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Cleaning the Air?
The Causal Effects of Traffic Restrictions

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Abstract. Traffic restrictions aim at reducing the concentration of pollutants in the air. Nevertheless, their causal effects on air quality and human behavior are debated due to differences in restrictions and enforcement problems. We study the effects of traffic restrictions on air quality and individuals' behavior by exploiting a natural experiment from Italy. In one of the most polluted areas in Europe, the Po Valley in Italy, since 2018, the circulation of diesel vehicles below Euro 3 standards is restricted from October 1 to March 31 for municipalities with over 30,000 inhabitants. To establish causality, we implement a Difference-in-Discontinuities design that accounts for shocks and other policies that may have happened simultaneously with the traffic restrictions in the treated cities. We find that the restrictions caused not only a strong reduction in air pollution (a 17-18% decrease in daily concentrations of NO_2, PM_{10}, and $PM_{2.5}$), but also a decrease in polluting cars, an increase in hybrid/electric cars, and an increase in car accidents. The results are robust to various specifications and placebo tests. The study contributes to the ongoing debate about the intended and unattended effects of environmental policies.