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## Christoph Kern

April 15, 2024

### Academic Experience

- 09/2022 – present **Junior Professor of Social Data Science and Statistical Learning**  
Department of Statistics, Ludwig-Maximilians-Universität (LMU) Munich
- 10/2020–03/2021 **Interim Professor of Statistics and Data Science in Social Science**  
Department of Statistics, Ludwig-Maximilians-Universität (LMU) Munich
- 10/2020 – present **Project Director**  
Research projects “*Fairness in Automated Decision-Making – FairADM*” and “*Consequences of Artificial Intelligence for Urban Societies (CAIUS)*”, Mannheim Centre for European Social Research (MZES)
- 02/2017–08/2022 **Post-Doctoral Researcher**  
Professorship for Statistics and Methodology (Prof. Dr. F. Kreuter, Prof. Dr. F. Keusch), Department of Sociology, University of Mannheim [on leave: Fall 2018, 2019, 2020]
- 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), 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

- 01/2022–05/2022 **Visiting Scientist** ([Causality](#) and [Learning and Games](#) Programs)  
Simons Institute for the Theory of Computing, UC Berkeley, USA

- 04/2021 – present **Research Assistant Professor**  
 01/2020–06/2020 Joint Program in Survey Methodology (JPSM), College of Behavioral and Social Sciences, University of Maryland, USA
- 09/2019–12/2019 **Visiting Assistant Professor**  
 06/2018–12/2018 Joint Program in Survey Methodology (JPSM), College of Behavioral and Social Sciences, University of Maryland, USA
- 09/2018–08/2019 **Adjunct Faculty Associate**  
 Survey Research Center (SRC), Institute for Social Research (ISR), University of Michigan, USA
- 06/2018–08/2018 **Visiting Researcher**  
 Center for Data Science and Public Policy (DSaPP), University of Chicago, USA

## Affiliations

- 05/2023 – present **Fellow** Konrad Zuse School of Excellence in Reliable AI (reAI)
- 01/2023 – present **Associated Member** Munich Center for Machine Learning (MCML)
- 06/2021 – present **Honorary Associate Professor** Department of Mathematics, University of Warwick, UK

## 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)**  
 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

- 2023 DGOF [Best Paper Award](#) provided by the German Society for Online Research for the paper “*Universal Adaptability: Target-Independent Inference that Competes with Propensity Scoring*” (jointly with Michael P. Kim, Shafi Goldwasser, Frauke Kreuter and Omer Reingold)
- 2022 Research Grant awarded by the German Research Foundation (DFG) (KE 2185/3-1) for the proposal “*Prediction-based Adaptive Designs for Panel Surveys*” (jointly with Tobias Gummer and Bernd Weiß), €431,062 (own share €173,584)
- 2021 Research Grant awarded by the German Federal Statistical Office (Destatis) for the proposal “*Methodological Aspects of Machine Learning in Official Statistics*” (jointly with Thomas Augustin, Andreas Bender, Ludwig Bothmann, Anne-Laure Boulesteix, Thomas Fetzner and Frauke Kreuter), €999,112 (own share with Frauke Kreuter €117,036)
- 2020 Research Grant awarded by the VW-Stiftung for the proposal “*Consequences of Artificial Intelligence for Urban Societies (CAIUS) – Using Impact-Aware AI to Make Smart Cities Socially Equitable*” (jointly with Kai Eckert, Frauke Kreuter, Heiner Stuckenschmidt and Ruben Bach), €1,496,600 (own share €293,100)

- 2020 Grant to support the initiation of international collaboration awarded by the German Research Foundation (DFG) for the proposal “*Learning Multiaccurate Classifiers for Adaptation and Estimation*”, €9,020
- 2020 Research Grant awarded by the BW-Stiftung for the proposal “*Fairness in Automated Decision-Making – FairADM*” (jointly with Ruben Bach and Frauke Kreuter), €203,787
- 2019 Travel Grant awarded by the German Academic Exchange Service (DAAD)
- 2018 Research Fellowship awarded by the German Research Foundation (DFG) for the proposal “*Predicting Panel Drop-outs with Machine Learning*”
- 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 (ESRA) for the paper “*Comparing coefficients of nonlinear multivariate regression models between equations*”
- 2014 Research Grant awarded by the German Research Foundation (DFG) (STE 1054/6-1) 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

## Publications

### Refereed Journal Articles

- [1] Classe, F. and Kern, C. (2024). Latent Variable Forests for Latent Variable Score Estimation. *Educational and Psychological Measurement*. doi: [10.1177/00131644241237502](https://doi.org/10.1177/00131644241237502)
- [2] Classe, F. and Kern, C. (2024). Detecting Differential Item Functioning in Multi-dimensional Graded Response Models With Recursive Partitioning. *Applied Psychological Measurement*. doi: [10.1177/01466216241238743](https://doi.org/10.1177/01466216241238743)
- [3] Höhne, J. K., Kern, C., Gavras, K., and Schlosser, S. (2023). The Sound of Respondents: Predicting Respondents’ Level of Interest in Questions with Voice Data in Smartphone Surveys. *Quality & Quantity*. doi: [10.1007/s11135-023-01776-8](https://doi.org/10.1007/s11135-023-01776-8)
- [4] Bach, R. L., Kern, C., Mautner, H., and Kreuter, F. (2023). The Impact of Modeling Decisions in Statistical Profiling. *Data & Policy* 5, E32. doi: [10.1017/dap.2023.29](https://doi.org/10.1017/dap.2023.29)
- [5] Saw, H. W., Owens, V., Morales, S. A., Rodriguez, N., Kern, C., and Bach, R. L. (2023). Population mental health in Burma after 2021 military coup: online non-probability survey. *BJPsych Open*, 9(5). doi: [10.1192/bjo.2023.550](https://doi.org/10.1192/bjo.2023.550)
- [6] Kern C., Gerdon, F., Bach, R. L., Keusch, F. and Kreuter, F. (2022). Humans versus Machines: Who is Perceived to Decide Fairer? Experimental Evidence on Attitudes Toward Automated Decision-Making. *Patterns*. doi:[10.1016/j.patter.2022.100591](https://doi.org/10.1016/j.patter.2022.100591)
- [7] Kuppler, M., Kern, C., Bach, R. L., Kreuter, F. (2022). From fair predictions to just decisions? Conceptualizing algorithmic fairness and distributive justice in the context of data-driven decision-making. *Frontiers in Sociology*. doi: [10.3389/fsoc.2022.883999](https://doi.org/10.3389/fsoc.2022.883999)

- [8] Silber, H., Bach, R. L., Gerdon, F., Kern, C., Keusch, F., Kreuter, F. (2022). A preregistered vignette experiment on determinants of health data sharing behavior. Willingness to donate sensor data, medical records, and biomarkers. *Politics and the Life Sciences*. doi:[10.1017/pls.2022.15](https://doi.org/10.1017/pls.2022.15)
- [9] Gerdon, F., Bach, R. L., Kern, C. and Kreuter, F. (2022). Social Impacts of Algorithmic Decision-Making: A Research Agenda for the Social Sciences. *Big Data & Society*. doi:[10.1177/20539517221089305](https://doi.org/10.1177/20539517221089305)
- [10] Bach, R. L., Kern, C., Bonnay, D. and Kalaora, L. (2022). Understanding Political News Media Consumption with Digital Trace Data and Natural Language Processing. *Journal of the Royal Statistical Society: Series A*. doi:[10.1111/rssa.12846](https://doi.org/10.1111/rssa.12846)
- [11] Kim, M. P., Kern, C., Goldwasser, S., Kreuter, F. and Reingold, O. (2022). Universal Adaptability: Target-Independent Inference that Competes with Propensity Scoring. *Proceedings of the National Academy of Sciences of the United States of America (PNAS)* 119(4). doi:[10.1073/pnas.2108097119](https://doi.org/10.1073/pnas.2108097119)
- [12] Averagesch, N. J. H., Shunk, G. K. and Kern, C. (2022). Cultivation of the Dematiaceous Fungus *Cladosporium sphaerospermum* Aboard the International Space Station and Effects of Ionizing Radiation. *Frontiers in Microbiology*. doi:[10.3389/fmicb.2022.877625](https://doi.org/10.3389/fmicb.2022.877625).
- [13] Kern, C., Weiß, B., and Kolb, J.-P. (2021). Predicting Nonresponse in Future Waves of a Probability-based Mixed-mode Panel with Machine Learning. *Journal of Survey Statistics and Methodology*. doi:[10.1093/jssam/smab009](https://doi.org/10.1093/jssam/smab009)
- [14] Pfisterer, F., Kern, C., Dandl, S., Sun, M., Kim, M. P., and Bischl, B. (2021). mcboost: Multi-Calibration Boosting for R. *Journal of Open Source Software* 6(64), 3453. doi:[10.21105/joss.03453](https://doi.org/10.21105/joss.03453)
- [15] Badillo-Goicoechea, E., Chang, T., Kim, E., LaRocca, S., Morris, K., Deng, X., Chiu, S., Bradford, A., Garcia, A., Kern, C., Cobb, C., Kreuter, F., and Stuart, E. (2021). Global Trends and Predictors of Face Mask Usage During the COVID-19 Pandemic. *BMC Public Health*. doi:[10.1186/s12889-021-12175-9](https://doi.org/10.1186/s12889-021-12175-9)
- [16] Kern, C., Höhne, J. K., Schlosser, S., and Revilla, M. (2020). Completion Conditions and Response Behavior in Smartphone Surveys: A Prediction Approach Using Acceleration Data. *Social Science Computer Review*. doi:[10.1177/0894439320971233](https://doi.org/10.1177/0894439320971233)
- [17] Kern, C., Li, Y., and Wang, L. (2020). Boosted Kernel Weighting - Using Statistical Learning to Improve Inference From Nonprobability Samples. *Journal of Survey Statistics and Methodology* 9(5), 1088–1113. doi:[10.1093/jssam/smaa028](https://doi.org/10.1093/jssam/smaa028)
- [18] Erlinghagen, M., Kern, C., and Stein, P. (2020). Migration, Social Stratification and Dynamic Effects on Subjective Well Being. *Advances in Life Course Research*. doi:[10.1016/j.alcr.2020.100393](https://doi.org/10.1016/j.alcr.2020.100393)
- [19] Bach, R. L., Kern, C., Amaya, A., Keusch, F., Kreuter, F., Hecht, J., and Heineemann, J. (2019). Predicting Voting Behavior Using Digital Trace Data. *Social Science Computer Review* 39(5), 862–883. doi:[10.1177/0894439319882896](https://doi.org/10.1177/0894439319882896)
- [20] 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)
- [21] 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)
- [22] 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)

- [23] 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

#### Refereed Conference Papers

- [24] Achterhold, E., Mühlböck, M., Steiber, N. and Kern, C. (2023). Fairness in Algorithmic Profiling: The AMAS Case. 3rd ACM conference on Equity and Access in Algorithms, Mechanisms, and Optimization (EAAMO'23).
- [25] Kern, C., Eckman, S., Beck, J., Chew, R., Ma, B., Kreuter, F. (2023). Annotation Sensitivity: Training Data Collection Methods Affect Model Performance. *Findings of the Association for Computational Linguistics: EMNLP 2023*, 14874–14886, Singapore. ACL. doi:10.18653/v1/2023.findings-emnlp.992.
- [26] Simson, J., Pfisterer, F., and Kern, C. (2023). Using Multiverse Analysis to Evaluate the Influence of Model Design Decisions on Algorithmic Fairness. *HHAI 2023: Augmenting Human Intellect*, 382–384. IOS Press. doi:10.3233/FAIA230104.
- [27] Jaime, S., and Kern, C. (2023). Ethnic Classifications in Algorithmic Decision-Making Processes. *Proceedings of the 2nd European Workshop on Algorithmic Fairness (EWAFA 2023)*. <https://ceur-ws.org/Vol-3442/>.
- [28] Kern, C., Bach, R. L., Mautner, H., and Kreuter, F. (2023). When Small Decisions Have Big Impact: Fairness Implications of Algorithmic Profiling Schemes. *Proceedings of the 2nd European Workshop on Algorithmic Fairness (EWAFA 2023)*. <https://ceur-ws.org/Vol-3442/>.
- [29] Kaiser, P., Kern, C., and Rügamer, D. (2022). Uncertainty-aware predictive modeling for fair data-driven decisions. *Trustworthy and Socially Responsible Machine Learning (TSRML 2022)*, co-located with *NeurIPS 2022*. <https://arxiv.org/abs/2211.02730>.

#### Books

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

#### Book Chapters

- [31] Kreuter, F., Kern, C., and Schenk, P. O. (2023). Automatisierte Entscheidungen: Aspekte von Fairness, Datenqualität und Privacy. In Dössel, O., Schäffter, T., Rutert, B. (Eds.): *Künstliche Intelligenz in der Medizin*. Berlin: Berlin-Brandenburgische Akademie der Wissenschaften.
- [32] Lin, C., Ganesh, V. N., Rathi, P., Sasson, A., and Kern, C. (2022). Bottom-up Economic Forecasting of Regional Unemployment in Germany. In: Wawrzyniak, B. and Herter, M. (Eds.) *Neue Dimensionen in Data Science*. Berlin: VDE Verlag.
- [33] Kern, C. (2020). Machine Learning Interpretation Tools. In: Atkinson, P., Delamont, S., Cernat, A., Sakshaug, J. W., Williams, R. A. (Eds.). *SAGE Research Methods Foundations*. SAGE Publishing. doi:10.4135/9781526421036913344
- [34] Kim, B., Kern, C., Morgan, J. S., Hunter, C., and Kumar, A. (2020). *Workbooks*. In: Foster, I., Ghani, R., Jarmin, R. S., Kreuter, F., and Lane, J. (Eds.). *Big Data and Social Science: Data Science Methods and Tools for Research and Practice*. Second Edition. Boca Raton, FL: CRC Press Taylor & Francis Group. <https://textbook.coleridgeinitiative.org/>
- [35] 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

- [36] 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.

### Preprints and Working Papers

- [37] Schenk, P. O. and Kern, C. (2024). Connecting Algorithmic Fairness to Quality Dimensions in Machine Learning in Official Statistics and Survey Production. arXiv. <https://arxiv.org/abs/2402.09328>.
- [38] Fischer Abaigar, U., Kern, C., Barda, N., Kreuter, F. (2023). Bridging the Gap: Towards an Expanded Toolkit for ML-Supported Decision-Making in the Public Sector. arXiv. <https://arxiv.org/abs/2310.19091>.
- [39] Simson, J., Pfisterer, F., and Kern, C. (2023). Everything, Everywhere All in One Evaluation: Using Multiverse Analysis to Evaluate the Influence of Model Design Decisions on Algorithmic Fairness. arXiv. <https://arxiv.org/abs/2308.16681>.
- [40] Höhne, J. K., Kern, C., Gavras, K., and Schlosser, S. (2022). The Sound of Respondents: Predicting Respondents' Level of Interest with Voice Data in Smartphone Surveys. SSRN. doi:10.2139/ssrn.4239005.
- [41] Kern, C., Bach, R. L., Mautner, H., and Kreuter, F. (2021). Fairness in Algorithmic Profiling: A German Case Study. arXiv. <https://arxiv.org/abs/2108.04134>.
- [42] Kuppler, M., Kern, C., Bach, R. L., Kreuter, F. (2021). Distributive Justice and Fairness Metrics in Automated Decision-making: How Much Overlap Is There? arXiv. <https://arxiv.org/abs/2105.01441>.
- [43] Shunk, G. K., Gomez, X. R., Kern, C., Aversch, N. J. H. (2021). A Self-Replicating Radiation-Shield for Human Deep-Space Exploration: Radiotrophic Fungi can Attenuate Ionizing Radiation aboard the International Space Station. bioRxiv. doi:10.1101/2020.07.16.205534.
- [44] Badillo-Goicoechea, E., Chang, T., Kim, E., LaRocca, S., Morris, K., Deng, X., Chiu, S., Bradford, A., Garcia, A., Kern, C., Cobb, C., Kreuter, F., and Stuart, E. (2020). Global Trends and Predictors of Face Mask Usage During the COVID-19 Pandemic. arXiv. <https://arxiv.org/abs/2012.11678>.
- [45] Kern, C., Weiß, B., and Kolb, J.-P. (2019). A Longitudinal Framework for Predicting Nonresponse in Panel Surveys. arXiv. <https://arxiv.org/abs/1909.13361>.
- [46] Kolb, J.-P., Weiß, B. and Kern, C. (2019). Using Predictive Modelling to Identify Panel Nonresponse. Proceeding of the 62nd ISI World Statistics Congress 2019, Volume 7, 206–214.
- [47] Erlinghagen, M., Kern, C., and Stein, P. (2019). Internal Migration, Social Stratification and Dynamic Effects on Subjective Well Being. SOEPpapers on Multidisciplinary Panel Data Research 1046. DIW Berlin.
- [48] 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.
- [49] 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

### Book Reviews

- [50] 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



## Reports

- [51] 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.

## Public Media

- [52] Gerdon, F., Kern, C., Bach, R. L., Keusch, F., Kreuter, F. (2021). Beurteilung des Einsatzes von automatisierten Entscheidungen in verschiedenen Lebensbereichen. <https://www.gesellschaft-im-wandel.de/ergebnisse/>
- [53] Kreuter, F., Kim, E., LaRocca, S., Morris, K., Kern, C., Garcia, A. (2020). Data on Economic Anxiety Offer New Opportunities for Insights on the Global Effects of the COVID-19 Pandemic. <https://socialdatascience.umd.edu>

## Software

Classe, F. and Kern, C. (2022). lvforest: Latent Variable Forests. R package version 0.0.2. <https://github.com/chkern/lvforest>.

Pfisterer, F., Dandl, S., Kern, C., and Bischl, B. (2021). mcboost: Multi-Calibration Boosting. R package version 0.3.3. <https://mlr-org.github.io/mcboost/>.

Wang, L. and Kern, C. (2020). KWML: Boosted Kernel Weighting. R package version 1.0.1. <https://github.com/chkern/KWML>.

## Conference Presentations (as presenting author)

- 2024 Schenk, P. O., Kern, C., Kreuter, F. (2024). Fairness in Machine Learning for National Statistical Organizations. Conference on Foundations and Advances of Machine Learning in Official Statistics, Wiesbaden.
- 2023 Kern, C. (2023). A Multiverse of Decisions: Fairness Implications of Algorithmic Profiling Schemes. (**Invited talk**). IMS International Conference on Statistics and Data Science (ICSIDS). Lisbon, Portugal.
- Kreuter, F. and Kern, C. (2023). Universal Adaptability [joint work with Michael P. Kim, Shafi Goldwasser, and Omer Reingold]. ICERM Workshop on Extending Inferences to a New Target Population. Providence, USA.
- Kern, C., Bach, R., Mautner, H., and Kreuter, F. (2023). When Small Decisions Have Big Impact. Fairness Implications of Algorithmic Profiling Schemes. European Workshop on Algorithmic Fairness (EWAf 23). Winterthur, Switzerland.
- Kern, C., Beck, J., Haensch, A.-C. (2023). A Systematic Comparison of Bias Adjustment Methods for Estimating Trends During the Pandemic. AAPOR 2023, Philadelphia, USA.
- Kern, C. (2023). Robust Conditional Average Treatment Effect Estimation via Multi-Accurate Learning [joint work with Angela Zhou and Michael P. Kim]. (**Invited talk**). Simons Institute for the Theory of Computing, UC Berkeley.
- Kern, C., Ma, B., Chew, R., Beck, J., Eckman, S., Kreuter, F. (2023). Downstream Effects of Labeling Methods on Model Performance. High-Quality Data for Reliable AI Workshop, LMU Munich.
- 2022 Kern, C. and Kreuter, F. (2022). Universal Adaptability – A New Method to Draw Inference from Non-Probability Surveys and Other Data Sources [joint work with Michael P. Kim, Shafi Goldwasser, and Omer Reingold]. Statistische Woche 2022, Münster.

- Kern, C. and Kreuter, F. (2022). Equity, inclusion, and fairness in data-driven decision making in the public sector. Workshop on Quality Aspects of Machine Learning, LMU Munich.
- Kern, C. (2022). Universal Adaptability – A New Method to Draw Inference from Non-Probability Surveys and Other Data Sources [joint work with Michael P. Kim, Shafi Goldwasser, Frauke Kreuter and Omer Reingold]. AAPOR 2022, Chicago, USA. [slides](#)
- Kern, C., Höhne, J. K., Gavras, K. and Schlosser, S. (2022). Predicting Respondents’ Level of Interest with Voice Data in Smartphone Surveys. AAPOR 2022, Chicago, USA.
- Bach, R. and Kern, C. (2022). A Discussion on Fairness in Policy Learning in Labor Market Settings. Applications of Causal Learning Group, Simons Institute for the Theory of Computing, UC Berkeley.
- Kim, M. P. and Kern, C. (2022). Universal Adaptability – A Target-Independent Approach to Inference [joint work with Shafi Goldwasser, Frauke Kreuter and Omer Reingold]. Social Data Science (SoDa) Symposium, University of Maryland. [video](#)
- Kern, C. (2022). Improving Inference from Imperfect Data with Statistical Learning. (**Invited talk**). U.S. Census Bureau ML/AI Discussion Group.
- 2021 Kreuter, F. and Kern, C. (2021). Tree-based Machine Learning Methods for Survey Research. U.S. Census Bureau ML/AI Discussion Group.
- Kern, C. (2021). When Small Decisions Have Big Impact: The Hidden Consequences of Algorithmic Decision-Making. (**Invited talk**). Seminar series in statistics, Örebro University.
- Kreuter, F. and Kern, C. (2021). Fairness in AI (automated) Decision Making. Colloquium of the Department of Statistics and the Department of Sociology at LMU Munich. [abstract](#)
- Kern, C., Höhne, J. K., Gavras, K. and Schlosser, S. (2021). Automated Emotion Recognition with Voice Data in Smartphone Surveys. ESRA 2021 virtual conference.
- Bach, R., Kern, C., Gerdon, F., Kreuter, F. (2021). Mitigating Biases in AI with Survey Science. AAPOR 2021 virtual conference. [slides](#)
- Kern, C., Höhne, J. K., Gavras, K. and Schlosser, S. (2021). Automated Emotion Recognition with Voice Data in Smartphone Surveys. AAPOR 2021 virtual conference. [slides](#)
- Kern, C. (2021). Statistical Learning and Survey Science – Improving Inference from Nonprobability Samples and Beyond. (**Invited talk**). Department of Statistics Seminar Series, Stockholm University.
- 2020 Kern, C. (2020). Multiaccurate Predictors Under Distributional Shifts [joint work with Shafi Goldwasser, Michael P. Kim, Frauke Kreuter and Omer Reingold]. Colloquium of the Department of Statistics and the Department of Sociology at LMU Munich. [abstract](#)
- Kern, C., Li, Y. and Wang, L. (2020). Boosted Kernel Weighting – Using Statistical Learning to Improve Inference from Nonprobability Samples. BigSurv20 Conference.
- Kern, C., Höhne, J. K. and Schlosser, S. (2020). The Sound of Respondents: How Do Emotional States Affect the Quality of Voice Answers in Smartphone Surveys? BigSurv20 Conference.
- Kreuter, F., Bach, R., Kern, C. (2020). Fairness in Automated Decision-Making – FairADM. Poster presented at the Research Day of the Baden-Württemberg Foundation. [poster](#)



- Kern, C., Bach, R. L. and Bonnay, D. (2020). What You Read Is Who You Support? Online News Consumption and Political Preferences. General Online Research Conference (GOR) 2020. [video](#)
- Kern, C., Bach, R. L. and Bonnay, D. (2020). What You Read Is Who You Support? Online News Consumption and Political Preferences. 6th International Conference on Computational Social Science (IC2S2).
- Kern, C., Li, Y. and Wang, L. (2020). Boosted Kernel Weighting – Using Statistical Learning to Improve Inference from Nonprobability Samples. AAPOR virtual conference. [slides](#)
- Kern, C., Bach, R. L. and Bonnay, D. (2020). Augmenting Survey Data with Web Content from Digital Traces to Study Political Behavior. AAPOR virtual conference. [slides](#)
- 2019 Kern, C. (2019). Tree-based Machine Learning in Survey Research. (**Invited talk**). UN Statistics Division Brown Bag Series. New York, USA.
- Kern, C. (2019). Machine Learning Applications in Survey Research: Predicting Nonresponse in Panel Studies. UMIACS Machine Learning Seminar Series. College Park, USA.
- Kern, C., Weiß, B. and Kolb, J.-P. (2019). Predicting Panel Nonresponse with Machine Learning in a Longitudinal Framework. Conference on Current Trends in Survey Statistics 2019, Singapore.
- Kern, C., Weiß, B. and Kolb, J.-P. (2019). A Longitudinal Framework for Predicting Nonresponse in Panel Surveys. ESRA 2019, Zagreb, Croatia. [slides](#)
- Kern, C., Schlosser, S., Höhne, J.K. and Revilla, M. (2019). Predicting Completion Conditions in Mobile Web Surveys with Acceleration Data. ESRA 2019, Zagreb, Croatia. [slides](#)
- Kern, C. (2019). Machine Learning in Survey Research: Modeling Nonresponse and Completion Conditions from a Prediction Perspective. ITACOSM 2019, **Invited session**: Machine learning for socio-economic surveys. Florence, Italy. [slides](#)
- Kern, C. (2019). Potenziale und Grenzen von 'Digital Trace Data' bei der Vorhersage politischer Einstellungen. DGOF Research plus. Mannheim, Germany.
- Kern, C., Weiß, B. and Kolb, J.-P. (2019). A Longitudinal Framework for Predicting Nonresponse in Panel Surveys. AAPOR 2019, Toronto, Canada. [slides](#)
- 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. [slides](#)
- Kern, C., Höhne, J. K., Schlosser, S. and Revilla, M. (2019). SurveyMotion: Predicting completion conditions in mobile web surveys by using acceleration data. (**Invited talk**). Mobile Apps and Sensors in Surveys (MASS) workshop, Mannheim, Germany.
- 2018 Kern, C. (2018). Predicting Panel Nonresponse with Machine Learning in a Longitudinal Framework. JPSM/MPSM Seminar Series, University of Maryland, College Park, USA. [video](#)
- Kern, C. (2018). Predicting Panel Drop-Outs with Machine Learning. JSM 2018, **Invited session**: Improving Survey Data Quality with Machine Learning Techniques, Vancouver, Canada. [slides](#)
- Kern, C. (2018). Data-driven Prediction of Panel Attrition. AAPOR 2018, Denver, USA.
- 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, Lisbon, Portugal.
- 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, Belgium. [slides](#)
- 2016 Kern, C. and Stein, P. (2016). Dyadische Modellierung des Entscheidungsprozesses räumlicher Mobilität im Mehrebenenkontext. DGS-Kongress 2016, Bamberg.
- Kern, C. and Stein, P. (2016). Effect comparison in nonlinear dyadic mixed-effects models between equations. ASA 2016, Seattle, USA.
- Kern, C. and Stein, P. (2016). Effect comparison in nonlinear dyadic mixed-effects models between equations. JSM 2016, Chicago, USA.
- 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, Göttingen.
- 2015 Stein, P. and Kern, C. (2015). Effect comparison in nonlinear dyadic models. ESA Conference 2015, Prague, Czech Republic.
- Kern, C. and Stein, P. (2015). Comparing coefficients of nonlinear multivariate regression models between equations. ESRA Conference 2015, Reykjavik, Iceland.
- 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.

## Professional Activities

### Journal Manuscript Reviewer

ASta Wirtschafts- und Sozialstatistisches Archiv; Big Data & Society (BDS); EPJ Data Science; Ethics and Information Technology (ETIN); European Journal of Criminology (EUC); Frontiers in Sociology; Government Information Quarterly (GIQ); Harvard Data Science Review (HDSR); Information, Communication and Society (RICS); Journal of the American Statistical Association (JASA); Journal for Labour Market Research (JLMR); Journal of Official Statistics (JOS); Journal of the Royal Statistical Society. Series A (JRSSA); Journal of Survey Statistics and Methodology (JSSAM); Longitudinal and Life Course Studies (LLCS); Mathematics; methods, data, analyses (mda); Public Opinion Quarterly (POQ); Scientific Reports; Survey Methods: Insights from the Field (SMIF); Survey Methodology (SMJ); Survey Research Methods (SRM); Social Science Computer Review (SSCR); Zeitschrift für Soziologie (ZfS)

### Research Proposal Reviewer

Austrian Agency for Education and Internationalisation (OeAD), European Research Council (ERC), Icelandic Research Fund (IRF), Israel Science Foundation (ISF)

### Review Editor

Frontiers in Big Data – Data Analytics for Social Impact

### Conference Paper Reviewer

AAPOR Conference 2021, 2022, 2023 (Abstract Reviewer), ACM Web Conference 2022 (Paper Reviewer), American Causal Inference Conference 2023 (Abstract Reviewer), BigSurv Conference 2020 (Abstract Reviewer, Poster Award Jury Member), EWAFF 2024 (Paper Reviewer)

### Conference Session Organizer

- 2023 ESRA Conference (with R. Bach, J. Beck, and S. Eckman), Session: Combining Data Science and Survey Research to Improve (Training) Data Quality. Milan, Italy.
- 2021 JSM Conference (with R. Bach and F. Kreuter), Invited Panel: Biased Data, Biased Models? Bridging Advances in Survey Research and Computer Science for Improving Fairness in Algorithmic Decision-making.
- 2019 ESRA Conference (with R. Bach and M. Schierholz), Session: Predictive Modeling and Machine Learning in Survey Research. Zagreb, Croatia.

### Other Service

- 2023 Area chair for the ACM conference on Equity and Access in Algorithms, Mechanisms, and Optimization (EAAMO'23)
- 2023 Co-Organizer of *Data Science for Social Good (DSSGx) Munich 2023*, LMU Munich
- 2023 Co-Organizer of *DataFest Germany 2023*, LMU Munich
- 2022 Panelist at the *Smart City Panel, Connect Data Science Conference*, University of Mannheim.
- 2022 Session chair and panelist at the roundtable *Next Generation AI, Topic IV: Social Aspects of AI*, LMU Munich.
- 2021 Co-Organizer of *Data Science for Social Good (DSSG) 2021*, University of Warwick and LMU Munich
- 2019 Lead Organizer of *DataFest Germany 2019*, University of Mannheim
- 2017 Co-Organizer of *DataFest Germany 2017*, University of Mannheim
- 2012–2013 Representative of Academic Staff, Institute of Sociology, University of Duisburg-Essen

## Professional Membership

American Association for Public Opinion Research (AAPOR), American Statistical Association (ASA), Akademie für Soziologie (AS), European Survey Research Association (ESRA), ISA Research Committee on Logic and Methodology in Sociology (RC33), Sektion Methoden der empirischen Sozialforschung der Deutschen Gesellschaft für Soziologie (DGS), Society for Causal Inference (SCI)

## Teaching

### Ludwig-Maximilians-Universität (LMU) Munich

- SS 2023 *Advanced Methods in Social Statistics and Social Data Science (V+Ü)* (with Sofia Jaime)
- WS 22/23, 23/24 *Computational Social Science (V)*
- WS 20/21, 23/24 *Fairness in Machine Learning*
- WS 2020/21 *Wirtschafts- und Sozialstatistik (V+Ü)* (with Thomas Augustin)
- WS 2020/21 *Statistik I für Studierende der Soziologie, des Nebenfachs Statistik, der Medieninformatik und der Cultural and Cognitive Linguistics (V)*

### International Program in Survey and Data Science (IPSDS)

- Summer 2020,  
Fall 21, 22, 23 *Machine Learning II* (with Trent Buskirk, SURV753)

### University of Maryland

- Fall 2021 *Fundamentals of Computing and Data Display* (with Ruben Bach, SURV727, SurvMeth727)
- Fall 2018, 2019 *Machine Learning for Social Science* (SURV699U)
- Fall 2018, 2019 *Fundamentals of Computing and Data Display* (SURV727, SurvMeth727)

### University of Mannheim

- FSS 2022 *Thesis Colloquium: Methods of Empirical Social Research* (in German)
- HWS 2021 *Research Practicum II: Big Data in the Social Sciences* (in German)
- FSS 2021 *Interpretability and Fairness in Machine Learning*
- FSS 2020 *Machine Learning*
- FSS 2019 *Machine Learning for Social Science*
- FSS 2019, 2020 *Fundamentals of Computing and Data Display*
- HWS 2017 *Research Practicum II* (in German)
- FSS 2017 *Research Practicum I* (in German)
- FSS 2017, 2018 *Machine Learning in the Social Sciences*

### 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 –  
WS 2015/16 *Data Analysis Programmes* (in German)

### Short Courses and Workshops

07/10/2023 – 07/14/2023	<i>Machine Learning for Social Sciences</i> , Course at the <a href="#">RECSM Summer Methods School 2023</a> , Universitat Pompeu Fabra, Barcelona
09/27/2022	<i>When Small Decisions Have Big Impact: Fairness Implications of Algorithmic Profiling of Jobseekers</i> , Input talk w. Ruben Bach at the <a href="#">AI &amp; Ethics Summer School</a> , Bamberg
08/08/2022 – 08/12/2022	<i>Data Science Techniques for Survey Researchers</i> , Online course w. M. Schierholz at the <a href="#">GESIS Summer School in Survey Methodology 2022</a> , GESIS
07/11/2022 – 07/13/2022	<i>Machine Learning for Social Sciences</i> , Course at the <a href="#">RECSM Summer Methods School 2022</a> , Universitat Pompeu Fabra, Barcelona
05/26/2022	<i>Introduction to Machine Learning for Survey Research</i> , <a href="#">AAPOR Webinar</a>
10/12/2021	<i>Introduction to Machine Learning</i> , Workshop at the Symposium on Machine Learning & Qualitative Dokumentenanalyse, DZHW
07/12/2021 – 07/14/2021	<i>Machine Learning for Social Sciences</i> , Online course at the <a href="#">RECSM Summer Methods School 2021</a> , Universitat Pompeu Fabra, Barcelona
08/10/2020 – 08/21/2020	<i>Introduction to Big Data for Social Science</i> , Online short course w. F. Kreuter, J. Lane and B. Feder
09/23/2019 – 09/24/2019	<i>Introduction to Big Data for Social Science</i> , JPSM short course w. F. Kreuter, Washington DC
03/25/2019 – 03/27/2019	<i>Big Data Analysis</i> , Workshop w. F. Kreuter, M. Neunhoeffer and S. Sternberg, Bundesbank Frankfurt
10/2018 – 12/2018	<i>Applied Data Analytics</i> ( <a href="https://coleridgeinitiative.org/">https://coleridgeinitiative.org/</a> ), Teaching Assistance, University of Maryland
03/21/2018 – 03/22/2018	<i>Machine Learning for Social Science</i> , Workshop w. M. Schierholz and J. Geßendorfer, IAB Nürnberg
02/06/2018 – 02/07/2018	<i>Machine Learning for Social Science</i> , Workshop w. M. Schierholz and J. Geßendorfer, IAB Nürnberg
10/2017 – 12/2017	<i>Applied Data Analytics</i> ( <a href="https://coleridgeinitiative.org/">https://coleridgeinitiative.org/</a> ), Teaching Assistance, University of Maryland
11/15/2017 – 11/17/2017	<i>Big Data Analysis</i> , Workshop w. F. Kreuter, M. Schierholz and S. Sternberg, Bundesbank Frankfurt
10/20/2017	<i>Introduction to Web Scraping and Machine Learning</i> , Workshop w. M. Schierholz at the University of Bremen
04/08/2017	<i>CART and Random Forests in R</i> , Short Tutorial at DataFest 2017, Mannheim
01/16/2017 – 01/17/2017	<i>An Introduction to R</i> (in German), Workshop at Sozialwissenschaftliches Umfragezentrum (SUZ), Duisburg
11/24/2015	<i>Objects, Matrices and Simulations in R</i> (in German), Short course at the University of Duisburg-Essen
05/16/2013	<i>An Introduction to R</i> (in German), Short course at the University of Duisburg-Essen
	<b>Tutoring</b>
	University of Duisburg-Essen
WS 2010/11	<i>Multivariate Data Analysis</i> (in German)
SS 2010	<i>Longitudinal Data Analysis</i> (in German)

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

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

### **Supervision**

current                    Supervision of 5 PhD projects at LMU Munich and University of Mannheim

completed                Supervision of 14 Master's theses and 12 Bachelor's theses at LMU Munich, University of Mannheim, University of Duisburg-Essen and IPSDS

## **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)