EGAP LEARNING DAYS 4:
EXPERIMENTAL DESIGN SESSIONS

SANTIAGO, CHILE
7-11 MAY 2016

This five-day meeting will consist of a combination of design clinics and teach-ins on topics critical for designing impact evaluations and field experiments intended to measure the effects of policies, interventions, and programs on policy outcomes. Teach-in topics will include randomization, statistical power, and threats to the estimation of treatment effects. Throughout the week participants will work to develop their own research designs together with peers and more senior researchers.

Venue: Universidad Diego Portales

Timing: The workshop starts on Saturday 7 May at 10AM and closes Wednesday 11 May at 4PM

Organization
The learning days are being organized by Jake Bowers (University of Illinois, Urbana-Champaign, JB), Natalia Garbiras Díaz, University of California, Berkeley, NGD), Thad Dunning (University of California, Berkeley, TD), Ana de la O (Yale University, AO), Fernando Rosenblatt (Universidad Diego Portales, FR), Tara Slough (Columbia University, TS) and Maarten Voors (Wageningen University, MV).

Study material
● Please bring a laptop. Make sure you have R and Rstudio[1] installed.
● We will use material developed by EGAP (http://egap.org/list-methods-guides)
● Additional material is drawn from
    o Dunning, Thad. 2012. *Natural experiments in the social sciences: a design-based approach*. New York: Cambridge University Press.
    o Gerber, Alan S, y Donald P Green. 2012. *Field experiments: Design, analysis, and interpretation*: New York: W.W. Norton. Chapters 1 to 5 [2]
    o Gertler et al: Gertler, Paul J.; Martinez, Sebastian; Premand, Patrick; Rawlings, Laura B.; Vermeersch, Christel M. J.. 2011. *Impact Evaluation in Practice*. World Bank.[3]
    o Glennerster et al: Glennerster, Rachel; Takavarasha, Kudzai. 2013. *Running Randomized Evaluations: A Practical Guide.* Princeton.[4]

Preparation before the workshop.
● Please prepare a brief (5 minutes) statement to introduce yourself (who you are, where you work, what are your expectations for the Learning Days) and to present your research question and general idea of your project that you will work on during the workshop. Every participant must have a research project to work on throughout the week. If you would like to discuss potential research project options with us in advance of the training, please send us an email. We are happy to discuss! La mayoría de los profesores hablan español.

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[1] Download from http://www.rstudio.com/products/rstudio/download/ . If you already prefer using R with an editor other than RStudio, you do not need to install RStudio.
[2] We will distribute some pdfs of chapters from this book. The book itself is very much worth owning as a reference, as is Dunning's book.
[3] Download from https://openknowledge.worldbank.org/handle/10986/2550 License: CC BY 3.0 Unported.
[4] Open Access ancillary materials: http://runningres.com

- Please familiarize yourself with R, the statistical program we will be using. Have a look at a free introduction to R from the Code School, which runs entirely through your browser https://www.codeschool.com/courses/try-r. In addition, please complete the first lecture from the online R Programming course organized by Johns Hopkins University: (i) go to coursera.org, (ii) create an account (this is free!), (iii) sign up for R Programming at Johns Hopkins University (instructor: Roger Peng) under the "Courses" tab (iv) read the materials and watch the videos. The videos from the first week are about 2.5 hours long total.
- Please fill out the pre survey.

Learning Days Agenda

Saturday, 7 May 2016: Getting Started

Morning: **Introduction and causal inference**
10-12PM: Welcome
- Introduction of group
- Introduction of EGAP (what is + types of projects)
- Objectives of learning days
- Expectations for collaboration: Ask questions (when you ask questions you are helping everyone, including the professors)! It is ok to sit or stand during lectures and discussions (just not in front of other people).
- Logistics
- **Brief** statement of research projects by participants (no formal presentation). A 3–min introduction to your research project, stressing motivation and research question, and main evaluation design plan.

12–1PM: Lecture 1: Causal inference (JB)
- Research questions: what are X and Y? What might it mean to say X caused Y?
- The potential outcomes framework and the fundamental problem of causal inference
- What do experiments have to do with causality?

1PM–2PM: LUNCH (Sandwiches in the room)

Afternoon: Research Design and Design Clinic

2–3PM: Research presentation 1[5]
- Maarten Voors: Chiefs and Development Aid in Sierra Leone

3–3:30PM: Lecture 2 Stages of research design and implementation (MV)
- Introducing the *research design form.*

3:30–4:00PM: Design clinic: housekeeping (NGD)
- Make sure you are set up with R
- Hands-on session on simple statistics in R

4–5PM: Design clinic: your project
- Break in small groups of no more than three people (randomized into groups or in thematic groups).
- Work on *research design form***.**
- Small Group discussions on research ideas: What are causal drivers and what are outcomes? By what "theory of change" or "causal mechanism" should the drivers influence the outcomes?

5–5:30PM: Recap
- Recap
- Quick go around: what did you find useful? What would you like to hear more about?

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[5] These research presentations are meant to be about the **process** of doing research. The presentation should be short to allow questions.

Resources

- [10 strategies for figuring out if X causes Y](#)
- [10 things you need to know about causal inference](#)
- R: http://www.r-project.org/
- Day 1. Key Tools for Experimental Research Design and Analysis in R (in Dropbox or Github)

Sunday, 8 May 2016: Identification and Randomization

Morning: Recap and Randomization strategies

10:00–10:15AM: Reflections on Day 1 from the participants

10:15–11AM: What is a hypothesis test for a randomized experiment? (JB)
Fisher's test of the sharp null hypothesis of no effects and relationship with large sample tests.

11–1PM: Lecture 3 Randomization (AO)
- Mechanics of replicable randomization
- Strategies for randomization: simple, clustered, factorial, intertemporal, block randomized, (the idea of the power of a statistical test)
- Examples from the field

1PM–2PM LUNCH

Afternoon: Design Workshop
2-2:30PM: Hands-on session on statistics, randomization and hypothesis testing in R

2:30–3:30PM: Research presentation 2
- Ana de la O: "Can Intrastate Accountability Reduce Local Capture? Results from a Field Experiment in Mexico"

3:30–5PM: Design clinic: assignments and design form
- Work on research design form
- Focus on strategy for hypothesis testing for each design
- Focus on randomization strategies for each design

5–5:30PM: Recap
- Recap
- Quick go around: what did you find useful? What would you like to hear more about?

Resources
- 10 things you need to know about randomization
- Day 2. Key Tools for Experimental Research Design and Analysis in R

Monday, 9 May 2016: Estimation of Causal Effects and Statistical Power

Morning: **Estimation and Testing of Causal Effects**

10:00–10:15AM: Reflections on Day 2 from the participants

10:15AM–12PM The Average Treatment Effect and Statistical Inference (JB/AO)
- Unbiased estimation of average treatment effects, Standard Errors, Confidence Intervals.

12PM–1PM Power analysis (JB/AO)
- What it is, relation to sample size, dispersion, standard methods, simulations

1PM – 2PM LUNCH

Afternoon:
2PM–3PM: Research presentation 3
- Fernando Rosenblatt: Is paying taxes habit forming? Evidence from a tax holiday lottery in Uruguay (Thad Dunning, Felipe Monestier, Rafael Piñeiro, Fernando Rosenblatt and Guadalupe Tuñón)

3PM–5PM: Group work
- Hands-on session on power in R
- Feedback and questions
- Figuring out the power for each study
- Work on research design

5–5:30PM: Recap
- Recap
- Quick go around: what did you find useful? What would you like to hear more about?

Evening (optional): **Book presentation:** *Crafting Policies to End Poverty in Latin America: The Quiet Transformation* **by Ana de la O, Yale University**
5:30PM–7:30PM
Sala B-31, Biblioteca Nicanor Parra, UDP (same building)

Resources
- [10 things you should know about the local average treatment effect](#)
- [10 things you need to know about spillovers in experimental analysis](#)
- https://egap.shinyapps.io/spillover-app/
- Day 3. Key Tools for Experimental Research Design and Analysis in R

Tuesday, 10 May 2016: Encouragement Designs and Threats to Causal Inference

Morning:

10:00–10:15AM: Reflections on Day 3 from the participants

10:15AM–11:30AM: Lecture 4 Threats to Inference (MV)
- Partial compliance: LATE and ITT
- Spillovers & Attrition & Demand Effects/Hawthorne Effects
- Jake Bowers: "A Placebo Controlled Encouragement Design of Media Effects in Nigeria"

11:30AM–12:15PM: DeclareDesign (TS)
- Feedback and questions

12:15PM–1PM: Group work
- Feedback and questions
- Work on research design

1PM–2PM LUNCH

Afternoon: Research presentation and Design Clinic

2–5PM: Design clinic
- Feedback and questions
- Work on your project with DeclareDesign
- Revise research designs
- Prepare Presentations

8PM: Dinner in town

Resources
- 10 things you need to know about statistical power
- 10 things you need to know about covariate adjustment
- 10 things you need to know about multiple comparisons
- https://egap.shinyapps.io/Power_Calculator/
- DeclareDesign Guide

Wednesday, 11 May 2016: Design presentations and Remaining Topics

Morning: Design Presentations

10:00–10:30AM: "Six steps to a better relationship with your future self," (JB)

10:30AM–1PM: Design presentations
- Each participant's does a 10-min presentation with 5-minutes discussion
- Addressing sampling, randomization approach, power, cluster randomized trials, potential threats

1–2PM: LUNCH

Afternoon: Design Presentation and Topics
2–3PM: Research presentation 5:
- Thad Dunning: "Transparency, Replication, and Cumulative Learning: What Experiments Alone Cannot Achieve"

3–5PM: Design Presentations

5–5:30PM: Next Steps
- How will we all continue to communicate and support each other after today?

Other Topics
Based on demand we will discuss on one or more of the following themes.
1. IRB/Ethics
2. Partnerships
3. Measurement strategies
4. Transparency in research