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The smoking ban next door: Do hospitality businesses in border areas have reduced sales after a statewide smoke-free policy?

Elizabeth G. Klein [a,*], Nancy E. Hood [b]

[a] Ohio State University College of Public Health, Health Behavior & Health Promotion, 352 Cunz Hall, 1841 Neil Avenue, Columbus, OH 43210, United States

[b] CPO Management, 910 East Broad St, Columbus, OH 43205, United States

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ABSTRACT

Introduction: Despite numerous studies demonstrating no significant economic effects on hospitality businesses following a statewide smoke-free (SF) policy, regional concerns suggest that areas near states without SF policies may experience a loss of hospitality sales across the border. The present study evaluated the impact of Ohio's statewide SF policy on taxable restaurant and bar sales in border and non-border areas.
Methods: Spline regression analysis was used to assess changes in monthly taxable sales at the county level in full-service restaurants and bars in Ohio. Data were analyzed from four years prior to policy implementation to three years post-policy. Change in the differences in the slope of taxable sales for border ($n = 21$) and non-border ($n = 67$) counties were evaluated for changes following the statewide SF policy enforcement, adjusted for unemployment rates, general trends in the hospitality sector, and seasonality.
Results: After adjusting for covariates, there was no statistically significant change in the difference in slope for taxable sales for either restaurants ($\beta = 0.9$, $p = 0.09$) or bars ($\beta = 0.2$, $p = 0.07$) following the SF policy for border areas compared to non-border areas of Ohio.
Conclusions: Border regions in Ohio did not experience a significant change in bar and restaurant sales compared to non-border areas following a statewide SF policy. Results support that Ohio's statewide SF policy did not impact these two areas differently, and provide additional evidence for the continued use of SF policies to provide protection from exposure to secondhand smoke for both workers and the general public.

1. Introduction

Compared to other occupational groups, bar and restaurant workers (also called hospitality workers) have historically experienced the least protection from secondhand smoke (SHS) exposure in the workplace [1] as hospitality businesses were often exempted from policies that restricted smoking in workplaces. These exemptions from SF policies have become less common; as of July 2014, 39 states had local 100% smoke-free (SF) policies that applied to workplaces including both bars and restaurants, representing protection for 81.6% of the population in the United States (U.S.) [2].

Despite well-documented health benefits of SF policies [3], opponents – including the tobacco industry – continue to argue that SF policies that apply to bars and restaurants may reduce the number of customers in these

* Corresponding author. Tel.: +1 614 292 5424; fax: +1 614 688 3533.
E-mail addresses: eklein@cph.osu.edu, klein.232@osu.edu (E.G. Klein), nhood@cpoms.org (N.E. Hood).

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establishments, thereby significantly reducing their revenue, employment opportunities, and likelihood of remaining in business [4]. Findings from numerous reviews of economic impact studies of SF policies have refuted these concerns [4–6]. In fact, Scollo et al. [6] found all studies documenting a negative economic impact of SF policies on the hospitality sector were sponsored by the tobacco industry. Furthermore, these studies were significantly more likely to use a subjective outcome measure and less likely to be peer-reviewed than studies showing no impact or a positive impact. Several studies that evaluated bars and restaurants separately reported no significant economic effects on either type of establishment [7–9] despite the known correlation between smoking and drinking behaviors [10].

Opponents have also raised concerns that statewide evaluations of SF policies may mask differential effects in some geographic areas such as border communities and rural regions, which may be important given that approximately 39% of smokers in the U.S. live within 40 miles of another state [11]. Economic studies have shown 4–25% of smokers cross borders to purchase cigarettes in jurisdictions with lower cigarette taxes [11,12]. Based on 2003 Current Population Survey Tobacco Use Supplement data, smokers traveled approximately three miles to save one dollar on a pack of cigarettes [11]. If smokers are willing to travel across borders to purchase cigarettes, they may also be willing to travel across borders to patronize bars and restaurants that permit smoking if those in their own jurisdictions do not.

Only one study to date has examined the effects of a statewide SF policy on the hospitality sector in border communities [13]. These researchers evaluated whether Ohio's statewide SF policy implemented in December 2006 differentially affected several hospitality sector employment indicators (including the total number of employees, total wages paid, and number of establishments) in selection of Ohio counties bordering Kentucky compared to non-border counties; Kentucky did not have a statewide SF policy during the study period. Additionally, changes over time were compared between Ohio counties and both border and non-border counties in Kentucky. From three years before Ohio's policy began to one year after implementation, there were no disproportionate changes in hospitality sector employment indicators between border and non-border counties in Ohio or Kentucky. Thus, opponents' arguments that a statewide SF policy would drive business across the border to jurisdictions without SF policies were not supported.

Despite these findings, the issue of economic effects in border areas deserves continued study. Ohio offers a unique opportunity to empirically examine whether statewide policies negatively impact restaurant and bar establishments because until recently, all Ohio border counties ($n=88$) were adjacent to five individual states without SF policies. Further, Ohio has suffered substantial set-backs in tobacco control including the 2008 state legislative dissolution of the Ohio Tobacco Prevention Foundation and diversion of Ohio's master tobacco settlement funds to non-tobacco-related budget items [14]. In fact, in 2011, Ohio did not contribute any state funds to tobacco control and federal tobacco control funding equaled only 1.5% of the level recommended by the Centers for Disease Control and Prevention [15]. As the prevalence of adult smoking in Ohio remains one of the highest in the nation at 23.3% of adults reporting current smoking [16], (a slight decline from a high of 25.1% in 2011), this slower pace of decline compared to other states may represent a negative effect of diminished state tobacco control funding. All told, Ohio presents a unique natural quasi-experiment to evaluate the economic impacts of a statewide SF policy in an area where smoking remains relatively prevalent.

This study provides three important extensions to previous work: (1) The use of taxable sales data as an objective and direct assessment of economic effects, (2) separate evaluations of bars and restaurant businesses to improve sensitivity to changes to specific business types, and (3) evaluation of the robust number of Ohio counties that share the border with five states. If Ohio residents responded to the SF law by traveling across state lines to restaurants and bars in states without comprehensive SF laws, as is suggested by the tobacco industry, sales in restaurant and bar taxable sales might be expected to suffer more in border counties, where individuals can more feasibly make such choices, than in more centralized counties. As a result, we hypothesized that border counties would experience a significant reduction in the rate (slope) of taxable sales compared to non-border counties for both business types.

2. Methods

The study sample includes all 88 counties in the state of Ohio, dichotomized into those counties which share a border with another state and non-border counties. Border counties were defined as those sharing a border with one of five neighboring states (Indiana, Michigan, Pennsylvania, West Virginia, and Kentucky) ($n=26$). One county shared less than 0.83 square miles with a neighboring state, including a single village of 525 residents, and was treated as non-border. None of the bordering states had 100% statewide SF laws covering restaurants and bars during the study period with the exception of Michigan, which implemented a law in the last month of the study period. However, five border counties were adjacent to non-Ohio counties with complete county-level smoke-free policies during at least some of the study period. Because border effects would not be expected in these areas, for the entire study period these counties were reclassified as non-border. The final sample included a total of 21 border and 67 non-border counties ($n=88$).

Linear mixed model regression analyses were selected to evaluate for change in taxable sales within bars and restaurants before and after a SF policy was enacted for the state. Data were collected and provided for this analysis by the Ohio Department of Taxation (referred to here as the Department).

The primary outcome variable was monthly taxable sales (in dollars). Hospitality businesses report sales tax liability every month. Very small businesses (defined as less than $1200 in state sales tax liability over a six month period) report every six months; businesses with biannual reporting of taxable sales were excluded from analyses