Research and Analysis for Public Policy and Management: Principles and Practices of Active Learning

Dahlia Remler

School of Public Affairs

Baruch College, CUNY

November 2, 2011   APPAM Teaching Pre-conference

BaruchCOLLEGE
The City University of New York
SCHOOL OF PUBLIC AFFAIRS

Research & Analysis for MPAs

- MPA programs generally require:
  - Statistics, research methods, data analysis...
  - MPPs too
- Principles and practices apply widely
- MPA Objectives:
  - Critically consume research
  - Effective with quantitative aspects of career
  - Perform basic R&A in policy/practice capacities

BaruchCOLLEGE
The City University of New York

SCHOOL OF PUBLIC AFFAIRS

My methods for this paper/talk

- Trial and error
  - Teaching R&A Baruch SPA
  - Writing textbook with Van Ryzin
- Literature
  - Active learning
  - Quantitative literacy
- Not what I teach my students...except:
  - Using existing research
  - Reflecting critically on
    - Representativeness, causation, measurement...

Context & Diversity in MPA programs

- *Large* variation in
  - Math & quant background, undergraduate training, career experience
  - ➔ *Must* manage variation in quant skills
- Career stage
  - Motivation, having own applications
- Full-time or part-time
  - Attention span

Active Learning

"Students do more than just listen: They must read, write, discuss or be engaged in solving problems. Most importantly... [they] must engage in such higher-order thinking tasks as analysis, synthesis and evaluation."
— Bonwell & Eison (1991)

- Experimental & quasi-experimental evidence
- Within-lecture and instead-of-lecture techniques
- Some methods not appropriate for learning essential skills

Quantitative Literacy

- Literature relevant for both our objectives and our approaches
- Other names: Quantitative reasoning, numeracy
- Applying and using in context
  - Interpreting data
  - Logical thinking
  - Number sense
- Partly why all programs have a requirement

Strategies for Quantitative Literacy

- Interpreting and writing about numbers
- Meaningful applications
  - Familiar concepts, motivating
- Rule of Four
  - Words, numbers (data), graph, symbols
  - Translate between them (regression example)
- Many different applications
  - Increasing role in framing and abstracting
- Data analysis with software

Principles for MPA R&A courses

- Students write and speak in words, interpreting results and studies
- Applications relevant to public policy ad management
  - Whenever possible, let students pick applications
- Use active learning
- Data analysis

Practices for MPA R&A Courses

Short Writes

- Ask a question and tell all students to write their answer down
  - Can be used for problems
- After 1-2 minutes, ask for volunteers or cold call
- Confirm answers
- What to do about variability in student skills?
  - Even for a short answer, have extra tasks
  - Variation enormous

Examples of short writes

- Identify independent & dependent variables
- Describe the population sampled in a poll
  - Extra task: think about coverage problems
- Interpret in words an entry in descriptive statistics table
- Determine if a result is statistically significant in a table
  - Extra task: practically significant?
- State null and alternative hypotheses
- Determine if a study is descriptive or causal
  - If experimental or observational or …

Short writes that motivate

- Describe a relationship between two categorical variables relevant to your work

- Think of a measure used in your work place. How valid do you think the measure is?

- Particularly good for those with career experience

- Make sure to get several answers

Think-Pair-Share

- Students think alone for a minute or so and then share their thoughts/efforts
- Again, reflect as a class
- Similar to individual exercises but more time consuming
- Example:
  - Write a good survey question asking respondents how safe feel in their neighborhood
  - Discuss questions on study read

In-class Group Exercises

- Significant time cost
  - ➔ Reserve for skills that are both hard (requiring multiple tries) and important
- Deal with variation in student ability
  - Core and extra tasks
  - Mix backgrounds ➔ peer teaching
- Circulate!
  - Cut-off misunderstandings
- Allow students to pick application, if possible

Examples of In-class group exercises

- Find alternative causal explanations for a correlation (reverse causation, common cause)
- Create a logic model of a program to show mechanisms
- Interpret in words regression coefficients and other statistical package output
- Predict non-response bias and other biases in a survey
- Evaluate the generalizability and quality of causal evidence for a particular quasi-experimental study

A research article reports that looking across schools, there is a correlation between mean test score and whether or not the school library has a qualified librarian. The Association of School Librarians picks up on the study and says that it shows that better librarians result in better student learning and test scores and therefore funding for qualified librarians should be increased.

(a) According to the librarians, what is the dependent variable and what is the independent variable? What is the unit of analysis in the study?

(b) Describe a theory that is consistent with the librarians' view of what causes what. Use both words (a few sentences at most) and a path diagram. Make sure to include some intervening variables (i.e., a mechanism)—at least a start at convincing a foundation to give money to support qualified librarians.

(c) Describe an alternative theory that *both* contradicts the librarian's position *and* explains the correlation in the study. Use a path diagram and words (a few sentences at most).

(d) What is the relevant counterfactual question?

(e) Explain in a few sentences what all of this has to do with the idea of endogeneity.

Discussions of studies

- Many forms of studies
  - From journal articles that are a real stretch through government & think tank reports to media articles
- Read before class with prepared questions for discussion
  - How much scaffolding to give?
- Practice interpreting tables of results
  - Individual numbers
  - Whole picture

Out-of-class assignments

- Writing, synthesizing, applying
- If possible, students choose application
  - Motivation & richer learning
- Example
  - Create a survey
    - Purpose; population; measures; sampling plan; mode of data collection; questionnaire; shell tables with made-up results; critique, including predicted non-response and coverage biases
  - Logic model of program

Data analysis assignments

- Data analysis
  - With software
  - Meaningful data and questions
    - Assembling own data sets?
  - Write up results as a memo, report…
  - Widely done now but essential
  - Done in-class (lab) also—but not only

Rubrics

- To grade assignments
- "An assessment tool that lists the criteria for a piece of work or what counts and articulates gradations of quality for each criterion" (Andrade, 2005)
- Advantages
  - Clarify goals and expectations
  - Communicate priorities, desirable qualities, pitfalls
  - Informative feedback with less instructor time

Component	A Level Work	B Level Work	C Level Work	F Level Work
Purpose	Survey explains its purpose clearly and concisely.

It explains not only its intent but also how its findings will be used for policy or practice. | Survey explains its purpose clearly.

It explains its intent and mentions how its findings will be used for policy or practice. | Survey explains its purpose in a confusing or incoherent manner.

It fails to explain either its intent or how its findings will be used for policy or practice. | Survey does not explain its purpose or how its findings will be used for policy or practice. |

Case Against One Big Project

- Advantages
  - Motivation, relevant context, relevant skills,
- Disadvantages
  - Many skills & ideas to learn
    - One project does not have all
  - Takes multiple applications to learn difficult contexts
    - Hard to generalize
  - Qualitative projects and quantitative skills

Problem of time

- After variation in student quant skills, biggest barrier is time
- Active learning takes more time
- Cover less but learn more
  - Yes, but...
- Cover lower priority and/or easier material through reading, out-of-class approaches
- Use in-class, active learning for more important and hardest to learn material

Conclusions

- Use active learning in class—and out of class
- Students write (and speak) in words about numbers and research
- Learning objectives and applications that are relevant
  - Students pick own applications when possible
- More good causal research
  - In MPA R&A settings