Applied Reading Group:
Topics on Inference with Clusters

I) First Session

When: Sept 27, 10:45

Where: 15.0.14

Presented by: Maria Alexandra Castellanos and Camila Steffens

Outline and recommended literature

1. Introduction (Bertrand, Duflo, and Mullainathan (2004), **Cameron and Miller (2015)***, Mckenzie (2017b)**)
    - Why clustering?
    - What to cluster over?
        - Insights from design-based inference (Rambachan and Roth (2022)***, **Roth et al. (2022)***)
        - Multiway clustering (Cameron, Gelbach, and Miller (2011)***)
        - Inference for Matching (Abadie and Spiess (2022)***)
2. Dealing with few clusters (**Cameron and Miller (2015)*, Roth et al. (2022)***)
    - Wild-Cluster Bootstrap (MacKinnon and Webb (2017)***)
    - Randomization Inference (**Heß (2017)***, Kondylis and Loeser (2020)**, Mckenzie (2017a)**, MacKinnon and Webb (2020)***)

II) Second Session

When: Sept 30, 10:45

Where: 14.1.1

Presented by: Camila Steffens

Outline and recommended literature

1. Introduction to very few clusters (**Roth et al. (2022)***)
    - Overview of the model-based approach
2. Rearrangement for a single treated cluster (Hagemann (2020)***)
    - Application in *R* and *Stata*
3. Permutation over time (Chernozhukov, Wüthrich, and Zhu (2021)***)

*** Main reference**, ** Summary, *** Technical reference

References

Abadie, Alberto and Jann Spiess (2022). "Robust post-matching inference". In: *Journal of the American Statistical Association* 117(538), pp. 983–995.

Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan (2004). "How much should we trust differences-in-differences estimates?" In: *The Quarterly Journal of Economics* 119(1), pp. 249–275.

Cameron, A Colin, Jonah B Gelbach, and Douglas L Miller (2011). "Robust inference with multiway clustering". In: *Journal of Business & Economic Statistics* 29(2), pp. 238–249.

Cameron, A Colin and Douglas L Miller (2015). "A practitioner's guide to cluster-robust inference". In: *Journal of Human Resources* 50(2), pp. 317–372.

Chernozhukov, Victor, Kaspar Wüthrich, and Yinchu Zhu (2021). "An exact and robust conformal inference method for counterfactual and synthetic controls". In: *Journal of the American Statistical Association* 116(536), pp. 1849–1864.

Hagemann, Andreas (2020). "Inference with a single treated cluster". In: *arXiv preprint arXiv:2010.04076*.

Heß, Simon (2017). "Randomization inference with Stata: A guide and software". In: *The Stata Journal* 17(3), pp. 630–651.

Kondylis, Florence and John Loeser (2020). *Econometrics Sandbox: Randomization Inference for Event Study Designs*. URL: `https://blogs.`

worldbank.org/impactevaluations/econometrics-sandbox-randomization-inference-event-study-designs.

MacKinnon, James G and Matthew D Webb (2017). "Wild bootstrap inference for wildly different cluster sizes". In: *Journal of Applied Econometrics* 32(2), pp. 233–254.

MacKinnon, James G and Matthew D Webb (2020). "Randomization inference for difference-in-differences with few treated clusters". In: *Journal of Econometrics* 218(2), pp. 435–450.

Mckenzie, David (2017a). *Finally, a way to do easy randomization inference in Stata!* URL: https://blogs.worldbank.org/impactevaluations/finally-way-do-easy-randomization-inference-stata.

Mckenzie, David (2017b). *When should you cluster standard errors? New wisdom from the econometrics oracle*. URL: https://blogs.worldbank.org/impactevaluations/when-should-you-cluster-standard-errors-new-wisdom-econometrics-oracle.

Rambachan, Ashesh and Jonathan Roth (2022). "Design-Based Uncertainty for Quasi-Experiments". In: *arXiv preprint arXiv:2008.00602v3*.

Roth, Jonathan, Pedro HC Sant'Anna, Alyssa Bilinski, and John Poe (2022). "What's Trending in Difference-in-Differences? A Synthesis of the Recent Econometrics Literature. Section 5: Relaxing sampling assumptions". In: *arXiv preprint arXiv:2201.01194*.