Impact of an unsanctioned safe consumption site on criminal activity, 2010–2019

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ABSTRACT

Background Health and social impacts of safe consumption sites (SCS) are well described in multiple countries. One argument used by those opposed to SCS in the US is that findings from other countries are not relevant to the US context. We examined whether an unsanctioned SCS operating in the US affected local crime rates.

Methods Controlled interrupted time series (ITS) analysis of police incident reports for five years before and five years after SCS opening, comparing one intervention and two control areas in one city.

Results Narcotic/drug incidents declined across the pre- and post-intervention periods in the intervention area and remained constant in both control areas, preventing an ITS analysis but suggesting no negative impact. On average, incident reports relating to assault, burglary, larceny theft, and robbery in the post-intervention period steadily decreased at a similar rate within both the Intervention area and Control area 1. However the change in rate of decline post-intervention was statistically significantly greater in the Intervention area compared to Control area 1 (difference in slope -0.007 SDs, 95% CI: -0.013, -0.002; p=0.01). The Intervention area had a statistically significant decline in crime over the post-intervention period compared to Control area 2 (difference in slope -0.023 SDs, 95% CI: -0.03, -0.01; p<0.001).

C**onclusions** Documented criminal activity decreased rather than increased in the area around an unsanctioned SCS located in the US in the five years following SCS opening.

KEYWORDS

Safe consumption site; safe injection facility; United States; crime; interrupted time series; drugs.

1. INTRODUCTION

Safe consumption sites (SCS) are a public health response to overdose deaths and other harms associated with using drugs. Approximately 177 facilities currently operate with formal legal sanction in 14 countries around the world (Australia, Belgium, Canada, Denmark, France, Germany, Luxembourg, Mexico, Netherlands, Norway, Portugal, Spain, Switzerland, and Ukraine) (International Network of Drug Consumption Rooms, 2020). A considerable body of research describes the

health and social order outcomes associated with these sites, with over 75 peer-reviewed publications (Potier et al., 2014) describing positive health outcomes for the people using the sites and the neighborhoods in which they are located, including reducing infectious disease risk (Salmon et al., 2009), overdose mortality (Milloy et al., 2008), and drug use (DeBeck et al., 2011).

In the United States, no SCS currently operates with formal authorization from local authorities. However, a number of states and cities are considering authorizing such sites. In October 2019 a Federal District Judge for the U.S. District Court for the Eastern District of Pennsylvania ruled that operating such a site would not violate the Federal 'crack house statute' (21 USC §856 (*Maintaining drug-involved premises*)), previously considered a serious legal impediment to authorization as it makes operating a facility for the purpose of consuming illicit drugs a federal felony (Burris et al., 2020; McHugh, 2019). However, in response to high levels of overdose, one SCS has been operating continuously in a city in the United States since 2014 without authorization (Davidson et al., 2018; Kral et al., 2020; Kral and Davidson, 2017).

One consistent objection to authorizing SCS has been the 'honey pot' argument: that opening a SCS will draw people who use drugs and drug dealers to the area around a site who would not otherwise be there, and that drug-related crime will rise as a consequence. While two research studies at authorized sites in Australia and Canada has shown no such increase in criminal activity (Freeman et al., 2005; Wood et al., 2006), one concern raised about these findings in the US, including by the US Attorney's Office for the Eastern District of Pennsylvania, and by the director of the US National Institute on Drug Abuse, is that such findings are "hyper-local" and may not apply to the US context (Fox, 2017; United States Attorney's Office, Eastern District of Pennsylvania, 2019). To address the honey pot argument within the US context, we used a controlled, interrupted time series design with an intervention area and two control areas to assess whether implementation of an unsanctioned safe consumption site in the United States increased crime in the immediate surrounding area.

2. METHODS

2.1 Intervention

In September 2014, a non-profit agency providing a range of services to people who use drugs began operating a SCS in response to increases in opioid-related overdose deaths among the population they served (Kral et al., 2020). The site consisted of two rooms, one equipped with individual "stations"—each containing a stainless-steel table, a mirror, a chair, and a biohazard waste container—for people to inject drugs they obtained elsewhere. Sterile syringes and related injection equipment are provided for all individuals using the site. Each station was cleaned with disinfectant after each use. A second room contained seating for people to spend time post injection. The injection room started with 5 stations, and in 2017, a 6th station was added along with a cushioned table so people could lie down during injection when necessary. Both rooms were staffed by trained personnel who provided counseling, intervention during overdose events, and calls for emergency medical services if needed.

Access to the site was by invitation only. An initial group of individuals who were already receiving services from the agency were invited to make use of the

SCS on the condition that they did not reveal its existence to anyone else. Because of the limited number of injecting stations and the desire to reduce the risk of disclosure, the number of individuals who had been invited to make use of the site was capped at approximately 60 people at any given time. As individuals stopped using the site—for example, because of cessation of drug use, incarceration, or leaving town— other individuals who continued using the site recommended new people from their broader social circles. In 2019 the site saw a median 16 injection events per day by a median 13 unique individuals (range 1-37 injections, 1-24 unique individuals). By comparison, a recent international survey of 51 authorized SCSs around the world reported a median 31 injection events per day (Belackova et al., 2018). From September 2014-August 2017, the site was open 4 to 6 hours per day, 5 days per week; from September 2017 – December 2020, the site was open 6 to 8 hours per day, 5 days per week.

Individuals brought their own pre-obtained drugs, and if they needed assistance with an injection, they could ask other participants to help them. Although technically there was no time limit to the injection, if a number of people were waiting, it was expected that individuals spend no more than 20 to 30 minutes at a station. There was always a staff member in the injection room, and another staff member in the adjoining room. There also was an overdose protocol, a pulse oximeter, and ample amounts of intramuscular or intranasal naloxone for reversing opioid-related overdoses.

2.2 Analytical Approach

Interrupted times series (ITS) is a robust approach for the evaluation of policies and interventions that cannot be assessed in a randomized controlled trial (Lopez Bernal et al., 2018). The ITS design requires a continuous sequence of observations taken at equal intervals over time and a clearly defined time point for when a policy or intervention was introduced. The model compares how the trend of an outcome differs when "interrupted" by the intervention. It includes a counterfactual or a control that represents the expected trend in the absence of the intervention to adjust for effects of time-dependent confounders (i.e., external influences unrelated to the intervention which may impact the outcome). To evaluate the impact of the intervention, statistics are used to examine whether there is a significantly different change in the intervention neighborhood post-intervention implementation from the expected scenario of the counterfactual neighborhood. Our analysis followed the recommended methodological and reporting guidelines for ITS studies (Bernal et al., 2017; Jandoc et al., 2015; Lopez Bernal et al., 2018).

2.3 Intervention Area

Similar to Wood et al's study of the impact of SCS on crime in Vancouver (Wood et al., 2006), the immediate surrounding neighborhood was defined as within a 500-meter radius of the SCS. We chose this radius partially for comparability to existing work and partially based on ethnographic observation which suggests that for street-engaged residents of both the intervention and control areas, walking 500 meters is sufficient to take them to a distinctly different 'micro-neighborhood', making the 500 meter radius chosen by Wood et al empirically reasonable for this setting as well.

2.4 Control Areas

Two control areas were selected in the same city as the intervention area, one location-based, and one characteristic-based. Control area 1, the location-based control, is a 500 meter radius area abutting the intervention area, selected for its similarity in neighborhood dynamics and mixed-land use. Control area 2, the characteristic-based control, is a 500 meter radius area in a non-adjoining neighborhood centered on a social service agency which serves people who use drugs and which has similar operating hours to the unsanctioned SCS.

2.5 Outcome measure

We constructed two primary outcome measures, the first being a measure of monthly police incident reports with a category of narcotics/drugs (i.e., possession or dealing), and the second being a measure of police incident reports with a category of assault, burglary, larceny theft, or robbery, which we collectively termed 'interpersonal crimes.' Police incident reports, in this context, are documentation of a police-citizen interaction or police interaction related to a potential crime (e.g., police officer finds a gun on the sidewalk). They can be generated in response to citizen crime reports (e.g., where a citizen calls 911, files a crime report online, or flags down an officer on the street) or by officers while on patrol (e.g., witnessing a crime, finding a weapon, witnessing someone overdosing, etc.). Incident reports do not always result in an arrest being made, warrant issued, or conviction being obtained.

Given the SCS is operating without approval, monthly incident rates were reported as standardized z-scores to maintain anonymity of the site's location. The data were rescaled to have a mean of zero and a standard deviation of one. Each z-score value then represents the difference from the overall mean in number of standard deviations of the original data.

2.6 Data source

All data were sourced from publicly available police department data. Given there were five calendar years of incident report data available post opening of the SCS, our analysis also included the five years prior to opening for seasonal balance in the before and after intervention implementation periods. The study included all police incident reports between January 2010 and December 2019. PostGIS 3.0.1 (Refractions Research, 2020) was used to identify which incidents had occurred within each of the three study areas.

2.7 Statistical analysis

Our proposed impact model was defined a priori and based on the "honey pot" theory that the opening of the SCS would attract more people who use drugs and drug dealers, which in turn would increase crime in the surrounding area. Hence, we tested whether the number of police incident reports increased in the neighborhood when the SCS opened and if the rate of incidents increased over time post-implementation, as compared to each of the two control areas. We constructed a segmented linear regression model to assess if the SCS caused a change in both (1) level and (2) slope. Both control groups were included and modeled simultaneously with an interaction term between study area, period, and time. The analysis included 120 months, 57 pre- and 63 post-intervention. The model

adjusted for calendar month to account for seasonal variations and potential autocorrelation of measures overtime. In a sensitivity analysis, we controlled for the number of traffic violation incident reports per month to account for potential changes in population size within these regions. We assumed that traffic violations would fluctuate with any changes in neighborhood population density (potentially affecting crime volume) but would not be influenced by the SCS. We report 2-sided p-values and considered $p<0.05$ as the cut-off for statistical significance. Statistical analyses were performed using Stata 16.0 (StataCorp, n.d.) and R statistical software version 3.5.0 (R Foundation for Statistical Computing, n.d.).

3. RESULTS

We calculated standardized monthly number of narcotic/drug incidents within each of the three areas between January 2010 and December 2019 (Figure 1). Incidents declined steadily across the entire pre- and post-intervention periods in the intervention area and remained essentially steady in both control areas. These trends violate the preconditions for an ITS analysis, which require that trends prior to commencement of the intervention need to be approximately parallel in both control and intervention areas. Hence, we were not able to evaluate the impact of SCS on narcotic/drug crime incidents using ITS.

We also calculated standardized monthly numbers of assault, burglary, larceny theft, and robbery related incidents (i.e., interpersonal crimes) within each of the three areas between January 2010 and December 2019 (Figure 2). Prior to the SCS intervention, more interpersonal crime-related incidents were observed in the area surrounding the SCS (Intervention) compared to the control areas. However, the trend in monthly interpersonal crime-related reports during the pre-intervention period steadily increased and was comparable across the three areas - meeting a key assumption required for ITS analysis.

Estimates from the segmented linear regression model are presented in Table 1. The change in level of interpersonal crime-related incident reports in the intervention area at the time the SCS opened was comparable to Control area 1 (difference in level change: 0.19; 95% CI: -0.16, 0.54; $p=0.29$). On average, interpersonal crime-related reports in the post-intervention period steadily decreased at a similar rate per month within both the Intervention area and Control area 1. However, the change in rate of decline post-intervention was significantly greater in the Intervention area compared to Control area 1 (difference in slope -0.007 SDs, 95% CI: -0.013, -0.002; $p=0.01$).

At the time the SCS opened, the level of interpersonal crime-related reports in Control area 2 had dropped relative to the increasing trend observed during the pre-intervention period (difference in level change: -0.37; 95% CI: -0.56, -0.18, $p<0.001$). Although the Intervention area did not exhibit an initial drop in interpersonal crime-related reports as in Control area 2, the Intervention area had a significant decline in interpersonal crime-related reports over the post-intervention period compared to Control area 2 (difference in slope -0.023 SDs, 95% CI: -0.03, -0.01; $p<0.001$). In contrast, there was a slightly increasing trend in monthly interpersonal crime-related report rates in Control area 2 over the post-intervention period.

In a sensitivity analysis, traffic violation offenses per month were included in the model to adjust for potential changes in population size; this did not affect our estimates (Supplemental Table 1).

4. DISCUSSION

We used a controlled, interrupted time series design with two comparison groups to assess the impact of an unsanctioned, US-based SCS on police incident reports in the immediate surrounding area. We found no evidence that drug-related incidents (i.e., narcotic/drug incidents) increased in the area around the SCS in the period following SCS service delivery. Rather, incident reports of this type steadily decreased across the entire study period, both pre- and post-intervention, suggesting the opening of the SCS had no impact in either direction on an existing downward trend. We also found no evidence that interpersonal crime-related reports (i.e., those relating to assault, burglary, larceny theft, and robbery) increased in the area around the SCS in the period following SCS service delivery. Overall, the trend for these latter types of incidents within the area around the SCS was very similar to that in a location-based control (Control area 1). While the level of interpersonal crime-related reports had dropped in the characteristic-based control (Control area 2) at the time the SCS opened, this drop was likely a continuation of a trend immediately before the opening of the SCS. After the initial drop, level of interpersonal crime-related reports within Control area 2 stayed consistent in the post-intervention period. The area around the SCS did not see the same immediate drop in interpersonal crime-related reports but had a continual downward trajectory starting post-intervention.

This study had a number of potential limitations to consider. First, the unsanctioned SCS is a relatively low-volume site, providing supervision for 2,926 injecting events in 2019 (Kral et al., 2020). However, we found that a site of this size did not have any negative impact on rates of police incident reports relating to either specifically drug-related incidents (narcotics/drugs), or interpersonal crimes (assault, burglary, larceny theft, and robbery). Second, our data consisted of police incident reports rather than arrests or convictions, which means some may have involved events which either did not result in an arrest or conviction, or which on investigation were determined not to have been crimes. Third, the trend in interpersonal crime-related reports within Control area 2 during the post-intervention period was potentially non-linear; nonetheless, the downward trend within the intervention area was in stark contrast to the Control area 2 trend which on average had a slightly upward trend. Fourth, the selection of a 500 meter radius for the evaluation of impact may have affected our analysis by being either inappropriately narrow or inappropriately broad. However, the radius was chosen based on previous literature from other SCS research worldwide, and on ethnographic observation in the urban area under study. Finally, the study was conducted in a single location, which may not be generalizable to other settings in the US, or to other countries.

In two other countries where the impact of SCS on crime in the surrounding area have been studied, no increase in crime was detected (Freeman et al., 2005; Wood et al., 2006). Similarly, our data show no detectable increases in police incident reports in the area around an unsanctioned SCS operating in the US. To the contrary, we found that incidents *decreased* in the surrounding area. Arguments have been made suggesting that findings from sanctioned sites in Australia and Canada are not relevant to the US due to differences in drug market dynamics, and our data fill an important gap in understanding whether SCS increases criminal activity in the US context. Given the well-established public health and public order

benefits of SCS, our data reinforce the case for a thoughtful, well-designed and carefully evaluated SCS pilot, preferably in multiple locations in multiple US cities with high rates of drug-related morbidity and mortality and highly concentrated public drug use.

Declaration of interests

None.

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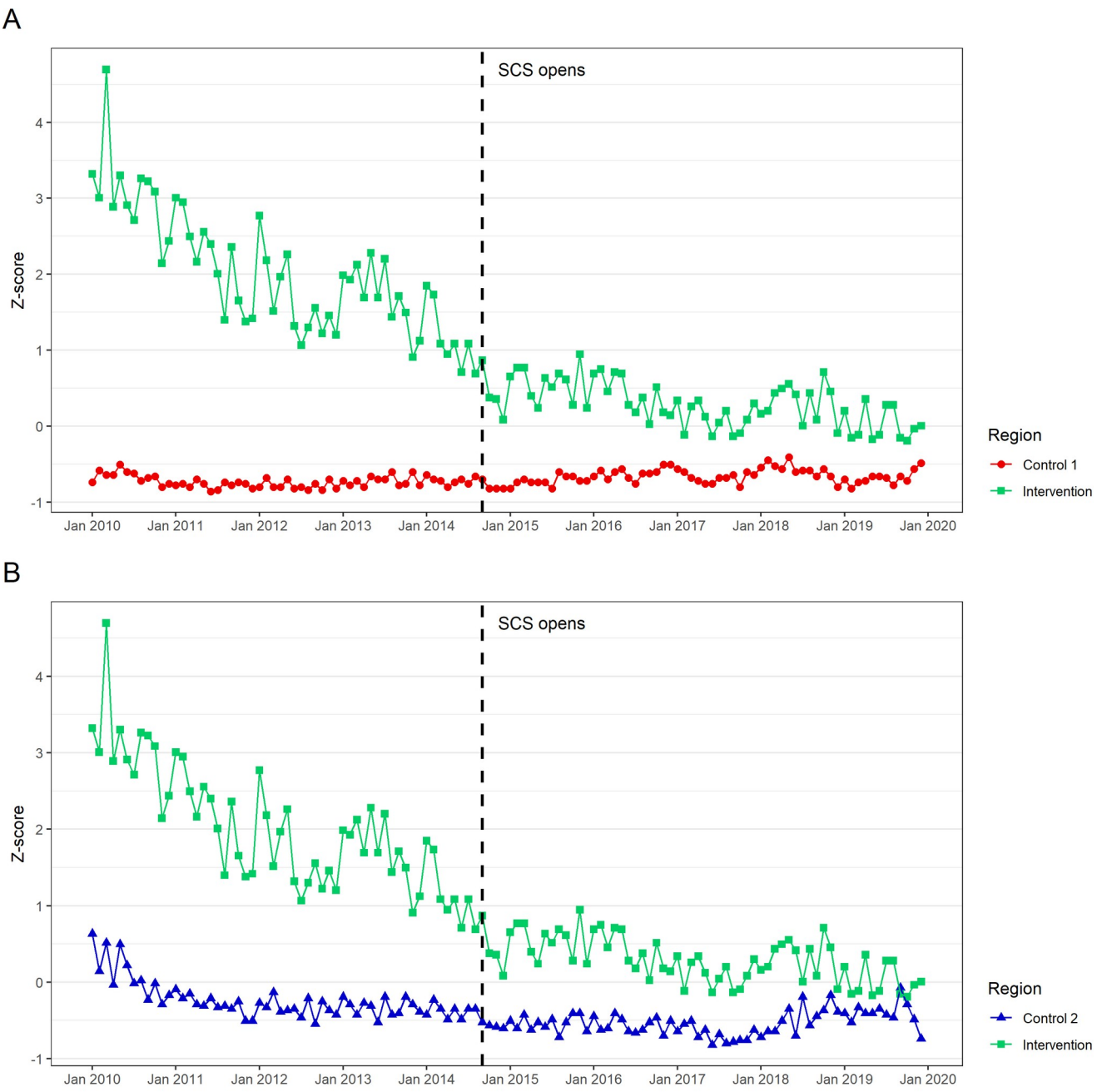

Figure 1 Monthly standardized counts of drug/narcotic-specific police incident reports between January 2010 and December 2019 within the 500-m area surrounding the Safe Consumption Site (SCS; Intervention) and two control areas: A. location-based control (Control area 1) and B. characteristic-based (Control area 2). Data are presented as z-scores; the vertical dashed line represents when the SCS was opened.

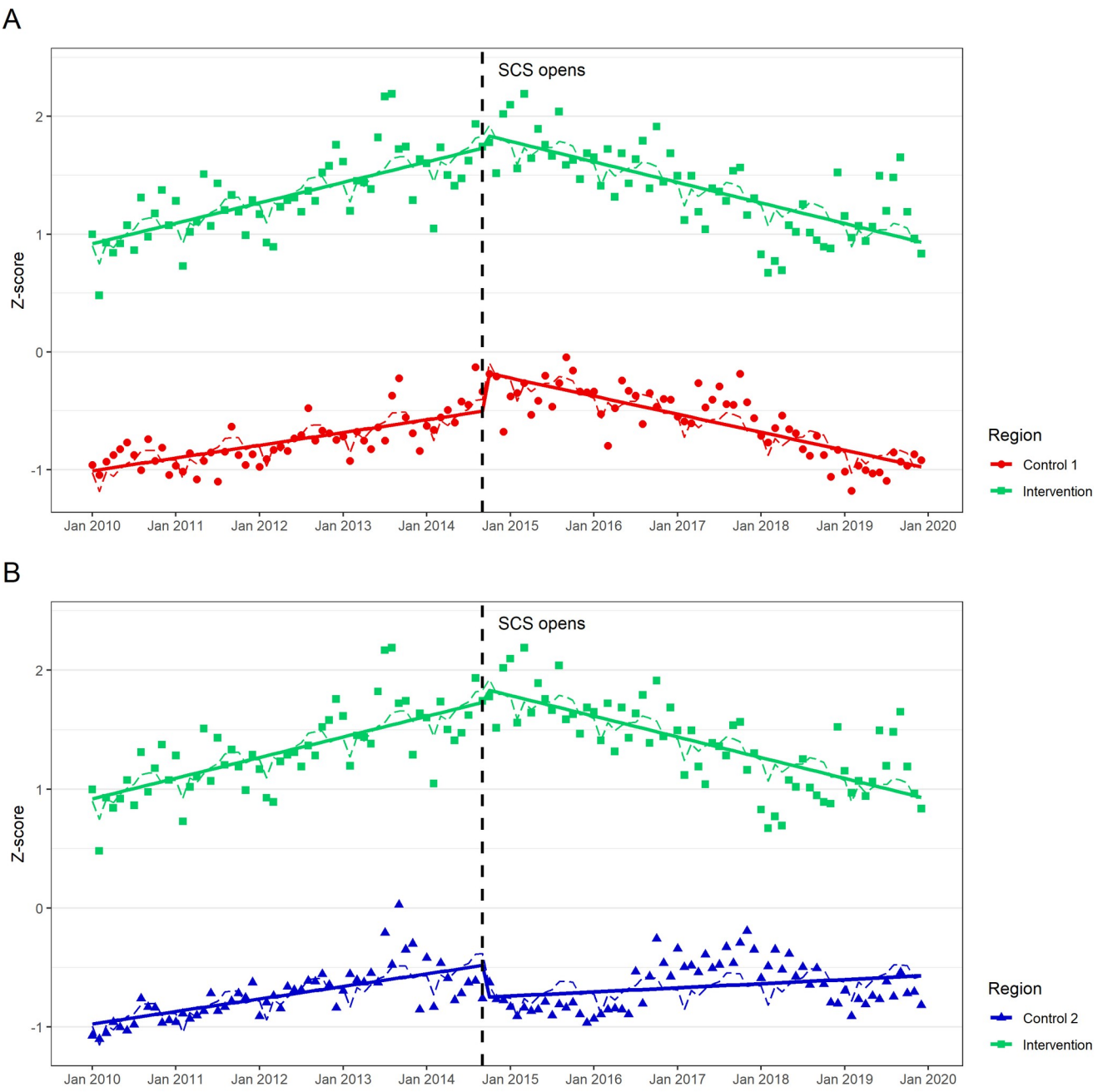

Figure 2 Monthly standardized counts of police incident reports of assault, burglary, larceny theft, or robbery and estimated trends in crime between January 2010 and December 2019 within the 500 meter area surrounding the Safe Consumption Site (SCS; Intervention) and two control areas: A. location-based control (Control area 1) and B. characteristic-based (Control area 2). Data are presented as z-scores; the vertical dashed line represents when the SCS was opened.

Table 1 Estimates from an interrupted time series segmented regression model examining police incidence reports of interpersonal crime (assault, burglary, larceny theft, or robbery) with two controls: a location control (Control area 1) and a characteristic control (Control area 2). Model allowed for changes in both linear trend and level.

	Pre-intervention Trend (slope)		**Change in level**		**Post-intervention Change in trend (slope)**		**Trend (slope)**	
	Estimate[a]	95% CI	Estimate[a]	95% CI	Estimate[a]	95% CI	Estimate[a]	95% CI
Intervention	0.014	(0.012, 0.018)	0.081	(-0.246, 0.408)	-0.029	(-0.033, -0.025)	-0.015	(-0.017, -0.012)
Control area 1	0.009	(0.006, 0.012)	0.324	(0.193, 0.455)	-0.022	(-0.026, -0.018)	-0.013	(-0.015, -0.010)
Control area 2	0.009	(0.006, 0.012)	-0.267	(-1.556, -0.901)	-0.006	(-0.002, -0.005)	0.003	(0.001, 0.005)

[a] Monthly police incident reports were modeled as standardized z-scores; each value represents the difference from the overall mean in number of standard deviations of the original measure.
Linear model included effects-coded variables for calendar month to adjust for seasonality.