

## LONG ABSTRACT

University of Manchester, Discipline of Economics and IDPM

Special Workshop Session on Impact Assessment Methods, June 2014

### Qualitative Comparative Analysis Grows Up: Three Surprising Applications of Fuzzy Sets

The qualitative comparative method is now well known, offering a variety of ways to interrogate data whether random or non-random samples. I summarise methods of applying fuzzy set methods to the analysis of large scale and randomly sampled data, including data with control samples or treatment groups. Three new ways of applying fuzzy sets are summarised here. My special addition to knowledge is to stress how a sociologist (or development sociologist) would interpret the results. My own conclusions are based on village-level research with couples, N=39, surrounded by a survey dataset collected by Daniel Neff, which had a random sample.

However in this presentation I offer summaries of two impact-assessment type applications which are already available in published format: Omstrom's study of watershed management success in Nepal, and two studies from the epidemiological literature.

Using QCA, we tease out a ranking of which causal configurations best match a sufficiency pattern for a given outcome. I show how this works in the case of school effectiveness in Chile (Troncoso's work). We estimate the consistency level using simple spreadsheet methods. Having many books available at home is not sufficient on its own, but it is when combined with other contextual factors, it is sufficient for high school value added in Chile.

Second we also develop results showing consistent the data are with the sufficiency hypothesis. We obtain a confidence interval around the consistency level through bootstrapping. In proposing such methods there is no need to revert to frequentist reasoning. We thus pick up a lively debate in sociological methodology. Finally, QCA can also be used by those doing inductive and exploratory studies. Here the inclusion ratio --which can perhaps be visualised by the degree of nesting in a Venn diagram -- is shown to help with setting up typologies. A better diagram is offered: fuzzy scattergram.

Overall these are good methods for studying impact because they allow the relevance of 'contextual factors' to be allowed to interact with treatments, and because they allow multiple causal pathways.

## SHORT ABSTRACT

Abstract

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### Qualitative Comparative Analysis Grows Up: Three Surprising Applications of Fuzzy Sets

The qualitative comparative method offers ways to interrogate data for necessary causes and sufficient causal pathways. I summarise methods of applying fuzzy set methods to the analysis of large scale and randomly sampled data, including data with control samples or treatment groups. Three new ways of applying fuzzy sets are summarised here. My special addition to knowledge is to stress how a sociologist (or development sociologist) would interpret the results. My own conclusions are based on village-level research with couples, N=39, surrounded by a survey dataset collected by Daniel Neff, which had a random sample. In the talk, I also summarise work from Lam & Ostrom on watershed management, epidemiological treatment effect measures, and school grade outcomes from Troncoso's PhD research. Using QCA, we tease out a ranking of which causal configurations best match a sufficiency pattern for a given outcome. We can estimate the consistency level using simple spreadsheet methods but typically freeware is used for larger applications (fsQCA). Second we also develop results showing consistent the data are with the sufficiency hypothesis. We obtain a confidence interval around the consistency level through bootstrapping. QCA can offer good methods for studying impact because its basket of methods allow the relevance of 'contextual factors' to interact with treatments, and because we can perceive multiple causal pathways.

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