



PSY 502: Data Analysis for Psychological Sciences I

Fall 2023

Mondays 13:40-16:30 | FASS G056

Instructor: Emre Selçuk

Course Description: PSY 502 is the first of a two-part series surveying common data analytic approaches in psychology research. We will start with reviewing some very basic analyses (which you are likely familiar with) and make our way up through more advanced models. As we progress, we will also discuss the best practices to improve the quality of analytic approaches and decisions.

Required Readings: The required readings will focus on the best practices in data analyses.

Lectures: I will be posting video lectures introducing each analytic model. Please watch these lectures **before** attending in-class meetings and try to replicate the analytical methods introduced.

In-class meetings: The meetings will take place on **Mondays at 13:40-16:30**. I will not be lecturing during these meetings. During two class hours, you will complete **assignments** on a given week's topic. Please note that **you must attend the class to get points for a given week's assignment**. During the last class hour, we'll discuss the assigned reading(s) and I will answer **your questions** about the lectures, readings, and assignments. At the end of the hour, you will submit your work via SUCourse. Please **bring your laptop** to all in-class meetings.

Course Assessment:

In-class assignments: 40% (4 points X 10 assignments)

Participation to in-class discussions: 2%

Mid-semester reflection on statistical power: 10%

In-class exam: 38%

End-of-semester reflection on regression: 10%

Grades: The following grading scheme is used to assign the final grade for the course. No changes can be made to your final grade unless there has been an arithmetical error.

A	100-93	B	79.99-75	C	64.99-60	D	49.99-45
A-	92.99-85	B-	74.99-70	C-	59.99-55	F	44.99-0
B+	84.99-80	C+	69.99-65	D+	54.99-50		

One bonus point for participation may be assigned to students who show up for classes regularly and ask thoughtful questions during classes as well as providing thoughtful responses to questions posed during classes. The participation bonus will only be assigned to those students who demonstrate extraordinary participation.

Make-up for missed assignments/exams: In order to be eligible for a make-up, you should have a valid and documented excuse.

Academic Integrity: Every student is expected to abide by the Sabancı University Academic Integrity Statement. Please see <https://www.sabanciuniv.edu/en/academic-integrity-statement>

Academic dishonesty, or plagiarism, is the act of taking someone else's work or ideas and presenting them as your own. Academic dishonesty can be deliberate or it can also result from carelessness; you will be held

responsible for academic dishonesty regardless of whether you meant to do it. Plagiarism can include anything from copying another student's work to using journal articles or an internet source (e.g., Wikipedia) in an assignment without describing them in your own words and referencing them. Please note that making small changes in a sentence (e.g., changing "a great deal" to "a lot" and "revealed" to "showed") does not mean that you paraphrased an existing idea and it is now your original claim. If you are unsure as to whether a certain act would fall in the category of academic dishonesty, please contact me for clarification. Any form of academic dishonesty in this course (e.g. plagiarism, cheating, etc.) will not be tolerated.

Resources

Please **install the following software** on your laptop at the beginning of the semester. You will be using these to complete in-class assignments.

Jamovi <https://www.jamovi.org/>

JASP <https://jasp-stats.org/>

GPower <https://www.psychologie.hhu.de/arbeitsgruppen/allgemeine-psychologie-und-arbeitspsychologie/gpower.html>

Optional free resource on JASP

<https://tomfaulkenberry.github.io/JASPbook/index.html>

Course Outline

Week 1 (October 2)

Class meeting on introductions, getting to know each other, your questions about the course, syllabus, expectations, etc.

Week 2 (October 9)

Video Lecture(s): Review of basic concepts

Reading: 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, 1359-1366.

Assignment 1 due.

Week 3 (October 16)

Video lecture(s): Review of basic concepts (cont'd)

Reading: Open Science Collaboration (2015). Estimating the reproducibility of psychological science. *Science*, 349, aac4716.

Assignment 2 due.

For Assignment 2 & 3 please read: Davidai, S., & Gilovich, T. (2016). The headwinds/tailwinds asymmetry: An availability bias in assessments of barriers and blessings. *Journal of Personality and Social Psychology*, 111, 835-851.

Week 4 (October 23)

Video lecture(s): Review of basic concepts (cont'd)

Reading: Nosek et al. (2018). The preregistration revolution. *PNAS*, 115, 2600-2606.

Assignment 3 due.

Week 5 (October 30)

Video lecture(s): Analysis of Variance (ANOVA) Part I: Between-participants designs

Reading: Aronow, P. M., Baron, J., & Pinson, L. (2019). A note on dropping experimental subjects who fail a manipulation check. *Political Analysis*, 27, 572-589. [*read Abstract, Introduction, & Conclusion*]

Ten Have, T. R., Normand, S. L. T., Marcus, S. M., Brown, C. H., Lavori, P., & Duan, N. (2008). Intent-to-treat vs. non-intent-to-treat analyses under treatment non-adherence in mental health randomized trials. *Psychiatric Annals*, 38, 772-783. [*read up to Example Studies*]

Assignment 4 due.

Week 6 (November 6)

Video lecture(s): ANOVA Part II: Within-participants designs

Reading: da Silva Frost, A., & Ledgerwood, A. (2020). Calibrate your confidence in research findings: A tutorial on improving research methods and practices. *Journal of Pacific Rim Psychology*, 14, e14.

Assignment 5 due.

Week 7 (November 13)

Video lecture(s): Introduction to correlation and regression

Reading: Pritschet, L., Powell, D., & Horne, Z. (2016). Marginally significant effects as evidence for hypotheses: Changing attitudes over four decades. *Psychological Science*, 27, 1036-1042.

For Assignment 6 & 8 please read: Turiano, N.A., Pitzer, L., Armour, C., Karlamangla, A., Ryff, C.D., & Mroczek, D.K. (2012). Personality trait level and change as predictors of health outcomes: Findings from a national study of Americans (MIDUS). *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, 67(1), 4–12, doi:10.1093/geronb/gbr072

Assignment 6 due.

Week 8 (November 20)

Video lecture(s): Regression approach to ANOVA

Reading: LeBel, E. P., Campbell, L., & Loving, T. J. (2017). Benefits of open and high powered research outweigh costs. *Journal of Personality and Social Psychology*, 113, 230-243.

Assignment 7 due.

Week 9 (November 27)

Video lecture(s): Multiple regression

Reading: Silberzahn et al. (2018). Many analysts, one data set: Making transparent how variations in analytic choices affect results. *Advances in Methods and Practices in Psychological Science*, 1, 337-356.

Assignment 8 due.

Week 10 (December 4)

Mid-semester reflection on statistical power due.

Week 11 (December 11)

Video lecture(s): Mediation analysis

Reading: Rucker, D. D., Preacher, K. J., Tormala, Z. L., & Petty, R. E. (2011). Mediation analysis in social psychology: Current practices and new recommendations. *Social and Personality Psychology Compass*, 5, 359-371.

Assignment 9 due.

Week 12 (December 18)

Video lecture(s): Moderation analysis

Reading: Giner-Sorolla R. (2018). Powering your interaction [blog post]. <https://approachingblog.wordpress.com/2018/01/24/powering-your-interaction-2>

Assignment 10 due.

Week 13 (December 25)

[EXAM, December 25, in-person]

Week 14 (January 1)

Readings: Grosz, M. P., Rohrer, J. M., & Thoemmes, F. (2020). The taboo against explicit causal inference in nonexperimental psychology. *Perspectives on Psychological Science*, 15, 1243-1255. *[optional]*

SPSP Power Analysis Working Group (2020). Power to detect what? Considerations for planning and evaluating sample size. *[optional]*

End-of-semester reflection on regression due.

Note: I reserve the right to make changes to the syllabus throughout the semester.