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Assessing the impact of safe consumption sites on neighborhood crime in New York City: a synthetic control approach

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Abstract

Objectives The study analyzes the impact of supervised consumption sites (SCSs) on local crime in New York City (NYC), examining both violent and property crimes.

Methods We use a count-based synthetic control approach to compare police administrative crime data before and after SCS establishment in two NYC neighborhoods. This quasi-experimental design was used to infer the causal effects of SCSs on neighborhood crime, using an evaluation framework across a range of local spatial bandwidths.

Results We found a significant 167% increase in property crimes within 1000 feet of the Washington Heights SCS after it opened as an SCS. We did not see changes in violence or property crimes near the East Harlem site. These findings suggest a differential impact of SCSs on neighborhood crime, possibly moderated by local factors.

Conclusion This research contributes to our understanding of how SCSs impact neighborhoods, suggesting that their effect on neighborhood crime is not uniform and may be dependent on local context. It underscores the need for further research to understand the interaction between public health interventions and local crime trends.

Keywords Harm reduction · Opioids · Property crime · Public health · Supervised consumption sites · Synthetic control · Safe injecting sites

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Introduction

The United States has suffered a steady rise in overdose deaths for several decades. CDC data suggests that over 107,000 individuals died from an overdose in 2022, ranking it among the top causes of unintentional death in the country (Ahmad et al., 2023; Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, 2023). The recent surge in overdose deaths is predominantly associated with the rising prevalence of synthetic opioids, which accounted for over 75,000 deaths in 2022 (excluding methadone, Ahmad et al., 2023).

Ciccarone (2017) has referred to this as a "triple wave epidemic," signifying the successive waves of deaths associated with different types of opioid use. The crisis has unfolded in three distinct waves: The first, starting in the 1990s, was driven by prescription opiates. The second wave, emerging around 2010, saw a rise in heroin-related overdoses. Presently, the crisis is in its third wave, which is marked by a dramatic increase in fatalities due to synthetic opioids like fentanyl, which has expanded its presence in the illicit drug market and significantly contributed to the overall rise in overdose deaths (Pardo et al., 2019).

City and local governments have implemented an array of harm reduction and treatment measures in their efforts to prevent overdoses. These strategies include increased access to naloxone, needle exchange programs, medically-assisted treatment, various enforcement approaches, and evidence-based treatments for substance use disorder (Allen & Urmanche, 2023; Pardo et al., 2019). Building on these efforts, several American cities are now exploring the establishment of supervised consumption sites (SCSs) as part of a harm reduction strategy to further reduce the incidence of overdose deaths (Johnson, 2023).

Supervised consumption sites already exist in Canada, Australia, and Europe, offering a controlled setting for drug use, alongside harm reduction services, needle exchange, naloxone distribution, connections to social services, and treatment referrals. These sites are equipped to provide timely emergency responses in the event of overdoses. Their proponents suggest that they are an effective tool for harm reduction, yet research on the effectiveness of supervised consumption sites has been constrained by their limited presence and the small number of sites available for study. Eighty percent of the literature on this subject originates from just two sites in Sydney and Vancouver (Caulkins et al., 2019; Kilmer et al., 2018). Caulkins et al. (2019) noted that research was generally favorable to SCSs, but suggested that there were limitations of the existing evidence base that must be considered amidst the many possible policy responses to the opioid crisis. The persistence and potential benefits of SCSs has, however, led to growing interest among policymakers and public health professionals in their potential implementation in the United States.

The presence of SCSs has also been met with concerns. One of the primary anxieties associated with these sites revolves around their impact on crime and disorder within the neighborhood. In 2020, US Deputy Attorney General Jeffrey A. Rosen (Rosen, 2020) expressed concerns that these sites "may endanger the

surrounding community." In 2019, the Alberta government formed a committee to review the safety and impact on the local environment of supervised consumption sites, gathering feedback from stakeholders and analyzing a range of data sources (such as crime, needle debris, and site usage information) from before and after their introduction (Livingston, 2021). The study, however, employed questionable metrics such as using calls-for-service data as a proxy for crime reports and lacked appropriate counterfactuals. The Alberta study highlights the need for a more rigorous evaluation of Supervised Consumption Sites (SCSs).

In line with the national trends, New York City has witnessed a significant escalation in fatal overdose rates. In 2022, the city recorded its highest ever overdose death rate at 43.3 per 100,000 residents, totaling 3026 deaths (Tuazon et al., 2023). This marked a 12% increase from 2021 and more than doubled the figures since 2019. Heroin was implicated in 85% of these fatalities, alongside fentanyl which contributed to 81%. Given this disturbing trend, in 2016, the NYC Council commissioned their Department of Health and Mental Hygiene (DOHMH) to assess the potential impact of introducing supervised consumption sites in NYC (*Overdose Prevention in New York City: Supervised Injection as a Strategy to Reduce Opioid Overdose and Public Injection*, 2018). Following the resulting study's release in 2018 and three years of community engagement and planning, a nonprofit organization—OnPoint NYC—opened its first two SCSs on November 30, 2021 in the neighborhoods of Washington Heights and East Harlem. These sites, located at existing needle exchanges, provide additional services like drug checking, naloxone distribution, and referrals to substance use disorder (SUD) treatment. To date, they have claimed to treat more than 1000 overdoses (Land et al., 2023).

As with other cities such as Philadelphia (Ratcliffe & Wight, 2022; Wight & Ratcliffe, 2024), police and residents have expressed concerns about safety in the vicinity of public health interventions. These concerns have been voiced by community groups in East Harlem and the local community board, both citing public safety as their major issue (Giglio et al., 2023; Johnson, 2023). Residents have reported an increase in criminal activity and disorder in the immediate vicinity of these sites. To date, only Chalfin et al. (2023) have empirically examined these complaints.

Previous research

For several decades, scholars have consistently identified a correlation between heroin consumption and acquisitive crime. For example, Felson and Staff (2017) showed a link between heightened drug usage and increased motivation for engaging in economic crimes. Although the causal direction of the relationship is debated, there is clear evidence that an increase in heroin users in an area often correlates with a rise in crime. Connections such as this are supported by work spanning decades (Bennett & Holloway, 2009; Bennett et al., 2008; Chaiken & Chaiken, 1990; Gandossy et al., 1980).

Concerns about SCSs often center on the potential "honeypot" effect, where these sites might attract more users and thus concentrate drug-related activities and crime nearby (Gordon, 2018; Miller et al., 2010). Such a scenario could lead to the

development of new illicit markets and the expansion of existing ones around SCSs. New and expanding markets may increase systemic violence linked to the operations of illegal markets, along with the acquisitive crime typically associated with drug users (Goldstein, 1985). However, previous work on similar situations, like syringe exchanges, has not found an increase in violence following their introduction (Day et al., 2016; Marx et al., 2000).

Until recently, the research examining the influence of safe consumption sites on crime has been scant. Huey's (2019) scan of the literature on the impact of SCS on local crime, disorder, and well-being, identified four studies from Australia, Canada, and the UK. She concluded that, while noting the limited work in this area, SCS exert negligible effects on crime in their immediate vicinity. For example, using interrupted time series analysis, Freeman and colleagues (Freeman et al., 2005) found no discernible change in the level or trend of reported robberies or thefts following the opening of the SCS. Additionally, analyses of drug-related loitering, key informant interviews, and trends in drug offenses in Kings Cross, NSW (Australia), did not indicate a significant increase attributable to a new SCS. While a small increase in total loitering was observed, both drug-related and total loitering at the front of the SCS returned to baseline levels or below after its opening.

Salmon and colleagues (2007) used survey data to explore how community perceptions of public amenity evolved over time in the vicinity of the Sydney Medically Supervised Injecting Centre (MSIC). There was a significant decrease in the proportion of individuals witnessing public injecting and discarded needles. Administrative crime data was not used in their evaluation. Miller et al. (2010) did use crime data in their examination of the impact of a medically supervised injectable maintenance clinic in London. Although not precisely a SCS, this clinic catered to individuals seeking treatment for substance use disorder. They concentrated on crimes such as robbery, burglary, theft, and various forms of violence against individuals and found no noticeable change in the crime rates in the affected ward before and after the implementation period.

Most recently, Chalfin et al. (2023) published the first paper on the government-sanctioned safe consumption sites that opened in New York City. They examined the impact of the sites on violent crime, property crime, and nuisance calls in the immediate vicinity of the site and the wider neighborhood using a differences-in-differences regression framework. Specifically, they considered "index crimes" or UCR Part I crimes and simple assault for their analyses. Nuisance calls consisted of 911 calls for trespass and 311 calls about homelessness and disorder—specifically rodents, graffiti, dirty and unsanitary conditions, drug and drinking activity, urinating in public, and those 311 calls under the New York Police Department's jurisdiction such as abandoned vehicles and noise complaints.

Using other syringe exchanges as controls, they found that the introduction of SCS had no impact on their measures of crime or nuisance calls. Chalfin and colleagues use a "tessellated hexagonal array" which fixed their analytical distance at about 600 feet from sites for the immediate vicinity, and roughly 1200 feet for broader impacts.[1] They also aggregated the two sites. Our analysis uses similar

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[1] Though their hexagons did not extend the same distance in every direction, so these distances are estimates (see their Fig.1).

crime data and sites, but takes a different approach both spatially and analytically, as explained below. This may clarify why we were able to corroborate three of their four findings, yet found markedly different outcomes for a particular crime problem around one site.

Data and methodology

New York City is the largest city in the United States, with a population of 8.33 million according to 2022 Census Bureau estimates.[2] 37.5% of city residents identify as White (non-Hispanic), 23.1% as Black (non-Hispanic), and 29% as Hispanic. One-third are foreign born, and 17.2% of people live in poverty.

We employ two main data sources. Crime data for January 2017 to the end of February 2023 were accessed from the New York City Police Department complaint data crime data warehouse. We formulated two crime data sets, for recorded property crime and recorded violence. Using NYPD crime classifications, the property data set included burglary, grand larceny, grand larceny of motor vehicle, and petit larceny. The violence data set included robbery, felony assault, and assault 3 and related offenses.

The overdose prevention centers (supervised consumption sites) that opened in November 2021 in New York were housed at already established syringe service program sites (locations sometimes referred to as needle exchange programs in other cities). Therefore, like Chalfin et al. (2023), we employed the syringe service sites that were not chosen for the overdose prevention program as the donor pool for the synthetic control model (described in the next section). In two instances, a pair of control syringe service sites were located so close together that we treated them as one control site, rather than have any local spatial effects overlap. This resulted in two intervention sites (OnPoint NYC East Harlem and OnPoint NYC Washington Heights), and 14 donor pool locations.

Spatial and analytical approach

Geolocated police-recorded crime events were assigned to their nearest overdose prevention center or syringe service program site with a point-in-polygon operation (Chainey & Ratcliffe, 2005) using Theissen polygons created around treatment or control locations (Albrecht, 2007). A network of Theissen polygons (also known as a Voronoi diagram) creates a surface where all spaces within each polygon are closer to the generating site (one of the syringe service or overdose prevention centers) than any other site. Crime events are located within polygons and thus associated with their nearest treatment or control site. This has statistical benefits, because it allows crime events to be associated with their nearest study location and only that location, preserving the assumption of independence necessary for many regression

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approaches (Rogers, 1993). In other words, each crime event can contribute to the aggregate crime count of only one overdose or syringe center.

We applied a distance cutoff to limit the crime events within each Theissen polygon included in the analysis. Previous studies have determined that crime can drop off quickly with distance from a potentially criminogenic facility such as bars (Ratcliffe, 2012), subway stations or schools (Groff & Lockwood, 2014). The pertinent distance of crime concentration varies across studies, and use of a single fixed distance can invite the modifiable areal unit problem (Larson, 1986; Openshaw, 1984). This is the problem whereby the results of an analysis change depending on the spatial scale or method of zonation employed (Green & Flowerdew, 1996). To overcome this issue, we demonstrate our methodology with a cutoff distance of 1000 feet (at an average of about 264 feet per north–south city block—equivalent to approximately four New York city blocks) but report results from 500 to 2000 feet in summary form.[3] In this way, we can be reasonably confident that our results are not idiosyncratic and sensitive to a specific analytical parameter choice.

For this study, we adapt the synthetic control model (SCM) approach. In a quasi-experimental approach for ex-post-facto place-based evaluations, such as natural experiments, SCMs are a relatively recent addition to the spatial policy evaluation toolkit (Saunders et al., 2015). They have been adopted by crime researchers to evaluate, for example, the High Point Drug Market Intervention program (Saunders et al., 2015), homicide in São Paulo, Brazil (Freire, 2018), right-to-carry gun laws (Donohue et al., 2019), police use of force (Goh, 2021), decriminalization of prostitution (Cunningham & Shah, 2018), progressive prosecution (Hogan, 2022), and police retention (Mourtgos et al., 2022). As a generalization of the difference-in-difference framework (Abadie et al., 2010), SCMs are advantageous over time series analysis of comparative cases, because they do not require the selection and justification of a single appropriate control site, a process that is often not formalized (Abadie, 2021). For example, Ratcliffe, Perenzin, and Sorg (2017) had to rely on Los Angeles Police Department members assigned to a local FBI Safe Streets and Violent Crimes task force to determine a control gang area for an intervention focused on the Rollin' 30's Harlem Crips of South-Central Los Angeles.

The SCM approach uses a weighted combination of potential control sites, hypothesizing that, rather than identify a single unit with which to compare an intervention, "a combination of unaffected units often provides a more appropriate comparison than any single unaffected unit alone" (Abadie, 2021: 393). SCM algorithms "use prediction errors, such as mean squared prediction errors (MSPE), to minimize differences between the treated and control series' pre-intervention trends" (Esposti et al., 2020: 2014). As we exploit crime count data, we employ a flexible method developed by Bonander (2021) that creates a synthetic control designed for count values while avoiding distributional assumptions (other than a lower limit of zero) that can render count data problematic. Bonander (2021) explains his method in

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[3] StreetEasy real estate website reports that the average north–south block in Manhattan is 264 feet, equivalent to 20 blocks in a mile. As they report east–west avenue distances are more variable, we translate distances in this article based on 264 feet blocks. Source: streeteasy.com/blog/how-many-nyc-blocks-are-in-one-mile/

Table 1 Control site weights for counterfactual construction across two crime types and two intervention sites at a crime event distance of 1000 feet

Donor pool site	East Harlem property crime	East Harlem violence	Washington Heights property crime	Washington Heights violence
After Hours Project-Broadway	0.08	0.11	0.05	0.1
After Hours Project/ Project-Dekalnd	0.07	0.07	0.07	0
Allian LE Harm Reduction Center	0	0.04	0.02	0.19
Boom Health	0.19	0.08	0.1	0.05
Community Health Action of SI (Port Richmond)	0	0.01	0.1	0.16
Community Health Action of SI (Bay St)	0	0	0.22	0.08
Family Services Network of NY	0.04	0.02	0.09	0.02
Housing Works	0	0.09	0.01	0.06
Housing Works (Bk)	0.08	0.08	0.13	0
Housing Works Positive Health	0.1	0.13	0.11	0.08
Safe Horizon/Harlem United	0.07	0.27	0	0.03
Safe Horizon Street Work	0	0.03	0.04	0.08
St. Ann's Corner of Harm Reduction	0.19	0.31	0.06	0.14
VOCAL-NY	0.17	0.03	0	0.02

detail, so we will avoid repeating his article here; however, we highlight two central benefits to his approach. Traditional SCMs create control series by interpolating a weighted average from the "donor pool" of potential controls (Esposti et al., 2020). This interpolation tends to generate a conservative estimate of the counterfactual in situations where the intervention site is at one or other extreme of the outcome range of donor locations. The Bonander implementation allows for *extrapolation* where necessary, to better approximate the (pre-)intervention outcome. Second, his approach is designed for count data and employs a Poisson ridge regression model to weight controls, negating the need to convert crime counts to rates.

Analytical implementation

The New York safe consumption sites opened on 30th November, 2021, and the data afforded us 257 pre-treatment weeks and 65 treatment weeks. Weighting on the pre-intervention series, Table 1 shows that at a distance limit of 1000 feet, the SCM constructed counterfactuals using a variety of site contributions. As can be seen in Fig. 1, while following the trend of the SCSs, the count synthetic control model approach had less variance than the observed series in the pre-intervention series, but this is to be expected with low volume count data. All four time series (property and violent crime around East Harlem site and the Washington Heights site) show little trend or seasonality in the 257 weeks prior to the intervention.
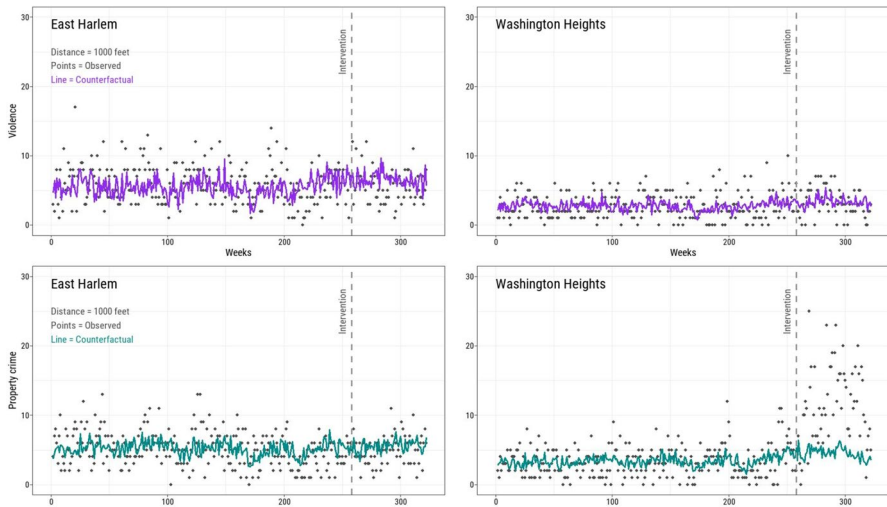
Fig. 1 Observed and counterfactual plots for violence (purple) and property crime (cyan) within 1000 feet of both intervention sites

Results

Graphically, the study results are shown in Fig. 1, where points represent observed data and lines indicate the estimated counterfactual generated by the synthetic control method. We see no impact of the conversion of the East Harlem and Washington Heights locations from syringe service programs to overdose prevention centers in terms of reported violent crime (upper graphs with violence counterfactual in purple). The lower two graphs with the property crime counterfactual in cyan show the results for property crime within 1000 feet of the overdose prevention centers. While there was no effect around the East Harlem site, there is a clear increase in property crime around the Washington Heights location.

To estimate the association with the conversion of the Washington Heights location to an overdose prevention center on property crime, we show results from a cross-fitting procedure for SCM estimators recommended by Bonander (2021) adapted from development by Chernozhukov et al. (2019) (see also Chernozhukov et al., 2021). The procedure estimates an average post-intervention rate ratio with accompanying confidence intervals. Heeding the advice from Abadie (2021: 415) that "the presence of multiple treated units creates some practical problems for estimation," we examine the two New York syringe service program sites separately and accordingly adjust our statistical threshold with a Bonferroni correction ($p < 0.025$, Overall & Atlas, 1999).

The results in Table 2 show that the only significant change in crime after the introduction of the overdose prevention centers is the level of property crime around the Washington Heights site. At this location, property crime increased by an estimated 167% (lower right graph in Fig. 1) at 1000 feet. The increase in crime continued to be statistically significant up to, and including, 1800 feet.

Table 2 Rate ratio and confidence intervals for intervention sites and crime types (1000 feet)

Intervention site and crime type	Rate ratio (confidence interval)
East Harlem (property crime)	0.881(0.575–1.348)
East Harlem (violence)	0.813(0.490–1.349)
Washington Heights (property crime)	2.669(2.258–3.156) *
Washington Heights (violence)	0.998(0.616–1.617)

Note: *$p \leq 0.025$

Discussion

Differences between this study and Chalfin et al.

Our analysis addressed some of the same concerns and uses the same sites as Chalfin and colleagues (Chalfin et al., 2023). In the majority, we echo their findings. We found that the introduction of a SCS did not influence violent crime rates, showing no significant increase or decrease. Unlike Chalfin and colleagues, we did identify a 167% increase in property crime after the introduction of the SCS at the Washington Heights site. Why did we find a different result?

There are numerous likely reasons for the disparity in our respective findings. First, we used significantly different spatial approaches. With Theissen polygons, we were able to assign each crime event to its nearest intervention or control site. This prevented crime events being attributed to treatment or control sites that were within the study bandwidth distance when they were closer to another location. This also prevented single crime events contributing to the count of more than one site. This could occur with crimes located near two or more study locations. Furthermore, in two cases (four sites), two control locations were so close to each other that they inevitably interfered with each other. Along with the use of Theissen polygons, we combined these locations, while Chalfin and colleagues appear to have employed robust standard errors to deal with issues of overlap.

In terms of distance metric, Chalfin and colleagues employed one fixed distance shape for the local vicinity and one for the neighborhood effect (it is not possible to establish the specific distance due to their use of hexagons that do not have a fixed radius). It may be that their results would more closely mirror ours with different choices of hexagon size. In the section above, we report the results for 1000 feet. To account for the modifiable areal unit problem, we also explored a range of spatial distances from 500 to 2000 feet (Fig. 2). As can be seen in Fig. 2, there is a substantial divergence between the counterfactual trend in property crime around the Washington Heights site and the observed value from 900 feet upwards, a divergence that starts just after the site began operation.

A significant portion of the increase in larcenies at the Washington Heights site is linked to a rise in shoplifting incidents at a Target store that opened on August 15, 2021. It had been open for some months but was associated with a visible jump in property crime just after the SCS opened. At just under 900
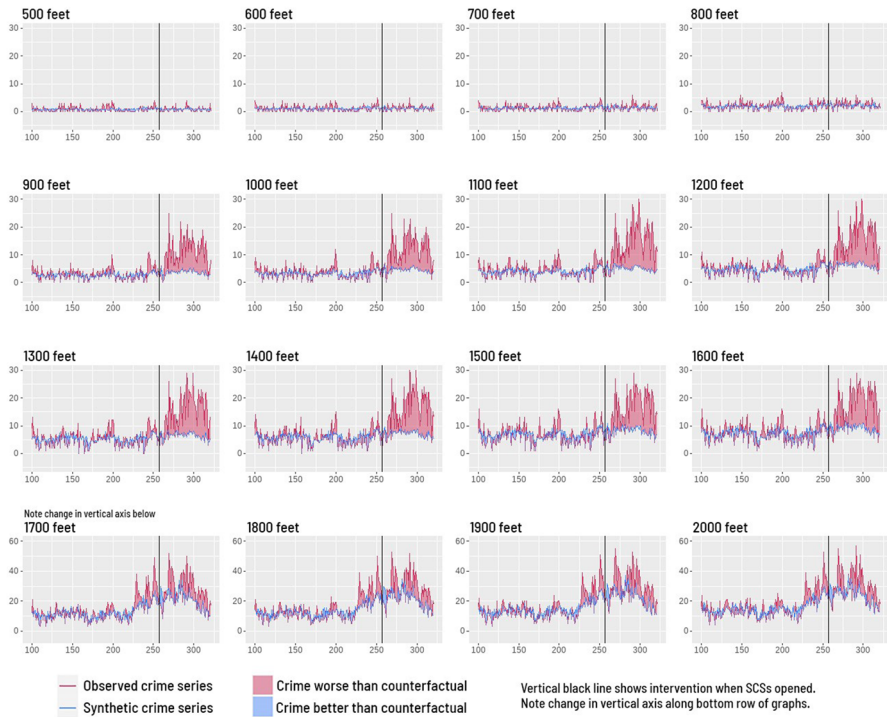
Fig. 2 Observed and counterfactual plots for property crime around the Washington Heights SCS for bandwidth distances of 500 to 2000 feet

feet from the Washington Heights SCS, it seems likely that the Target store (and the crime reported by it evident in Fig. 2) fell outside of the local vicinity hexagon employed by Chalfin and colleagues. We should note that when we extend to 1700 feet, another major store falls within the bandwidth of the Washington Heights SCS. Property crime at that location increased some months before the SCS opened, reflected in the increase in the observed (and counterfactual) series; however, as it predates the SCS, we do not attribute crime there to the SCS.

An additional cause of the result disparity can be attributed to our differing definitions of property crimes. While Chalfin et al.'s study limited its scope to major larceny, defined as theft of over $1000 in value in New York State, our analysis included all reported larcenies, both grand and petit. Petit larcenies include thefts under $1000. We noted a significant rise in petit larcenies, contributing to the overall increase in Washington Heights property crime measured in our study.

Finally, our analytical approach differed. Chalfin and colleagues examined the SCSs together, while we conducted two separate analyses, examining the impact of each site on the local environment independently. This allowed us to identify differing local contexts that may be significant in explaining the results, as we explore in the next section.

Local context

As noted above, the Target store, just a few short blocks from the Washington Heights site, opened on August 15, 2021 (a store that fell outside of the Chalfin and colleagues' local vicinity metric). Noticeably, the spike in larcenies at this store only occurred *after* the nearby supervised consumption site began operating months later.

There are multiple possible interpretations. First, local property offenders could have chosen to entirely ignore the Target store for months and then immediately after the Washington Heights supervised consumption site opened drastically increase shoplifting. Second, it is possible that after operating for several months the store decided to alter its reporting policies, and this policy change drove a spike in reports that happened to coincide with the opening of the SCS. These possibilities require a coincidence of timing.

Third, and we would argue most likely given the timings evident in Fig. 1, this increase in shoplifting incidents can be understood through the lens of changes in criminal behavior and Routine Activity Theory (Cohen & Felson, 1979). Specifically, the opening of the supervised consumption site, coupled with the existing presence of a "target of opportunity," created an environment conducive to increased theft. The Washington Heights site was located close to a crime opportunity full of shoplifting targets that are CRAVED (concealable, removable, available, valuable, enjoyable, and disposable; see Clarke, 1999).

Locating a SCS so close to a large crime attractor may have failed what might be called the "Hamsterdam principle," a reference to the renowned TV series *The Wire*. In the series third season, an illicit drug market nicknamed "Hamsterdam" was tolerated by authorities because it was located well away from residential neighborhoods and business communities where it might have caused crime and disorder problems. In *The Wire*, the Hamsterdam location operated largely free of negative local and spillover effects. The advertising and media attention for the Washington Heights site potentially drew new individuals struggling with substance use to the area, some of whom may have been more inclined towards acquisitive crimes. Unlike in Hamsterdam, the proximity of the existing Target store provided an attractive "target." The media attention may have also brought in new drug dealers, increasing the size of the local illicit drug market and generating more demand for CRAVED products to sell or exchange for narcotics.

It is noteworthy that a similar rise in property crimes was not observed at the East Harlem site, also suggestive that local factors may influence these trends. It remains uncertain whether this disparity was due to differences in citizen crime complaints indicating a real rise in crime, changes in police department or store policies, or to police deployment decisions made at the local precinct level. Despite a decrease in arrests and summonses around both locations as reported by Chalfin and colleagues, police patrols significantly intensified around the East Harlem site a few weeks after the SCS opened, according to NYPD data shown as the red line in Fig. 3. This contrasted with the situation at the Washington Heights site, where no similar escalation in patrols was observed (grey line in Fig. 3).

Consistent police presence in an area is generally associated with crime reduction; however, it can influence the use of harm reduction facilities. Research supports
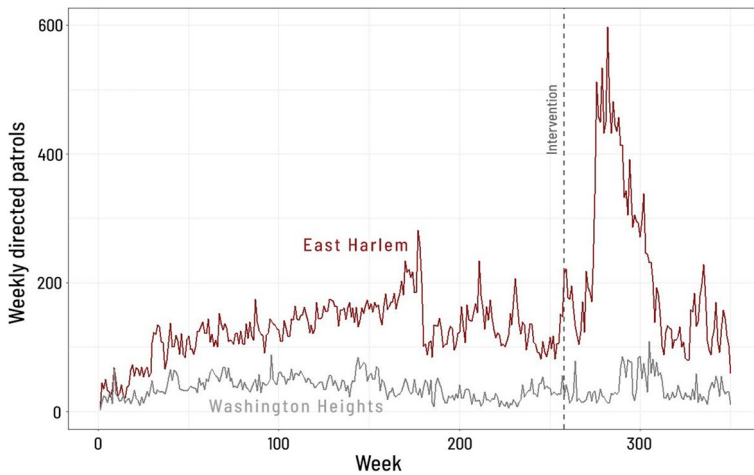
Fig. 3 Weekly NYPD assigned directed patrol counts around the two New York SCSs pre and post-intervention

the effectiveness of targeted police patrols in reducing crime in high-risk areas, even if these patrols are brief (Braga & Bond, 2008; Braga et al., 2014; Koper, 1995; Ratcliffe & Sorg, 2017). However, increased police activities may inadvertently discourage people from accessing harm reduction services. For example, a Vancouver study (Wood et al., 2003) found that the presence of police decreased the use of a needle exchange program. If the increase in police presence around the East Harlem site did suppress desire to take advantage of the supervised consumption site, that might reduce willingness of people who use drugs to come to the area, with the corollary that there would have been less likelihood of an increase in local property crime.

Two decades later, amid changing public and professional attitudes to drug use, it is unclear whether this deterrent effect still applies, but it underscores the need to understand law enforcement's role in reducing crime and its impact on community health and social services.

Conclusion

This study finds a significant and substantial increase in property crime in the vicinity (a 167% increase out to 1000 feet) of New York's Washington Heights supervised consumption site after it converted from a needle exchange location. The result is consistent across multiple spatial bandwidths. We found no increase in violence at the location and no increase in violence or property crime at the other SCS in East Harlem. We attribute this in part to a combination of an easy criminal opportunity at the Washington Heights location, combined with increased police presence suppressing criminal opportunities in the immediate area around the East Harlem site.

We agree with Chalfin et al., (2023: 9/12) that "More research is required to conclude that the 2 [SCSs] in NYC will not be associated with localized increases in crime and disorder over a longer span of time" and add that different methodological approaches may illuminate different aspects of crime and social harm around these sites of significant public interest. Our study (in effect, two independent studies) finds a crime increase around one site, for one crime type, but future evaluations of other locations—if and when they are approved—will enable us to better understand the external validity of the current work. In the case of our study, we find substantive differences between the two SCSs, suggesting that the local context is important in determining any local effects of consumption sites. The existing level of disorder in a location, how they are managed internally, how the local business community reacts, and how the environment is policed are all likely to determine whether drug consumption locations negatively impact neighborhoods.

References

Abadie, A. (2021). Using synthetic controls: Feasibility, data requirements, and methodological aspects. *Journal of Economic Literature, 59*(1), 391–425.

Abadie, A., Diamond, A., & Hainmueller, J. (2010). Synthetic control methods for comparative case studies: Estimating the effect of California's tobacco control program. *Journal of the American Statistical Association, 105*(490), 493–505.

Ahmad, F., Cisewski, J., Rossen, L., & Sutton, P. (2023, December 6). *Provisional drug overdose death counts*. Provisional Drug Overdose Counts. Retrieved February 23, 2024, from https://www.cdc.gov/nchs/nvss/vsrr/drug-overdose-data.htm

Albrecht, J. (2007). *Key concepts and techniques in GIS*. Sage.

Allen, B., & Urmanche, A. (2023). NYC RxStat: Stakeholder perspectives on a national model public health and public safety partnership to reduce overdose deaths. *Evaluation and Program Planning, 98*, 102275.

Bennett, T., & Holloway, K. (2009). The causal connection between drug misuse and crime. *British Journal of Criminology, 49*(4), 513–531.

Bennett, T., Holloway, K., & Farrington, D. (2008). The statistical association between drug misuse and crime: A meta-analysis. *Aggression and Violent Behavior, 13*(2), 107–118.

Bonander, C. (2021). A (flexible) synthetic control method for count data and other nonnegative outcomes. *Epidemiology, 32*(5), 653–660.

Braga, A. A., & Bond, B. J. (2008). Policing crime and disorder hot spots: A randomized controlled trial*. *Criminology, 46*(3), 577–607.

Braga, A. A., Papachristos, A. V., & Hureau, D. M. (2014). The effects of hot spots policing on crime: An updated systematic review and meta-analysis. *Justice Quarterly, 31*(4), 633–663.

Caulkins, J. P., Pardo, B., & Kilmer, B. (2019). Supervised consumption sites: A nuanced assessment of the causal evidence. *Addiction, 114*(12), 2109–2115.

Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. (2023, December 9). *WISQARS leading causes of death visualization tool*. Centers for Disease Control and Prevention. Retrieved February 23, 2024, from https://wisqars.cdc.gov/lcd/

Chaiken, J. M., & Chaiken, M. R. (1990). Drugs and predatory crime. *Crime and Justice, 13*, 203–239.

Chainey, S., & Ratcliffe, J. H. (2005). *GIS and Crime Mapping*. John Wiley and Sons.

Chalfin, A., Del Pozo, B., & Mitre-Becerril, D. (2023). Overdose prevention centers, crime, and disorder in New York City. *JAMA Network Open, 6*(11), e2342228.

Chernozhukov, V., Wüthrich, K., & Zhu, Y. (2021). An exact and robust conformal inference method for counterfactual and synthetic controls. *Journal of the American Statistical Association, 116*(536), 1849–1864.

Chernozhukov, V., Wüthrich, K., & Zhu, Y. (2019). A t-test for synthetic controls. *ArXiv181210820 Econ, Published online June 17, 2019*.

Ciccarone, D. (2017). Fentanyl in the US heroin supply: A rapidly changing risk environment. *International Journal of Drug Policy, 46*, 107–111.

Clarke, R. V. (1999). Hot products: Understanding, anticipating and reducing demand for stolen goods. *Police Research Group: Police Research Series, UK Home Office, Paper, 112*, 48.

Cohen, L. E., & Felson, M. (1979). Social change and crime rate trends: A routine activity approach. *American Sociological Review, 44*(4), 588.

Cunningham, S., & Shah, M. (2018). Decriminalizing indoor prostitution: Implications for sexual violence and public health. *Review of Economic Studies, 85*(3), 1683–1715.

Day, C. A., White, B., & Haber, P. S. (2016). The impact of an automatic syringe dispensing machine in inner-city Sydney, Australia: No evidence of a 'honey-pot' effect. *Drug and Alcohol Review, 35*(5), 637–643.

Donohue, J. J., Aneja, A., & Weber, K. D. (2019). Right-to-carry laws and violent crime: A comprehensive assessment using panel data and a state-level synthetic control analysis. *Journal of Empirical Legal Studies, 16*(2), 198–247.

Esposti, M. D., Spreckelsen, T., Gasparrini, A., Wiebe, D. J., Bonander, C., Yakubovich, A. R., & Humphreys, D. K. (2020). Can synthetic controls improve causal inference in interrupted time series evaluations of public health interventions? *International Journal of Epidemiology, 49*(6), 2010–2020.

Felson, R. B., & Staff, J. (2017). Committing economic crime for drug money. *Crime & Delinquency, 63*(4), 375–390.

Freeman, K., Jones, C. G. A., Weatherburn, D. J., Rutter, S., Spooner, C. J., & Donnelly, N. (2005). The impact of the Sydney Medically Supervised Injecting Centre (MSIC) on crime. *Drug and Alcohol Review, 24*(2), 173–184.

Freire, D. (2018). Evaluating the effect of homicide prevention strategies in São Paulo, Brazil: A synthetic control approach. *Latin American Research Review, 53*(2), 231–249.

Gandossy, R. P., Williams, J. R., Cohen, J., & Harwood, H. J. (1980). *Drugs and crime: A survey and analysis of the literature*. US Government Printing Office.

Giglio, R. E., Mantha, S., Harocopos, A., Saha, N., Reilly, J., Cipriano, C., Kennelly, M., Landau, L., McRae, M., & Chokshi, D. A. (2023). The nation's first publicly recognized overdose prevention centers: Lessons learned in New York City. *Journal of Urban Health, 100*(2), 245–254.

Goh, L. S. (2021). Did de-escalation successfully reduce serious use of force in Camden County, New Jersey? *Criminology and Public Policy, 20*(2), 207–241.

Goldstein, P. J. (1985). The drugs/violence nexus: A tripartite conceptual framework. *Journal of Drug Issues, 15*(4), 493–506.

Gordon, E. (2018). Lessons from Vancouver: U.S. cities consider supervised injection facilities. *WHYY*. Retrieved February 23, 2024, from https://whyy.org/segments/lessons-from-vancouver-u-s-cities-consider-supervised-injection-facilities/

Green, M., & Flowerdew, R. (1996). New evidence on the modifiable areal unit problem. In P. Longley & M. Batty (Eds.), *Spatial Analysis: Modelling in a GIS Environment* (pp. 41–54). GeoInformation International.

Groff, E. R., & Lockwood, B. (2014). Criminogenic facilities and crime across street segments in Philadelphia: Uncovering evidence about the spatial extent of facility influence. *Journal of Research in Crime and Delinquency, 51*(3), 277–314.

Hogan, T. P. (2022). De-prosecution and death: A synthetic control analysis of the impact of de-prosecution on homicides. *Criminology and Public Policy, 21*(3), 489–534.

Huey, L. (2019). *What is known about the impacts of supervised injection sites on community safety and wellbeing?* A systematic review.

Johnson, S. R. (2023). *Safe injection sites have gained a foothold in the U.S. are more on the way?* US News & World Report. Retrieved February 23, 2024, from https://www.usnews.com/news/health-news/articles/2023-02-02/safe-injection-sites-gain-a-foothold-in-u-s

Kilmer, B., Taylor, J., Caulkins, J., Mueller, P., Ober, A., Pardo, B., Smart, R., Strang, L., & Reuter, P. (2018). *Considering heroin-assisted treatment and supervised drug consumption sites in the United States*. RAND Corporation.

Koper, C. S. (1995). Just enough police presence: Reducing crime and disorderly behavior by optimizing patrol time in crime hot spots. *Justice Quarterly, 12*(4), 649–672.

Land, O., Hicks, N., & Jaramillo, V. (2023, August 9). Federal prosecutor hints at shutting down NYC overdose prevention centers. *Fed Prosecutor Says NYC Safe Injection Centers Are Illegal and Hints at Shutting Them Down*. Retrieved February 23, 2024, from https://nypost.com/2023/08/09/federal-prosecutor-hints-at-shutting-down-nyc-overdose-prevention-centers/

Larson, R. C. (1986). The invalidity of modifiable areal unit randomization. *Professional Geographer, 38*(4), 369–374.

Livingston, J. D. (2021). Supervised consumption sites and crime: Scrutinizing the methodological weaknesses and aberrant results of a government report in Alberta. *Canada. Harm Reduction Journal, 18*(1), 4.

Marx, M., Crape, B., Brookmeyer, R., Junge, B., Latkin, C., Vlahov, D., & Strathdee, S. (2000). Trends in crime and the introduction of a needle exchange program. *American Journal of Public Health, 90*(12), 1933–1936.

Miller, P., McKenzie, S., Lintzeris, N., Martin, A., & Strang, J. (2010). The community impact of RIOTT, a medically supervised injectable maintenance clinic in south London. *Mental Health and Substance Use, 3*(3), 248–259.

Milloy, M.-J., Wood, E., Tyndall, M., Lai, C., Montaner, J., & Kerr, T. (2009). Recent incarceration and use of a supervised injection facility in Vancouver. *Canada. Addiction Research & Theory, 17*(5), 538–545.

Mourtgos, S. M., Adams, I. T., & Nix, J. (2022). Elevated police turnover following the summer of George Floyd protests: A synthetic control study. *Criminology and Public Policy, 21*(1), 9–33.

Openshaw, S. (1984). The modifiable areal unit problem. *Concepts and Techniques in Modern Geography, 38*, 41.

Overall, J. E., & Atlas, R. S. (1999). Power of univariate and multivariate analyses of repeated measurements in controlled clinical trials. *Journal of Clinical Psychology, 55*(4), 465–485.

Pardo, B., Taylor, J., Caulkins, J., Kilmer, B., Reuter, P., & Stein, B. (2019). *The future of fentanyl and other synthetic opioids*. RAND Corporation.

Overdose Prevention in New York City: Supervised injection as a strategy to reduce opioid overdose and public injection. (2018). New York City Department of Health and Mental Hygiene. Retrieved February 23, 2024, from https://www.nyc.gov/assets/doh/downloads/pdf/public/supervised-injection-report.pdf

Ratcliffe, J. H. (2012). The spatial extent of criminogenic places: A change-point regression of violence around bars. *Geographical Analysis, 44*(4), 302–320.

Ratcliffe, J. H., & Sorg, E. T. (2017). *Foot Patrol: Rethinking the Cornerstone of Policing*. Springer Criminology.

Ratcliffe, J. H., & Wight, H. (2022). Policing the largest drug market on the eastern seaboard: Officer perspectives on enforcement and community safety. *Policing: An International Journal, 45*(5), 727–740.

Ratcliffe, J. H., Perenzin, A., & Sorg, E. T. (2017). Operation thumbs down A quasi-experimental evaluation of an FBI gang takedown in South Central Los Angeles. *Policing An International Journal of Police Strategies and Management, 40*(2), 442–458.

Rogers, W. H. (1993). Regression standard errors in clustered samples. *Stata Technical Bulletin, 13*(1), 19–23.

Rosen, J. (2020). *Safe injection sites enable drug users and endanger communities | Opinion*. Retrieved February 23, 2024, from https://www.inquirer.com/opinion/commentary/safe-injection-sites-safehouse-philadelphia-20200203.html

Salmon, A. M., Thein, H.-H., Kimber, J., Kaldor, J. M., & Maher, L. (2007). Five years on: What are the community perceptions of drug-related public amenity following the establishment of the Sydney Medically Supervised Injecting Centre? *International Journal of Drug Policy, 18*(1), 46–53.

Saunders, J., Lundberg, R., Braga, A. A., Ridgeway, G., & Miles, J. (2015). A synthetic control approach to evaluating place-based crime interventions. *Journal of Quantitative Criminology, 31*, 413–434.

Tuazon, E., Bauman, M., Sun, T., Weitz, A., DeWalt, J., Mantha, S., & Harocopos, A. (2023). *Unintentional drug poisoning (overdose) deaths in New York City in 2022* (Epi Data Brief 137). New York City Department of Health and Mental Hygiene. Retrieved February 23, 2024, from https://www.nyc.gov/assets/doh/downloads/pdf/epi/databrief137.pdf

Wight, H., & Ratcliffe, J. H. (2024). Aiding or enabling? Officer perspectives on harm reduction and support services in an open-air drug market. *Policing and Society, 34*(6), 535–550.

Wood, E., Kerr, T., Small, W., Jones, J., Schechter, M. T., & Tyndall, M. W. (2003). The impact of a police presence on access to needle exchange programs. *Journal of Acquired Immune Deficiency Syndromes, 34*(1), 116–117.

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