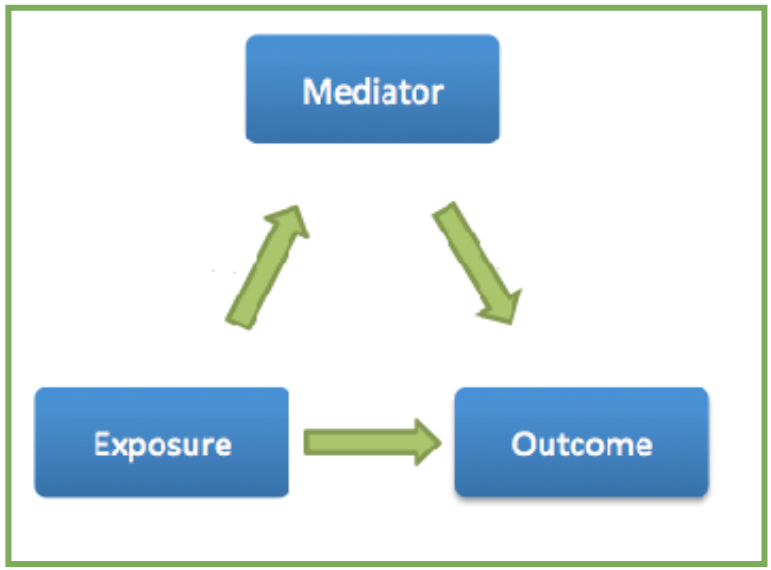
University of Pavia

Department of Brain and Behavioral Sciences

Pavia, 11-13 September 2017

CAUSAL MEDIATION ANALYSIS

Prof. Stijn Vansteelandt
Ghent University



Teacher

Professor Stijn Vansteelandt,
Ghent University

Stijn Vansteelandt is Professor of Statistics at Ghent University, and Professor of Statistical Methodology at the London School of Hygiene and Tropical Medicine. He did postdoctoral research at the Harvard School of Public Health and Ghent University. He is a leading expert in causal inference: a fast-growing field within statistics, which focuses on the development of statistical methods for inferring the causal effect of an exposure on an outcome from experimental and observational data under minimal and well-understood assumptions. He has authored over 140 peer-reviewed publications in international journals on a variety of topics in biostatistics, epidemiology and medicine, such as the analysis of longitudinal and clustered data, missing data, mediation and moderation/interaction, instrumental variables, family-based genetic association studies, analysis of outcome-dependent samples and phylogenetic inference.

He is Co-Editor of Biometrics, the flagship journal of the International Biometric Society, and has previously served on the editorial boards of Biometrics (2006-2012), Biostatistics (2010-2015), Epidemiological Methods (2011-2015), Journal of Causal Inference (2011-2015), and Epidemiology (2013-2015).

Within fields spanning drug testing, epidemiology and social sciences, researchers are often faced with the challenge of decomposing the effect of an exposure into different causal pathways working through defined mediator variables. The goal of such analyses is often to understand the mechanisms of the system or to suggest possible interventions. Over the last two decades mediation analyses have developed both a theoretical framework for understanding effect decomposition and specific tools to the actual estimations.

In this course we will introduce the modern causal inference based understanding of effect decomposition. All theoretical concepts will be set into the context of real life research problems. The course will enable the participants to conduct their own mediation analyses in settings with either single or multiple mediators, by making use of specific R packages for mediation analysis. The examples of the course will be taken from medical testing, epidemiology and social sciences. Exercise sessions throughout the course will ensure that participants actively use the just taught concepts.

REGISTRATION FEES

Academic	**€ 400,00**
Student	**€ 300,00**
Non academic	**€ 500,00**

Deadline for sending application

31 August 2017

Program:

DAY 1: SINGLE MEDIATOR STUDIES

Morning: linear mediation analysis

- Traditional mediation analysis: product and difference-of-coefficient methods
- Estimands: controlled direct effects, interventional (in)direct effects, natural (in)direct effects
- Controlling confounding
- Calculating direct and indirect effects in linear mediation analysis under no-interaction assumptions

PC-lab: linear mediation analysis, non-collapsibility

Afternoon: non-linear mediation analysis

- Limitations of traditional mediation analysis, non-collapsibility
- Calculating direct and indirect effects using the mediation formula

PC lab: the mediation formula, the mediation package

DAY 2: MULTIPLE MEDIATOR STUDIES

Morning: understanding confounding control using causal diagrams

- Causal diagrams and d-separation
- Lab: causal diagrams
- Challenges of multiple mediator studies

Afternoon: multiple mediator analysis

- Mediation analysis one at a time
- Sequential mediation analysis

PC Lab: sequential mediation analysis

DAY 3: FLEXIBLE MEDIATION ANALYSES

Morning: natural effect models

- Natural effect models
- Weighting and imputation approaches for fitting natural effect models

PC Lab: natural effect models, the medflex package

Afternoon: extensions

- Natural effect models for multiple mediators
- Interventional (in)direct effects
- Complex designs
- High-dimensional mediators

Venue

Department of Brain and Behavioral Sciences,
Cascina Cravino, via Bassi, 21.

Secretary

Dr. Gianfranca Corbellini,
Department of Brain and Behavioral Sciences
Pavia, Italy
Telephone : 0382 987526
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Causal Mediation Analysis

Deadline for sending application 31 August 2017

REGISTRATION FORM

The registration form, completed in all its part, must be sent to the secretary by email at dbbs.master@unipv.it together with the proof of payment.

Surname: .....

Name: .....

Place and date of birth: .....

Address: .....

City/Zip:..... **State:** .....

Phone: ..... **Fax:** .....

Italian Fiscal Code .....
(ONLY FOR FOREIGN PEOPLE: copy of the passport for the invoice)

email: .....

Institution: .....

.....

Department: .....

.....

Qualification: .....

Under the Italian Law 196/2003, the personal data will be processed by the University of Pavia, Via Bassi 21, Pavia

REGISTRATION FEES	
Academic	**€ 400,00**
Student	**€ 300,00**
Non academic	**€ 500,00**

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