CPP 524: Eval II – Research Design

Research Design Project Requirements

Your final assignment for the semester is to design a hypothetical program evaluation for a real-world program of your choice (or alternatively a public policy of your choice).

For context, assume that are the lead evaluator for the organization or agency that will implement the program or policy. You are submitting a grant to secure sustained funding for the program and the foundation requires an impact evaluation if the program receives funding (the grant covers evaluation costs as well). You need to create a memo that describes the evaluation design and explains why the design is appropriate, how it addresses threats to validity, and challenges that you anticipate during the process.

Your job is to apply principles of research design that you have learned in the class. You will start with a literature review to find at least three evaluation or performance studies that examine a similar program model. Use the background research to see which evaluation designs others have used and how they have measured program impact.

You will need to select at least one latent construct that can be used as an outcome or a control variable in the study, even if it is not your primary outcome of interest. You will need to identify a valid instrument (one that has been developed and tested) and report the reliability scores.

Selecting an Evaluation Design

- Your primary task is to identify which design is most appropriate for your program:
    - Pretest-posttest control group design (diff-in-diff)
    - Posttest only control-group design
    - Pre-post reflexive design

- **You are not allowed to use a pure experiment where you have <u>full control</u> over assignment into treatment and control groups.** Very few real-world evaluations have the opportunity to randomly assign individuals into categories, so I want you to think creatively about designing an evaluation when you don't have that privilege.

- How will you ensure that the research question is framed around a plausible counter-factual as the point of reference, and what steps need to be taken to ensure it is a valid comparison group? Specifically, does your comparison group represent what the world would have looked like if the program had not been implemented? Do your comparison group demographics

need to be identical to the treatment group given the estimator you have selected for the study (T2-C1, T2-T1, or the diff-in-diff). Think hard about questions like selection and non-random attrition. Explain what other studies have done to address these issues and lay out a plan for how you revaluation will address the issue.

- How will data be collected? And over what period?

You paper should have the following structure:

PART 1 - Research Question (1-page memo form – see example below)

The first page of the evaluation should be a succinct explanation of the program in memo form:

- What is the problem addressed by the program?
- What is the program, policy or intervention that will be evaluated?
- Explain the program theory in a couple of sentences?
- What is the primary outcome of interest?
- Who is eligible to participate in the program (program inclusion criteria) and who is excluded?
- Optional: motivate the study if there is a specific context that makes the research especially timely or salient.

This cover page should be exactly one page in length, single-spaced.

PART 2 – Measurement of the Outcome

How will you measure the dependent variable in the analysis?

You must select at least one latent construct and identify an appropriate "instrument" that has been validated i.e. how do we know that we are measuring what we think we are measuring? Don't try to reinvent the wheel – 99 out of 100 times you will be able to find existing instruments that can be adapted for the study.

Report your study period (duration of the treatment and the time between start of the study and the last observation period). Provide some justification for the time frame you have selected.

PART 3 – Theory of Change

You will diagram **the essential elements** of your program model (the most parsimonious and abstract version of your program). Each causal link in the model represents an assumption. You will enumerate the list of assumptions and discuss your level of confidence in each, discussing which parts of the program might be most sensitive to implementation integrity. In other words, conduct a brief and informal pre-mortem analysis of the most likely causes of program failure.

PART 4 - Competing Hypotheses

Describe your counterfactual and you will use for the study.
Diagram your expectations about the data and use the diagrams to explain your research design and your assumptions about group equivalency and secular trends.

Justify your counterfactual. Explain why you believe it to be the best identification strategy for your research question.

Then enumerate the potential threats to the validity of the study:

- What are the major threats to validity given the research design that you have chosen? Can your adequately account for each of the threats?

- Address the ten competing hypotheses outlined in the Campbell Scores in your study. In essence, you will rate your own research design on a scale of 1 to 10. Note that it is very unusual for a study to receive a perfect ten, so I am looking for you to clearly identify issues, think through how they might be addressed, and if they cannot be addressed completely how would you report the limitations to ensure you are upholding high standards of transparency and ethics as an external evaluator. You can address additional competing hypotheses if there is something specific to your research domain that is worth noting.

  - Selection
  - Non-random attrition
  - Maturation (if applicable)
  - Secular trends (if applicable)
  - Study time-frame (how do you know it's long enough?)
  - Testing (is there reason to suspect it in your case?)
  - Regression to the mean
  - Seasonality
  - Intervening events
  - Measurement error

- The primary hypothesis in your study is, "You can explain the results (the estimated effect) because of the impact of the program or policy." The term **competing hypothesis** refers to a statement, "You can explain the results through bias introduced by an omitted variable" or "You can explain the results as a result of maturation, selection bias, etc."

- The goal of the evaluation design is to eliminate ALL competing hypothesis so the only remaining explanation comes from the impact attributed to the program. It is rare that a single evaluation is able to eliminate <u>all</u> competing hypotheses. For those that are not addressed through your research design, articulate why the hypotheses cannot be eliminated.

The first page (the program overview memo) will be single-spaced. Use 1.5 spacing for the rest. Your paper will be approximately 15 pages in length. In addition, be sure to include references for cited works.

Grading Rubric

Part 1 – cover page (6)
- Problem (1): What is the problem addressed by the program?
- Program (1): What is the program, policy or intervention that will be evaluated?
- Program Theory (1): Explain the program theory in a couple of sentences?
- Outcome (1): What is the primary outcome of interest?
- Program Inclusion Criteria (1): Who is eligible to participate in the program (program inclusion criteria) and who is excluded?
- Motivate the study (1): if there is a specific context that makes the research especially timely or salient (optional).

Part 2 – outcome measure (6)
- Identification of appropriate latent construct (2)
- Justification (2)
- Proper citation of reliability (2)

Part 3 – theory of change (10)
- Coherent theory of change (4)
- Quality of the diagram (3)
- Explanation of assumptions (3)

Part 4 – model and competing hypotheses (14)
- Explanation of the counterfactual (3)
- Diagram of expectations (3)
- Justification of the design (3)
- Campbell Scores (5)

Writing quality (2)

Proper citations (2)

Total: 40 points

The first page is written as a memo:

Evaluation of the Urban Naturalist
Environmental Education Program

The problem: In a world that is increasingly dominated by technology, children are generally spending less time outdoors and have only limited interaction with nature. Lack of time outdoors has been associated with obesity, higher rates of asthma and allergy, and lack of concern for environmental issues.

Program: The Urban Naturalist program provides outdoor education to students in 15 public schools in Atlanta. Children meet at a local park once a week during the school year and participate in science lessons and outdoor wilderness activities.

Program theory: Case studies from a recent report have shown that students often learn more effectively within an environment-based context than within a traditional education framework and the benefits can include improved performance on standardized measures of academic achievement, reduced classroom management problems and increased enthusiasm for learning.[1] Among the five case studies examined in the report, the researchers observed performance improvements in reading, math, science and social studies and saw classroom discipline problems decline.

The dependent variable in the study: The study will examine overall classroom performance of 8th-graders that are part of an environment-based education program.

Motivation of the Study: Legislation has been proposed to provide $500 million over five years to schools with approved "environmental literacy" plans for students in grades kindergarten through 12, and offer competitive grants to schools and non-profits for outdoor education projects. Strong evidence is needed for program effectiveness before this kind of support is provided.[2]

Program inclusion criteria: All 8th-graders in the 15 Atlanta public schools included in the program are eligible to participate. There is a fee structure based upon the free-lunch status of students. Those eligible for free lunches can participate for free while others have to pay a $50 participation fee. There are no enrollment limits for this group. Students in the adjacent school districts can apply for the program if there are extra openings, but they are not guaranteed a spot and have a pay a nominal registration fee of $65.[3]

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[1] G. Lieberman, & L. Hoody, "Closing the achievement gap: using the environment as an integrating context for learning" (San Diego, CA, State Education and Environmental Roundtable, 1998).

[2] Penny Starr, "No Child Left Inside Act Would Spend $500M Teaching Environmental Literacy Starting in Kindergarten." *CNSNews.com*, 14 May 2009, http://www.cnsnews.com/news/article/48164 (accessed November 5, 2010).

[3] Information from the program website at http:fakewebsite.com.