Hertie School Fall Semester 2025

Course Syllabus

GRAD-E1201: Applied Logistic Regression Analysis

1. General information

Course Format	Onsite
Instructor(s)	Michaela Kreyenfeld
Instructor's E-mail	kreyenfeld@hertie-school.org
Teaching Assistant	William Fernandez Tinoco W.Fernandez-Tinoco@phd.hertie-school.org
Assistant (if applicable)	Alwine Hoppe hoppe@hertie-school.org
Instructor's Office Hours	Please make an appointment via email: kreyenfeld@hertie-school.org

Link to Study, Examination and Admission Rules and MIA, MDS and MPP Module Handbooks

For information on **course room, times and session dates,** please consult the Course Plan on *MyStudies*.

Instructor Information:
Prof. Dr. Michaela Kreyenfeld is professor of Sociology at the Hertie School in Berlin. Her main interest is quantitative social policy research. Specifically, she is interested in aspects related to population diversity and social inequality. Her focus is on family research, but she is also interested in applied migration, aging, health and life course research. She is co-directing the Einstein Center Population Diversity in Berlin and Co-spokesperson of the graduate school DYNAMICS. She has also worked in policy consulting, particularly in the area of family policy.

2. Course Contents and Learning Objectives

Course contents:
This course provides "hands-on" experience with logistic regression analysis. This course does not teach "dry" statistical techniques. Instead, all lectures start with a social policy-relevant research question. Together with the instructor, students will develop an understanding of how to choose the right data set, how to prepare the data for empirical investigation, and how to conduct simple but sound empirical investigations. We focus on methods for discrete data. This is because most processes in political science are discrete. To give some typical examples: What determines xenophobic attitudes? What affects poverty and social exclusion? What factors relate to intimate partner violence? To answer such questions in a regression framework, logistic regression techniques are commonly used. We draw on data from across the globe, including data from Latin America, Africa and Asia.

Main learning objectives:
Apart from providing an applied introduction to logistic regression modelling, the course also aims at enhancing students' ability to formulate research questions and to interpret and visualize descriptive statistics as well as results from regression models. We will rely on "R" for the course. It is useful to have some basic knowledge of this software, but we will start from "scratch", as there are always some students who need to brush up their knowledge (either because they are exchange students and completely new to the software or because students have been away for a professional year and forgot most of their R-skills).

Target group:
The course is designed for students who have taken Statistics I. MIA Students, MPP students as well as MDS-students with an interest in practical applications may attend the course. It is also useful for exchange students with an interest in applied research. The course is very suitable for students who are searching for data for their MA-projects. The course leaves room to explore the potential of different data sets and to employ the data to answer policy-relevant research questions.

Teaching style:
The sessions are organized in lectures (first part of lecture) and labs (second part of lecture). During the lab, exercises will be solved together with the instructor.

Prerequisites:
The course does NOT require any deep statistical or mathematical knowledge, apart from the skills that were taught in Statistics I.

Diversity Statement:
Understanding and respect for all cultures and ethnicities is central to the teaching at Hertie. Being mindful of diversity is an important issue for policy professionals in the planning, implementation, and evaluation of programmes designed for specific groups, populations, or communities. Diversity and cultural awareness will be integrated in the course content whenever possible. This course addresses key concept of population diversity and social inequality. The course is not restricted to any particular area of the world. Students are encouraged to work with data from different countries, such as data from the DHS, Latino- or Afrobarometer.

3. Grading and Assignments

Composition of Final Grade:

Assignment 1: Research Paper	Deadline: 3rd of November 2025, 5 p.m.	Submit paper via Moodle	45%
Assignment 2: Presentation of a Research Paper	Deadline: Session 7	Submit slides via Moodle	15%
Participation grade (including weekly exercises)	Completed exercises need to be uploaded by Thursday 5 p.m.		40%

Assignment Details

Assignment 1

The research paper includes a piece of empirical investigation based on the methods taught in the course (2,500 words +/-10%, including abstract, excluding references, R code). It is expected that the paper not only includes the empirical investigation, but that the students select a topic that allows them to develop testable hypotheses. The students will develop a topic together with the instructor. Teamwork is permitted (+1,500 for each additional author).

Assignment 2

Oral presentation (about 5-10 minutes) of planned research project. It is expected that all students prepare slides for their presentations and upload the slides of the presentation before the presentation.

Participation grade

Exercises will be handed out during the lecture. Parts of the exercises must be completed in class; the rest must be finalized at home. The completed exercises must be uploaded to Moodle. Each exercise contains a small task to practise the techniques we learned in class. For example, an exercise may include the tasks to run a logistic regression and interpret the coefficients of an analytical sample that we compiled in class. The exercises are part of the participation grade. Note that exercises may include additional readings (not listed in the syllabus) that are relevant to solving the exercise.

Late submission of assignments: The same regulations that apply to MA-theses apply for the research papers: The deadline for the research paper is hard. Late submissions will be sanctioned with a reduction in the grade as stipulated below. Deadline extension is only granted based on medical certificate or equivalent that must be submitted to the examination office.

- Up to 3 hours past deadline: 2-point reduction.
- Between 3 hours and less than 24 hours late: 5-point reduction.
- Per day late: 10 points (24-48 hours late means a 20-point reduction, etc.).

Attendance: Students are expected to be present and prepared for every class session. Active participation during lectures and seminar discussions is essential. If unavoidable circumstances arise which prevent attendance or preparation, the instructor should be advised by email with as much advance notice as possible. Please note that students cannot miss more than two out of 12 course sessions. For further information please consult the Examination Rules §10.

Academic Integrity: The Hertie School is committed to the standards of good academic and ethical conduct. Any violation of these standards shall be subject to disciplinary action. Plagiarism, misuse of AI, free riding in group work, and other deceitful actions are not tolerated. See Examination Rules §16, the Hertie Plagiarism Policy, and the Hertie Guidelines for Artificial Intelligence Tools.

Compensation for Disadvantages: If a student furnishes evidence that he or she is not able to take an examination as required in whole or in part due to disability or permanent illness, the Examination Committee may upon written request approve learning accommodation(s). In this respect, the submission of adequate certificates may be required. See Examination Rules §14.

Extenuating circumstances: An extension can be granted due to extenuating circumstances (i.e., for reasons like illness, personal loss or hardship, or caring duties). In such cases, please contact the course instructor and Examination Office *in advance* of the assignment deadline.

4. Course Readings

Session 1 **Basic concepts and terminology of logistic regression analysis**	
Learning Objective	This lecture refreshes basic statistical skills and R knowledge. In addition, basic concepts and terminology of logistic regression (such as odds, odds ratios, contingency tables) are introduced. Data will come from the ISSP which will be used to study the determinants of preferences for government spending.
Readings (Content)	Busemeyer, M. R.; Goerres, A.; Weschle, S. (2009). Attitudes towards redistributive spending in an era of demographic aging. The rival pressures from age and income in 14 OECD Countries. Journal of European Social Policy, 19: 195-212. Busemeyer, M., Ober, D. (2020): Between solidarity and self-interest: The elderly and support for public education revisited. Journal of Social Policy, 49: 425-444.

Session 2: **Logistic regression models**	
Learning Objective	This session provides an introduction to the basic structure of logistic regression models. We will get familiar with the correct interpretation of Odds Ratios. The outcome variable will be gender role attitudes. Data comes from the ISSP 2012 and 2022.
Readings (Content)	Neimanns, E. (2022). Making mothers stay at home? Analyzing the impact of partisan cueing on attitudes toward maternal employment. Social Politics, 29: 831–855. Spéder, Z. (2023). A quarter century of change in family and gender-role attitudes in Hungary. Comparative Population Studies, 48.

Session 3: Confounders and mediators	
Learning Objective	We will get a deeper understanding of regression results. Why do parameters change after the inclusion of further variables into the model? The outcome variable is anti-immigrant sentiments. We will examine how they are influenced by education and employment status. Data will come from the WVS.
Readings (Content)	Ceobanu, A., Escandell, X. (2010): Comparative analyses of public attitudes toward immigrants and immigration using multinational survey data: A review of theories and research. Annual Review of Sociology, 36: 309-328.

Session 4: Predicted values and continuous controls	
Learning Objective	We will learn how to plot the predicted probabilities (margins) from the model when the covariates are categorical or continuous. Data will come from the European Social Survey (ESS). The outcome variable will be political interest.
Readings (Content)	Rennwald, L. Pontusson, J. (2022): Class gaps in perceptions of political voice: liberal democracies 1974–2016. West European Politics, 45: 1334-1360. Sánchez-Vítores, Irene (2019): Different governments, different interests: The gender gap in political interest. Social Politics, 26: 348-369.

Session 5: Interaction models (with categorical variables)	
Learning Objective	This lecture addresses interaction models and their visualisation and interpretation. Data comes from the Demographic Health Survey. The main outcome is Intimate Partner Violence (IPV).
Readings (Content)	Stöckl, H. et al. (2021): Economic empowerment and intimate partner violence: a secondary data analysis of the cross-sectional Demographic Health Surveys in Sub-Saharan Africa. BMC Women's Health, 21.

Session 6: Interaction models (with continuous variables)	
Learning Objective	We deepen the understanding of interaction model, but now focus on continuous variables. This session also draws attention to the limitations of logistic regression modelling. Data will come from the PISA-data. We will examine how parental class influences own educational success.
Readings (Content)	DiPrete, T. (2020): The impact of inequality on intergenerational mobility. Annual Review of Sociology, 4: 379398.

Session 7: Presentation of student projects	
Learning Objective	In a “mini-workshop”, students will present their research projects. Each presenter will have about 10 min. to present (+10 min. of discussion).

Session 8: Ordered logits and multinominal regression models	
Learning Objective	This session introduces to ordered logit as well as multinomial models. The focus will be on the question whether employment, income and earnings influence far-right extremism. Data comes from the GSOEP.
Readings (Content)	Engler, S., Weisstanner, D. (2021): The threat of social decline: income inequality and radical right support. Journal of European Public Policy, 28: 153-173.