

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

**Introduction to Impact
Assessment**



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Outline for the Session

1. Introductions
2. What are impact assessments?
3. A scenario – irrigation project
4. Why is it important to get things right?
5. Final thoughts



Introductions



Who We Are

- Kathy Baylis, Associate Professor, Dept. of Agricultural and Consumer Economics, University of Illinois
- Jeffrey Michler, Post doctoral Fellow, Dept. of Agricultural and Consumer Economics, UIUC and ICRISAT
- Mary Arends-Kuenning, Associate Professor, Dept. of Agricultural and Consumer Economics, UIUC
- Kizito Mazvimavi , Country Representative, ICRISAT Zimbabwe



What Do We Know About You?

- You are interested in randomized control trials and how to do an evaluation when the intervention was not randomized (I will expand on this with some examples)
- Unfortunately, we can't offer a magic bullet to solve problems
- Impact assessment is more an art than a science
 - Need to make arguments that assumptions hold
 - Often we can't do a simple statistical test and have it settle the question (tests and IVs)



What are Impact Assessments?



What is Impact Assessment\Evaluations?

- An impact assessment or impact evaluation is a research study to determine whether the changes in well-being are indeed due to the program intervention and not to other factors (Khandker et al. 2010)



Monitoring vs. Impact Evaluation

- Monitoring involves assessment of how the project is being implemented and how beneficiaries are using inputs (Ezermenari et al 1999)
- Impact evaluation is concerned with “the extent to which a program has caused desired changes in the intended audience (Ezermenari et al 1999)”
- Impact evaluation focuses on causality



Quantitative vs. Qualitative

- We will focus on quantitative, which use econometric techniques such as regression analysis.
- Qualitative data are valuable
 - In depth interviews—open ended
 - Participant observation
 - Focus groups
- Qualitative helps answer the “how” and “why” and also to see how the program operated on the ground



Ex Ante vs. Ex Post

- *Ex ante* seeks to predict how individuals will respond to a new program, using utility maximization
 - Ex. Bourguignon *et al.* and *Bolsa Familia* in Brazil
- Use structural modeling, change variables to reflect policy changes
- We will focus on *ex post* methods that are carried out after the program has been implemented

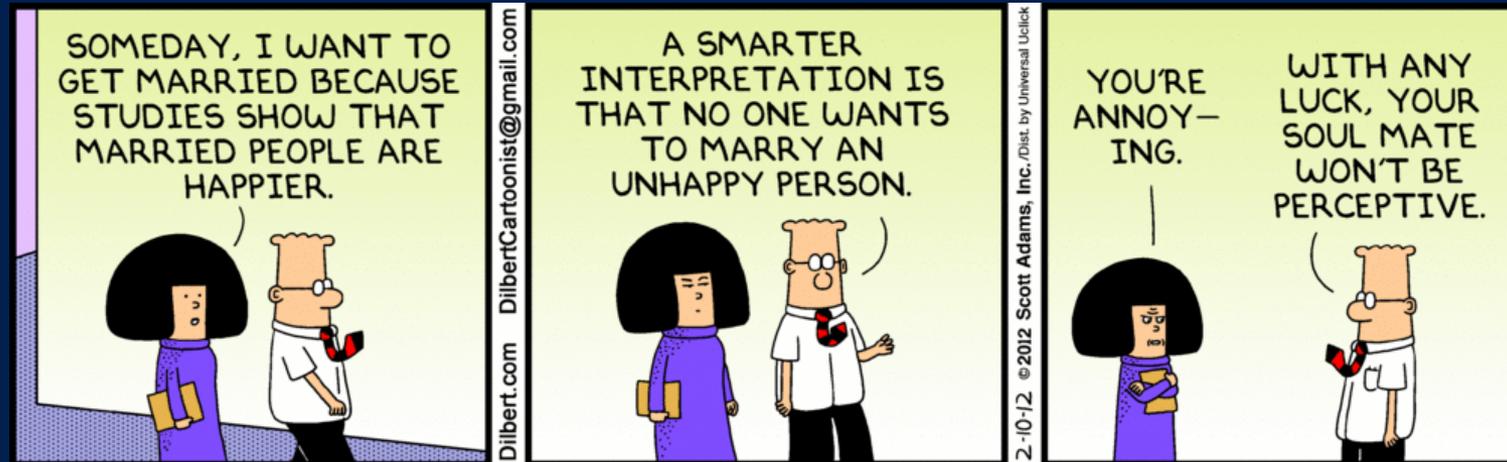


Experimental vs. Non-Experimental

- Experimental—randomized control trials in which the individuals who receive the treatment are randomized
- Non-experimental—the program was not randomized. We may still be able to give an unbiased result
- Our workshop will focus on three non-experimental methods
 - Difference-in-differences, instrumental variables, matching estimators



Correlation and Causation



A Scenario – Irrigation Project



A Scenario....

- Your agency implemented an irrigation program in several villages in a developing country
- Program ran for 2 or 3 years
- Somebody above you in the hierarchy wants you to demonstrate that the program was effective, increased yields, and lowered poverty

[Take a few minutes to pair and share a similar experience in your job]



What Do You Do? First Idea

- Commission a survey, collect data, compare those who participated in the program with those who did not.
 - You find that participants in the program had higher yields than those who did not.
 - Can we conclude that the program was effective?



Naïve Comparison with One Survey

- Sample selection—those who participated in the program CHOSE to do so because they expected to benefit
- Participants may have experienced an increased yield anyway.
- $Y_i = \alpha X_i + \beta T_i + \epsilon_i$
- Y_i is outcome, X_i are controls, T_i is treatment, ϵ_i is error term
- $Cov(T_i, \epsilon_i) \neq 0$



What Do You Do? Second Idea

- Suppose you have a baseline that was collected before the program started 3 years ago, but the data were only collected for those who participated in the program.
- Compare yields and profits before and after the irrigation program.
- Reflexive evaluation



Problems with Reflexive Studies

- You have no counterfactual—what would have happened in the absence of the program?
- The irrigation program and the increase in yields happened at the same time, but we cannot say that the program is causal.



What Do You Do? Third Idea

- You have a baseline for the project area. You don't have a baseline for a comparison area.
- You choose an area that seems to be a good comparison. Then you ask people what they were doing 3 years ago.
- Problem: recall bias. People have difficulty accurately reporting what they did 3 years ago. What they report is also colored by recent experience.



What Do You Do? Fourth Idea

- You have access to data that were collected before the program started for both the area that received the program (treatment area) and other areas.
- Now, we may be able to get somewhere
- Panel data methods
- Panel data with matching



Why Is it Important to Get Things Right?



Why Do We Need Impact Evaluations?

- To create knowledge about policy effectiveness
- To evaluate the state of the knowledge base about interventions
 - Organizations such as the International Initiative for Impact Evaluation (3ie) are aggregating the research
- To encourage adoption of the knowledge to improve performance
- To allocate resources well



Cautionary Tales

- Millenium Villages Project
- Hormone Replacement Therapy for menopausal women



Millenium Villages Project

- Integrated multisector approach to rural development—agriculture, health, technology, education, gender
- Began in 2006 at a cost of \$120 per person.
- Nine villages in 9 sub-Saharan African countries
- Villages averaged 35,000 people
- \$38 million
- Villages chosen because very poor
- Control villages not identified until the third year



Millenium Village Project

- Research team argued that infant mortality fell by 7.8 percent in millenium villages
- Criticism—actual decline was 5.9 percent.
- But infant mortality fell rapidly in control villages, too
- *Ex post* justification—choose villages that were similar to treated villages
- Consequence—less impact than was hoped given spending on the project
- Controversy discussed in Clemens and Demombynes 2013



Hormone Replacement Therapy (HRT)

- HRT for women formerly seen as an excellent way to maintain heart health
 - Problem: based on the Harvard Nurses study
 - Not a random sample
- Women who used HRT tended to be healthier and the best informed about medical issues
- Hormone found to increase risk of heart disease, some cancer
 - Consequence—millions of women taking drug of little value and which brought side effects.



Hormone Replacement Therapy (HRT)

- Recommendation for post-menopausal women to take hormone replacements to lower risk of heart disease
- Nurses' Health Study was observational, indicated HRT reduced risk of heart disease
- Women's Health Initiative did a clinical trial
- WHI found HRT INCREASED the risk of stroke and had no effect on heart disease.
- How can we explain these contrary findings?



Final Thoughts



Thoughts on Impact Evaluation

- Be honest about what you are doing
 - Example—don't claim a study was randomized if the implementers chose the study location
- Be aware of likely biases and how they might affect your analyses. Report them.
- Use information about the program and how it was implemented. Know the program well.



What is the Counterfactual?

