The Mortalility and Medical Costs of Air Pollution- Review

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1 Introduction

Paper uses heteorgenous treatment effect and generic machine learning inference. Mortality in elderly population 25% are effected. Conduct first large scale quasi experimental investigation on health care use and medical case. Wind direction as an IV identification strategy. Mortality displacement as problem with identification.

Use cox-lasso model as further model.

- Shortcoming: External validity
- Perhaps also unable to capture interconnection of other factors in other external cases
- Model evaluation for ML method not SOTA
- Bayesian Estimation (probabilistic modelling)

Added value ML here: Prediction of pollution

2 Literature Review

3 Method

3 pillars:

- Mortality and health care use

- Life-Years Lost
- Treatment Effect Heterogeneity

3.1 Mortality and health care use

- Dependent Variables: health care use, health care spending and net of any confounding factors
- Include FE: country level, state by month level and month by year level
- Cluster all standard errors at country level and weight all estimates by population for per captia dependent variables.
- Robustness to different clustering choices.
- IV- Strategy: Daily wind direction varying by geography

3.2 Life-Years Lost

- Unsupervised learning (cluster analysis) to group pollution effect by county across the US.

4 Conclusion

Additional Variation via estimation of life expectancy. Using heterogeneous treatment effect on quasi-experiment. Suggest that life expectancy models vulnerability to air pollution exposure.