Learning Days Agenda

EGAP LEARNING DAYS 11:

EXPERIMENTAL DESIGN SESSIONS

AFRICAN SCHOOL OF ECONOMICS, BENIN
10 – 13 JUNE 2019

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. The focus of the workshop is on experimental methods. 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 the teaching team.

Workshop Venue: African School of Economics, Abomey-Calavi, Benin

Lodging: Golden Tulip Le Diplomate, Cotonou, Benin

Timing: The workshop starts on Monday 10 June at 830 AM and closes Friday 14 June at noon.

Organization
The learning days are being organized by Nahomi Ichino (University of Michigan, NI), Gareth Nellis (UCSD, GN), Ian Hefferman (African School of Economics, IH) Tara Slough (EGAP and Columbia University, TS), Salif Jaiteh (Columbia University, SJ) and Maarten Voors (EGAP and Wageningen University, MV).

Study material
- Please bring a laptop. Make sure you have R and Rstudio[1] installed. See notes below.
- As core resources we use EGAP Methods Guides (http://egap.org/list-methods-guides)
- Additional useful material:
  - Dunning, Thad. 2012. *Natural experiments in the social sciences: a design-based approach*. New York: Cambridge University Press.
  - Gerber, Alan S., and Donald P. Green. 2012. Field experiments: Design, analysis, and interpretation: New York: W.W. Norton. Chapters 1 to 5[2]
  - 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]
  - Glennerster et al: Glennerster, Rachel; Takavarasha, Kudzai. 2013. Running Randomized Evaluations: A Practical Guide. Princeton.[4]
- During the workshop materials will be shared via Dropbox.

Preparation before the workshop.
- Please prepare a brief (3 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 project to work on throughout the week. Ideally this is a project you are implementing, or are hoping to implements and fits closely with your research interests. During the workshop, we will focus mostly on experimental methods, ie where an intervention (program, project) is implemented using randomization. The workshop does not focus on non-

[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

experimental methods (ie regression models, PSM, DD, RD, etc). If you would like to discuss potential research project options with us in advance of the training, please send Maarten Voors (maarten.voors@wur.nl) an email. We are happy to discuss!

- Before you come, please complete the following pre-Learning Days assignment in R: https://docs.google.com/forms/d/e/1FAIpQLSec3kSVyKDkIcNLSv3uIup-ix9Ug25kRfdvugO3YbRhTGuI2Q/viewform
  All R code is included so it should not take long to complete.
- Make sure you have R and Rstudio installed. The file, "benin_egap_introR.pdf" provides information on how to download R and RStudio. We ask that you download both programs prior to the workshop and familiarize yourself with the material provided in the guide. In particular, we provide lines of code in section 3.1 that you should execute to download several auxiliary files ("packages") that we will use during Learning Days. If you have difficulty downloading R, RStudio, or the packages, please email Tara at tls2145@columbia.edu for assistance.
- To further familiarize yourself with R, 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.

Learning Days Agenda

Monday, 10 June 2019: Getting Started

8:00AM: Bus to ASE campus
Note: travel time between the hotel and workshop venue is ~30 minutes, so please leave on time.

Morning: Introduction and causal inference
8:30-10:00AM: Welcome (NI, IH, all)

- Welcome and 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)
- Logistics
- **Introductions:** brief statement of research projects by participants (no formal presentations). A three–min introduction of yourself and the research project you brought to the workshop.

10:00–12:00AM: Lecture 1: Causal inference (NI)
With 10:30–11AM: Coffee break

- 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?

12:00–1:00PM: LUNCH

Afternoon: Research Design and Design Clinic

1:00–2:00PM: Research presentation 1: Tara Slough
These research presentations are meant to be about the process of doing research.

2:00–2:30PM: Lecture 2 Stages of research design and implementation (NI, TS, SJ)

- Introducing the *research design form.*
- Stages to DeclareDesign

2:30–3:00PM: Coffee

3:00–5:00PM: Design clinic: your project

- Break in small 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?

Evenings (optional): Office hours
Office hours are meant to be 30 minute sessions with one of the instructors to discuss your project or related research issues. Sign-up sheets are available during the day.
6:00–7:30PM: Office hours

- Sign up for office hours with teaching team
- Venue: at Hotel

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/

Learning Days Agenda

Tuesday, 11 June 2019: Identification and Randomization

8:00AM: Bus to ASE campus

Morning: Randomization strategies and Hypothesis testing

9:00–9:30AM: Day 1 Recap, Quiz

9:30–10:30 AM: Lecture 3: Hypothesis Testing (GN)

- What is a hypothesis test for a randomized experiment?
- Classical hypothesis testing
- Fisher's test of the sharp null hypothesis of no effects and relationship with large sample tests.

10:30–11:00AM: Coffee break

11:00–12:00AM: Lecture 4: Randomization (SJ)

- 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

12:00–1:00PM LUNCH

Afternoon: Design Workshop

1:00-1:30PM: Lecture 4: Randomization, continued

1:30–2:00PM: Research presentation 2: Gareth Nellis

2:00–5:00PM: Design clinic: work on design form
with 3:30PM: Coffee

- Focus on strategy for hypothesis testing for each design
- Focus on randomization strategies for each design

Evenings (optional): Office hours
6:00–7:30PM: Office hours

- Sign up for office hours with teaching team
- Venue: at Hotel

Resources

- 10 things you need to know about randomization

Learning Days Agenda

Wednesday, 12 June 2019: Estimation of Causal Effects and Statistical Power

8:00AM: Bus to ASE campus

Morning: Estimation and Testing of Causal Effects

9:00–9:30AM: Day 1 & 2 Recap, Quiz

9:30–10:30AM: Lecture 5: The Average Treatment Effect and Statistical Inference (TS)

- ATE: Variance, standard errors, confidence intervals, sampling distributions

10:30–11:00AM BREAK

11:00AM–12:00PM: Lecture 6: Power (GN)

- What it is, relation to sample size, dispersion, standard methods, simulations

12:00–12:45PM LUNCH

Afternoon: Research presentation and Design Workshop

12:45–1:45PM: In-class experiment

1:45-2:15PM: Update on Research at ASE: Leonard Wantchekon

2:15–5:00PM: Design clinic

- Feedback and questions
- Figuring out the power for each study
- Work on research design

Evening: Group outing/group dinner

Resources

- 10 things you should know about the local average treatment effect
- 10 things you need to know about statistical power
- https://egap.shinyapps.io/spillover-app/

Learning Days Agenda

Thursday, 13 June 2019: Threats to Causal Inference and Other Topics

8:00AM: Bus to ASE campus

Morning Threats to Inference

9:00–9:30AM: Recap, Quiz

9:30AM–10:45AM: Lecture 7: Threats to Inference (NI, all)
- Reading and presenting results
- Endogenous subgroups
- Covariate adjustment
- Partial compliance: LATE and ITT
- Spillovers & Attrition

10:45-11:00AM: BREAK

11:00–12:00AM: R Tutorial

12:00AM–1:00PM LUNCH

Afternoon: Design Workshop

1:00–2:30PM: Design Clinic and Start to prepare presentations

Design clinic
- Feedback and questions
- Revise research designs
- Prepare Presentations

2:30-3:30: Transit back to hotel

4:00-6:00: EGAP Evidence Seminar

6:00-8:00: Post-Evidence Seminar Reception

Resources
- 10 things you need to know about covariate adjustment
- 10 things you need to know about multiple comparisons

Learning Days Agenda

Friday, 14 June 2019: Presentations

8:00: Bus to ASE campus

Morning: Design Presentations

9:00AM-12:00PM: Individual run-through of presentations, last minute questions
if time allows, on demand discuss other topics such as: ethics, funding, replicability and workflow, etc

12:00-1:00PM: LUNCH

1:30–3:00PM: Design presentations (several rooms)
- Each participant's does a 8-min presentation with 7-minutes discussion
- Addressing substantive motivation, research question, randomization approach, power, potential threats

3–4PM: Travel back to hotel

4-6PM: EGAP meeting

List of Participants

- Abiodun Adegboye
- Adebisi Nofiu
- Arnaud Dakpogan
- Busta Munthali Chiona
- Esther Owelle
- Ezechias Jesugnon Djima
- Grace Adewoye
- Henry Telli
- Horace Mahugnon Akim Gninafon
- Jennifer Adhiambo
- Leonie Koumassa
- Nissily Mushani
- Oludele Folarin
- Prisca Yéwa Tidjani
- Samuel Olowogbon
- Titilope Olarewaju