Experimental Design For Surveys
SURV 627
2 credits/4 ECTS Fall
2025
Section 1

Instructor
Stephanie Coffey

Video lecture by Roger Tourangeau and Frauke Kreuter

Short Course Description
This course examines how to embed experiments in surveys. It covers both the design of survey experiments and the analysis of the results.

Course and Learning Objectives
By the end of the course, students will…

- Know about basic principles of experimental design
- Recognize the main types of experimental designs
- Improve the quality of designs used to carry out methodological research in or for surveys
- Develop critical skills to spot flaws in experimental and nonexperimental designs to support causal inferences
- Improve skills at analyzing results of survey experiments
- Improve skills as both consumer and producer of experiments done to shed light on survey methodological issues

Prerequisites
At least one prior course in data analysis. Ability to use SAS, R, or STATA.

Class Structure and Course Concept:
This is an online course using a flipped classroom design. It covers the same material and content as an on-site course but runs differently. In this course, you are responsible for watching video recorded lectures and reading the required literature for each unit and then "attending" mandatory weekly one-hour online meetings where students have the chance to discuss the materials from a unit with the

instructor. As with an on-site course, homework will be assigned and graded and there will be three quizzes.

Although this is an online course where students have more freedom in when they engage with the course materials, students are expected to spend the same amount of time overall on all activities in the course – including preparatory activities (readings, studying, in-class-activities (watching videos, participating in online meetings, and follow-up activities (working on assignments and exams – as in an on-site course. As a rule of thumb you can expect to spend approximately 3h/week on in-class-activities and 9 hours per week on out-of-class activities (preparing for class, readings, assignments, projects, studying for quizzes and exams. Therefore, the workload in all courses will be approximately 12h/week. This is a 2-credit course that runs for 8 weeks. Please note that the actual workload will depend on your personal knowledge.

Mandatory Weekly Online Meetings:

Meetings will be held online through Zoom. Follow the link to the meeting sessions on the course website on https://www.elms.umd.edu/. If video participation via Internet is not possible, arrangements can be made for students to dial in and join the meetings via telephone.

In preparation for the weekly online meetings, students are expected to watch the lecture videos and read the assigned literature before the start of the meeting. In addition, students are encouraged to post questions about the materials covered in the videos and readings of the week in the forum before the meetings (deadline for posting questions is 8:00AM EDT/2:00 PM CEST the day before the online meeting).

Students have the opportunity to use the Zoom meeting room set up for this course to connect with peers outside the scheduled weekly online meetings (e.g., for study groups). Students are encouraged to post the times that they will be using the room to the course website forum to avoid scheduling conflicts. Students are not required to use Zoom and can of course use other online meeting platforms such as Google Hangout or Skype.

Grading

- 3 exercises (45%)
- 3 quizzes (45 %)
- Participation in online discussions (10%)

Dates of when assignment will be due are indicated in the syllabus. Extensions will be granted sparingly and are at the instructor's discretion.

Technical Equipment Needs

The learning experience in this course will mainly rely on the online interaction between students and the instructor during the weekly online meetings. Therefore we encourage all students in this course to use a web camera and a headset. Decent quality headsets and web cams are available for less than $20 each. We ask students to refrain from using built-in web cams and speakers on their desktops or laptops. We know from our experience in previous online courses that this will reduce the quality of video and audio transmission and therefore will decrease the overall learning experience for all students in the course. In addition, we suggest that students use a wire connection (LAN, if available, when connecting to the online meetings. Wireless connections (WLAN are usually less stable and might be dropped.

Long Course Description

A key tool of methodological research is the split-ballot experiment, in which randomly selected subgroups of a sample receive different questions, different response formats, or different modes of data collection. In theory, such experiments can combine the clarity of experimental designs with the inferential power of representative samples. All too often, though, such experiments use flawed designs that leave serious doubts about the meaning or generalizability of the findings. The purpose of this course is to consider the issues involved in the design and analysis of data from experiments embedded in surveys. It covers the purposes of experiments in surveys, examines several classic survey experiments in detail, and takes a close look at some of the pitfalls and issues in the design of such studies. These pitfalls include problems (such as the confounding of the experimental variables that jeopardize the comparability of the experimental groups, problems (such as nonresponse that cast doubts on the generality of the results, and problems in determining the reliability of the results. The course will also consider some of the design decisions that almost always arise in planning experiments — issues such as identifying the appropriate error term for significance tests and including necessary comparison groups.

Readings

Primary readings will be the following:

Fienberg, S. E., & Tanur, J. M. (1988). From the inside out and the outside in: Combining experimental and sampling structures. *Canadian Journal of Statistics*, *16*, 135-151.

Gerdon, F., Nissenbaum, H., Bach, R. L., Kreuter, F., & Zins, S. (2021). Individual Acceptance of Using Health Data for Private and Public Benefit: Changes During the COVID-19 Pandemic. Harvard Data Science Review.
Groves, R. M., Fowler, F. J., Couper, M.P., Lepkowski, J. M., Singer, E., & Tourangeau, R. (2009). *Survey methodology*, 2nd Edition. Pages 259-287. Hoboken, NJ: John Wiley.

Heckman, J. J. (1979). Sample selection bias as a specification error. *Econometrica*, *47*, 153-161.

Neter, J., and Waksberg, J. (1964). A study of response errors in expenditures data from household interviews. *Journal of the American Statistical Association*, *59*, 1755.

O'Reilly, J., Hubbard, M., Lessler, J., Biemer, P., and Turner, C. (1994). Audio and video computer assisted self-interviewing: Preliminary tests of new technology for data collection. *Journal of Official Statistics*, *10*, 197-214.

Rubin, D. B. (1986) Statistics and causal inference: Comment: Which ifs have causal answers. *Journal of the American Statistical Association*, *81*, 961-962.

Rubin, D.B. (1997). Estimating causal effects from large data sets using propensity scores. *Annals of Internal Medicine* 127: 757-763.

Stuart, E. A., & Rubin, D. B (2008). Best practices in quasiexperiment designs: Matching methods for causal inference. In J. Osborne (Ed.), *Best practices in quantitative methods* (pp. 155-176). Thousand Oaks, CA: Sage Publications.

Shadish, W.R. (2010). Campbell and Rubin: A primer and comparison of their approaches to causal inference in field settings. *Psychological Methods*, *15*, 3-17.

Shadish, W. R., Cook, T.D., & Campbell, D. T. (2002). *Experimental & quasiexperimental designs for generalized causal inference*. Chapters 1-3.

Simmons, J. P, Nelson, L. D., & Simonsohn, U. (2011). False-positive psychology: Undisclosed llexibility in data collection and analysis allows presenting anything as significant. *Psychological Science*, *22*, 1359-66.

Tourangeau, R. (2004). Design considerations for questionnaire development. In S. Presser, J. Rothgeb, M. Couper, J. Lessler, E. Martin, J. Martin, and E. Singer (Eds.), *Methods for Testing and Evaluating Survey Questionnaires* (pp. 209-224). New York: John Wiley & Sons.

Tourangeau, R., Kreuter, F., & Eckman, S. (2012). Motivated underreporting in screening surveys. *Public Opinion Quarterly*, *76*, 453-469.

Tourangeau, R., Smith, T.W., and Rasinski, K. (1997). Motivation to report sensitive behaviors in surveys: Evidence from a bogus pipeline experiment. *Journal of Applied Social Psychology*, *27*, 209-222.

van den Brakel, J., and Rennsen, R. H. (2005). Analysis of experiments embedded in complex sampling designs. *Survey Methodology*, *31*, 23-40.

Van den Brakel, J. (2008). Design-based analysis of embedded experiments with applications in the Dutch Labour Force Survey. *Journal of the Royal Statistical Society, Series A*, 171, 581–613.

Additional required and recommended readings will be made available on the course website: https://www.elms.umd.edu/

Academic Conduct

Clear definitions of the forms of academic misconduct, including cheating and plagiarism, as well as information about disciplinary sanctions for academic misconduct may be found at

https://www.president.umd.edu/sites/president.umd.edu/files/documents/policies/III-100A.pdf (University of Maryland)

Knowledge of these rules is the responsibility of the student and ignorance of them does not excuse misconduct. The student is expected to be familiar with these guidelines before submitting any written work or taking any exams in this course. Lack of familiarity with these rules in no way constitutes an excuse for acts of misconduct. Charges of plagiarism and other forms of academic misconduct will be dealt with very seriously and may result in oral or written reprimands, a lower or failing grade on the assignment, a lower or failing grade for the course, suspension, and/or, in some cases, expulsion from the university.

Accommodations for Students with Disabilities

In order to receive services, students at the University of Maryland must contact the Accessibility & Disability Service (ADS) office to register in person for services. Please call the office to set up an appointment to register with an ADS counselor. Contact the ADS office at 301.314.7682; https://www.counseling.umd.edu/ads/.

Course Evaluation

In an effort to improve the learning experience for students in our online courses, students will be invited to participate in an online course evaluation at the end of the course (in addition to the standard university evaluation survey). Participation is entirely voluntary and highly appreciated.

Class Schedule

Please note that assignments and dates are subject to change. Information (e.g., articles and assignments) posted to the course website supersedes the information noted here.

Unit 1: Introduction

Video Lecture: available August 20, 2025

Online meeting: Tuesday, August 26, 2025, 8:00 AM EDT/2:00 PM CEST

Readings:

Fienberg, S. E., & Tanur, J. M. (1988). From the inside out and the outside in: Combining experimental and sampling structures. Canadian Journal of Statistics, 16, 135-151.

Rubin, D. B. (1986) Statistics and causal inference: Comment: Which ifs have causal answers. Journal of the American Statistical Association, 81, 961-962.

Shadish, W.R. (2010). Campbell and Rubin: A primer and comparison of their approaches to causal inference in field settings. Psychological Methods, 15, 3-17.

Shadish, W. R., Cook, T.D., & Campbell, D. T. (2002). Experimental & quasiexperimental designs for generalized causal inference. Chapter 1

Unit 2: Examples of Experiments in Surveys

Video lecture: available August 26, 2025

Online meeting: Tuesday, September 2, 2025, 8:00 AM EDT/2:00 PM CEST

Online quiz 1: due Wednesday, September 3, 8:00 AM EDT/2:00 PM CEST

Readings:

Gerdon, F., Nissenbaum, H., Bach, R. L., Kreuter, F., & Zins, S. (2021). Individual Acceptance of Using Health Data for Private and Public Benefit: Changes During the COVID-19 Pandemic. Harvard Data Science Review.

Neter, J., and Waksberg, J. (1964). A study of response errors in expenditures data from household interviews. Journal of the American Statistical Association, 59, 17-55.

Tourangeau, R., Kreuter, F., & Eckman, S. (2012). Motivated underreporting in screening surveys. Public Opinion Quarterly, 76, 453-469.

Unit 3: Experimental Designs I

Video lecture: available September 2, 2025

Online meeting: Tuesday, September 9, 2025, 8:00 AM EDT/2:00 PM CEST

Online quiz 2: due Wednesday, September 10, 2025, 8:00 AM EDT/2:00 PM CEST

Exercise 1: due Thursday, September 18, 2025, 8:00 AM EDT/2:00 PM CEST

Readings:

Heckman, J. J. (1979). Sample selection bias as a specification error. Econometrica, 47, 153-161.

Rubin, D.B. (1997). Estimating causal effects from large data sets using propensity scores. Annals of Internal Medicine 127: 757-763.

Stuart, E. A., & Rubin, D. B (2008). Best practices in quasiexperiment designs: Matching methods for causal inference. In J. Osborne (Ed.), Best practices in quantitative methods (pp. 155-176). Thousand Oaks, CA: Sage Publications.

Unit 4: Experimental Designs II

Video lecture: available September 9, 2025

Online meeting: Tuesday, September 16, 2025, 8:00 AM EDT/2:00 PM CEST

Readings:

O'Reilly, J., Hubbard, M., Lessler, J., Biemer, P., and Turner, C. (1994). Audio and video computer assisted self-interviewing: Preliminary tests of new technology for data collection. Journal of Official Statistics, 10, 197-214.

Unit 5: Comparability and Generalizability

Video lecture: available September 9, 2025

Online meeting: Tuesday, September 23, 2025, 8:00 AM EDT

Excercise 2: due Thursday, September 25, 2025, 8:00 AM EDT

Readings:

Shadish, W. R., Cook, T.D., & Campbell, D. T. (2002). Experimental & quasiexperimental designs for generalized causal inference. Chapters 2-3.

Unit 6: Construct Validity I

Video lecture: available September 16, 2025

Online meeting: Tuesday, September 30, 2025, 8:00 AM EDT/2:00 PM CEST

Readings:

Tourangeau, R., Smith, T.W., and Rasinski, K. (1997). Motivation to report sensitive behaviors in surveys: Evidence from a bogus pipeline experiment. Journal of Applied Social Psychology, 27, 209-222.

Unit 7: Construct Validity 2; Statistical Validity

Video lecture: available September 23, 2025

Online meeting: Tuesday, October 7, 2025, 8:00 AM EDT/2:00 PM

Readings:

Groves, R. M., Fowler, F. J., Couper, M.P., Lepkowski, J. M., Singer, E., & Tourangeau, R. (2009). Survey methodology, 2nd Edition. Pages 259-287. Hoboken, NJ: John Wiley.

Simmons, J. P, Nelson, L. D., & Simonsohn, U. (2011). False-positive psychology: Undisclosed flexibility in data collection and analysis allows presenting anything as significant. Psychological Science, 22, 1359-66.

Unit 8: Wrap-Up

Video lecture: available September 30, 2025

Online meeting: Tuesday, October 14, 2025, 8:00 AM EDT/2:00 PM CEST

Online quiz 3: due Wednesday, October 15, 2025, 8:00 AM EDT/2:00 PM CEST

Exercise 3: due Thursday, October 16 , 2025, 8:00 AM EDT/2:00 PM CEST

Readings:

Tourangeau, R. (2004). Design considerations for questionnaire development. In S. Presser, J. Rothgeb, M. Couper, J. Lessler, E. Martin, J. Martin, and E. Singer (Eds.), Methods for Testing and Evaluating Survey Questionnaires (pp. 209-224). New York: John Wiley & Sons.

Van den Brakel, J., and Rennsen, R. H. (2005). Analysis of experiments embedded in complex sampling designs. Survey Methodology, 31, 23-40.

Van den Brakel, J. (2008). Design-based analysis of embedded experiments with applications in the Dutch Labour Force Survey. Journal of the Royal Statistical Society, Series A, 171, 581–613.

Note: Student access to the course website will be revoked four weeks after the final class.