

Learning Days Agenda

EGAP LEARNING DAYS 9: EXPERIMENTAL DESIGN SESSIONS

URUGUAY
26 FEBRUARY – 2 MARCH 2018

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: Universidad Católica del Uruguay, Edificio Monseñor Carlos Mullin | Facultad de Ingeniería y Tecnologías y Facultad de Psicología, Comandante Braga 2715, room M301 and M303.

Lodging: Hotel Dazzler Montevideo, 21 de Setiembre 2752, (PUNTA CARRETAS)
(<https://www.dazzlerhoteles.com/es/hoteles/uruguay/hoteles-en-montevideo/dazzler-montevideo/>)

Timing: The workshop starts on Monday 26 February at 10AM and closes Friday 2 March at 5PM

Organization

The learning days are being organized by Rafael Piñeiro (Universidad Católica del Uruguay, RP), Jake Bowers (University of Illinois, Urbana-Champaign, JB), Natalia Garbiras Díaz, University of California, Berkeley, NGD, Fernando Rosenblatt (Universidad Diego Portales, FR), Tara Slough (Columbia University, TS) 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.
- We will use material developed by EGAP (<http://egap.org/list-methods-guides>)
- Additional material is drawn from
 - 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 5²
 - 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 (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 project to work on throughout the week. Ideally this is a project you are implementing, or are hoping to implement and fits closely with your research interests. During

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>

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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-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) us an email. We are happy to discuss!

- Make sure you have [R](#) and [Rstudio](#) installed. The file, “uruguay_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](https://www.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.
- Complete the following pre-Learning Days assignment in R: <https://goo.gl/forms/Arxye5kJEfz3bfek2>. All R code is included so it should not take long to complete.

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Monday, 26 February 2018: Getting Started

Note: travel time between the hotel and workshop venue (Universidad Católica del Uruguay) is about 30 minutes by bus.

Morning: Introduction and causal inference

9-1030AM: Welcome (RP, MV, 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)! 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.

1030–11AM: Coffee break

11–1PM: 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

Afternoon: Research Design and Design Clinic

2–3PM: Research presentation 1: Maarten Voors

These research presentations are meant to be about the process of doing research.

3–330PM: Lecture 2 Stages of research design and implementation (MV, TS, NGD)

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

3:30PM: Coffee

3:30–4PM: Design clinic: housekeeping

- Make sure you are set up with R (all)
- Hands-on session on simple statistics in R (NGD)
- Setting up DeclareDesign

4–5PM: 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

6–730PM: Office hours

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

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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/>
- DeclareDesign
- Day 1. Key Tools for Experimental Research Design and Analysis in R

Tuesday, 27 February 2018: Identification and Randomization

Morning: Randomization strategies and Hypothesis testing

9:00–9:30 AM: Day 1 Recap, Quiz

9:30–11AM: Lecture 3: Randomization (FR)

- Mechanics of replicable randomization
- Strategies for randomization: simple, clustered, factorial, intertemporal, block randomized (the idea of the power of a statistical test)
- Randomization in R (using randomizr) (TS)

11:00–11:30AM: Coffee break

11:30PM–1PM: Lecture 4: 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.

1PM–2PM LUNCH

Afternoon: Design Workshop

2:30–3:00PM: Research presentation 2: Tara Slough

3-4:30PM: Design clinic: assignments and design form

3:30PM: Coffee

- Hands-on session on statistics, randomization and hypothesis testing in R
- 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?

Evenings (optional): Office hours

6–730PM: Office hours

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

Resources

- [10 things you need to know about randomization](#)
- Day 2. Key Tools for Experimental Research Design and Analysis in R

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Wednesday, 28 February 2018: Estimation of Causal Effects and Statistical Power

Morning: Estimation and Testing of Causal Effects

9:00 AM–10:15 AM: Day 1 & 2 Recap, Quiz

10:15AM–11:00AM: Lecture 5: The Average Treatment Effect and Statistical Inference (NDG)

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

11:00 AM–11:30 AM BREAK

11:30AM–12:00PM Lecture 5 cont.

12:00 – 1:00PM: Lecture 6: Power (TS)

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

1PM – 2PM LUNCH

Afternoon: Research presentation and Design Workshop

2:00–3PM: Research Presentations 3 Jake Bowers

3:00–4:45PM: Design clinic

- Hands-on session on power in R
- Feedback and questions
- Figuring out the power for each study
- Work on research design

4:30–5PM: Recap

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

Evening: Group outing/group dinner

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

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Thursday, 1 March 2018: Threats to Causal Inference

Morning Threats to Inference

9:00–9:45AM: Recap day 1-3, Quiz, Reflections & Suggestions of topics for Friday afternoon

9:45AM–12AM: Lecture 7: Threats to Inference

- Partial compliance: LATE and ITT
- Spillovers & Attrition & Mediation
- Post treatment bias
- Covariates

12–1PM: Group work

- Feedback and questions
- Work on research design

1PM–2PM LUNCH

Afternoon: Design Workshop

2:30–3PM: Research Presentations 4 Fernando Rosenblatt

3-4:30PM: Design clinic

- Feedback and questions
- Work on your project with DeclareDesign
- Revise research designs
- Prepare Presentations

4:30–5PM: Recap

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

Evenings (optional): Office hours

6–730PM: Office hours

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

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

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Friday, 2 March 2017: Design presentations and Remaining Topics

Morning: Design Presentations

9-10AM: Individual run-through of presentations

10AM-1PM: Design presentations (two rooms)

- 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: Other Topics

2-4PM: 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. Workflow
5. Transparency in research

4-5 PM: Feedback and Next Steps

- How will we all continue to communicate and support each other after today?

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List of Participants

- Arturo Maldonado - Pontificia Universidad Católica del Perú
- Felipe Botero – Universidad de los Andes
- Jennifer Viñas – Ghent University (Belgium)
- Juan Carlos Rodríguez-Raga – Universidad de los Andes
- Lelys Dinarte – Pontifical Catholic University of Chile
- Miguel García-Sánchez – Universidad de los Andes
- Miguel A. Lopez Varas - niversity of Chile. Institute of International Studies
- Inés Fynn – Pontificia Universidad Católica de Chile
- Florencia Caro Sachetti – Centro de Implementacion de Politicas Publicas para la Equidad y el Crecimiento (CIPPEC)
- Laura Georgina Flores-Ivich – FLACSO México and UNAM
- Lihuen Nocetto – Instituto de Ciencia Política, Pontificia Universidad Católica de Chile
- Sandra Botero – Universidad del Rosario
- Manuel Moscoso Rojas – Conflict Analysis Resources Center (CERAC) and Attorney General Office
- Diego Hernandez – Universidad Catolica del Uruguay
- Guillermo Lezama – Departamento de Economía, Facultad de Ciencias Sociales, Universidad de la República
- Rosario Queirolo – Universidad Católica del Uruguay