◇ think out of the box
- ◇ be creative
- ◇ do not use models only because everybody else uses them
- ◇ defend your approach

and remember that no model works all the time

- ◇ eg famous now professor couldn't get into PhD
- ◇ because his GPA was low,
- ◇ and model predicted that people with low GPA cannot do well in PhD
- ◇ model works probably well most of the time, but as any model
- ◇ it sometimes fails

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GIS (todo)

what next?

- ◇ now you know the basic and powerful tool of multiple OLS
- ◇ what next ?
- ◇ use it !
- ◇ turn your ideas into new theories and hypotheses
- ◇ and test those hypotheses by regressing the outcome (Y) on your main X, controlling for other X's
- ◇ do data support your hunch ? find out ...
- ◇ be creative ! being social scientist you don't have to study economic development or income inequality
- ◇ you can study happiness, culture, religion, terrorism, facebook relationships, and so forth

theory, logic, explanation

- ◇ again, you need to have some theory that makes sense and that is interesting for public policy/business/philosophers, etc...
- and be as clear and simple as possible
- eg “Wage is a function of education and experience; it is based more on merit than on privilege, such as race and gender.” [see also Alesina’s paper in few slides]
- ◇ do not say that you expect that “gender affect wage” etc...
- why ? how ? so what ?

regressions

- again, do not overemphasize R^2
- do **not** pick the models based on the R^2 !
- use beta coeff to compare magnitude!
- see code in 1.4 Multiple Regression

https:

`//stats.idre.ucla.edu/stata/webbooks/reg/chapter1/`

`regressionwith-statachapter-1-simple-and-multiple-regr`

regressions

- ◇ e.g.: “When controlling for union membership, experience is not statistically significant; and even if it were statistically significant, it’s practical significance is negligible.”
- This is great ! The coeff on exp is $< .1$ depending on specification; with .1 it means that 10 more years of experience (a lot !) would produce only 1 more \$ per hour

regressions

- ◇ produce alternative models , eg merit v privilege
- ◇ but then always have a combined model with both to see which one is more important
 - is privilege affecting wages controlling for merit ?
 - is merit affecting wages controlling for privilege ?
- ◇ if both merit and privilege affect wages
 - (they do—we know it from theory and models)
then if you run separate models, you have LOVB !

general coding practices

- ◇ clean data and save it as something else
(never overwrite the original files)
- ◇ merge/append
- ◇ cleanup, save, and then for analysis start with clean:
 - have a final clean combined data file that you will use from now on
- ◇ then descriptive statistics
- ◇ and inferential statistics
- ◇ NOTE: in the course of coding code chunks will be all over the place – rearrange them

file formats again

- ◇ again, no Microsoft files
- ◇ stata code—can append at the end of paper
 - can post online
 - can have a separate .do file
 - but never have a dofile with a non .do extension
 - (unless it is an appendix in your paper)

dropping outliers

- ◇ if dropping outliers, always say why
- ◇ and may have an analysis including them in the appendix
 - if not sure... (unless it is obvious that outliers must be dropped)
- ◇ however, rarely anything is obvious in research
 - best try different options/do robustness checks...
- ◇ yet, there is obviously a time constraint

make it meaningful

- ◇ eg better have freq or perc for histogram
- ◇ avoid ugly graphs and tables: follow published examples!
- ◇ don't forget about the practical significance!

elaboration of the model

- ◇ start with a basic model
- ◇ possibly bivariate
- ◇ and have more columns adding more covariates as per theory
- ◇ the idea is that you test competing hypotheses/alternative explanations
- ◇ and in doing so show the robustness of your results

do the whole thing

- ◇ why study only counties in South Jersey
- ◇ or only libraries in Philly
- ◇ when you can study all of them!
- ◇ and at very least compare with your small n results

speculation/opinion

- ◇ this is not an op-ed
- ◇ there cannot be any speculation/opinion
- ◇ all statements must be supported by evidence
- ◇ evidence: literature or your own results

this is soc sci, not data sci

- ◇ in social science all models must be theory driven
 - (this is not true in statistics or data science)
- ◇ choice of variables, functional form (e.g. log) must be theory-driven
- ◇ you need to be explicit why you run a model that you run!

satisfy assumptions

- ◇ you *always* have to take care of assumptions
- ◇ e.g. heteroskedascity etc
- ◇ don't have to discuss in great detail in paper
- ◇ but have to have code—you need to show that you have done it!
- ◇ if you have many obs, no need to worry about normality
- ◇ also do not spend too much time on violations; just need to take care of them in dofile!

yet, another note on collinearity

- ◇ again collinearity is just a correlation between independent vars
- ◇ you can see it with **corr**
- ◇ some people say that you have collinearity if say correlation $>.9$
- ◇ you really have collinearity most of the time
- ◇ you can also use **vif**
- ◇ www.nd.edu/~rwilliam/stats2/l11.pdf

yet another note on BLUE

- ◇ what BLUE really means ?
- ◇ how estimators compare ?
- ◇ lets compare efficient/inefficient and unbiased/biased estimators
- draw a picture (based on Kennedy)

organize

- ◇ descriptive stats goes before the regressions, not after (unless in the appendix)
- ◇ if descriptive stats is not very interesting (e.g. table of means and sd) just put it into the appendix
- ◇ instead of having alternative models, elaborate models
- ◇ figures and tables need captions and numbering
 - captions need to be very detailed so that you can understand table/figure from the caption only
 - axes need to be labeled in the figure
- ◇ have to refer tables/figures in text

contribute

- ◇ don't be modest !
- ◇ your paper needs to contribute to the literature
- ◇ it should be clear how it contributes
- ◇ again, explain:
 - how come nobody else did this before
 - or/and how come they got it wrong

get intuition; make it meaningful

- ◇ use beta coefficients
- ◇ use more descriptive statistics

cite data; replication replication

- ◇ data – you should clearly cite data
 - best give URL and authors and description
 - describe sample, time, sampling, etc
- ◇ your dofile should produce final results from the raw data
 - do not just send me the dofile with few `regress`
 - it should have all the commands you executed after loading the fresh data

interpret!

- ◇ beginning researchers usually do not spend enough time on interpreting the results
- ◇ there should be at least 1 page (12pt, double-spaced) of discussion
 - what have you found
 - substantive meaning
 - why does it matter
 - “so what ?”
 - limitations/future research

ols almost always useful; sometimes not best

- ◇ what data you have ?
- ◇ ols is good for cross sectional data only
- ◇ if you have panel or time series or dyadic/network data you need different models !
 - in this class it is fine, again ols will often give you reasonable results
 - but you should at least acknowledge the problems

- ◇ let's have a look at Alesina's "Public Goods and Ethnic Divisions"

`http://www.google.com/search?sourceid=chrome&ie=UTF-8&q=public+goods+and+ethnic+divisions`

- ◇ note:

- nice elaboration/sequential models, eg TABLE III
- well-developed theory—alternative explanations
- multiple models
- sensitivity analysis

another example

- ◇ <http://theaok.github.io/qm2/CassPortfolioPaper-FinancialLiteracy.pdf>
- ◇ skip nonlinear logit models!
- ◇ by a former student in this class
- ◇ note that it tells a story, it is interesting, engaging
- ◇ it contributes—we learn something new
- ◇ theory first, descriptive statistics second
- ◇ then regressions, interpretation and discussion
- ◇ last but not least, this paper looks polished and “publishable”

more examples

- ◇ <https://link.springer.com/article/10.1007/s11205-011-9812-y>
- ◇ <https://link.springer.com/article/10.1007/s12232-015-0223-2>
- ◇ <http://journals.sagepub.com/doi/abs/10.1177/0042098016645470>
- ◇ go through at least some of them and do ask questions if anything unclear
- ◇ also do read literature with OLS in your field, practice practice
- ◇ MQE is mostly about interpreting regressions!

practice interpretation

- ◇ <http://link.springer.com/article/10.1007/s11482-014-9319-1>
- ◇ what is worse for wellbeing: inequality or poverty?
- ◇ Tab1: note precise definitions of vars
- ◇ Tab2: some examples: be meaningful!
- ◇ Fig1, 2: des sta
- ◇ Tab3,4: coef, and std coef
- ◇ Discussion: gini ranges 32 to 60, if goes up by $6 \cdot .5 = .3 \cdot 100k$ (in avg county): 30k unhealthy days
 - causality: alternative explanations, reverse causality

practice interpretation

- ◇ <http://link.springer.com/article/10.1007/s11205-016-1327-0>
- ◇ 70s v 00s: 50% wider happiness gap: middle class v rich
- ◇ Fig1, Table 1: des sta
- ◇ Tab2: interactions
- ◇ Fig2: \hat{Y}
- ◇ robustness checks: eg Fig6, Fig10

outline

litRev: <https://theaok.github.io/generic/howToGoogSch.html>

opinion/activism v science

how do i produce a final project for this class?

presentations

final paper/project in general [NOT resMet]

a dilemma: publishable project or student project [NOT resMet]

inline response to comments on ps [qm*, dev, swb, dirStu]

links: good research in words of others [NOT resMet]

the end of theory, data is enough, airplane model [datMan, dirStu]

regression [qm2, dirStu]

data management [datMan, dirStu]

GIS (todo)

do something useful

- ◇ do not just merge, loop, reshape, etc
 - for the sake of doing it
 - eg first split dataset, and then merge it back again
- ◇ playing is fine for learning and exploration
- ◇ but the final project must do something useful!

one-on-one

- ◇ again, let's work more one-on-one in second part of the class
- ◇ the idea is that by the end of the semester you will
 - develop a great dataset
 - understand your data really well (des stats, graphics)
 - and be able to change/expand your data easily
 - also be able to manage output (tables, coeff, graphs) easily

how do i cite data

◇ the most proper way

- <http://www.bu.edu/datamanagement/background/cite/>
- <http://libguides.lib.msu.edu/citedata>
- <https://www.icpsr.umich.edu/icpsrweb/ICPSR/curation/citations.jsp>

◇ the quick way way: just give url

- you can also then load it directly into stata
- but keep it on harddrive as well!
- data on websites change and disappear

outline

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GIS (todo)

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