ECPR Winter School

6-11 February 2024

Course Outline

**Course Title: Introduction to Conjoint Experiments**

**Instructor name:** Alberto Stefanelli

**Prerequisite Knowledge and Commitment Time:**

The course assumes intermediate familiarity with the basis of experimental design, survey experiments and regression analysis.

The empirical analysis will be implemented using R. While example datasets and full syntax codes will be provided, intermediate knowledge of R is expected.

You should know how to:

1. read datasets in R

2. work with data frames

3. perform basic data manipulation

4. run basic statistical analyses such as linear or logistic regression.

More advanced knowledge of statistical computing, such as writing functions and loops, is helpful but not essential.

Make sure that your R and Python environments work and that you can run a script before coming to class since we will have no time to resolve technical issues. If you have already collected data, bring it along. If not, you’ll get a toy dataset to play with. Be sure to have installed in R the cjoint and cregg packages together with any other package that you use for data management/cleaning/visualization (e.g. dplyr, ggplot, etc).

**Classroom time:** 13:00 – 15:30

**Short Outline:**

Estimating causal effects is a central aim of quantitative empirical analysis in social sciences. Recently, Conjoint Analysis and Choice-Based Conjoint Experiments have gained interest among social scientists to understand and predict people's preferences in a multi-dimensional and multi-choice environment. This course offers an applied introduction to Choice-Based Conjoint, along with hands-on experience in lab sessions.

**Purpose of the Course:**

1. Have a basic understanding of the structure, logical underpinnings, basic notions, and analytical goals of conjoint analysis.

2. Identify areas of application where conjoint analysis could be successfully implemented.

3. Critically evaluate conjoint experiment applications and understand the advantages/disadvantages compared to more traditional methods.

4. Implement your own conjoint experiment into an (online) survey platform.

5. Understand and be able to apply different techniques to analyse conjoint experiments.

6. Be able to easily visualise the result of a conjoint experiment.

7. Be prepared for more advanced conjoint (and factorial experiments) courses or workshops.

**Long Outline: Key topics covered:**

This course is structured around eight pivotal topics, offering a comprehensive understanding of conjoint experiments:

**1. Introduction to Conjoint Experiments:** Explore the foundational concepts of conjoint experiments, understanding their logic, historical development, and the factors contributing to their increasing popularity in social and behavioral sciences.

**2. Modern Causal Analysis:** Delve into the potential outcome framework, a key element of contemporary causal analysis. Gain insights into the fundamental problem of causal inference (Holland, 1986), and examine its relevance within the context of conjoint analysis.

**3. Measuring Individual Preferences:** Explore various methods of measuring individual preferences in conjoint experiments, with a primary focus on Choice-Based Conjoint measurement. Additionally, briefly discuss alternative measurements such as Rating, Ranking, Combined, and Adaptive approaches.

**4. Conjoint Design:** Examine different types of conjoint designs, their applications, and limitations. Break down the elements of a conjoint design, including alternatives, choice sets, and context, with special attention to the design of conjoint alternatives.

**5. Construction of Conjoint Experiments:** Learn the process of constructing a conjoint experiment using JavaScript/Python programs and R. Cover both basic choice-based designs and more advanced designs incorporating attributes/levels constraints and randomization.

**6. Conjoint Experiment Deployment**: Follow a simple workflow to deploy a conjoint design using Qualtrics, gaining practical insights into implementation.

**7. Analysis and Methods:** Explore various methods for analyzing conjoint experiments, with a specific focus on Average Marginal Component Effects (AMCEs), marginal mean, and omnibus F-test. Briefly discuss subgroup differences and visualization techniques.

**8. Recent Advances in Conjoint Analysis:** Cover the latest developments in conjoint analysis, such as individual component effects and mixture modeling to uncover treatment heterogeneity.

**How the course will work:**

The course is a mix of in-person interactive lectures and hands-on in-class. Each class ends with a practical exercise that we start solving in class and should be completed before the beginning of the next session. Solutions will be provided and discussed in-class in an interactive way to facilitate learning, problem solving, and exchange of ideas. We will have presentations with Q&A sessions and small-group work.

**Literature (if applicable)**

**Suggested:**

Imbens, Guido W, and Donald B Rubin (2015).

Causal Inference for Statistics, Social, and Biomedical Sciences: An Introduction

Cambridge University Press

Chapter 1

Morton, R.B. & Williams, K. (2010)

Experimental Political Science and the Study of Causality: From Nature to the Lab

Cambridge University Press

Chapters 2 and 7

Kaczmirek, L. (2015)

Conducting web surveys: Overview and introduction

In Engel, Uwe, et al., eds. Improving survey methods: Lessons from recent research

Routledge

Chapter 13

Knudsen, E., & Johannesson, M. P. (2018)

Beyond the Limits of Survey Experiments: How Conjoint Designs Advance Causal Inference in Political Communication Research

Political Communication, 0(0), 1–13

Hainmueller, J., & Hopkins, D. J. (2015)

The Hidden American Immigration Consensus: A Conjoint Analysis of Attitudes toward Immigrants

American Journal of Political Science, 59(3), 529–548

Hainmueller, J., Hangartner, D., & Yamamoto, T. (2015)

Validating vignette and conjoint survey experiments against real-world behavior

Proceedings of the National Academy of Sciences, 112(8), 2395–2400

Horiuchi, Yusaku, Daniel M Smith and Teppei Yamamoto. 2015

Measuring Voters’ Multidimensional Policy Preferences with Conjoint Analysis: Application to Japan’s 2014 Election

Available at SSRN 2627907

Leeper, T. J., Hobolt, S. B., & Tilley, J. (2018)

Measuring Subgroup Preferences in Conjoint Experiments

Political Analysis 55

**Optional**

Strezhnev, A., Hainmueller, J., Hopkins, D. J., & Yamamoto, T. (2013)

Conjoint Survey Design Tool: Software Manual

Toepoel, V. (2016)

Doing Surveys Online, Chapters 6 and 15

Sage

Callegaro, M., Manfreda, K. L., and Vehovar, V. (2015)

Web survey methodology, Chapters 5, 6 and 7

Sage

Stefanelli A. & Lukac M. (2020)

Subjects, Trials, and Levels: Statistical Power in Conjoint Experiments

Available at 10.31235/osf.io/spkcy

Goplerud M., Imai K, Pashley N. (2022)

Estimating Heterogeneous Causal Effects of High-Dimensional Treatments: Application to Conjoint Analysis

Available at https://arxiv.org/abs/2201.01357