



PSY 502: Data Analysis for Psychological Sciences I

Fall 2024

Mondays 12:40-15:30 | FASS G043

Instructor: Gül Günaydın

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. Otherwise, you will struggle with completing in-class assignments correctly and on time.

In-class meetings: The meetings will take place on **Mondays at 12:40-15:30**. 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.

Active, high-quality participation that demonstrates your mastery of the course material and critical thinking is an essential part of this course. To this end, please make sure you watch the video lectures, complete the assigned readings, and carefully review my feedback on in-class assignments on a regular basis. Remember, your active participation in in-class discussions (mainly focusing on assigned readings) comprises a significant portion of the course assessment. Being physically present during the discussions without contributing doesn't count as active participation.

Please **bring your laptop** to all in-class meetings.

Course Assessment:

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

Participation in in-class discussions: 6%

Mid-semester reflection on statistical power: 8%

In-class exam: 38%

End-of-semester reflection on regression: 8%

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		

Make-up for missed assignments/exams: 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. Using AI tools (e.g., Chat GPT) to complete assignments will also be considered plagiarism in this course. Please note that making small changes in someone else's sentence or AI-generated text (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 (September 23)

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

Week 2 (September 30)

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 7)

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 14)

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

Reading: Nosek et al. (2018). The preregistration revolution. *Proceedings of the National Academy of Sciences*, 115, 2600-2606.

Assignment 3 due.

Week 5 (October 21)

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.

[No classes on October 28, Republic Day Eve]

Week 6 (November 4)

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 11)

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 18)

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 25)

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.

Mid-semester reflection on statistical power due.

Week 10 (December 2)

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 11 (December 9)

Video lecture(s): Moderation analysis

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

Baranger, D. A., Finsaas, M. C., Goldstein, B. L., Vize, C. E., Lynam, D. R., & Olino, T. M. (2023). Tutorial: Power analyses for interaction effects in cross-sectional regressions. *Advances in Methods and Practices in Psychological Science*, 6(3). *[optional]*

Assignment 10 due.

Week 12 (December 16)

[Review week]

Week 13 (December 23)

[EXAM, December 23, in-class]

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]*

Week 14 (December 30)

End-of-semester reflection on regression due.

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