

## Configurational Research with Qualitative Comparative Analysis (QCA) and Coincidence Analysis (CNA)

25-29 September 2017, Regenstrief Institute, Indianapolis, USA

*Prof. Dr. Michael Baumgartner, University of Bergen, Norway*

*Prof. Dr. Alrik Thiem, University of Lucerne, Switzerland*

### 1 Workshop Description

This workshop offers an intensive 1-week introduction for health researchers to *Qualitative Comparative Analysis* (QCA) and *Coincidence Analysis* (CNA)—the two most prominent configurational comparative methods (CCMs) of causal discovery. Participants will be guided through the nuts and bolts of configurational comparative data analysis as well as cutting-edge methodological innovations. In replicating published studies from various areas of the health sciences, they will also learn how to make the most of current software for QCA and CNA.

From the philosophical roots of regularity theories of causation, over the procedural protocols of QCA and CNA, to the empirical analysis of causal chain structures, this seminar will go way beyond the material taught in other courses, enabling participants to perform QCA and CNA in a correct and sophisticated manner. It will be shown, for example, why the vast majority of past QCA studies have run the risk of failing to find the underlying causal model, why the so-called “conservative solution” is not conservative at all, what to do when data are beset by model ambiguities, and how to perform sensitivity tests. Last but not least, participants will learn why recent high-profile critiques discouraging the use of QCA lack traction. Individual consultation sessions will be offered in addition to help participants with the methodological aspects of their own research projects.

## 2 Instructor Details

The two instructors are among the most active researchers and course instructors in the field of configurational comparative data analysis.

**Michael Baumgartner** is a full professor of philosophy at the Department of Philosophy of the University of Bergen, Norway. His research focuses on questions in the philosophy of science and logic, more specifically, on aspects of causation and causal reasoning with QCA and CNA, regularity theories, interventionism, mechanistic explanation, determinism, logical formalization, argument reconstruction and modelling in the social sciences. He has published in journals such as the *British Journal for the Philosophy of Science*, *Comparative Political Studies*, *Dialectica*, *Erkenntnis*, *Field Methods*, *Journal of Philosophical Logic*, *Sociological Methodology*, *Sociological Methods & Research* and *Synthese*. He has developed the method of CNA and is a co-author of the corresponding CNA software package for the R environment. For further biographical details, see his [Homepage](#).

**Alrik Thiem** is Swiss National Science Foundation Professor at the Department of Political Science of the University of Lucerne, Switzerland. The main part of his work addresses questions of methodology in the field of empirical research methods, primarily configurational ones such as CNA and QCA. In addition, he works on meta-scientific questions such as publication bias, and is interested in strategies to improve the teaching of research methods in the social sciences. He has taught nationally and internationally, and has published methodological as well as applied work in journals such as, among others, the *American Journal of Evaluation*, *Comparative Political Studies*, *Political Analysis*, *Sociological Methodology* and *Sociological Methods & Research*. He is also the author of the QCAPRO software package for the R environment. For further biographical details, see his [Homepage](#) or his [ResearchGate website](#).

## 3 Detailed Workshop Schedule

Each day is divided into four modules, with each module lasting 90 minutes. A consultation session is offered after the fourth module on days 2 and 4. All recommended and supplementary readings will be made available to registered participants three weeks in advance.

<b>Day</b>	<b>Module and Topic(s) Covered</b>
<i>Day 1; Monday, 25 September 2017: Theoretical Foundations</i>  detailed schedule	

09:00 - 10:30	<b>Module 1.1:</b> Theorizing about causation and the essentials of Boolean algebra
10:30 - 10:45	Break
10:45 - 12:15	<b>Module 1.2:</b> Regularity theories from Hume over Mill to Mackie
12:15 - 13:30	Lunch Break
13:30 - 15:00	<b>Module 1.3:</b> Discovering regularity theoretic causation
15:00 - 15:15	Break
15:15 - 16:45	<b>Module 1.4:</b> The basic work flow of QCA and CNA

**Recommended readings**

- Mackie, John L. 1965. "Causes and conditions." *American Philosophical Quarterly* 2 (4):245-64.
- 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.
- Quine, Willard V. 1952. "The problem of simplifying truth functions." *American Mathematical Monthly* 59 (8):521-31. (only read until Theorem 6).
- Thiem, Alrik, Michael Baumgartner, and Damien Bol. 2016. "Still lost in translation! A correction of three misunderstandings between configurational comparativists and regressional analysts." *Comparative Political Studies* 49 (6):742-74.

**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.
- Baumgartner, Michael. 2008. "Regularity theories reassessed." *Philosophia* 36 (3):327-54.
- Reiss, Julian. 2009. "Causation in the social sciences: Evidence, inference, and purpose." *Philosophy of the Social Sciences* 39 (1):20-40.

<i>Day 2; Tuesday, 26 September 2017: Crisp-Set QCA</i>  detailed schedule	
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09:00 - 10:30	<b>Module 2.1:</b> A short introduction to R
10:30 - 10:45	Break
10:45 - 12:15	<b>Module 2.2:</b> A short introduction to R
12:15 - 13:30	Lunch Break
13:30 - 15:00	<b>Module 2.3:</b> From raw data to the QCA solution
15:00 - 15:15	Break
15:15 - 16:45	<b>Module 2.4:</b> Measures of fit in QCA
17:00 - 18:00	Consultation session

### **Recommended readings**

- McCluskey, Edward J. 1956. "Minimization of Boolean functions." *Bell Systems Technical Journal* 35 (6):1417-44. (only read pages 1417-28).
- Ragin, Charles C. 1987. *The comparative method: Moving beyond qualitative and quantitative strategies*. Berkeley: University of California Press, pp. 85-118.
- Ragin, Charles C. 2006. "Set relations in social research: Evaluating their consistency and coverage." *Political Analysis* 14 (3):291-310.
- 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.

### **Supplementary readings**

- Ragin, Charles C. 2008. *Redesigning social inquiry: Fuzzy sets and beyond*. Chicago: University of Chicago Press, pp. 147-175.
- 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.
- Schneider, Carsten Q., and Claudius Wagemann. 2012. *Set-Theoretic Methods for the social sciences: A guide to Qualitative Comparative Analysis (QCA)*. Cambridge: Cambridge University Press, pp. 151-177.

Day 3; Wednesday, 27 September 2017: Other variants of QCA  detailed schedule

09:00 - 10:30	<b>Module 3.1:</b> Complex, intermediate, and parsimonious solutions
10:30 - 10:45	Break
10:45 - 12:15	<b>Module 3.2:</b> Multi-value QCA
12:15 - 13:30	Lunch Break
13:30 - 15:00	<b>Module 3.3:</b> Fuzzy-set theory and fuzzy-set QCA
15:00 - 15:15	Break
15:15 - 16:45	<b>Module 3.4:</b> A closer look at model ambiguities

### **Recommended readings**

- Baumgartner, Michael. 2015. "Parsimony and causality." *Quality & Quantity* 49 (2):839-56.
- Baumgartner, Michael, and Alrik Thiem. 2015. "Model ambiguities in configurational comparative research." *Sociological Methodology*. Advance online publication. DOI: 10.1177/0049124115610351.
- Schneider, Carsten Q., and Claudius Wagemann. 2012. *Set-Theoretic Methods for the social sciences: A guide to Qualitative Comparative Analysis (QCA)*. Cambridge: Cambridge University Press, pp. 93-104.
- Thiem, Alrik. 2013. "Clearly crisp, and not fuzzy: A reassessment of the (putative) pitfalls of multi-value QCA." *Field Methods* 25 (2):197-207.
- Thiem, Alrik. 2017. *Beyond the facts: Limited empirical diversity and the incorrectness of Qualitative Comparative Analysis (QCA)*. Paper presented at the 7th Annual General Conference of the European Political Science Association, Milan, Italy, 22-24 June.

### **Supplementary readings**

- Cooper, Barry, and Judith Glaesser. 2011. "Paradoxes and pitfalls in using fuzzy set QCA: Illustrations from a critical review of a study of educational inequality." *Sociological Research Online* 16 (3):8.
- Ragin, Charles C. 2009. "Qualitative Comparative Analysis using fuzzy sets (fsQCA)." In *Configurational Comparative Methods: Qualitative Comparative Analysis (QCA) and related techniques*, ed. B. Rihoux and C. C. Ragin. London: Sage Publications, pp. 87-121.
- Schneider, Carsten Q., and Claudius Wagemann. 2012. *Set-Theoretic Methods for the social sciences: A guide to Qualitative Comparative Analysis (QCA)*. Cambridge: Cambridge University Press, pp. 255-263.
- Thiem, Alrik. 2014. "Navigating the complexities of Qualitative Comparative Analysis: Case numbers, necessity relations, and model ambiguities." *Evaluation Review* 38 (6):487-513. (pages 498-505).
- Thiem, Alrik. 2014. "Unifying Configurational Comparative Methods: Generalized-set Qualitative Comparative Analysis." *Sociological Methods & Research* 43 (2):313-37.
- Thiem, Alrik. 2015. "Parameters of fit and intermediate solutions in multi-value Qualitative Comparative Analysis." *Quality & Quantity* 49 (2):657-74.
- Thiem, Alrik. 2016. "Analyzing multilevel data with QCA: Yet another straightforward procedure." *Quality & Quantity* 50 (1):121-8.
- Vink, Maarten P., and Olaf van Vliet. 2009. "Not quite crisp, not yet fuzzy? Assessing the potentials and pitfalls of multi-value QCA." *Field Methods* 21 (3):265-89.
- Vink, Maarten P., and Olaf van Vliet. 2013. "Potentials and pitfalls of multi-value QCA: Response to Thiem." *Field Methods* 25 (2):208-13.

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Day 4; Thursday, 28 September 2017: Coincidence Analysis  detailed schedule

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09:00 - 10:30	<b>Module 4.1:</b> Beyond QCA: causal chains and common cause structures
10:30 - 10:45	Break
10:45 - 12:15	<b>Module 4.2:</b> The CNA algorithm
12:15 - 13:30	Lunch Break
13:30 - 15:00	<b>Module 4.3:</b> Differences and commonalities of QCA and CNA
15:00 - 15:15	Break
15:15 - 16:45	<b>Module 4.4:</b> Working with the cna package for R
17:00 - 18:00	Consultation session

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
### **Recommended readings**

- Baumgartner, Michael. 2013. "Detecting causal chains in small-n data." *Field Methods* 25 (1):3-24.
- Baumgartner, Michael, and Mathias Ambühl. 2017. *Causal Modeling with multi-value and fuzzy-set Coincidence Analysis*. Paper presented at the Joint Sessions of the European Consortium for Political Research, Nottingham, United Kingdom, 25-30 April.

### **Supplementary readings**

- Baumgartner, Michael. 2008. "The causal chain problem." *Erkenntnis* 69 (2):201-26.
- Baumgartner, Michael. 2009. "Inferring causal complexity." *Sociological Methods & Research* 38 (1):71-101.
- Baumgartner, Michael, and Ruedi Epple. 2014. "A Coincidence Analysis of a causal chain: The Swiss minaret vote." *Sociological Methods & Research* 43 (2):280-312.
- Baumgartner, Michael, and Alrik Thiem. 2015. Identifying complex causal dependencies in configurational data with Coincidence Analysis." *The R Journal* 7 (1): 176-84.
- Thiem, Alrik. 2015. "Using Qualitative Comparative Analysis for identifying causal chains in configurational data: A methodological commentary on Baumgartner and Epple (2014)." *Sociological Methods & Research* 44 (4):723-36.

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Day 5; Friday, 29 September 2017: Replications  detailed schedule

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09:00 - 10:30	<b>Module 5.1:</b> Criticisms of QCA
10:30 - 10:45	Break
10:45 - 12:15	<b>Module 5.2:</b> Replication session QCA
12:15 - 13:30	Lunch Break
13:30 - 15:00	<b>Module 5.3:</b> Replication session QCA/CNA
15:00 - 15:15	Break
15:15 - 16:45	<b>Module 5.4:</b> Replication session CNA

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### **Recommended readings**

- Baumgartner, Michael, and Alrik Thiem. 2017. "Often trusted but never (properly) tested: Evaluating Qualitative Comparative Analysis." *Sociological Methods & Research*. Advance online publication. DOI: 10.1177/0049124117701487.
- Cragun, Deborah, Rita D. DeBate, Susan T. Vadaparampil, Julie Baldwin, Heather Hampel, and Tuya Pal. 2014. "Comparing universal Lynch syndrome tumor-screening programs to evaluate associations between implementation strategies and patient follow-through." *Genetics in Medicine* 16 (10):773-82.
- Lucas, Samuel R., and Alisa Szatrowski. 2014. "Qualitative Comparative Analysis in critical perspective." *Sociological Methodology* 44 (1):1-79. (only read pages 1-27).
- Goicolea, Isabel, Carmen Vives-Cases, Anna-Karin Hurtig, Bruno Marchal, Erica Briones-Vozmediano, Laura Otero-García, Marta García-Quinto, and Miguel San Sebastian. 2015. "Mechanisms that trigger a good health-care response to intimate partner violence in Spain. Combining realist evaluation and Qualitative Comparative Analysis approaches." *PLoS ONE* 10 (8):e0135167.
- McNamara, Courtney. 2015. "Trade Liberalization, Social Policies and Health: An Empirical Case Study." *Globalization and Health* 11 (1):42.

### **Supplementary readings**

- Collier, David. 2014. "Comment: QCA should set aside the algorithms." *Sociological Methodology* 44 (1):122-6.
  - Hug, Simon. 2013. "Qualitative Comparative Analysis: How inductive use and measurement error lead to problematic inference." *Political Analysis* 21 (2):252-65.
  - Krogslund, Chris, Donghyun Danny Choi, and Mathias Poertner. 2015. "Fuzzy sets on shaky ground: Parameter sensitivity and confirmation bias in fsQCA." *Political Analysis* 23 (1):21-41.
  - Paine, Jack. 2016. "Set-theoretic comparative methods: Less distinctive than claimed." *Comparative Political Studies* 49 (6):703-41.
  - Ragin, Charles C. 2014. "Comment: Lucas and Szatrowski in critical perspective." *Sociological Methodology* 44 (1):80-94.
  - Schneider, Carsten. 2016. "Real differences and overlooked similarities: Set-methods in comparative perspective." *Comparative Political Studies* 49(6): 781-92.
  - Thiem, Alrik. 2014. "Mill's methods, induction and case sensitivity in Qualitative Comparative Analysis: A comment on Hug (2013)." *Qualitative & Multi-Method Research* 12 (2):19-24.
  - Thiem, Alrik, and Michael Baumgartner. 2016. "Modeling causal irrelevance in evaluations of configurational comparative methods." *Sociological Methodology*. 46 (1):345-57.
  - Thiem, Alrik, and Michael Baumgartner. 2016. "Back to square one: A reply to Munck, Paine, and Schneider." *Comparative Political Studies* 49(6): 801-6.
  - Vaisey, Stephen. 2014. "Comment: QCA Works—When Used with Care." *Sociological Methodology* 44 (1):108-12.
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## **4 Detailed Seminar Schedule**

### ***Day 1: Monday, 25 September 2017***

The first module of the seminar introduces the basic objectives and designs of theories of causation, discusses various theory candidates, and presents the elements of Boolean algebra implemented by QCA and CNA. Module 1.2 then displays the details of the regularity theory of causation behind configurational methods and tracks its historical predecessors in the works of David Hume, John Stuart Mill, and John L. Mackie. In module 1.3 we turn to the problem of discovering causation as defined by modern regularity theories. We review Mill's famous method of difference, consider the problems of causal inference under epistemic uncertainty and of data confounding, and pinpoint the background assumptions required by configurational methods. Finally, module 1.4 introduces the basic problem to be solved by QCA and CNA and discusses different algorithms that can be employed to solve this problem. 🙌

### ***Day 2: Tuesday, 26 September 2017***

Day 2 begins with a short introduction to the R environment and its basic functionality in modules 2.1 and 2.2. In module 2.3, participants recap the material from module 1.4 by performing their first crisp-set QCA in an ideal data context from beginning to end with the QCApro package for R. Important differences between the QCApro package and other QCA software like fs/QCA and Tosmana are also highlighted. Module 2.4 then introduces consistency and coverage as the two measures of fit in QCA for evaluating certain data deficiencies that are ubiquitous in applied research. 🙌

### ***Day 3: Wednesday, 27 September 2017***

An often-mentioned issue in QCA research is limited empirical diversity. As a direct result, three solution types have been proposed in the methodological QCA literature, namely complex/conservative, intermediate and parsimonious solutions. Module 3.1 presents the logic of these three solution types, and explains why two of them are unsuitable for empirical research.


Since about the early 2000s, QCA has also become a family of different variants that are defined by their underlying set type. Crisp-set QCA has at its root bivalent factors whose levels underlie sets in which cases can only be members or not. Both multi-value and fuzzy-set QCA extend crisp-set QCA in different directions, the former on the dimension of the number of levels a factor can have, and the latter on the dimension of the degree to which cases can be elements in the respective set formed by each level of a bivalent factor. In module 3.2, students learn about multi-value QCA, how it relates to crisp-set QCA, and why it still leads a niche existence in both methodological and applied research. Fuzzy logic and fuzzy-set QCA is the topic of module 3.3.

Finally, in module 3.4, a closer look is first taken at the issue of model ambiguities, a problem that has gone unnoticed in the QCA literature until very recently, with serious consequences for applied research. We show why and how this problem occurs, to which extent it affects applied research, and what can be done to alleviate it. 🙌


### ***Day 4: Thursday, 28 September 2017***

Day 4 is dedicated to CNA. In module 4.1, we demonstrate that the restriction of QCA to single outcomes presupposes that there are no causal dependencies among the exogenous factors, which in turn constitutes a considerable restriction on the maximal causal complexity discoverable by QCA. Module 4.2 introduces the algorithmic protocol of CNA, which is designed to overcome the restriction to single-outcome structures, reviews CNA's theoretical foundation, and introduces complex solution formulas. In module 4.3, we highlight the differ-



ences and commonalities of QCA and CNA: both methods analyze the same type of data and have overlapping search targets, but while QCA is closely associated with Quine-McCluskey optimization, CNA draws on its own custom-built optimization routine, which does not force CNA to make recourse to counterfactual reasoning in cases of limited diversity and does not require an outcome specification as input. Module 4.4 is then devoted to acquiring familiarity with the `cna` package for R. 

### **Day 5: Friday, 29 September 2017**

Critiques of QCA are the first topic of day 5. In module 5.1, we confront prominent studies which have argued, for various reasons, that QCA is of no use for empirical data analysis. We demonstrate why these studies lack traction. The rest of day 5 is dedicated to detailed replications of existing studies in the health sciences using QCA and CNA. This will give participants ample opportunity to explore possibilities of exploiting these methods in their own research and to critically evaluate the research design and analyses of other studies. 

## **5 Prerequisite Knowledge**

The course requires no prior formal knowledge, but it will be intensive for absolute beginners. Users with an intermediate to advanced knowledge of QCA as taught in standard textbooks and methods courses will learn much they did not know before. Participants at all levels of knowledge will benefit from the instructors' current research, a significant part of which will be broached during the course. Basic knowledge of R, or at least programming more generally, will be helpful but is not essential.

## **6 List of Applied QCA Studies in Health Sciences**

This list makes no claim to exhaustiveness. URL hyperlinks will take you directly to the website of the respective article.

1. Andrade, Luciano de, Catherine Lynch, Elias Carvalho, Clarissa Garcia Rodrigues, João Ricardo Nickenig Vissoci, Guttenberg Ferreira Passos, Ricardo Pietrobon, Oscar Kenji Nihei, and Maria Dalva de Barros Carvalho. 2014. "System dynamics modeling in the evaluation of delays of care in ST-segment elevation myocardial infarction patients within a tiered health system." *PLoS ONE* 9 (7):e103577. [URL](#).
2. Backhans, Mona C., Sarah Mosedale, Daniel Bruce, Margaret Whitehead, and Bo Burström. 2016. "What is the impact of flexicurity on the chances of entry into employment for people with low education and activity limitations due to health problems? A comparison of 21

- European countries using Qualitative Comparative Analysis (QCA)." *BMC Public Health* 16 (1):1-15. [URL](#).
3. Baltzer, Maria, Hugo Westerlund, Mona Backhans, and Karin Melinder. 2011. "Involvement and structure: A qualitative study of organizational change and sickness absence among women in the public sector in Sweden." *BMC Public Health* 11 (1):318-34. [URL](#).
  4. Blackman, Tim. 2008. "Can smoking cessation services be better targeted to tackle health inequalities? Evidence from a cross-sectional study." *Health Education Journal* 67 (2):91-101. [URL](#).
  5. Blackman, Tim. 2013. "Exploring explanations for local reductions in teenage pregnancy rates in England: An approach using Qualitative Comparative Analysis." *Social Policy and Society* 12 (1):61-72. [URL](#).
  6. Blackman, Tim, and Katie Dunstan. 2010. "Qualitative Comparative Analysis and health inequalities: Investigating reasons for differential progress with narrowing local gaps in mortality." *Journal of Social Policy* 39 (3):359-73. [URL](#).
  7. Blackman, Tim, Jonathan Wistow, and David Byrne. 2011. "A Qualitative Comparative Analysis of factors associated with trends in narrowing health inequalities in England." *Social Science & Medicine* 72 (12):1965-74. [URL](#).
  8. Blake, Charles H., and Jessica R. Adolino. 2001. "The enactment of national health insurance: A Boolean analysis of twenty advanced industrial countries." *Journal of Health Politics, Policy & Law* 26 (4):679. [URL](#).
  9. Britt, David W. 2006. "A Qualitative Comparative Analysis of the conditions affecting early maternal transfer patterns." *Journal of Telemedicine and Telecare* 12 (8):392-5. [URL](#).
  10. Britt, David W., and Mark I. Evans. 2007. "Sometimes doing the right thing sucks: Frame combinations and multi-fetal pregnancy reduction decision difficulty." *Social Science & Medicine* 65 (11):2342-56. [URL](#).
  11. Britt, David W., Samantha T. Risinger, Virginia Miller, Mary K. Mans, Eric L. Krivchenia, and Mark I. Evans. 2000. "Determinants of parental decisions after the prenatal diagnosis of Down Syndrome: Bringing in context." *American Journal of Medical Genetics* 93 (5):410-6. [URL](#).
  12. Chatterley, Christie, Amy Javernick-Will, Karl Linden, Kawser Alam, Laure Bottinelli, and Mohini Venkatesh. 2014. "A Qualitative Comparative Analysis of well-managed school sanitation in Bangladesh." *BMC Public Health* 14 (6):1-14. [URL](#).
  13. Chatterley, Christie, Karl G. Linden, and Amy Javernick-Will. 2013. "Identifying pathways to continued maintenance of school sanitation in Belize." *Journal of Water, Sanitation and Hygiene for Development* 3 (3):411-22. [URL](#).
  14. Chuang, Emmeline, Janette Dill, Jennifer Craft Morgan, and Thomas R. Konrad. 2012. "A configurational approach to the relationship between high-performance work practices and frontline health care worker outcomes." *Health Services Research* 47 (4):1460-81. [URL](#).
  15. Cragun, Deborah, Rita D. DeBate, Susan T. Vadaparampil, Julie Baldwin, Heather Hampel, and Tuya Pal. 2014. "Comparing universal Lynch Syndrome tumor-screening programs to evaluate associations between implementation strategies and patient follow-through." *Genetics in Medicine* 16 (10):773-82. [URL](#).
  16. Da Roit, Barbara, Marcel Hoogenboom, and Bernhard Weicht. 2015. "The gender informal care gap." *European Societies* 17 (2):199-218. [URL](#).

17. Dill, Janette S., Emmeline Chuang, and Jennifer C. Morgan. 2014. "Healthcare organization-education partnerships and career ladder programs for health care workers." *Social Science & Medicine* 122:63-71. [URL](#).
18. Dy, Sydney M., Pushkal Garg, Dorothy Nyberg, Patricia B. Dawson, Peter J. Pronovost, Laura Morlock, Haya Rubin, and Albert W. Wu. 2005. "Critical pathway effectiveness: Assessing the impact of patient, hospital care, and pathway characteristics using Qualitative Comparative Analysis." *Health Services Research* 40 (2):499-516. [URL](#).
19. Eng, Sereikhuoch, and Arch G. Woodside. 2012. "Configural analysis of the drinking man: Fuzzy-set Qualitative Comparative Analyses." *Addictive Behaviors* 37 (4):541-3. [URL](#).
20. Ford, E. W., W. J. Duncan, and P. M. Ginter. 2005. "Health departments' implementation of public health's core functions: An assessment of health impacts." *Public Health* 119 (1):11-21. [URL](#).
21. Glatman-Freedman, Aharona, Mary-Louise Cohen, Katherine A. Nichols, Robert F. Porges, Ivy Rayos Saludes, Kevin Steffens, Victor G. Rodwin, and David W. Britt. 2010. "Factors affecting the introduction of new vaccines to poor nations: A comparative study of the haemophilus influenzae type B and hepatitis B vaccines." *PLoS ONE* 5 (11):1-9. [URL](#).
22. Goicolea, Isabel, Carmen Vives-Cases, Anna-Karin Hurtig, Bruno Marchal, Erica Briones-Vozmediano, Laura Otero-García, Marta Garcia-Quinto, and Miguel San Sebastian. 2015. "Mechanisms that trigger a good health-care response to intimate partner violence in Spain. Combining realist evaluation and Qualitative Comparative Analysis approaches." *PLoS ONE* 10 (8):e0135167. [URL](#).
23. Goicolea, Isabel, Monica Christianson, Anna-Karin Hurtig, Bruno Marchal, Miguel San Sebastian, and Maria Wiklund. 2016. "Searching for best practices of youth friendly services - a study protocol using Qualitative Comparative Analysis in Sweden." *BMC Health Services Research* 16:321. [URL](#).
24. Gulbas, Lauren E., and Luis H. Zayas. 2015. "Examining the interplay among family, culture, and Latina teen suicidal behavior." *Qualitative Health Research* 25 (5):689-99. [URL](#).
25. Harkreader, Steve, and Allen W. Imershein. 1999. "The conditions for state action in Florida's health-care market." *Journal of Health and Social Behavior* 40 (2):159-74. [URL](#).
26. Hollingsworth, Rogers, Robert Hanneman, Jerald Hage, and Charles Ragin. 1996. "The effect of human capital and state intervention on the performance of medical systems." *Social Forces* 75 (2):459-84. [URL](#).
27. Kahwati, Leila C., Megan A. Lewis, Heather Kane, Pamela A. Williams, Patrick Nerz, Kenneth R. Jones, Trang X. Lance, Stephen Vaisey, and Linda S. Kinsinger. 2011. "Best practices in the Veterans Health Administration's MOVE! weight management program." *American Journal of Preventive Medicine* 41 (5):457-64. [URL](#).
28. Kahwati, Leila, Meera Viswanathan, Carol E. Golin, Heather Kane, Megan Lewis, and Sara Jacobs. 2016. "Identifying configurations of behavior change techniques in effective medication adherence interventions: A Qualitative Comparative Analysis." *Systematic Reviews* 5 (1):1-9. [URL](#).
29. Kane, Heather, Laurie Hinnant, Kristine Day, Mary Council, Janice Tzeng, Robin Soler, Megan Chambard, Amy Roussel, and Wendy Heirendt. 2017. "Pathways to program success: A Qualitative Comparative Analysis (QCA) of communities putting prevention to work case study programs." *Journal of Public Health Management and Practice* 23 (2):104-11. [URL](#).
30. Leykum, Luci, Holly Lanham, Jacqueline Pugh, Michael Parchman, Ruth Anderson, Benjamin Crabtree, Paul Nutting, William Miller, Kurt Stange, and Reuben McDaniel. 2014.

- “Manifestations and implications of uncertainty for improving healthcare systems: An analysis of observational and interventional studies grounded in complexity science.” *Implementation Science* 9 (1):165. [URL](#).
31. Longest, Kyle C., and Peggy A. Thoits. 2012. “Gender, the stress process, and health: A configurational approach.” *Society and Mental Health* 2 (3):187-206. [URL](#).
  32. Lubold, Amanda Marie. 2017. “The effect of family policies and public health initiatives on breastfeeding initiation among 18 high-income countries: A qualitative comparative analysis research design.” *International Breastfeeding Journal* 12 (1):34. [URL](#).
  33. Lucidarne, Steffie, Greet Cardon, and Annick Willem. 2016. “A comparative study of health promotion networks: Configurations of determinants for network effectiveness.” *Public Management Review* 18 (8):1163-217. [URL](#).
  34. McNamara, Courtney. 2015. “Trade liberalization, social policies and health: An empirical case study.” *Globalization and Health* 11 (1):42. [URL](#).
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