



**Peder Sather
Center for
Advanced
Study**



Introduction to Causal Data Analysis and Modeling with Coincidence Analysis

June 8 – 11, 2026

hosted by the School of Social Welfare, UC Berkeley, and the Peder Sather Center
venue: Residence Inn by Marriott Berkeley

Main instructor:

Michael Baumgartner, University of Bergen, Norway

Additional presentations by:

Deborah Cragun, University of South Florida

Jonathan Freitas, University of Minas Gerais, Brazil

Reiping Huang, American College of Surgeons

Edward Miech, Indiana University School of Medicine

Kelly Coates, OHSU, Portland State University SPH

Jessica Dodge, CHERP, Pittsburgh VA

Workshop Description

This workshop offers an intensive 4-day introduction to causal modeling with Coincidence Analysis (CNA), a novel configurational comparative method of data analysis geared towards causal complexity, which has seen a considerable uptick in applications in recent years (click [here](#) for references). **No prior knowledge of CNA is required.**

In plenary lectures, the main developer of CNA, Michael Baumgartner, and a team of experienced CNA methodologists and practitioners will guide participants through the nuts and bolts of configurational data analysis and cutting-edge methodological innovations, as well as offer advice on practical issues such as getting funded and published with CNA. Participants will deepen their understanding through exercises, and the instructors will demonstrate how to make the most of current CNA software.

The workshop covers Boolean algebra, the philosophical roots of regularity theories of causation, the basic ideas behind CNA's search algorithm, measures of fit, multi-outcome structures, model ambiguities, and robustness analyses. By the end of

the workshop, participants will be able to conduct CNA analyses themselves and critically assess the work of other researchers.

In addition, this will be an opportunity to get to know researchers working with and on CNA from all over the world—at the prestigious [University of California, Berkeley](#).

On the two days following the workshop (i.e. June 12-13), there will be a **conference on CNA** at the same venue. Participants of the training workshop will be invited to attend that conference (at no extra cost). More information about the conference and a link to register can be found [here](#). Moreover, the instructors will remain available for consultation after the event to help participants with the methodological and practical aspects of their research projects.

Pre-Workshop R Installation

We are offering a preparatory Zoom meeting before the actual workshop. Its purpose is to ensure that everyone has a working R environment on the computer they will bring to Berkeley.

<i>Zoom Meeting to set up R</i>	
<i>Tuesday, 2 June 2026</i>	
Eastern Time (US)	11AM - 12PM (17:00 - 18:00, CEST)
	Zoom link

Workshop Schedule

<i>Day</i>	<i>Module and Topics Covered</i>
<i>Day 1; Monday, 8 June 2026</i>	
09:00 - 09:15	Welcome
09:15 - 10:30	Module 1.1: Methodological Landscape and the Essentials of Boolean Algebra
10:30 - 10:45	Break
10:45 - 11:00	“Living Conditions” group exercise (Miech)
11:00 - 12:15	Module 1.2: The Theory of Causation Behind CNA
12:15 - 13:15	Lunch Break
13:15 - 14:15	Module 1.3: The Principles of Configurational Causal Discovery
14:15 - 14:30	Break
14:30 - 15:45	Module 1.4: Top-down vs. Bottom-up Search / the CNA Algorithm
15:45 - 16:15	A first CNA analysis (Freitas)
16:15 - 17:45	Bonus Session: Introduction to R for those new to R (Huang)
19:00	Workshop Dinner at Restaurant XY

Essential readings

- Baumgartner, Michael. 2020. "Causation." In: *The SAGE Handbook of Political Science*, ed. by D. Berg-Schlosser, B. Badie, and L. Morlino, London: SAGE, pp. 305-321. (brief overview of theories of causation)
- Baumgartner, Michael, and Mathias Ambühl. 2020. "Causal modeling with multi-value and fuzzy-set Coincidence Analysis." *Political Science Research and Methods* 8 (3):526-42. (introduction of the CNA algorithm)
- Mackie, John L. 1965. "Causes and conditions." *American Philosophical Quarterly* 2 (4):245-64. (central piece on the INUS theory of causation)

Supplementary readings

- Barringer, Sondra N., Scott R. Eliason, and Erin Leahey. 2013. "A history of causal analysis in the social sciences." In *Handbook of Causal Analysis for Social Research*, ed. S. L. Morgan. Dordrecht: Springer, pp. 9-26. (historical background)
- Baumgartner, Michael and Christoph Falk. 2019. "Boolean difference-making: A modern regularity theory of causation." *The British Journal for the Philosophy of Science*. doi: [10.1093/bjps/axz047](https://doi.org/10.1093/bjps/axz047). (technical introduction to the theory of causation behind CNA)
- Mill, John Stuart [edited by J. M. Robson]. 2006, 1973, [1843]. *A system of logic, ratiocinative and inductive*. Toronto: University of Toronto Press, pp. 388-406, 434-453. (central piece about methods of causal inference)
- Ragin, Charles C. 1987. *The Comparative Method: Moving Beyond Qualitative and Quantitative Strategies*. Berkeley: University of California Press. (first and still very readable introduction of QCA)

Day 2; Tuesday, 9 June 2026

09:00 - 10:30	Module 2.1 Data Types, Fuzzy Operations, Measures of Fit
10:30 - 10:45	Break
10:45 - 12:00	Module 2.2: Calibration (Cragun)
12:00 - 13:15	Lunch Break
13:15 - 15:00	Module 2.3: Factor Selection + Exercises (Miech)
15:00 - 15:15	Break
15:15 - 16:45	Module 2.4: Running a CNA
16:45 - 17:00	Break
17:00 - 18:00	Consultation Session: The instructors are available for individual consultation

Essential readings

- Baumgartner, Michael, and Mathias Ambühl. 2025. "**cna**: An R package for configurational causal inference and modeling." R package vignette: The Comprehensive R Archive Network. Package version 4.0.3. <https://cran.r-project.org/web/packages/cna/vignettes/cna.pdf>. (introduction to the CNA R package)
- Oana, Ioana-Elena, Carsten Schneider, and Eva Thomann. 2021. *Qualitative Comparative Analysis using R: A Beginner's Guide*. Cambridge: Cambridge University Press, Chapter 2 (chapter on calibration).

Supplementary readings

- De Souter, Luna and Michael Baumgartner. 2025. “New sufficiency and necessity measures for model building with Coincidence Analysis.” *Zenodo*, doi: [10.5281/zenodo.13619580](https://doi.org/10.5281/zenodo.13619580).
- Ragin, Charles C. 2006. “Set relations in social research: Evaluating their consistency and coverage.” *Political Analysis* 14 (3):291-310. (introduction of consistency and coverage as measures of fit)
- Swiatczak, Martyna. 2021. “Towards a neo-configurational theory of intrinsic motivation.” *Motivation and Emotion*. doi: [10.1007/s11031-021-09906-1](https://doi.org/10.1007/s11031-021-09906-1) (calibration in practice)
- Thiem, Alrik, and Adrian Duşa. 2013. *Qualitative Comparative Analysis with R: A User’s Guide*. New York: Springer, pp. 51-62 (chapter on calibration of fuzzy sets).
- Yakovchenko, Vera, Edward Miech, et al., and Shari Rogal. 2020. “Strategy configurations directly linked to higher Hepatitis C virus treatment starts. An applied use of configurational comparative methods, *Medical Care* 58(5), pp. e31-e38, doi: [10.1097/MLR.0000000000001319](https://doi.org/10.1097/MLR.0000000000001319). (factor selection in practice)

Day 3; Wednesday, 10 June 2026

09:00 - 10:15	Module 3.1: Model Ambiguities
10:15 - 10:35	Break
10:35 - 11:50	Module 3.2: Over- and Underfitting (Freitas)
11:50 - 12:50	Lunch Break
12:50 - 14:50	Module 3.3: Robustness + Exercises (Freitas)
14:50 - 15:05	Break
15:05 - 16:35	Module 3.4: Replication of an Empirical Study (group work; Huang)
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17:00 - 19:00	Field Trip: TBD

Essential readings

- Baumgartner, Michael, and Alrik Thiem. 2017. “Model ambiguities in configurational comparative research.” *Sociological Methods & Research* 46 (4):954-87. (discussion of the problem of model ambiguities)
- Parkkinen, Veli-Pekka, and Michael Baumgartner. 2021. “Robustness and model selection in configurational causal modeling.” *Sociological Methods & Research*. doi: [10.1177/0049124120986200](https://doi.org/10.1177/0049124120986200). (introduction to robustness analysis with CNA)

Supplementary readings

- Arel-Bundock, Vincent. 2019. “The double bind of Qualitative Comparative Analysis.” *Sociological Methods & Research*. doi: [10.1177/0049124119882460](https://doi.org/10.1177/0049124119882460). (discussion of the problem of overfitting)
 - Haesebrouck, Tim. 2019. “Who follows whom? A Coincidence Analysis of military action, public opinion and threats.” *Journal of Peace Research* 56(6): 753-766. (exemplary CNA application)
 - Haesebrouck, Tim. 2023. “The Populist Radical Right and Military Intervention: A Coincidence Analysis of Military Deployment Votes.” *International Interactions*, doi: [10.1080/03050629.2023.2184815](https://doi.org/10.1080/03050629.2023.2184815). (exemplary frscore application)
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Day 4; Thursday, 11 June 2026

09:00 - 10:00	Module 4.1: Solution Visualization (Cragun/Miech)
10:00 - 10:15	Break
10:15 - 12:30	Module 4.2: Replication of an Empirical Study (group work; Freitas)
12:30 - 13:30	Lunch Break
13:30 - 15:00	Module 4.3: CNA and Related Methods: QCA & Logic Regression
15:00 - 15:15	Break
15:45 - 16:45	Module 4.4: "I know CNA, so now what?" (Dodge/Coates)
16:45 - 17:00	Closing

Essential readings

- Baumgartner, Michael and Christoph Falk. 2021. "Configurational causal modeling and Logic Regression." *Multivariate Behavioral Research*. doi: [10.1080/00273171.2021.1971510](https://doi.org/10.1080/00273171.2021.1971510). (comparison of CNA and Logic Regression)
- Swiatczak, Martyna. 2022. "Different algorithms, different models." *Quality & Quantity*. 56, 1913–1937, doi: [10.1007/s11031-021-09906-1](https://doi.org/10.1007/s11031-021-09906-1). (comparison of CNA and QCA)

Supplementary readings

- Ragin, Charles C. 2008. *Redesigning Social Inquiry: Fuzzy Sets and Beyond*. Chicago: University of Chicago Press, pp. 147-175. (introduction to fuzzy-set QCA)
- Rihoux, Benoît, and Gisèle De Meur. 2009. "Crisp-set Qualitative Comparative Analysis (csQCA)." In *Configurational Comparative Methods: Qualitative Comparative Analysis (QCA) and Related Techniques*, ed. B. Rihoux and C. C. Ragin. London: SAGE, pp. 33-68. (introduction to crisp-set QCA)
- Ruczinski, Ingo, Charles Kooperberg, and M. LeBlanc. 2003. "Logic regression." *Journal of Computational and Graphical Statistics*, 12(3), 475–511. doi: [10.1198/1061860032238](https://doi.org/10.1198/1061860032238). (introduction of Logic Regression)
- Thiem, Alrik. 2016. "Conducting configurational comparative research with Qualitative Comparative Analysis: A hands-on tutorial for applied evaluation scholars and practitioners." *American Journal of Evaluation* 38 (3):420-33. (concise introduction to QCA)