

How to reduce biases coming from a before and after design: the impact of the 2007-2008 French smoking ban policy

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Abstract

BACKGROUND: Smoke-free laws aim at protecting against second-hand smoke and at contributing to change smoking behaviors. Impact evaluation studies can help understand to what extent they reach their goals. Simple before and after designs are often used but cannot isolate the effect of the policy of interest.

METHODS: The short-term impact of the French smoking ban (2007-08) on smoking behavior outcomes was evaluated among smokers with data from the ITC project. We first conducted a before and after design on the French sample. Second, we added the UK (excluding Scotland) as a control group and finally used external pre-policy data from national surveys to control for bias arising from pre-policy trends.

RESULTS: After one year post-implementation, the smoking ban led to a decrease in seeing people smoking in bars, restaurants and workplaces [estimated risk ratios (RR) of 8.81 IC95% (5.34-14.71), 2.02 (1.79-2.31) and 1.24 (1.16-1.33), respectively], as well as an increase in support for the smoke-free policy, but only in bars and restaurants [RR of 1.35 (1.15-1.61) and 1.25 (1.16-1.35)], respectively. No impact was found on smoking behaviors and on having a strict no smoking policy at home. The simple before and after design systematically overestimated the smoking ban's impact [e.g. RR of 29.9 (20.06-44.56) for observed smoking in bar, compared to 13.21 (7.78-22.42) with the control group, and 8.81 (5.34-14.71) with the correction from external data].

CONCLUSION: When data are lacking to conduct quasi-experimental designs for impact evaluation, the use of external data could help understand and correct pre-policy trends.

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