

Single Subject Causal Mediation Analysis

26 – 30 August 2019@Oort

Science

Personalized medicine is becoming more popular, and we are aware that treatments that work for one person may not work for another person. Somewhat surprisingly, there are no methods for single subject causal mediation analysis. This workshop brought together clinical psychologists and statisticians for social sciences working on mediation analysis, single subject data analysis, and causal inference in order to devise new statistical methods for causal mediation analysis with repeated measures from a single participant.

The workshop participants were divided into small groups of 4-6, and each group worked on a final presentation for the last day of the workshop and a write-up describing their idea. The participants had the option of developing an idea for a grant application and/or having their idea included in the conference proceedings.

Each day of the workshop had a specific focus (i.e., illustration of clinical SCED data, single subject analysis techniques, causal inferences and mediation analysis) including presentations of experts in the field. This helped the workshop participants developing some ideas of their own. There were many fruitful discussions during the workshop, especially on the last day when each of the eight groups presented their ideas. Some novel ideas include the addition of interaction terms to the piecewise regression model for the outcome in order to analyze causal effects, and considerations regarding time trends in the mediator and outcome for estimating the effect of the mediator on the outcome. Multiple groups indicated the value of randomization tests.

Groups 7 and 8 presented in sequence, and there was an "Aha" moment for group 8 after hearing the presentation of group 7. Furthermore, many clinical psychologists commented on how they have learned a number of useful statistics skills from the talks in the workshop. As a result, this workshop helped bridge the gap between applied researchers and methodologists/statisticians.

Organization/Format

The format of the workshop favored work in small groups, and allowed for only a limited number of lectures per day. Many participants reported that they enjoyed being able to interact with their group members and other workshop attendees more than at other scientific meetings. Furthermore, the amount of time spent on group work likely made a big difference for the quality of the ideas the groups had and presented on the last day.

We have nothing but compliments for the Lorentz center. The participants were really able to focus on the science, the space was very conducive to work in small groups, and the Lorentz center staff was very helpful. Several participants complimented the organization, and many reported that they really enjoyed the conference dinner.

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