

# Stijn Vansteelandt

++32-9-2644776 <u>stijn.Vansteelandt@UGent.be</u>

http://users.ugent.be/~svsteela/

# Profile

Stijn Vansteelandt (born April 1, 1976; Ostend, Belgium) graduated as Master in Mathematics at Ghent University in 1998, and obtained a PhD in Mathematics (Statistics) in 2002 at the same university. After postdoctoral research at the Department of Biostatistics of the Harvard School of Public Health, he returned to Ghent University in 2004, where he is now Full Professor in the Department of Applied Mathematics, Computer Science and Statistics. He is furthermore Honorary Professor in the Department of Epidemiology and Population Health at the London School of Hygiene and Tropical Medicine.

Stijn Vansteelandt 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 100 peerreviewed 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, familybased genetic association studies, analysis of outcome-dependent samples and phylogenetic inference. He is Co-Editor of Biometrics, the leading flagship journal of the International Biometrics Society, and has previously served as Associate Editor for the journals Biometrics, Biostatistics, Epidemiology, Epidemiologic Methods and the Journal of Causal Inference. His recent research is primarily aimed at making causal inferences less vulnerable to the weaknesses (imprecision, finite-sample bias and susceptibility to model misspecification) of simple inverse probability weighted estimators that dominate causal inference research. He aims to realise this either by improving inverse probability weighted estimation (see his work on bias-reduced double-robust estimation) or by popularising and extending alternative estimation methods, such as g-estimation, that avoid inverse weighting (see his work on additive hazard models and g-estimation).

## Experience

PROFESSOR OF STATISTICS; GHENT UNIVERSITY, BELGIUM; 10/2012 - PRESENT

HONORARY PROFESSOR, LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, U.K.; 6/2010 - PRESENT

ASSOCIATE PROFESSOR OF STATISTICS; GHENT UNIVERSITY, BELGIUM; 10/2010 - 9/2012

#### CV Stijn VANSTEELANDT

ASSISTANT PROFESSOR OF STATISTICS; GHENT UNIVERSITY, BELGIUM; 10/2004 - 9/2010

RESEARCH FELLOW OF THE HARVARD SCHOOL OF PUBLIC HEALTH, HARVARD UNIVERSITY, U.S.A.; 1/2003 - 5/2003

POSTDOCTORAL FELLOW OF THE FUND FOR SCIENTIFIC RESEARCH; GHENT UNIVERSITY, BELGIUM; 10/2002 - 9/2004

RESEARCH ASSISTANT OF THE FUND FOR SCIENTIFIC RESEARCH; GHENT UNIVERSITY, BELGIUM; 10/1998 - 9/2002

#### Education

Ghent University, Ghent, Belgium - Master of Mathematics, 1998

Ghent University, Ghent, Belgium - PhD in Mathematics, 2002

Supervisor: Prof. Dr. Els Goetghebeur.

Title of thesis: Sense and sensitivity in the causal analysis of incomplete data.

#### Membership of Editorial Boards

Associate Editor of Biometrics (2006-2012)

Associate Editor of Biostatistics (2010-present)

Associate Editor of Epidemiological Methods (2011-present)

Associate Editor of the Journal of Causal Inference (2011-present)

Associate Editor of Epidemiology (2013-present)

Co-Editor of Biometrics (2016-)

#### Awards

Winner of the ISCB Student Conference Awards (1999). Regression Models for Disease Prevalence with Diagnostic Tests on Pooled Serum Samples. 20th Annual Conference of the International Society for Clinical Biostatistics, Heidelberg, Germany. Winner of the ASA Student Paper Competition (2000). The Imputation towards Directional Extremes (IDE) Algorithm for Analyzing Sensitivity to Incomplete Outcomes. Joint Statistical Meetings, Indianapolis, U.S.A.

Prijs Ontwikkelingssamenwerking 2001 (Development Co-operation Prize 2001, Belgium).

Winner of the Quetelet Prize 2001-2002 (for a most outstanding Doctoral Thesis in Statistics).

# Publications in books

**Vansteelandt, S.** and Goetghebeur, E. (2005). Maximum likelihood estimation. In Encyclopaedic Companion to Medical Statistics (eds. Everitt, B. and Palmer, C. R.), Ar nold Publishers.

**Vansteelandt, S.** and Goetghebeur, E. (2005). Least squares estimation. In Encyclopaedic Companion to Medical Statistics (eds. Everitt, B. and Palmer, C. R.), Arnold Publishers.

Goetghebeur, E. and **Vansteelandt, S.** (2005). Missing values. In Encyclopaedic Companion to Medical Statistics (eds. Everitt, B. and Palmer, C. R.), Arnold Publishers.

**Vansteelandt, S.** and Goetghebeur, E. (2010). Causal effect (direct and indirect). In Encyclopaedic Companion to Medical Statistics, 2nd edition (eds. Everitt, B. and Palmer, C. R.), Wiley.

**Vansteelandt, S.** and Goetghebeur, E. (2010). Inverse probability weighting. In Encyclopaedic Companion to Medical Statistics, 2nd edition (eds. Everitt, B. and Palmer, C. R.), Wiley.

Sjolander, A. and **Vansteelandt, S.** (2010). Marginal structural models. In Encyclopaedic Companion to Medical Statistics, 2nd edition (eds. Everitt, B. and Palmer, C. R.), Wiley.

**Vansteelandt, S.** (2012). Estimation of direct and indirect effects. Causal Inference: Statistical Perspectives and Applications, (C. Berzuini, P. Dawid and L. Bernardinelli, eds.). Wiley and Sons.

**Vansteelandt, S.** (2014). Semi-parametric sensitivity analysis. Handbook of Missing Data Methodology (eds. G. Molenberghs, G. Fitzmaurice, M.G. Kenward, A.A. Tsiatis and G. Verbeke). CRC Press.

Rotnitzky, A. and **Vansteelandt, S.** (2014). Double-robust methods. Handbook of Missing Data Methodology (eds. G. Molenberghs, G. Fitzmaurice, M.G. Kenward, A.A. Tsiatis and G. Verbeke). CRC Press.

## Publications in scientific journals with peer review

**Vansteelandt, S.**, Goetghebeur, E. and Verstraeten, T. (2000). Regression Models for Disease Prevalence with Diagnostic Tests on Pooled Serum Samples. Biometrics, 56, 1126-1133.

**Vansteelandt, S.** and Goetghebeur, E. (2001). Generalized Linear Models with Incomplete Outcomes: the IDE Algorithm for Estimating Ignorance and Uncertainty. Journal of Computational and Graphical Statistics, 10, 656-676.

Loeys, T., **Vansteelandt, S.** and Goetghebeur, E. (2001). Accounting for Correlation and Compliance in Cluster Randomised Trials. Statistics in Medicine, 20, 3753-3767.

Mwanyumba, F., Gaillard, P., Inion, I., Verhofstede, C., Claeys, P., Chohan, V., **Vansteelandt, S.**, Mandaliya, K., Praet, M. and Temmerman, M. (2002). Placental inflammation and Perinatal transmission of HIV-1. Journal of Acquired Immune Deficiency Syndromes, 29, 262-269.

De Vuyst, H., Steyaert, S., Van Renterghem, L., Claeys, P., Muchiri, L., Sitati, S., **Vansteelandt, S.**, Quint, W., Kleter, B., Van Marck, E. and Temmerman, M. (2003). Distribution Of Human Papillomavirus In A Family Planning Population In Nairobi, Kenya. Sexually Transmitted Diseases, 30, 137-142.

**Vansteelandt, S.** and Goetghebeur, E. (2003) Causal inference with generalized structural mean models. Journal of the Royal Statistical Society – Series B, 65, 817-835.

Harro, J., Fischer, K., **Vansteelandt, S.** and Harro, M. (2004). Both low and high activity of platelet monoamine oxidase increase the probability of becoming a smoker. European Neuropsychopharmacology, 14, 65-69.

Verstraelen, H., **Vansteelandt, S.** and Temmerman, M. (2004). Bacterial vaginosis: not a risk for preterm birth? British Journal of General Practice, 54, 547.

**Vansteelandt, S.** and Goetghebeur, E. (2004). Using potential outcomes as predictors of treatment activity via strong structural mean models. Statistica Sinica, 9, 891-909.

**Vansteelandt, S.** and Goetghebeur, E. (2005) Sense and sensitivity when correcting for observed exposures in randomized clinical trials. Statistics in Medicine, 24, 191-210.

**Vansteelandt, S.**, Goetghebeur, E., Thomas, I., Mathys, E. and Van Loock, F. (2005). On the Safety of Plasma Pools and Derivatives. Statistics in Society, 168, 345-363.

Goetghebeur, E. and **Vansteelandt, S.** (2005) Structural mean models for compliance analysis in randomized clinical trials and the impact of errors on measures of exposure. Statistical Methods in Medical Research, 14, 397-416.

Verstraelen, H., Goetgeluk, S., Derom, C., **Vansteelandt, S.**, Derom, R., Goetghebeur, E. and Temmerman, M. (2005). Preterm birth in twins following subfertility treatment: a population-based cohort study. British Medical Journal, 331, 1173-1176.

**Vansteelandt, S.**, Goetghebeur, E., Kenward, M. G., and Molenberghs, G. (2006). Ignorance and Uncertainty Regions as Inferential Tools in a Sensitivity Analysis. Statistica Sinica, 16, 953-979.

Carpenter, J., Kenward, M. and **Vansteelandt, S.** (2006). A comparison of multiple imputation and doubly robust estimation. Statistics in Society, 169, 571-584.

Baele, G., Raes, J., van de Peer, Y. and **Vansteelandt, S.** (2006). A powerful multiple testing method to detect heterotachy in nucleotide sequences. Molecular Biology and Evolution, 23, 1397-1405.

Marcellino, V., Cnudde, V., **Vansteelandt, S.** and Caro, F. (2007). An evaluation of 2Dimage analysis techniques for measuring soil micro-porosity. European Journal of Soil Science, 58, 133-140.

**Vansteelandt, S.** (2007). On confounding, prediction and efficiency in the analysis of clustered and longitudinal data. The Scandinavian Journal of Statistics, 34, 478-498.

Delbaere, I., **Vansteelandt, S.**, De Bacquer, D., Verstraelen, H., Gerris, J., De Sutter, P., Temmerman, M. (2007). Should we adjust for gestational age when analysing birth weights? The use of z-scores revisited. Human Reproduction, 22, 2080-2083.

**Vansteelandt, S.**, Rotnitzky, A. and Robins, J. M. (2007). Estimation of regression models for the mean of repeated outcomes under non-ignorable non-monotone non-response. Biometrika, 94, 841-860.

Delva, W., Wuillaume, F., **Vansteelandt, S.**, Claeys, P., Verstraelen, H. and Temmerman, M. (2007). Sexual behaviour and contraceptive use among youth in the Balkans. European Journal of Contraception and Reproductive Health Care, 12, 309-316.

Aerssens, A., Claeys, P., Garcia, A., Sturtewagen, Y., Velasquez, R., Vanden Broeck, D., **Vansteelandt, S.**, Temmerman, M., Cuvelier, C. A. (2008). Lesson of the Month - Natural history and clearance of HPV after treatment of precancerous cervical lesions. Hispathology, 52, 381-386.

**Vansteelandt, S.**, DeMeo, D., Su, J., Smoller, J., Murphy, A.J., McQueen, M., Celedon, J., Weiss, S.T., Silverman, E.K. and Lange, C. (2008). Testing and estimating geneenvironment interactions in family-based association studies. Biometrics, 64, 458-467.

Goetgeluk, S. and **Vansteelandt, S.** (2008). Conditional generalized estimating equations for the analysis of clustered and longitudinal data. Biometrics, 64, 772-780.

Baele, G., van de Peer, Y. and **Vansteelandt, S.** (2008). A model-based approach to study nearest neighbour influences reveals complex substitution patterns in non-coding sequences. Systematic Biology, 57, 675-692.

Delva, W., Wuillaume, F., **Vansteelandt, S.**, Claeys, P., Verstraelen, H. and Temmerman, M. (2008). HIV testing and STI care among sexually active youth in the Balkans. AIDS Patient Care and STDs, 22, 817-821.

Delbaere, I., **Vansteelandt, S.** et al. (2008). Human chorionic gonadotropin levels in early IVF/ICSI pregnancies are higher in singletons after single embryo transfer compared with singletons after double embryo transfer. Human Reproduction, 23, 2421-2426.

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**Vansteelandt, S.**, VanderWeele, T., Tchetgen, E.J. and Robins, J.M. (2008). Multiply robust inference for statistical interactions. Journal of the American Statistical Association, 103, 1693–1704.

Verplancke, T., Van Looy, S., Benoit, D., **Vansteelandt, S.**, Depuydt, P., De Turck, F. and Decruyenaere, J. (2008). Support vector machine versus logistic regression modeling for prediction of hospital mortality in critically ill patients with haematological malignancies. BMC Medical Informatics and Decision Making, 8, nr 56.

**Vansteelandt, S.**, Mertens, K., Suetens, C. and Goetghebeur, E. (2009). Marginal Structural Models for Partial Exposure Regimes. Biostatistics, 10, 46-59.

Zhan, Y., **Vansteelandt, S.**, Van der Elst, J. Coetsier, T., Dhont, M. and De Sutter, P. (2009). The efficacy of the embryo transfer catheter in IVF and ICSI is operatordependent: a randomized clinical trial. Human Reproduction, 24, 880-887.

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**Vansteelandt, S.**, Babanezhad, M. and Goetghebeur, E. (2009). Correcting Instrumental Variables Estimators for Systematic Measurement Error. Statistica Sinica, 19, 1223-1246.

**Vansteelandt, S.**, Goetgeluk, S., Lutz, S., Waldman, I., Lyon, H., Schadt, E.E., Weiss, S.T. and Lange, C. (2009). On the adjustment for covariates in genetic association analysis: A novel, simple principle to infer causality. Genetic Epidemiology, 33, 394-405.

Baele, G., van de Peer, Y. and **Vansteelandt, S.** (2009). Efficient Context-dependent Model Building Based on Clustering Posterior Distributions for Non-coding Sequences. BMC Evolutionary Biology, 9, nr. 87.

**Vansteelandt, S.** (2009). Estimating direct effects in cohort and case-control studies. Epidemiology, 20, 851-860.

Comté, L., **Vansteelandt, S.**, Tousset, E., Baxter, G., and Vrijens, B. (2009). Linear and loglinear Structural Mean Models to evaluate the benefits of an on-demand dosing regimen. Clinical Trials, 6, 403-415.

Hoffmann, T.J., Lange, C., **Vansteelandt, S.** and Laird, N.M. (2009). Gene-Environment Interaction Tests for Dichotomous Traits in Trios and Sibships. Genetic Epidemiology, 33, 691-699.

VanderWeele, T.J. and **Vansteelandt, S.** (2009). Conceptual issues concerning mediation, interventions and composition. Statistics and its Interface, 2, 457-468.

Delva, W., Vercoutere, A., Louac, C., Lamahc, J., **Vansteelandt, S.**, De Koker, P., Claeys, P., Temmerman, M., and Annemans, L. (2009). Psychological well-being and socioeconomic hardship among AIDS orphans and other vulnerable children in Guinea. AIDS Care, 21, 1490-1498.

Bekaert, M., **Vansteelandt, S.** and Mertens, K. (2010). Adjusting for time-varying confounding in the subdistribution analysis of a competing risk. Lifetime Data Analysis, 16, 45-70.

**Vansteelandt, S.**, Carpenter, J. and Kenward, M.G. (2010). Analysis of incomplete data using inverse probability weighting and doubly robust estimators. Methodology, 6, 37-48.

Hoffmann, T.J., Lange, C., **Vansteelandt, S.**, Raby, B.A., Demeo, D.L., Silverman, E.K. and Laird, N.M. (2010). Parsing the Effects of Individual SNPs in Candidate Genes with Family Data. Human Heredity, 69, 91-103.

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Babanezhad, M., **Vansteelandt, S.** and Goetghebeur, E. (2010). Comparison of Causal Effect Estimators Under Exposure Misclassification. Journal of Statistical Planning and Inference, 140, 1306-1319.

Moerkerke, B., **Vansteelandt, S.** and Lange, C. (2010). A doubly-robust test for geneenvironment interaction in family-based studies of affected offspring. Biostatistics, 11, 213-225.

Erkkola, R., Vervarcke S., **Vansteelandt S.**, Rompotti P., De Keukeleire, D. and Heyerick, A. (2010). A randomized, double-blind, placebo-controlled, cross-over pilot study on the use of a standardized hop extract to alleviate menopausal discomforts. Phytomedicine, 17, 389-396.

Sjolander, A., **Vansteelandt, S.** and Humphreys, K. (2010). A principal stratification approach to assess the differences in prognosis between cancers caused by hormone replacement therapy and by other factors. International Journal of Biostatistics, 6, Article 20.

Baele, G., van de Peer, Y. and **Vansteelandt, S.** (2010). Using non-reversible contextdependent evolutionary models to study substitution patterns in primate non-coding sequences. Journal of Molecular Evolution, 71, 34-50. Himpens, E., Oostra, A., Franki, I., **Vansteelandt, S.**, Vanhaesebrouck, P. and Van den Broeck, C. (2010) Predictability of Cerebral Palsy in a high-risk NICU population. Early Human Development, 86, 413-417.

VanderWeele, T.J. and **Vansteelandt, S.** (2010). Odds ratios for mediation analysis for a dichotomous outcome. American Journal of Epidemiology, 172, 1339-1348.

**Vansteelandt, S.** (2010). Estimation of controlled direct effects on a dichotomous outcome using logistic structural direct effect models. Biometrika, 97, 921-934.

Baele, G., van de Peer, Y. and **Vansteelandt, S.** (2010). Modelling the ancestral sequence distribution and model frequencies in context-dependent models for primate non-coding sequences. BMC Evolutionary Biology, 10, Article 244.

Sjolander, A. and **Vansteelandt, S.** (2011). Doubly robust estimation of attributable fractions. Biostatistics, 12, 112-121.

Bowden, J., and **Vansteelandt, S.** (2011). Mendelian randomisation analysis of casecontrol data using Structural Mean Models. Statistics in Medicine, 30, 678-694.

Hoffmann, T.J., **Vansteelandt, S.**, Lange, C., Silverman, E.K., DeMeo, D.L. and Laird, N.M. (2011). Combining Disease Models to Test for Gene-Environment Interaction in Nuclear Families. Biometrics, 67, 1260-1270.

Hollevoet, K., Van Cleemput, J., Thimpont, J., De Vuyst, P., Bosquée, L., Nackaerts, K., Germonpré, P., **Vansteelandt, S.**, Kishi, Y., Delanghe, J.R., van Meerbeeck, J.P. (2011). Serial Measurements of Mesothelioma Serum Biomarkers in Asbestos-exposed Individuals: A Prospective Longitudinal Cohort Study. Journal of Thoracic Oncology, 6, 889-895.

Baele, G., van de Peer, Y. and **Vansteelandt, S.** (2011). Context-dependent codon partition models provide significant increases in model fit in atpB and rbcL protein-coding genes. BMC Evolutionary Biology, 11, Article 145.

Baert, B., **Vansteelandt, S.** and De Spiegeleer, B. (2011). Ion mobility spectrometry as a high-throughput technique for in vitro transdermal Franz diffusion cell experiments of ibuprofen. Journal of Pharmaceutical and Biomedical Analysis, 55, 472-478.

Delva, W., Beauclair, R., Welte, A., **Vansteelandt, S.**, Hens, N., Aerts, M., du Toit, E., Beyers, N. and Temmerman, M. (2011). Age-disparity, sexual connectedness and HIV infection in disadvantaged communities around Cape Town, South Africa: A study protocol. BMC Public Health, 11, Article 616.

VanderWeele, T.J. and **Vansteelandt, S.** (2011). A weighting approach to causal effects and additive interaction in case-control studies: marginal structural linear odds models. American Journal of Epidemiology, 174, 1197-1203.

Martinussen, T., **Vansteelandt, S.**, Gerster, M. and Hjelmborg, J.v.B. (2011). Estimation of direct effects for survival data using the Aalen additive hazards model. Journal of the Royal Statistical Society - Series B, 73, 773-788.

**Vansteelandt, S.**, Bowden, J., Babanezhad, M. and Goetghebeur, E. (2011). On Instrumental Variables Estimation of Causal Odds Ratios. Statistical Science, 26, 403-422.

Comté, L., **Vansteelandt, S.**, Rode, R.A. and Vrijens, B. (2011) Estimation of HIV treatment-efficacy by combining structural nested mean models with pharmacokinetic models of antiretroviral drug exposure. Statistics and its Interface, 4, 511-520.

Bekaert, M., Timsit, J.-F., **Vansteelandt, S.**, Depuydt, P., Vésin, A., Garrouste-Orgeas, M., Decruyenaere, J., Clec'h, C., Azoulay, E., Benoit, D. (2011). Attributable Mortality of Ventilator Associated Pneumonia: A Reappraisal Using Causal Analysis. American Journal of Respiratory and Critical Care Medicine, 184, 1133-1139.

**Vansteelandt, S.**, Bekaert, M. and Claeskens, G. (2012). On model selection and model misspecification in causal inference. Statistical Methods in Medical Research, 21, 7-30.

**Vansteelandt, S.**, VanderWeele, T. and Robins, J.M. (2012). Semiparametric tests for sufficient cause interaction. Journal of the Royal Statistical Society - Series B, 74, 223-244.

Fardo, D.W., Liu, J., Demeo, D.L., Silverman, E. and **Vansteelandt, S.** (2011). Geneenvironment interaction testing in family-based association studies with phenotypically ascertained samples: A causal inference approach. Biostatistics, 13, 468-481.

Lange, T., **Vansteelandt, S.** and Bekaert, M. (2012). A simple unified approach for estimating natural direct and indirect effects. American Journal of Epidemiology, 176, 190-195.

De Coen, V., **Vansteelandt, S.**, Maes, L., Huybrechts, I., De Bourdeaudhuije, I. and Vereecken, C. (2012). Parental socioeconomic status and soft drink consumption of the child: The mediating proportion of parenting practices. Appetite, 59, 76-80.

**Vansteelandt, S.** and VanderWeele, T.J. (2012). Natural direct and indirect effects on the exposed: effect decomposition under weaker assumptions. Biometrics, 68, 1019-1027.

**Vansteelandt, S.**, Bekaert, M. and Lange, T. (2012). Imputation Strategies for the Estimation of Natural Direct and Indirect Effects. Epidemiological Methods, 1, 131-158.

**Vansteelandt, S.** and Lange, C. (2012). Causation and Causal Inference for Genetic Effects. Human Genetics, 131, 1665-1676.

Berzuini, C., **Vansteelandt, S.**, Foco, L., Pastorino, R. and Bernardinelli, L. (2012). Direct genetic effects and their estimation from matched case-control data. Genetic Epidemiology, 36, 652-662.

Baele, G., Lemey, P. and **Vansteelandt, S.** (2013). Make the most of your samples: Bayes factor estimators for high-dimensional models of sequence evolution. BMC Bioinformatics, 14, Article 85.

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Loeys, T. Moerkerke, B., Raes, A., Rosseel, Y. and **Vansteelandt, S.** (2014). Estimation of controlled direct effects in the presence of exposure-induced confounding and latent variables. Structural Equation Modeling, 21, 396-407.

**Vansteelandt, S.**, Martinussen, T. and Tchetgen Tchetgen, E. (2014). On adjustment for auxiliary covariates in additive hazard models for the analysis of randomized experiments. Biometrika, 101, 237-244.

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Lambert, M.L., Silversmit, G., Savey, A., Palomar, M., Hiesmayr, M., Agodi, A., Van Rompaye, B., Mertens, K. and **Vansteelandt, S.** (2014). Preventable Proportion of Severe Infections Acquired in Intensive Care Units: Case-Mix Adjusted Estimations from Patient-Based Surveillance Data. Infection Control and Hospital Epidemiology, 35, 494-501.

Varewyck, M., Goetghebeur, E., Eriksson, M. and **Vansteelandt, S.** (2014). On shrinkage and model extrapolation in the evaluation of clinical center performance. Biostatistics, 15, 651-664.

Vandekerckhove, F., **Vansteelandt, S.**, Gerris, J. and De Sutter, P. (2014). Adding serum estradiol measurements to ultrasound monitoring does not change the yield of mature oocytes in IVF/ICSI. Gynecological Endocrinology, 30 ,649-652.

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**Vansteelandt, S.** and Daniel, R.M. (2014). On regression adjustment for the propensity score. Statistics in Medicine, 33, 4053-4072.

De Frène, V., **Vansteelandt, S.**, T'Sjoen, G., Gerris, J., Somers, S., Vercruysse, L. and De Sutter, P. (2014). A retrospective study of the pregnancy, delivery and neonatal outcome in overweight versus normal weight women with the polycystic ovary syndrome. Human Reproduction, 29, 2333-2338.

Vandekerckhove, F., Gerris, J., **Vansteelandt, S.**, De Baerdemaeker, A., Tilleman, K. and De Sutter, P. (2014). Delaying the oocyte maturation trigger by one day leads to a higher metaphase II oocyte yield in IVF/ICSI: a randomised controlled trial. Reproductive Biology and Endocrinology, 12, Article 31.

Taevernier, L., Veryser, L., Vandercruyssen, K., D'Hondt, M., **Vansteelandt, S.**, De Saeger, S., De Spiegeleer, B. (2014). UHPLC-MS/MS method for the determination of the cyclic depsipeptide mycotoxins beauvericin and enniatins in in vitro transdermal experiments. Journal of Pharmaceutical and Biomedical Analysis, 100, 50-57.

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Moerkerke, B., Loeys, T. and **Vansteelandt, S.** (2015). Structural Equation Modeling versus Marginal Structural Modeling for assessing mediation in the presence of post-treatment confounding. Psychological Methods, 20, 204-220.

Vermeulen, K. and **Vansteelandt, S.** (2015). Bias-Reduced Doubly Robust Estimation. Journal of the American Statistical Association, 110, 1024-1036.

Vermeulen, K., Thas, O. and **Vansteelandt, S.** (2015). Increasing the power of the Mann-Whitney test in randomized experiments through flexible covariate adjustment. Statistics in Medicine, 34, 1012-1030.

Tchetgen Tchetgen, E.J., Walter, S., **Vansteelandt, S.**, Martinussen, T. and Glymour, M. (2015). Instrumental variable estimation in a survival context. Epidemiology, 26, 402-410.

De Frène V., Gerris, J., Weyers, S., Dhont, M., **Vansteelandt, S.**, Annemans L., De Sutter P. (2015). Gonadotropin therapy versus laparoscopic ovarian drilling in clomiphene citrate resistant polycystic ovary syndrome patients: a retrospective cost-effectiveness analysis. Gynecologic and Obstetric Investigation, 80, 164-169.

Josephy, H., Loeys, T. and **Vansteelandt, S.** (2015). Within-subject mediation analysis in AB/BA crossover designs. The International Journal of Biostatistics, 11, 1-22.

Bijlsma, M.J., Janssen, F., Bos, J., Kamphuisen, P.W., **Vansteelandt, S.** and Hak, E. (2015). Association between statin use and cardiovascular mortality at the population level in the Netherlands 1994-2010: an ecological study. Epidemiology, 26, 6, 802-805.

Neupane, J., Ghimire, S., Vandewoestyne, M., Lu, Y.C., Gerris, J., Van Coster, R., Deroo, T., Deforce, D., **Vansteelandt, S.** and De Sutter, P. (2015). Cellular Heterogeneity in the

Level of mtDNA Heteroplasmy in Mouse Embryonic Stem Cells. Cell Reports, 13, 1304-1309.

Zetterqvist, J., **Vansteelandt, S.**, Pawitan, Y. and Sjolander, A. (2016). Doubly robust methods for handling confounding by cluster. Biostatistics, 17, 264-276.

Vermeulen, K. and **Vansteelandt, S.** (2016). Data-Adaptive Bias-Reduced Doubly Robust Estimation. International Journal of Biostatistics, 12, 253-282.

Vandecandelaere, M., **Vansteelandt, S.**, De Fraine, B., Van Damme, J. (2016). The effects of early grade retention: Effect modification by prior achievement and age. Journal of School Psychology, 54, 79-U101.

Talloen, W., Moerkerke, B., Loeys, T., van Keer, H. and **Vansteelandt, S.** (2016). Estimation of indirect effects in the presence of unmeasured confounding for the mediator-outcome relationship in a multilevel 2-1-1 mediation model. Journal of Educational and Behavioral Statistics, 41, 359-391.

Vandecandelaere, M., **Vansteelandt, S.**, De Fraine, B. and Van Damme, J. (2016). Timevarying Treatments in Observational Studies: Marginal Structural Models of the Effects of Early Grade Retention on Math Achievement. Multivariate Behavioral Research, 51, 843-864.

Vandecandelaere, M. and **Vansteelandt, S.** (2016). Rejoinder: Remaining Challenges in Investigating Grade-Retention Effectiveness. Multivariate Behavioral Research, 51, 877-880.

**Vansteelandt, S.** and Sjolander, A. (2016). Revisiting g-estimation of the effect of a time-varying exposure subject to time-varying confounding. Epidemiologic Methods, 5, 37-56.

**Vansteelandt, S.** and Daniel, R.M. (in press). Interventional effects for mediation analysis with multiple mediators. Epidemiology.

Bijlsma, M.J., **Vansteelandt, S.**, Janssen, F. and Hak, E. (2016). The effect of adherence to statin therapy on cardiovascular mortality: quantification of unmeasured bias using falsification end-points. BMC Public Health, 16, Number 303.

Dolphens, M., **Vansteelandt, S.**, Cagnie, B., Vleeming, A., Nijs, J., Vanderstraeten, H. and Danneels, L. (2016). Multivariable modeling of factors associated with spinal pain in young adolescence. European Spine Journal, 25, 2809-2821.

Loeys, T., Talloen, W., Goubert, L., Moerkerke, B. and **Vansteelandt, S.** (2016). Assessing moderated mediation in linear models requires fewer confounding assumptions than assessing mediation. British Journal of Mathematical and Statistical Psychology, 69, 352-374.

Varewyck, M., **Vansteelandt, S**, Eriksson, M. and Goetghebeur, E. (2016). On the practice of ignoring center-patient interactions in evaluating hospital performance. Statistics in Medicine, 35, 227-238.

Vandenberghe, S., Vansteelandt, S. and Loeys, T. (2016). Boosting the precision of mediation analyses of randomised experiments through covariate adjustment. Statistics in Medicine.

Daniel, R.M., De Stavola, B.L. and Vansteelandt, S. (2016). The formal approach to quantitative causal inference in epidemiology: misguided or misrepresented? International Journal of Epidemiology.

Steen, J., Loeys, T., Moerkerke, B. and Vansteelandt, S. (2016). Flexible mediation analysis with multiple mediators. American Journal of Epidemiology.

Vansteelandt, S. and Daniel, R.M. (2016). Interventional effects for mediation analysis with multiple mediators. Epidemiology.

Sjolander, A. and **Vansteelandt, S.** (in press). Doubly robust estimation of attributable fractions in survival analysis. Statistical Methods in Medical Research.

Steen, J., Loeys, T., Moerkerke, B. and **Vansteelandt, S.** (in press). Medflex: An R Package for Flexible Mediation Analysis Using Natural Effect Models. Journal of Statistical Software.

Vandenberghe, S., Duchateau, L., Slaets, L., Bogaerts, J. and **Vansteelandt, S.** (in press). Surrogate marker analysis in cancer clinical trials through time-to-event mediation techniques. Statistical Methods in Medical Research.

Pouwels, K.B., Van Kleef, E., **Vansteelandt, S.**, Batra, R., Edgeworth, J.D., Smieszek, T. and Robotham, J.V. (in press). Does appropriate empiric antibiotic therapy modify ICU-acquired Enterobacteriaceae bacteraemia mortality and discharge? Journal of Hospital Infection.

Martinussen, T., **Vansteelandt, S.**, Tchetgen Tchetgen, E.J. and Zucker, D.M. (in press). Instrumental variables estimation of exposure effects on a time-to-event endpoint using structural cumulative survival models. Biometrics. Miscellaneous publications (invited commentaries, ...)

**Vansteelandt, S.**, Goetghebeur, E. and Verstraeten, T. (1999). Adjusting for confounding when estimating a time trend in HIV prevalence based on pooled serum samples. Archives of Public Health, 57, 89-105.

Goetghebeur, E. and **Vansteelandt, S.** (2002). Discussion of `Clustered encouragement designs with individual noncompliance: Bayesian inference with randomization, and application to advance directive forms' by Frangakis, Rubin and Zhou. Biostatistics, 3, 169-171.

Robins, J.M., Rotnitzky, A. and **Vansteelandt, S.** (2007). Discussion on `Principal Stratification Designs to Estimate Input Data Missing Due to Death'. Biometrics, 63, 650-653.

**Vansteelandt, S.** (2009). Discussion on `Identifiability and Estimation of Causal Effects in Randomized Trials with Noncompliance and Completely Non-ignorable Missing-Data'. Biometrics, 65, 686-689.

Bekaert, M., Benoit, D., Decruyenaere, J. and **Vansteelandt, S.** (2010). A note on statistical association and causality derived from epidemiological ICU data - Reply. Intensive Care Medicine, 36, 550.

VanderWeele, T.J. and **Vansteelandt, S.** (2010). VanderWeele and Vansteelandt Respond to "Decomposing With a Lot of Supposing" and "Mediation". American Journal of Epidemiology, 172, 1355-1356.

**Vansteelandt, S.** and Keiding, N. (2011). G-computation: lost in translation? American Journal of Epidemiology, 173, 739-742.

Billiet, J., Molenberghs, G. and **Vansteelandt, S.** (2012). De onzekerheid van politieke barometers. De Gids op Maatschappelijk Gebied, Nummer 3, 39-43.

**Vansteelandt, S.** (2012). Understanding counterfactual-based mediation analysis approaches and their differences. Epidemiology, 23, 889-891.

**Vansteelandt, S.** (2012). Discussion of "Bayesian Effect Estimation Accounting for Adjustment Uncertainty" by Wang, Parmigiani, and Dominic. Biometrics, 68, 675-678.

**Vansteelandt, S.** (2012). Discussion of 'Probabilistic index models' by Thas, O., De Neve, J., Clement, L. and Ottoy, J.-P. Journal of the Royal Statistical Society – Series B, 74, 656-657.

# **Doctoral theses**

Promoter PhD student Sylvie Goetgeluk, IWT grant (defense date: 30/05/2008)

Title of thesis: From data clusters to causal inference: new methodology for the analysis of twin registers.

Promoter PhD student Guy Baele, Teaching Assistant (defense date: 12/12/2008)

Title of thesis: Detecting complex substitution patterns in non-coding sequences.

Promoter PhD student Manoochehr Babanezhad, Grant from the Iranian Government (defense date: 27/04/2009)

Title of thesis: Measurement error and causal inference with instrumental variables.

Promoter PhD student Wim Delva, IWT grant (defense date: 10/05/2010)

Title of thesis: Sexual behavior and the spread of HIV: statistical amd epidemiological modeling applications.

Promoter PhD student Maarten Bekaert, IWT grant (defense date: 22/12/2011)

Title of thesis: Do patients die from or with infection? Finding the answer through causal analysis of longitudinal intensive care unit data.

Promoter PhD student Fanghong Zhang, IAP and BOF grant (defense date: 13/12/2012)

Title of thesis: From parametric towards nonparametric mixed modeling of correlated data.

Promoter PhD student Karel Vermeulen, FWO grant (defense date: 29/05/2015)

#### CV Stijn VANSTEELANDT

Title of thesis: Bias-reduced Doubly Robust estimation.

Promoter PhD student Machteld Varewyck, IWT grant (defense date: 18/12/2015)

Title of thesis: On quantifying quality of care.

Promoter PhD student Maarten Bijlsma (Universiteit Groningen) (defense date: 11/03/2016)

Title of thesis: Age-period-cohort methodology.

Promoter PhD student Karl Mertens (defense date: 26/05/2016)

Title of thesis: Marginal Structural and Structural Nested Models for Causal Inference in Hospital Epidemiology.

Promoter PhD student Johan Steen (defense date: 23/11/2016)

Title of thesis: Flexible causal mediation analysis using natural effect models.

Promoter PhD students Sjouke Vandenberghe (defense foreseen 2017), Haeike Josephy (defense foreseen 2017), Oliver Dukes (defense foreseen 2019), Thang Tat Vo (defense foreseen 2019).

## **Keynote lectures**

Vansteelandt, S. (2013). Reflections on inverse probability weighting and G-estimation in causal inference. 1st UK-Causal Inference Meeting, Manchester, U.K.

Vansteelandt, S. (2013). On prediction and robustness in causal inference. 2nd VOC Conference, Antwerp, Belgium.

Vansteelandt, S. (2015). Inferring pathways from health registry data: pitfalls, cautions and some solutions. One-day seminar: Deriving causal information from Norwegian health registries - what are the challenges? Oslo, Norway.

Vansteelandt, S. (2015). Challenges and opportunities for causal analyses of timevarying exposures. One-day seminar: Deriving causal information from Norwegian health registries - what are the challenges? Oslo, Norway.

# Invited Presentations at Scientific Conferences and

# Workshops

Vansteelandt S and Goetghebeur E (2000). Sensitivity Analysis for Incomplete Data: Ignoring Bounds or Bounding Ignorance? Workshop on Sensitivity Analyses for Dropout Models, Leuven, Belgium.

Vansteelandt S and Goetghebeur E (2000). Sensitivity Analysis for Incomplete Data: Ignoring Bounds or Bounding Ignorance? Fifth International conference on social science methodology, Koln, Germany.

Vansteelandt S and Goetghebeur E (2001). Sensitivity analysis for generalized structural mean models. Symposium on Causal Inference, Ghent, Belgium.

Vansteelandt S and Goetghebeur E (2001). Drawing inference from a region of estimates: sensitivity analysis for missing data. 22nd Annual Conference of the International Society for Clinical Biostatistics, Stockholm, Sweden.

Vansteelandt S and Goetghebeur E (2002). Information-exchange in a sensitivity analysis: from local currencies to the (e)uro. 34th Journees de Statistique, Brussels, Belgium.

Vansteelandt S, Rotnitzky A and Robins J (2003). Sense and sensitivity in the analysis of longitudinal data with intermittent nonresponse. 2003 WNAR/IMS Annual Meeting, Golden, Colorado.

Vansteelandt S (2003). Invited discussant in the session `Causation and graphical models'. 54th session of the International Statistical Institute, Berlin, Germany.

Vansteelandt S, Rotnitzky A and Robins J (2004). Semiparametric regression for repeated outcomes with nonignorable intermittent nonresponse. ENAR Spring Meeting, Pittsburgh, U.S.A.

Vansteelandt S (2005). Invited discussant in the session `Statistics and twin studies: a double challenge'. 26th Annual Conference of the International Society for Clinical Biostatistics, Szeged, Hungary.

Vansteelandt S (2005). Emerging methods of causal inference open new ways to interpret dosing history data. Symposium on patient compliance and persistence, Liege, Belgium.

Vansteelandt S, Goetghebeur E, Kenward M and Molenberghs G (2006). Drawing inference from a region of estimates: Ignoring Bounds or Bounding Ignorance? ENAR Spring Meeting, Tampa, U.S.A.

Vansteelandt S, Rotnitzky A and Robins J (2006). Handling Non-Ignorable Non-Monotone Non-Response in Follow-up Studies. Recent developments in the analysis of repeated measurement studies in the presence of missing data. University Hospital Gasthuisberg, Leuven, Belgium.

Vansteelandt S, Babanezhad M and Goetghebeur E (2006). Correcting for Measurement Error in Compliance-adjusted Analyses of Randomized Clinical Trials. 23rd International Biometric Conference, Montreal, Canada.

Vansteelandt S (2006). Discussant in the invited session `Adjusting For Non-Compliance In Clinical Trials'. 23rd International Biometric Conference, Montreal, Canada.

Vansteelandt S and Lange C (2006). Gene-environment Interaction in Family-based Studies. European Science Foundation-IfW Conference on The Global Health Economy, Salzau, Germany.

Vansteelandt S and Goetgeluk S (2007). Causal diagrams, stratification, inverse probability weighting and the problem of inferring direct effects. First IBS Channel Network Conference, Rolduc, The Netherlands.

Vansteelandt S, Carpenter J and Kenward M (2007). Inverse Probability Weighting and Doubly Robust Estimation for Analyses With Missing Data. Fall Meeting of Netherlands Statistical Society -- Social Sciences Division, Tilburg, The Netherlands.

Vansteelandt S (2008). Estimation of controlled direct effects. 24th International Biometric Conference, Dublin, Ireland.

Vansteelandt S (2008). Estimating and modeling direct effects. 29th Annual Conference of the International Society for Clinical Biostatistics, Copenhagen, Denmark.

Vansteelandt S (2008). Epidemiologic data analysis with diagnostic group tests: can we get more by doing less? Workshop in Infectious Disease Epidemiology for Decision Making, Brussels, Belgium.

Vansteelandt S (2009). Estimating Controlled Direct Effects in Random and Outcomedependent Sampling Designs. ENAR Spring Meeting, San Antonio, U.S.A. Vansteelandt S and Lange C (2009). On the Adjustment for Covariates in Genetic Association Analysis: A Novel, Simple Principle to Infer Causality. ENAR Spring Meeting, San Antonio, U.S.A.

Vansteelandt S (2009). Estimating direct effects in cohort and case-control studies. 40th Anniversary Meeting of the MSc in Medical Statistics at the London School of Hygiene and Tropical Medicine. London, U.K.

Vansteelandt S (2009). Estimating direct effects in cohort and case-control studies. 20th Open University Statistics Conference `Statistics for health registers and linked databases'. Milton Keynes, U.K.

Vansteelandt S, VanderWeele T and Robins J (2009). Semiparametric tests for sufficient cause Interactions. 2nd Nordic-Baltic Biometric Conference, Tartu, Estonia.

Vansteelandt, S., Bekaert, M. and Mertens, K. (2009). Adjusting for time-varying confounding in survival analysis with competing risks. Workshop on Causal Inference, Oslo, Norway.

Vansteelandt S, Babanezhad M and Goetghebeur E (2009). Correcting for Measurement Error in Compliance-adjusted Analyses of Randomized Clinical Trials. October joint meeting of the Biostatistics Group and the RSS Manchester Local Group, Manchester, U.K.

Vansteelandt S (2009). Estimating direct effects on a dichotomous outcome using logistic structural direct effect models. Annual Meeting of the Danish Society for Theoretical Statistics, Odense, Denmark.

Vansteelandt S (2009). On testing for statistical interactions and sufficient cause interactions. Workshop on mediation and interaction, Copenhagen, Denmark.

Vansteelandt S (2010). Recent advances in doubly robust estimation for missing data. RSS Medical Section meeting - 'Analysis of partially observed datasets: putting methodology into practice' - 30th March 2010, London, U.K.

Vansteelandt S (2010). Estimating Direct Effects on a Dichotomous Outcome Using Logistic Structural Direct Effect Models. Joint Statistical Meetings, Vancouver, Canada.

Vansteelandt S (2010). Testing for statistical and sufficient cause interactions. Causal Inference in Epidemiology: from theory to applied research. SISMEC-ICE, Florence, Italy.

Vansteelandt, S. (2011). Mendelian randomization analysis of case-control studies. ENAR Spring Meeting, Miami, U.S.A.

Vansteelandt, S. (2011). Mendelian randomization analysis of case-control studies. Atlantic Causal Inference Conference, Ann Arbor, U.S.A.

Vansteelandt, S. and Martinussen, T. (2011). Adjusting for time-varying confounding in survival analysis using structural nested additive hazards models. ISI satellite meeting, Copenhagen, Denmark.

Vansteelandt, S. and Martinussen, T. (2011). Estimation of direct effects for survival data using the Aalen additive hazards model. 58th session of the International Statistical Institute, Dublin, Ireland.

Vansteelandt, S. (2011). Instrumental Variables Estimation of Causal Odds Ratios. 5th IAP workshop, Louvain-la-neuve, Belgium.

Vansteelandt S (2011). Ignoring Bounds or Bounding Ignorance? Reflections on sensitivity analysis for missing data. QMSS2 workshop, Leuven, Belgium.

Vansteelandt S. (2012). Challenges for model selection in etiologic studies. International Biometric Society - British and Irish Region (IBS-BIR) Spring meeting and LSHTM Centre for Statistical Methodology Meeting `Model selection for genetic and epidemiological data', London, U.K.

Vansteelandt, S., Martinussen, T. and Tchetgen Tchetgen, E. (2012). Adjusting for timevarying confounding in survival analysis using structural nested cumulative failure time models. `Time for Causality'Sustain Workshop, Bristol, U.K.

Vansteelandt, S. (2012). Dealing with complex problems of confounding in mediation analysis. 46th meeting of the Italian Statistical Society, Rome, Italy.

Vansteelandt, S. (2012). Dealing with time-varying confounding in mediation analysis. Joint Statistical Meetings, San Diego, U.S.A.

Vansteelandt, S. (2013). Causal inference and gene-environment interaction testing in family studies. Leiden Family Lab meeting. Leiden, The Netherlands.

Vansteelandt, S. and Martinussen, T. (2013). Adjusting for time-varying confounding in survival analysis using structural nested cumulative failure time models. EMR-IBS meeting, Tel-Aviv, Israel.

Vansteelandt, S. and Vermeulen, K. (2013). A Doubly Robust Adaptation of the Mann-Whitney Test to Adjust for Measured Confounding. Joint Statistical Meetings, Montreal, Canada.

Vansteelandt, S., Bekaert, M. and Benoit, D. (2014). Handling time-varying confounding and competing risks: a case study on the attributable mortality of ventilator-associated pneumonia. 27th International Biometric Conference, Florence, Italy.

Vansteelandt, S. and VanderWeele, T. (2014). Natural Direct and Indirect Effects on the Exposed - Effect Decomposition under Weaker Assumptions. Biometrics Showcase Paper at the 27th International Biometric Conference, Florence, Italy.

Vansteelandt, S. and VanderWeele, T. (2014). Mediation analysis with multiple mediators. SER Meeting, Seattle, U.S.A.

Vansteelandt, S. and Vandenberghe, S. (2014). Mediation Analysis of Randomised Experiments. Joint Statistical Meetings, Boston, U.S.A.

Vansteelandt, S., Vermeulen, K. and Didelez, V. (2014). Improving the performance of double-robust IV estimators under model misspecification. CLAPEM, Cartegena, Colombia.

Vansteelandt, S. (2015). Time-dependent confounding, MSMs, G-computation. ERA-EDTA, London.

Vansteelandt, S. and Vermeulen, K. (2015). Bias-reduced Double-robust estimation. Nordic-Baltic IBS meeting, Reykjavik, Iceland.

Vansteelandt, S. and Vermeulen, K. (2015). Bias-reduced Double-robust estimation. European Mathematical Statistics conference, Amsterdam, The Netherlands.

Vansteelandt, S. and Joffe, M. (2015). Structural Nested Models and G-estimation: the partially realised promise. Joint Statistical Meetings, Seattle, U.S.A.

Vansteelandt, S. and Vermeulen, K. (2015). Bias-reduced Double-robust estimation. Annual Meeting of the Belgian Statistical Society, Antwerpen, Belgium.

Vansteelandt, S. (2016). Structural nested cumulative survival models. UK-Causal Inference Meeting, London.

Vansteelandt, S. (2016). Mendelian randomisation analysis of time-to-event endpoints. International Biometric Conference, Victoria, Canada. Vansteelandt, S. (2016). Mediation analysis with multiple mediators. Half-day symposium of the Danish Society for Pharmaceutical Statistics, Copenhagen, Denmark.

Vansteelandt, S. (2016). Survivor bias in Mendelian randomisation analysis. IV meeting, Copenhagen, Denmark.

Vansteelandt, S. (2016). Bias-reduced double-robust estimation. CMStatistics 2016, Seville, Spain.

Vansteelandt, S. (2016). Bias-reduced double-robust estimation. 10th Conference of the International Chinese Statistical Association (ICSA), Shanghai, China.

#### **Invited Presentations at Seminars**

Vansteelandt S and Goetghebeur E (2001). Combining correlation and causation with structural mean models. Limburgs Universitair Centrum, Belgium.

Vansteelandt S, Goetghebeur E, Thomas I, Mathys E and Van Loock F (2001). Group testing and the safety of plasma derivatives in Belgium. Université catholique de Louvain, Belgium.

Vansteelandt S, Goetghebeur E, Thomas I, Mathys E and Van Loock F (2001). Diagnostic testing for Hepatitis C risk in plasma derivatives: residual risk calculation and cost-efficient pool sizes. Scientific Institute of Public Health, Belgium.

Vansteelandt S and Goetghebeur, E (2002). Sensitivity analysis for Generalized Structural Mean Models. University of Tartu, Estonia.

Vansteelandt S (2004). Using pooled specimens in epidemiologic studies of diagnostic tests for rare infectious diseases. Prince Leopold Institute of Tropical Medicine, Belgium.

Vansteelandt S and Goetghebeur E (2005). Compliance-adjustment in randomized clinical trials using generalized linear structural mean models. Karolinska Institutet, Stockholm, Sweden.

Vansteelandt S, Rotnitzky A and Robins J (2006). Handling Non-Ignorable Non-Monotone Non-Response in Follow-up Studies. Université Libre de Bruxelles, Belgium. Vansteelandt S, Rotnitzky A and Robins J (2006). Handling Non-Ignorable Non-Monotone Non-Response in Follow-up Studies. Erasmus Universiteit Rotterdam.

Vansteelandt S and Goetgeluk S (2007). Doubly robust estimators for direct effects. Copenhagen University, Dept. of Biostatistics.

Vansteelandt S, VanderWeele T and Robins J (2007). Semiparametric inference for statistical interactions. LUMC, Leiden, The Netherlands.

Vansteelandt S, Mertens K, Suetens C and Goetghebeur E (2008). Marginal Structural Models for the effect of ICU-acquired nosocomial pneumonia on survival. Freiburg Universitat, Germany.

Vansteelandt S, Rotnitzky A and Robins J (2008). Handling Non-Ignorable Non-Monotone Non-Response in Follow-up Studies. London School of Hygiene and Tropical Medicine, U.K.

Vansteelandt S, VanderWeele T and Robins J (2008). Multiply robust inference for statistical interactions. MRC Cambridge, United Kingdom.

Vansteelandt, S., Bekaert, M. and Mertens, K. (2009). Estimation of marginal structural survival models in the presence of competing risks. Université catholique de Louvain, Belgium.

Vansteelandt, S., Bekaert, M. and Mertens, K. (2009). Adjusting for time-varying confounding in survival analysis with competing risks. Copenhagen University, Dept. of Biostatistics.

Vansteelandt, S. (2010). On Instrumental Variables Estimation of the Effect of an Exposure on a Dichotomous Outcome. Katholieke Universiteit Leuven, Belgium.

Vansteelandt, S. (2010). Semiparametric tests for statistical and sufficient cause interactions. Katholieke Universiteit Leuven, Belgium.

Vansteelandt, S. (2010). On doubly robust estimation in causal inference and incomplete data analysis. University of Bristol, U.K.

Vansteelandt, S. (2010). Mendelian randomization analysis of case-control studies. LUMC, Leiden, The Netherlands.

Vansteelandt, S. (2010). Testing for statistical and sufficient cause interactions. Universita' Degli Stidu di Milano Bicocca, Milano, Italy.

Vansteelandt, S. (2011). Estimating direct effects on a survival outcome using the Aalen additive hazards model. London School of Hygiene and Tropical Medicine, U.K.

Vansteelandt, S. (2011). IV-estimation of causal odds ratios in cohort and case-control studies. LUMC, Leiden, The Netherlands.

Vansteelandt, S. (2011). Testing for statistical and sufficient cause interactions. The Johns Hopkins University, U.S.A.

Vansteelandt, S. (2011). Semi-parametric tests for gene-gene and gene-environment interactions. University of Maastricht, Maastricht, The Netherlands.

Vansteelandt, S. (2012). Semi-parametric tests for gene-gene and gene-environment interactions. Université de Liège, Liège, Belgium.

Vansteelandt, S. (2012). On estimation of nuisance working models in doubly robust estimators. The University of Pennsylvania, Philadelphia, U.S.A.

Vansteelandt, S. (2012). On estimation of nuisance working models in doubly robust estimators. The Johns Hopkins University, U.S.A.

Vansteelandt, S. (2014). Biased-Reduced Double-Robust Estimation. Karolinska Institutet, Stockholm, Sweden.

Vansteelandt, S. (2015). Structural nested cumulative survival models. University of Oslo, Norway.

Vansteelandt, S. (2016). Introduction to causal inference. IDDI, Ottignies, Belgium.

Vansteelandt, S. (2016). Instrumental Variable Estimation in a Survival Context. University Groningen, The Netherlands.

Vansteelandt, S. (2016). Assessing the effects of time-varying exposures: what is the attributable mortality of VAP? ICU UZGent, Belgium.

# Teaching

I currently teach the following regular courses at Ghent University:

Statistics I, 2nd Ba Mathematics

Statistics II, 2nd Ba Mathematics

Statistics and Pharmaceutical Data Analysis, 2nd Ba Pharmacy

Causality and Missing Data, Master of Statistical Data Analysis and Master of Mathematics

Principles of Statistical Data Analysis, Master of Statistical Data Analysis (cotaught with Els Goetghebeur and Olivier Thas)

Longitudinal Data Analysis, Master of Statistical Data Analysis (co-taught with Theo Stijnen)

Since 2007, I also teach part of the following course at the London School of Hygiene and Tropical Medicine: Causal inference in epidemiology: recent methodological developments.

I teach short courses on Causality, on Missing Data and on Longitudinal Data Analysis on a regular basis:

Vansteelandt S (2002, 2004-2008). Epidemiologic data analysis with diagnostic group tests: Can we get more by doing less? ½ day invited lecture in Course CE05 `Epidemiology of Infectious Diseases', Netherlands institute for health sciences, Amsterdam, The Netherlands.

Vansteelandt S (2004). Causal inference with observational data. ½ day invited lecture at the School of Biometrics, 2004 ITI Conference, Dubrovnic, Croatia.

Goetghebeur E, Vansteelandt S and Vrijens B (2005). Analysis of non-compliance in clinical trials. Full day invited lecturer at 26th Annual Conference of the International Society for Clinical Biostatistics, Szeged, Hungary.

Vansteelandt S (2006, 2009, 2012, 2014, 2016). Applied Longitudinal Analysis. Three day short course of the ICES, Faculty of Sciences, Ghent University.

Vansteelandt S (2007). Short Course on Statistical analysis of immuno-epidemiological data: `Causal Modeling'., LUMC, Leiden.

Vansteelandt S (2008). Missing Data. Three day short course of the ICES, Faculty of Sciences, Ghent University.

Vansteelandt S (2008, 2010, 2012). Mediation – intermediate variables, direct and indirect effects in epidemiology. Three day short course at the Department of Biostatistics, Copenhagen University.

Vansteelandt S, Sjolander A and Didelez V (2008). Causal Inference. Three day short course organized by the FP6 MOLPAGE program, Pavia, Italy.

Vansteelandt S (2009). Causal Inference. One-day short course at the 2nd Nordic-Baltic Biometric Conference, Tartu, Estonia.

Vansteelandt S and Didelez V (2010). Causal Inference. One-day short course at the 31st Annual Conference of the International Society for Clinical Biostatistics, Montpellier, France.

Vansteelandt S (2010). Causal Mediation Analysis. Three day short course of the ICES, Faculty of Sciences, Ghent University.

Goetghebeur E and Vansteelandt S (2011). Topics in causal inference for the health sciences. One-day short course at Universita degli Studi Milano-Bicocca, Italy.

Vansteelandt S (2014). Causal Inference. Albert Einstein University, New-York, U.S.A.

Rotnitzky, A. and Vansteelandt S. (2014). Causal Inference. Cison Di Valmarino, Treviso, Italy.

# Academic Service

COPSS member of the George W. Snedecor award committee, 2016-2020.

President of the Channel Network, a network of the International Biometric Society, 2011-2013.

Board Member of the Quetelet Society, Belgian Region of the International Biometric Society, 2004-2016.

Steering Member of the Channel Network of the International Biometric Society, 2006-2016.

Board Member of the Editorial Advisory Committee of the International Biometric Society, 2006-present.

Member of the Nominating Committee of the International Biometric Society, 2016-.

Council Member of the International Biometric Society, 2010-present.

Member of the Scientific Committee of the 2nd, 4th and 5th Channel Network Conference (Ghent, Belgium 2009; St Andrews, U.K., 2013; Nijmegen, The Netherlands, 2015), of the International Biometric Conference (Florianopolis, Brazil 2010, Kobe, Japan 2012), of the Annual Meeting of the International Society for Clinical Biostatistics (Montpellier, France 2010, Bergen, Norway 2012).

Chair of the Scientific Committee of the 4th Channel Network Conference (St Andrews, U.K., 2013).

Chair of the Local Organizing Committee of the 2nd Channel Network Conference (Gent, Belgium 2009).

Member of the Program Committee, Master of Statistical Data Analysis (2005-present)

Member of the Program Committee, Mathematics (2011-present)

Secretary of the Examination Committee, Master of Statistical Data Analysis (2005-present)

Secretary of the Program Committee, Master of Statistical Data Analysis (2013-present)

Secretary of the Center for Statistics, Ghent University (2003-present)

Member of the examination committee for the doctoral thesis defence of: Ivy Jansen (Limburgs Universitair Centrum, 2005), An Vandebosch (Ghent University, 2005), Beatrijs Moerkerke (Ghent University, 2006), Lieven Clement (Ghent University, 2007), Heidi Wouters (Ghent University, 2007), Dave Fardo (Harvard University, 2008), Sylvie Goetgeluk (Ghent University, 2008), Ella Roelant (Ghent University, 2008), Stanley Luchters (Ghent University, 2008), Guy Baele (Ghent University, 2008), Manoochehr Babanezhad (Ghent University, 2009), Thomas Hoffmann (Harvard University, 2009), Rhian Daniel (University of London, 2009), Susanne Rosthoj (Copenhagen University, 2009), Anagha Joshi (Ghent University, 2009), Willem van der Wal (University of Amsterdam, 2011), Maarten Bekaert (Ghent University, 2011), Bart Ampe (Ghent University, 2012), Fanghong Zhang (Ghent University, 2012), Kristof De Beuf (Ghent University, 2013), Jan De Neve (Ghent University, 2013), Yenehew Getachew (Ghent University, 2013), Emma Persson (Umea University, 2014), Bie Verbist (Ghent University, 2014), Filip Bielejec (KULeuven, 2015), Karel Vermeulen (Ghent University, 2015), Koen Pouwels (Universiteit Groningen, 2015), Machteld Varewyck (Ghent University, 2015), Maarten Bijlsma (Universiteit Groningen, 2016), Karl Mertens (Ghent University, 2016),

Wenjing Zheng (Universite Paris Descartes, 2016), Veronique Storme (Ghent University, 2016), Yingjie Zhang (Ghent University, 2016), Johan Steen (Ghent University, 2016).

# Funding and research grants

Funding for my position is fully covered by the university. In addition, I have acquired the following research grants:

2005-2006: Krediet aan Navorsers, F.W.O.: 5300 EUR

2006: BOF project 01J16607 `Powerful methods for the detection of gene-gene interaction' (promoter; co-promotor: Els Goetghebeur; 76.000 EUR)

2006: BOF project 01J13007 'Modelling of the impact of microbicides on HIV incidence and prevalence in Mombasa, Kenia ' (co-promoter; promoter Marleen Temmerman; 78.000 EUR)

Specialisatiebeurs IWT Maarten Bekaert `Causale modellering van longitudinale intensieve zorgen gegevens' - 4-year PhD grant

2008: BOF project 01J05809 `Semi-parametrische gemengde modellen voor de analyse van genoom-wijde expressie data' (promoter; co-promoters: Olivier Thas and Marnik Vuylsteke; 172.000 EUR)

2009: 3-year collaboration grant from the Swedish Research Council (Promoter Juni Palmgren): Causal inference for observational studies; Modelling genes and lifestyle as predictors for cancer risk and prognosis (1.900.000 SEK/year).

2009: FWO Onderzoeksproject G.0912.10 ` Informatie-gestuurde modellering van de impact van vervroegde, grootschalige HIV behandeling op de HIV incidentie in Zuidelijk Afrika' (promoter: Marleen Temmerman; co-promoters: Stijn Vansteelandt and Marc Aerts)

2009: co-investigator on MRC grant G0900724 ` Developing and disseminating robust methods for handling missing data in epidemiological studies' (Lead applicant: Kate Tilling - 2 postdoc positions).

2010: Co-promoter of Center of Excellence in Bio-informatics.

2010: UGent BOF PhD grant, Jan Buyse, Structural nested models for the effect of a time-varying exposure on dichotomous outcomes and survival outcomes, 2010-2013.

2011: FWO PhD grant, Karel Vermeulen, Optimal nuisance parameter estimation in causal inference, 2011-2014.

2011: Promoter of FWO-onderzoeksproject: Dealing with effect decomposition and intermediate confounding in causal mediation analysis (272250 EUR).

2012: partner in IAP `Developing crucial statistical methods for understanding major complex dynamic systems in natural, biomedical and social sciences' (500.000 EUR - UGent share).

2012: ICU-VAR project of the Scientific Institute of Public Health, Brussels, Belgium (Postdoc 3 months).

2014: Co-promoter of FWO-onderzoeksproject: Improved Inference for Probabilistic Index Models (329452 EUR).

2016: Promoter of FWO-onderzoeksproject: Bias-reduced double-robust estimation (250000 EUR).

2016: IWT PhD grant, Oliver Dukes, Offline And Online Evaluation Of Medical Treatment Decision Strategies Based On Large Scale Electronic Health Registers, 2016-2019.

2017: Co-promoter of FWO-onderzoeksproject: Dealing with multiple mediators in causal mediation analysis (297600 EUR).