

Applied quantitative research in public administration and or- ganizational science

*Research Master Program 'Research in Public Administration and Organizational Science'
Utrecht University*

1. Introduction

1.1. General information

Course number	USG7653	
Semester, period	Semester 2, period 3 2018-2019	
Credits	5 ECTS	
Coordinator	Dr. Marc van de Wardt	
Lecturers	Dr. Marc van de Wardt	M.vdWardt@uvt.nl
	Dr. Michael Verba	M.A.Verba@uvt.nl
	Dr. Bas Bosma	B.Bosma@uvt.nl
	Dr. Alex Ingrams	A.Ingrams@uvt.nl

1.2. Contents of the course

This course will give a broad introduction into today's most important quantitative research methods in the field of public administration and organization science. Specifically, students will learn how these methods can be used in an applied setting. How can governments, public organizations, NGOs, and think-tanks use these methods to evaluate the impact of policy interventions, study the determinants of public sector performance and solve real-world problems?

The six lectures will provide students with the basics about several important quantitative methods. The first two lectures will focus on multiple regression analysis, including regression assumptions and complex causal relationships (i.e., mediation and moderation). In lecture 3 and 4, we will turn to impact-evaluation methods that allow us to assess the effect of policy interventions when randomization of treatment and control groups is not possible. Specifically, we will cover differences-in-difference, matching and regression discontinuity designs, first covering the theory behind the aforementioned techniques, followed by exploration of their use in empirical and applied research. Lecture 5 addresses agent-based-modelling. By means of computer simulations these models show how micro-level decision-making produces macro-level outcomes like traffic jams and neighborhood segregation. Again, we will focus on how these simulations can inform policy-making. Finally, lecture 6 wraps it up. Then we will also discuss the requirements for the final paper and you will receive feedback on your research plan.

Because of the applied nature of this course, we will focus on how the aforementioned techniques are used in a real-world setting. We will do so by evaluating extant applied research (e.g., publications by government bodies, empirical scientific articles), by focusing on real-life cases, and by involving lecturers with experience in applied quantitative research. Dr. Ingrams will be presenting his research for the Independent Reporting Mechanism (IRM), a body that files progress reports on the implementation of open government principles by member countries. Dr. Verba will present applied work from several areas of public administration and policy, including: innovation policy, health systems management, land use regulation, and international development. Dr. Bosma also has extensive experience in doing research commissioned by the public and private sector. Finally, students will carry out their own applied research. Based on an existing dataset (e.g., data gathered by a national bureau of statistics), they will study a real-world policy problem by means of one of the methods taught during the course. The paper will conclude with policy advice.

The structure of the weekly meetings is as follows. A lecture will be given on the methodological topics of that day. These lecturers will not just focus on technical issues, but also highlight how the techniques are used in an applied setting. Each meeting concludes with a lab session. During the lab sessions, students will be taught how to carry out the analyses in the statistical analysis program called STATA. It is therefore highly recommended that students carry out their group assignments and final paper in STATA. While STATA is available on the student computers at Tilburg University, those wishing to work from home will have to buy a license. A 6 month student version can be purchased online for 45 dollars (<https://www.stata.com/order/new/edu/gradplans/student-pricing/nodl/>).

In order to have fruitful discussions, you are expected to come to class well-prepared and to actively participate.

1.3. Learning outcomes

After completing this course, students will:

- have acquired an overview of the most important quantitative research methods in the fields of public administration and organizational science
- have gained insight into how quantitative methods can be applied by governments, public organizations, NGOs and think-tanks to inform policy making
- be able to critically evaluate applied quantitative research
- be able to carry out applied quantitative research

1.4. Time table

Date	Time	Lecturer	Location
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Friday February 15 th	10.45-14.30	Marc van de Wardt	Tilburg University-Montesquieu Building 9 Room MO23 ¹
Friday February 22 th	10.45-14.30	Marc van de Wardt Alex Ingrams	Tilburg University-Montesquieu Building 9 Room MO23
Friday March 1 th	10.45-14.30	Michael Verba	Tilburg University-Montesquieu Building 9 Room MO23
Friday March 8 th	10.45-14.30	Michael Verba	Tilburg University-Montesquieu Building 9 Room MO23
Friday March 15 th	10.45-14.30	Bas Bosma	Tilburg University-Montesquieu Building 9 Room MO23
Friday March 22 th	10.45-14.30	Marc van de Wardt	Tilburg University-Montesquieu Building 9 Room MO23

1.5. Weekly schedule

Lecture	Topics	Deadline
Friday February 15 th	Introduction to multiple regression analysis	
Friday February 22 th	Multiple regression analysis: complex causality and regression assumptions. Guest lecture on Open Government Partnership	
Friday March 1 th	Introduction to impact evaluation analysis: difference-in-difference	Hand in Group Assignment 1 before lecture begins (10.45 am)
Friday March 8 th	Advanced methods of impact evaluation: difference-in-difference, propensity score	

¹ <https://www.tilburguniversity.edu/nl/contact/campus-map/montesquieu/>),

	matching and regression discontinuity designs	
Friday March 15 th	Agent based models	Hand in Group Assignment 2 before lecture begins (10.45 am)
Friday March 22 th	Wrapping it up Discussion of research proposals for the final paper	Hand in Group Assignment 3 before lecture begins (10.45 am)
Wednesday April 10 th 9.00 am		Hand in final paper
Thursday June 6 th 9.00 am		Resit final paper
Thursday June 6 th 9.00 am		Resit assignment grade

1.6. Literature

The scheme below lists the mandatory and optional literature for each week. Students are expected to have read all mandatory articles and book chapters before class. The book chapters are all open source (and thus free!) and can be downloaded by clicking on the URLs provided below. Journal articles can be downloaded through Google Scholar with a VPN connection from your university. The other references are optional. The free, online STATA tutorials are highly recommended for those wishing to increase their knowledge of this program that we will use throughout the course.

Friday February 15 th	<p>Mandatory readings (most fruitfully read in following order):</p> <p>Groeneveld, S., Tummers, L., Bronkhorst, B., Ashikali, T., & Van Thiel, S. (2015). Quantitative methods in public administration: Their use and development through time. <i>International Public Management Journal</i>, 18(1), 61-86.</p> <p>Diez et al. (2015) Chapter 7 Introduction to linear regression, pp. 331-356. Download from : https://drive.google.com/file/d/0B-DHaDEbiOGkc1RycUtlcUtleIE/view</p> <p>Gerring, J. (2005). Causation: A unified framework for the social sciences. <i>Journal of Theoretical Politics</i>, 17(2), 163-198.</p>
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<p>Friday February 22th</p>	<p>Mandatory readings (most fruitfully read in following order):</p> <p>Casella et al. (2013) Chapter 3 Linear regression pp. 59-108. Download from: http://www-bcf.usc.edu/~gareth/ISL/ISLR%20Seventh%20Printing.pdf</p> <p>Brambor, T., Clark, W. R., & Golder, M. (2005). Understanding interaction models: Improving empirical analyses. <i>Political analysis</i>, 14(1), 63-82</p> <p>MacKinnon, D. P., Krull, J. L., & Lockwood, C. M. (2000). Equivalence of the mediation, confounding and suppression effect. <i>Prevention science</i>, 1(4), 173-181.</p> <p>Grimmelikhuijsen, S. G., & Feeney, M. K. (2017). Developing and testing an integrative framework for open government adoption in local governments. <i>Public Administration Review</i>, 77(4), 579-590.</p> <p>Optional</p> <p>Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. <i>Journal of personality and social psychology</i>, 51(6), 1173.</p> <p>Hayes, A. F. (2009). Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. <i>Communication monographs</i>, 76(4), 408-420.</p> <p><u>Stata tutorials on multiple regression:</u> http://www.princeton.edu/~otorres/Regression101.pdf</p>
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	<p>https://www.ucm.es/data/cont/docs/430-2015-06-22-rave_heschet%202004%20hand-book_STATA.pdf</p>
<p>Friday March 1th</p>	<p>Mandatory readings (most fruitfully read in following order):</p> <p>Read (4 pages): Khandker, S. R., Koolwal, G. B., & Samad, H. A. (2010). Introduction. In <i>Handbook on Impact Evaluation: Quantitative Methods and Practices</i> (pp. 3-6). World Bank. Retrieved from https://openknowledge.worldbank.org/handle/10986/2693</p> <p>Read (24 pages): Khandker, S. R., Koolwal, G. B., & Samad, H. A. (2010). Basic Issues of Evaluation. In <i>Handbook on Impact Evaluation: Quantitative Methods and Practices</i> (pp. 7-30). World Bank. Retrieved from https://openknowledge.worldbank.org/handle/10986/2693</p> <p>On difference-in-difference: Khandker, S. R., Koolwal, G. B., & Samad, H. A. (2010). Double Difference. In <i>Handbook on Impact Evaluation: Quantitative Methods and Practices</i> (pp. 71-84). World Bank. Retrieved from https://openknowledge.worldbank.org/handle/10986/2693</p> <p>Steinhardt, L. C., Aman, I., Pakzad, I., Kumar, B., Singh, L. P., & Peters, D. H. (2011). Removing User Fees for Basic Health Services: A Pilot Study and National Roll-Out in Afghanistan. <i>Health Policy and Planning, 26 Suppl 2</i>, ii92–103. doi:10.1093/heapol/czr069</p> <p>Optional</p>

	<p>Watch: Searching for Answers with Randomized Experiments, with Abhijit Banerjee, MIT and Angus Deaton, Princeton University and Woodrow Wilson School http://www.youtube.com/watch?v=2Js-AxZcmr8</p> <p>Ravallion, M. (2001). The Mystery of the Vanishing Benefits: An Introduction to Impact Evaluation. <i>The World Bank Economic Review</i>, 15(1), 115–140. doi:10.1093/wber/15.1.115</p>
<p>Friday March 8th</p>	<p>Mandatory readings (most fruitfully read in following order):</p> <p>On propensity score matching: Khandker, S. R., Koolwal, G. B., & Samad, H. A. (2010). Propensity Score Matching. In <i>Handbook on Impact Evaluation: Quantitative Methods and Practices</i> (pp. 53-68). World Bank. Retrieved from https://openknowledge.worldbank.org/handle/10986/2693</p> <p>Bérubé, C., & Mohnen, P. (2009). Are Firms That Receive R&D Subsidies More Innovative? <i>The Canadian Journal of Economics / Revue Canadienne d'Économique</i>, 42. Retrieved from http://www.jstor.org/stable/25478346</p> <p>On regression discontinuity design: Khandker, S. R., Koolwal, G. B., & Samad, H. A. (2010). Regression Discontinuity and Pipeline Methods. In <i>Handbook on Impact Evaluation: Quantitative Methods and Practices</i> (pp. 103-112). World Bank. Retrieved from https://openknowledge.worldbank.org/handle/10986/2693</p>

	Grout, C. A., Jaeger, W. K., & Plantinga, A. J. (2011). Land-Use Regulations and Property Values in Portland, Oregon: A Regression Discontinuity Design Approach. <i>Regional Science and Urban Economics</i> , 41(2), 98–107. doi:10.1016/j.regsci-urbeco.2010.09.002
Friday March 15 th	<p>Mandatory readings (most fruitfully read in following order):</p> <p>Bonabeau, E. (2002). Agent-based modeling: Methods and techniques for simulating human systems. <i>Proceedings of the National Academy of Sciences</i>, 99(suppl 3), 7280-7287.</p> <p>Macal, C. M., & North, M. J. (2010). Tutorial on agent-based modelling and simulation. <i>Journal of simulation</i>, 4(3), 151-162.</p> <p>De Marchi, S., & Page, S. E. (2014). Agent-based models. <i>Annual Review of Political Science</i>, 17, 1-20.</p>
Friday March 22 th	No readings, students are expected to prepare a research proposal for final paper (see below). Each student's proposal will be discussed in class

1.7. Computer programs

During the lab sessions, students will be taught how to carry out the analyses in the computer program STATA. Additionally, the lecturers will teach them some basic commands like how variables can be recoded, datasets can be merged, etc. It is therefore **highly recommended that students carry out their assignments and final paper in STATA**. While STATA is available on the student computers at Tilburg University, students wishing to work from home will have to buy a license. A 6 months student version can be purchased online for 45 dollars (<https://www.stata.com/order/new/edu/gradplans/student-pricing/nodl/>).

Opt for the STATA/IC version, the others are much more expensive!

1.8. Format

During the lectures, the statistical techniques will be introduced and explained by either the course coordinator or a guest lecturer considered a specialist. The lecturers will highlight how these techniques are used in an applied setting. Each meeting will end with a lab session in which students are walked through the application of the method in STATA.

2. Assessment

2.1. Assignments

This is a **5 ECTS** course, corresponding to a total **workload of 140 hours** (28*5), or an average workload of **28 hours per week**. Students will hand in **three group assignments**, which will appear on Osiris at least one week before their due date. Groups will consist of approximately 2-3 students. The three assignments constitute 40% of the final grade. Assignments should be handed in **in hard-copy and by e-mail** to the course instructor. The deadlines are:

- Friday March 1th 10.45 am (Assignment 1: multiple regression analysis)
- Friday March 15th 10.45 am (Assignment 2: impact evaluation analysis)
- Friday March 22th 10.45 am (Assignment 3: applying agent based models)

2.2. Final paper

In the final paper, students will carry out their own **applied research**. Based on an **existing dataset** (e.g., data gathered by a research institute, research project, or national bureau of statistics), they will study a real-world policy problem by means of **a method taught during the course**. The paper will conclude with a brief policy advice. The final paper is **written and graded individually and should be in English**. Additionally, the following aspects are relevant:

1. Students are free to select a research topic that matches their own interests, meaning that they will select their own data from an existing source. Collecting your own data lies beyond the scope of this course. Examples of interesting datasets include: IDEA (<https://www.idea.int/about-us#node-13>), the World Governance Dataset (<http://www.nsd.uib.no/macrodataloguide/set.html?id=50&sub=1>), Eurostat (<http://ec.europa.eu/eurostat>), the CIA Factbook (<https://www.cia.gov/library/publications/the-world-factbook/>), the World Values Survey (<http://www.worldvaluessurvey.org/wvs.jsp>), or the European Social Survey (<http://www.europeansocialsurvey.org/>). For the final lecture (March 22th) there are no reading assignments, but instead students **should prepare by choosing a dataset and drafting a brief research plan for their final papers (max 1 A4)**. This plan should contain information on the research question, the actor(s) having a stake in this research (i.e., the hypothetical commissioner), the method of analysis, and the dependent and independent variables to be included in the analysis. We will discuss each student's research plans in class.

2. The final paper should be applied research, meaning that the research paper aims to provide a solution for a practical problem facing a specific actor like for instance an organization, national government, or global organization. Students will have to indicate for which stakeholder (e.g., a national government ministry, an organization, a global organization, an NGO, etc.) their research carries relevance.
3. The paper should be around **4000 words** (+/- 10%, excluding reference list and tables) written in English and is to be structured as follows: Abstract → Introduction → Theory and hypotheses → Data and research methods → Results → Conclusion and policy advice to the stakeholders.
4. The paper must satisfy **two minimum requirement**: a) in-text citations and a reference list must be provided, b) sufficient care to grammar and spelling must be apparent. **If one of these requirements has not been met according to the course coordinator, the paper will be graded a 1** (out of 10).
5. Before the final lecture the grading scheme for the final paper will be made available on Osiris.
6. The paper needs to be handed in before Wednesday April 10th 9 am. The paper needs to be send to the course coordinator through e-mail and it needs to be uploaded in our system Ephorus before the deadline mentioned above. The Ephorus code is **2018-USG7653**.

2.3. Examination Scheme

Component	Deadline	Weight	Conditions to pass / resit
Average of three group assignments	See 1.5 or 2.1	40% (1/3 each)	<p>The final grade consists of two components: the average assignment grade and final paper grade. To successfully complete this course, the average of the two components should be a 5.5 or higher. Furthermore, the grade for each of the two components should be at least a 5.0.</p> <p>If the average of the two components is between a 4.0 and 5.4 or if students received an “ND” (did not participate) for any of the two components, they may resit the assignments and/or final paper.</p> <p>While resitting the final paper speaks for itself, resitting the assignments implies that students may newly hand in any or all of the three group</p>
Final paper	April 10 th 9 am	60%	
Resit	June 6 th 9 am		

			assignments either individually or with their former group members, depending on who has or wants to resit. A grade for a resit replaces the original grade.
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2.4. *Fraud and plagiarism*

Rules from the 'Education and Examination Regulations', more specifically section 5, apply to the testing. The 'Education and Examination Regulations' can be found here: <https://students.uu.nl/en/leg/research-in-public-administration-and-organisational-science/practical-information/academic-policies-and-procedures>