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Christoph Kern

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Work Experience

- 02/2017–present **Post-Doctoral Researcher**
Professorship for Statistics and Methodology (Prof. Dr. F. Kreuter, Prof. Dr. F. Keusch), Department of Sociology, University of Mannheim
- 02/2014–09/2016 **Research Associate**
Research project “*Modeling dyadic decision-making processes of regional mobility and their labour market outcomes*”, funded by the German Research Foundation (DFG) (STE 1054/6-1), University of Duisburg-Essen
- 04/2011–03/2017 **Research Associate**
Chair of Empirical Social Research and Statistics (Prof. Dr. P. Stein), Institute of Sociology (IfS), University of Duisburg-Essen
- 04/2011–08/2011 **Research Associate**
Research Unit “Flexibility and Security” (FLEX), Institute for Work, Skills and Training (IAQ), University of Duisburg-Essen
- 10/2009–02/2011 **Undergraduate Research Assistant**
Chair of Empirical Social Research and Statistics (Prof. Dr. P. Stein), Institute of Sociology (IfS), University of Duisburg-Essen

Visiting Positions

- 09/2018–present **Adjunct Faculty Associate**
Survey Research Center (SRC), Institute for Social Research (ISR), University of Michigan, USA
- 06/2018–12/2018 **Visiting Assistant Professor**
Joint Program in Survey Methodology (JPSM), College of Behavioral and Social Sciences, University of Maryland, USA
- 06/2018–08/2018 **Visiting Researcher**
Center for Data Science and Public Policy (DSaPP), University of Chicago, USA

Education

- 12/2016 **Dr. rer. pol. (Ph.D.)** (summa cum laude)
Dissertation “*Dyadische Modellierung des Entscheidungsprozesses regionaler Arbeitsmarktmobilität*” (“*Modeling dyadic decision-making processes of regional mobility*”); Primary adviser: Prof. Dr. P. Stein, secondary adviser: Dr. B. Weiß, University of Duisburg-Essen
- 10/2005–02/2011 **Dipl. Soz.-Wiss. (Bachelor & Masters in Sociology)** (1,3)
Major in Methods for Empirical Social Science Research, Minors in Analysis of Social Structures, Sociological Theory and Psychology, University of Duisburg-Essen

Research Grants & Awards

- 2017 Best Doctoral Dissertation Award awarded by the Sparkasse Duisburg for the dissertation “*Dyadische Modellierung des Entscheidungsprozesses regionaler Arbeitsmarktmobilität*”
- 2015 Early Career Award provided by the European Survey Research Association for the paper “*Comparing coefficients of nonlinear multivariate regression models between equations*” (jointly with Petra Stein)
- 2014 Research Grant awarded by the German Research Foundation (DFG) for the proposal “*Modeling dyadic decision-making processes of regional mobility and their labour market outcomes*” (jointly with Petra Stein), €111,800
- 2013 Research Grant awarded by the Main Research Area “Transformation of contemporary societies” of the University of Duisburg-Essen, €6,900

Services

Journal Manuscript Reviewer

Zeitschrift für Soziologie (ZfS)

Conference Session Organizer

ESRA Conference 2019 (with R. Bach and M. Schierholz), Session: Predictive Modeling and Machine Learning in Survey Research, Zagreb, Croatia.

Professional Affiliations

American Statistical Association (ASA)

American Association for Public Opinion Research (AAPOR)

European Survey Research Association (ESRA)

Sektion Methoden der empirischen Sozialforschung der Deutschen Gesellschaft für Soziologie (DGS)

UseR Group Bochum/Ruhr

Publications

Books

- [1] Kern, C. (2017). Dyadische Analyse regionaler Arbeitsmarktmobilität. Modellierung von Entscheidungsprozessen im Mehrebenenkontext. Wiesbaden: Springer VS. doi:[10.1007/978-3-658-17435-4](https://doi.org/10.1007/978-3-658-17435-4)

Refereed Journal Articles

- [2] Kern, C., Klausch, T., and Kreuter, F. (2019). Tree-based Machine Learning Methods for Survey Research. *Survey Research Methods* 13(1), 73–93. doi:[10.18148/srm/2019.v1i1.7395](https://doi.org/10.18148/srm/2019.v1i1.7395)
- [3] Kern, C. and Stein, P. (2018). Modelling Decision-Making Processes of Regional Mobility in a Dyadic Framework. *European Sociological Review* 34(4), 433–451. doi:[10.1093/esr/jcy012](https://doi.org/10.1093/esr/jcy012)
- [4] Kern, C. and Stein, P. (2015). Comparing coefficients of nonlinear multivariate regression models between equations. *Survey Research Methods* 9(3), 159–167. doi:[10.18148/srm/2015.v9i3.6211](https://doi.org/10.18148/srm/2015.v9i3.6211)
- [5] Kern, C. (2015). Modeling Mobility Dispositions from a Multilevel Perspective. *Schmollers Jahrbuch – Journal of Contextual Economics* 135(1), 23–34. doi:[10.3790/schm.135.1.23](https://doi.org/10.3790/schm.135.1.23)

Book Chapters

- [6] Stein, P. and Kern, C. (2018). Konzeption eines dyadischen Modells zur Analyse von Entscheidungsprozessen räumlicher Arbeitsmarktmobilität im Mehrebenenkontext. In: Quack, S., Schulz-Schaeffer, I., Shire, K., Weiß, A. (Eds.): *Transnationalisierung der Arbeit*. Wiesbaden: Springer VS. doi:[10.1007/978-3-658-20939-1](https://doi.org/10.1007/978-3-658-20939-1)
- [7] Stein, P. and Kern, C. (2015). Dyadische Modellierung regionaler Arbeitsmarktmobilität. In: Lessenich, S. (Ed.): *Routinen der Krise – Krise der Routinen*. Verhandlungen des 37. Kongresses der Deutschen Gesellschaft für Soziologie in Trier 2014.

Conference / Working Papers

- [8] Kern, C. and Stein, P. (2016). Effect Comparison in Multilevel Structural Equation Models with Non-Metric Outcomes. *JSM Proceedings, Social Statistics Section*. Alexandria, VA: American Statistical Association. 3892–3901.
- [9] Kern, C. (2014): Regional structures and mobility dispositions: A multilevel proportional- & partial-proportional odds approach. *SOEPpapers on Multidisciplinary Panel Data Research* 681. DIW Berlin. doi:[10.2139/ssrn.2493094](https://doi.org/10.2139/ssrn.2493094)

Book Reviews

- [10] Stein, P. and Kern, C. (2016). Rezension: Friedrichs, J. and Nonnenmacher, A. (Eds.), 2014: *Soziale Kontexte und Soziale Mechanismen*. *Soziologische Revue* 39 (3), 480–484. doi:[10.1515/srsr-2016-0064](https://doi.org/10.1515/srsr-2016-0064)

Reports

- [11] Bosch, G., Kalina, T., Kern, C., Neuffer, S., Schwarzkopf, M., and Weinkopf, C. (2011). Evaluation bestehender gesetzlicher Mindestlohnregelungen – Branche: Gebäudereinigung. Abschlussbericht. Duisburg: Institut Arbeit und Qualifikation.

Presentations

- 2019
- Kern, C., Weiß, B. and Kolb, J.-P. (2019). Predicting Panel Nonresponse with Machine Learning in a Longitudinal Framework. GESIS Panel User Conference. Mannheim, Germany.
- Bach, R., Kern, C., Amaya, A., Keusch, F., Kreuter, F., Hecht, H. and Heinemann, H. (2019). Predicting Political Behavior and Preferences Using Digital Trace Data. GOR 2019, Session: Tracking Political Behaviour. Cologne, Germany.
- Kern, C., Höhne, J. K., Schlosser, S. and Revilla, M. (2019). **Invited presentation:** SurveyMotion: Predicting completion conditions in mobile web surveys by using acceleration data. Mobile Apps and Sensors in Surveys (MASS) workshop, Session: Physical activity sensors, Mannheim, Germany.
- 2018
- Kolb, J.-P., Weiß, B. and Kern, C. (2018). Using Predictive Modeling to Identify Panel Dropouts. BigSurv 2018, Session: Big Data Methods, Small Survey Nonresponse? Barcelona, Spain.
- Bach, R., Kern, C., Amaya, A., Keusch, F., Kreuter, F., Hecht H. and Heinemann, H. (2018). Predicting Political Behavior and Attitudes Using Digital Trace Data. Poster presented at BigSurv 2018, Barcelona, Spain. [poster](#)
- Kern, C. (2018). Predicting Panel Nonresponse with Machine Learning in a Longitudinal Framework. JPSM/MPSM Seminar Series, University of Maryland, College Park. [video](#)
- Kern, C. (2018). Predicting Panel Drop-Outs with Machine Learning. JSM 2018, **Invited session:** Improving Survey Data Quality with Machine Learning Techniques, Vancouver. [slides](#)
- Weiß, B., Kolb, J.-P. and Kern, C. (2018). Using Predictive Modeling in Survey Methodology to Identify Panel Nonresponse. JSM 2018, Speed Session: Missing Survey Data: Analysis, Imputation, Design, and Prevention, Vancouver. [slides](#)
- Kern, C. (2018). Data-driven Prediction of Panel Attrition. AAPOR Conference 2018, Session: Tinkering with Tradition: Using Machine Learning Methods and Big Data to Refine Survey Designs and Improve Survey Participation, Denver.
- 2017
- Kern, C. (2017). Modeling decision-making processes of regional mobility in a dyadic framework. MZES AB A-Colloquium, Mannheim.
- Kern, C. (2017). Data-driven Prediction of Panel Nonresponse. GESIS Panel Research Colloquium, Mannheim.
- Kern, C. (2017). Data-driven Prediction of Panel Nonresponse. ESRA Conference 2017, Session: Different methods, same results? Lisbon.
- Kern, C. and Stein, P. (2017). Effect Comparison in Multilevel Structural Equation Models with Non-Metric Outcomes. Meeting of the Working Group Structural Equation Modeling, Ghent. [slides](#)
- 2016
- Kern, C. and Stein, P. (2016). Dyadische Modellierung des Entscheidungsprozesses räumlicher Mobilität im Mehrebenenkontext. DGS-Kongress 2016, Ad-hoc-Gruppe: Dyadische Datenanalyse, Bamberg.
- Kern, C. and Stein, P. (2016). Effect comparison in nonlinear dyadic mixed-effects models between equations. ASA 2016, Session: Quantitative Methodology, Seattle.
- Kern, C. and Stein, P. (2016). Effect comparison in nonlinear dyadic mixed-effects models between equations. JSM 2016, Speed Session: Statistics for Education and Social Sciences Research, Chicago.

- Kern, C. (2016). Effektvergleiche in dyadischen Mehrebenenmodellen mit nicht-metrischen abhängigen Variablen. Frühjahrstagung der DGS-Sektion Methoden der empirischen Sozialforschung, Duisburg.
- Kern, C. and Stein, P. (2016). Implicit rescaling in multivariate mixed-effects models with nonmetric outcomes. DAGStat 2016 – Statistics under one umbrella, Session: Structural Equation Modelling, Göttingen.
- 2015 Stein, P. and Kern, C. (2015). Effect comparison in nonlinear dyadic models. ESA Conference 2015, Session: RN21 Quantitative Methods, Prague.
- Kern, C. and Stein, P. (2015). Comparing coefficients of nonlinear multivariate regression models between equations. ESRA Conference 2015, Session: Interaction effects and group comparisons in nonlinear models, Reykjavik.
- 2014 Stein, P. and Kern, C. (2014). Dyadische Modellierung regionaler Arbeitsmarktmobilität. DGS-Kongress 2014, Sektion: Methoden der empirischen Sozialforschung, Trier.
- Stein, P. and Kern, C. (2014). Modellierung von dyadischen Entscheidungsprozessen räumlicher Mobilität und ihren Konsequenzen. Poster presented at DGS-Kongress 2014, Trier.
- Stein, P. and Kern, C. (2014). Regional structures and mobility dispositions: A multilevel proportional- & partial-proportional odds approach. 11th International German Socio-Economic Panel User Conference, Berlin.
- Stein, P. and Kern, C. (2014). Modeling Dyadic Decision-making Processes of Regional Mobility and their Labor Market Outcomes. Workshop Transnational Labor Markets: Bridging Different Regulatory and Cultural Contexts, Duisburg.

Teaching

Courses

- University of Maryland
- Fall 2018 *Machine Learning for Social Science* (SURV699U)
- Fall 2018 *Fundamentals of Computing and Data Display* (SURV727, SurvMeth727)
- University of Mannheim
- FSS 2019 *Machine Learning for Social Science*
- FSS 2019 *Fundamentals of Computing and Data Display*
- FSS 2018 *Machine Learning in the Social Sciences*
- HWS 2017 *Research Practicum II* (in German)
- FSS 2017 *Machine Learning in the Social Sciences*
- FSS 2017 *Research Practicum I* (in German)
- University of Duisburg-Essen
- WS 2016/17 *An Introduction to Machine Learning in R* (in German)
- SS 2016 *Advanced Regression Methods in R* (in German)
- SS 2014, 2015 *Regression Models for Categorical Dependent Variables* (in German)
- SS 2013 *Essential Mathematics for Social Research* (in German)

SS 2012 *An Introduction to Stata and R* (in German)

SS 2012 *Research Practicum II* (in German)

WS 2011/12 *Research Practicum I* (in German)

WS 2011/12 – *Data Analysis Programmes* (in German)

WS 2015/16

Short Courses and Workshops

2019 Organizer of *DataFest Germany* 2019, Mannheim

03/25/2019 – *Big Data Analysis*, Workshop w. F. Kreuter, M. Neunhoeffler and S. Sternberg, Bundesbank Frankfurt

10/2018 – *Applied Data Analytics* (<https://coleridgeinitiative.org/>), Teaching Assistance, University of Maryland

03/21/2018 – *Machine Learning for Social Science*, Workshop w. M. Schierholz and J. Geßendorfer, IAB Nürnberg

02/06/2018 – *Machine Learning for Social Science*, Workshop w. M. Schierholz and J. Geßendorfer, IAB Nürnberg

10/2017 – *Applied Data Analytics* (<https://coleridgeinitiative.org/>), Teaching Assistance, University of Maryland

11/15/2017 – *Big Data Analysis*, Workshop w. F. Kreuter, M. Schierholz and S. Sternberg, Bundesbank Frankfurt

10/20/2017 *Introduction to Web Scraping and Machine Learning*, Workshop w. M. Schierholz at the University of Bremen

04/08/2017 *CART and Random Forests in R*, Short Tutorial at DataFest 2017, Mannheim

01/16/2017 – *An Introduction to R* (in German), Workshop at Sozialwissenschaftliches Umfragezentrum (SUZ), Duisburg

2017 Organizing committee of *DataFest Germany* 2017, Mannheim

11/24/2015 *Objects, Matrices and Simulations in R* (in German), Short course at the University of Duisburg-Essen

05/16/2013 *An Introduction to R* (in German), Short course at the University of Duisburg-Essen

Tutoring

University of Duisburg-Essen

WS 2010/11 *Multivariate Data Analysis* (in German)

SS 2010 *Longitudinal Data Analysis* (in German)

SS 2010 *Statistical Classification in the Social Sciences* (in German)

WS 2009/10 *Latent Variable Models* (in German)

Professional Development

07/2018	JSM Continuing Education Course “Master the Tidyverse: An Introduction to R for Data Science”, Vancouver (Canada)
07/2017	ESRA Short Course “Applications of Big Data to Social Sciences”, Lisbon (Portugal)
08/2016	JSM Continuing Education Course “A Statistical Approach to Machine Learning: Boosting, Nearest Neighbors, Random Forests and Support Vector Machines”, Chicago (USA)
07/2015	ESRA Short Course “Multilevel Structural Equation Modeling”, Reykjavik (Iceland)
08/2014	GESIS Summer School “Sampling, Weighting and Estimation”, Cologne (Germany)
09/2012	GESIS Spring Seminar “Mathematical Tools for Social Scientists”, Cologne (Germany)
09/2011	Datalab “Analysis of longitudinal data”, Bielefeld (Germany)