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Hot Spot 'Knarkrondellen'

An evaluation of Police Interventions in Malmö

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Abstract
'Knarkrondellen', which translates to 'the drug roundabout', is a known hot spot for drug trading in Malmö and the police have implemented several measures to fight the open drug market. This paper sets out to investigate the impact that the police interventions, namely enhanced police foot patrols, improved street lighting and the installation of a surveillance camera, exert on the crime rates and the fear of crime at the roundabout. Quantitative data from the police register of reported crimes and police surveys are analyzed. The findings show that the police interventions did not reach the desired preventative effect on crime in the given study period and possibly indicate the occurrence of displacement. Nor did the citizens' feeling of safety and perception of the problems change significantly as a result of the interventions.

Keywords:
Fear of crime, hot spot policing, informal social control, open drug market, surveillance camera (CCTV)

Introduction

In recent years reports of open drug markets have surfaced, and while no hard data on the topic exists, it appears to be a phenomenon that is increasing. Communities and the police internationally have approached open drug markets, with cannabis representing the most prevalent drug being sold, in different ways. The attempts to fight narcotic crimes range from more lenient approaches that tolerate the selling and purchasing of drugs to a certain degree, to zero-tolerance resolutions. A practice applied in many cases is hot spot policing, based on the idea that enhanced surveillance through the police or technical devices (such as cameras) at known hot spots will deter possible offenders (Weisburd, Braga, Groff, & Wooditch, 2017). A concentration of police resources on open drug markets is expected to increase the offenders' perception of detection and sanction certainty and therefore restrain them from committing narcotic crimes (Clarke, 1995). These assumptions were the premise, too, for police measures implemented in the city of Malmö, where two out of the 13 open drug markets (Magnusson, unpublished) are located in central parts of the city. One of them received widespread attention in the media during the summer and fall of 2016 after parents of a local day care center reportedly were threatened when picking up their kids (Dagens Nyheter, 2016; Sydsvenskan, 2016). The open drug market, somewhat jok-

ingly labeled "knarkrondellen" ("the drug roundabout", henceforward termed the hot spot) was located in central parts of the city, next to a major park situated in a night life district. The police have implemented several measures to fight the narcotic crimes and to reduce the related problems at the hot spot. The question is whether these measures bring about the desired preventative effect and contribute to increasing the feeling of safety in the area.

The aim of this project is to evaluate if intervention measures implemented by the police (namely increased police foot patrols, improved street lighting and the installation of a surveillance camera) have contributed to a change in the crime rates at the hot spot. It will be examined whether the measures have an impact on the general criminality as well as specific types of crime with a focus on drug offences. The study further intends to measure the citizens' perception of the police measures and their feeling of safety before and after the implementation of interventions. The goal is to set the development of the actual crime rates in relation to the residents' perception of the situation and to analyze their connection.

Place-based theories of crime

Place-based criminology in general builds on the concept of situational crime prevention, which departs from the premise that crimes can be prevented based on an understanding for- and manipulation of- the circumstances which lead crime to arise (Clarke 1995). There are a number of specific theories suited for understanding place-based strategies to reduce crime, or fear of crime, among which routine activity theory (Cohen & Felson, 1979), rational choice theory (Cornish & Clarke, 2014), and collective efficacy theory (Sampson, Raudenbush, & Earls, 1997) are among the most prominent.

Routine activity theory suggests that crime occurs when a motivated offender, a suitable target and a lacking guardianship intersect in time and space (Cohen & Felson: 1979). When it comes to crime prevention, the police often rely on this concept and attempt to act as guardians in order to"protect potential victims from potential offenders" (Weisburd et al., 2017, 44). Additionally, it has been argued that (next to the police) neighbors or bystanders (Clarke & Felson, 1993, p. 3) as well as CCTV cameras (La Vigne, Lowry, Markman, & Dwyer, 2011, p. 18) can provide guardianship. In terms of the suitable target, however, the application of routine activity to the present study, which largely deals with open air drug dealing and associated disorder, crime and fear, becomes somewhat problematic as the dealing of drugs can largely be considered as lacking a victim (Rossmo, Lu, & Fang, 2011). While routine activity theory may well serve as premise for police interventions, the criminal activity of drug sales and purchases in itself is therefore perhaps better understood through other theoretical perspectives. It should be noted, however, that an indirect victim can be considered from the perspective of passersby who may feel disturbed and/or scared by seeing an open drug market transaction. In the present case this is in fact one of the rationales behind the intervention, the fact that the open distribution of drugs spread fear and discomfort to residents and visitors of the area alike.

Rational choice theory departs from a premise that offenders are rational, and that increasing the effort for crime, reducing the gains, removing excuses, and increasing the risk, that is the certainty of sanction, may result in less crime (Clarke, 1995). For an open drug market, the most obvious type of intervention is the increase of the risk, which can be done through, for example, increasing the natural- or formal surveillance. Formal surveillance deals with the actions of police or other actors with a formal responsibility to deter criminals but can also be augmented through the use of CCTV (Clarke, 1995). Natural surveillance instead deals with the social control that is indirectly or directly performed by

other actors, such as residents or passersby, and can be enhanced through increasing visibility and through encouraging people to engage in crime preventive actions. This is in line with both the capable guardian component of routine activity theory (Cohen & Felson, 1979) and with the collective efficacy theory stating that residential informal social control can be a strong crime inhibitor (Sampson et al., 1997). Collective efficacy is defined as "mutual trust and the willingness to intervene for the common good" (Sampson et al., 1997, p. 919). A lack of neighborhood concern and care is assumed to lead to an increased fear of crime amongst the citizens, resulting in avoidance of the area and neighborhood decline (Skogan, 1986). In the present paper the interventions can largely be considered to correspond to attempts at increasing formal and natural surveillance, in the form of place-based police interventions, CCTV and improved street lighting.

Place-based police strategies and interventions

There are several types of police strategies and tactics that to some extent can be said to have influenced the interventions of interest in the present paper.Policing strategies are often directed at specific geographical 'hot spots' where a cumulation of crime emerged and where the police address the problem by allocating additional resources to the area. This place-based policing strategy focuses on very small units such as streets, blocks or addresses and can range from mere enhanced police presence at the hot spot to full multi-step programs in order to fight criminality (Weisburd & Telep, 2014). The crime-reducing effect of hot spot policing is based on the concept of deterrence and the reduction of criminal opportunity as suggested in routine activity theory (Weisburd et al., 2017). A substantial body of research on hot spot policing has been gathered over the years and systematic reviews suggest that the strategy is effective in preventing crime (Braga, Hureau, & Papachristos, 2012; Braga, Papachristos, & Hureau, 2014; Weisburd et al., 2017). Place-based policing is regarded as especially successful since it appears not to displace crime but rather to generate an effect of diffusion of benefits of crime control (Clarke & Weisburd, 1994; Weisburd et al., 2017). Regarding hot spot policing of drug hot spots in particular it has however been noted that far fewer studies are available and that the evidence is less convincing. The meta-analysis by Mazerolle, Soole, and Rombouts(2007) noted that the only significant effect of drug market hot spot policing was on total offences.

Another policing strategy with a similar goal but a somewhat different focus is 'broken windows policing'. Wilson and Kelling(1982) outlined the 'broken windows theory' in their article on police and neighborhood safety. The assumption is that if a broken window is left unrepaired, this sends a signal that no one cares about the situation and that other windows will as a consequence also be broken in due time (Wilson & Kelling, 1982, pp. 30–31). Thereby, broken windows can be replaced by all kinds of disorder or minor offences such as graffiti, loitering or public drinking that "show a lack of neighborhood concern or vigilance" (Thompson, 2015, p. 44). The main mechanisms behind the theory are collective efficacy and fear of crime (Weisburd, Hinkle, Braga, & Wooditch, 2015). Although Wilson and Kelling(1982) stress that it is not inevitable, it has been argued that this prevalence of disorder and the resulting desertion makes an area more vulnerable to more serious crimes (Thompson, 2015). In order to prevent serious crimes it is therefore in the interest of the police to stop petty crime and antisocial behavior at an early stage, something that is also stressed by Innes (2014) in his discussion of some crimes being signal crimes that have a greater effect on neighborhood residents. Braga, Welsh, and Schnell(2015) report a significant association between policing disorder strategies and a reduction in crime. They stress,

however, that this is only true for certain types of policing strategies: programs with a community and problem-solving focus were considerably more successful than aggressive zero-tolerance approaches.

Besides hot spot and broken windows policing, community-oriented policing (COP) has emerged as alternative policing strategy."In its simplest form, community policing is about building relationships and solving problems"say La Vigne et al.(2011, p. 4).Gill, Weisburd, Telep, Vitter, and Bennett's (2014) meta-analysis of studies examining the effects of community policing finds evidence that the policing strategy improves the relationship between the police and the citizens and enhances the trust in the police work. It does, however, not appear to decrease crime or have a preventative effect on criminality. Interestingly, they also report that COP has no effect on the citizen's fear of crime, despite the improvement in perceptions of disorder and police legitimacy. In conclusion they discuss whether a collaboration between the police and the community can be achieved in areas where they have no pre-existing relationship and low collective efficacy, and state that the"full implementation of COP in a police department involves a long-term, multi-stage process"(Gill et al., 2014, p. 421). Another effect of community-oriented policing is its enhancing influence on the citizens' willingness to report crime. Gill et al.(2014) call this increase in reports by the public a"reporting effect" which covers actual declining crime rates. Community policing was also studied separately in relation to drug hot spots by Mazerolle et al.(2007), but with a slightly different definition, labeled community wide policing and with a focus on cooperation with other agencies on a larger community scale. In their meta-analysis they find significant reductions of drug related-, disorder- and total crime, but based on a very small sample of only one study for each outcome.

In a Scandinavian context, Olsen(2017) recently depicted the"dilemmas of police work in open drug scenes" (Olsen, 2017, p. 151) by portraying the back and forth between punitive and harm-reducing police strategies in Oslo over the years. Olsen(2017) outlines that although a combination of harm reduction and restrictive measures appears to be the most successful approach to challenge drug crimes, Oslo and several other European cities nowadays revert to a more punitive strategy. For the time being, Copenhagen has been considered to be an exception, as the Copenhagen police follow a more liberal track regarding drug scenes following a new legislation from 2012 (Olsen, 2017). It is, however, unclear whether this new strategy is effective in practice regarding public order and public health problems (Houborg, Frank, & Bjerge, 2014). It further needs to be noted that this more lenient approach mainly applies to heroin and cocaine markets (ibid.), while at the same time Danish police employ CCTV in the open drug market of Christiania to monitor cannabis sales, in the course of which a large crackdown was initiated in 2004 (Moeller, 2016, 2018). This implies that while Copenhagen may be somewhat less punitive with regard to certain drugs than Oslo, it still has a focus on intense policing.

The efforts directed at the hot spot in Malmö can certainly be characterized as place-based, since they are concentrated on a rather small geographic location. The police further include elements of hot spot policing through enhanced patrols in the area as well as COP by attempting to include the neighborhood in their activities. The continuous removal of graffiti and garbage at the roundabout follows the logic of broken windows theory. While the police interventions can thus be understood through the lens of the above-discussed policing strategies, the efforts at the roundabout additionally involve specific interventions that deserve due discussion in themselves. Below we will therefore briefly outline findings from prior research on the effects of implementing CCTV and street lighting on crime.

CCTV

CCTV (closed-circuit television) cameras are a main tool used in crime prevention in various countries and contexts, and a meta-study has shown that they can be effective in preventing some types of crime under some circumstances, with car parks noted as the context with the best effect (Welsh & Farrington, 2009). Some cameras merely record statically or following a specific programmed tour (passive), but others are monitored and controlled by the operator (active) at specific times or around the clock (La Vigne et al., 2011). Modern surveillance cameras are not static and targeting one single area all the time, but can pan, tilt and zoom and sometimes they are even mobile, meaning the cameras are not fixed but can be deployed and redeployed as needed by the operator (Gill & Spriggs, 2005, pp. 1–2).

In theory, it is assumed that the presence of a camera deters possible offenders from committing a crime and therefore acts preventive. This should work best on planned crimes rather than impulsive ones, which fits the present study as the sales of narcotics should be considered a planned crime. In addition, the video footage can be used as evidence in prosecutions and assist in the identification and sentencing of offenders (Ashby, 2017). With actively monitored cameras an additional potential mechanism is that the police can identify situations that may develop into a crime and intervene before the crime occurs, or alternatively respond faster to the crime after watching it in real time (Piza, Caplan, & Kennedy, 2017; Piza, Caplan, Kennedy, & Gilchrist, 2015). This approach has for instance been used at an open drug scene in Oslo, where the police used actively monitored cameras in order to track down major drug pushers and to prevent"the recruitment of young addicts" (Lomell, 2004, p. 350). Ideally, criminal behavior is not only deterred in the area covered by the camera, but also in other areas and for different types of crime. Quite a substantial body of research has been gathered regarding the use of public surveillance. The results of the studies are, however, inconsistent and although a tendency towards positive results exists, many aspects are left unanswered. The most striking hereby is that most studies focus on whether the cameras work as a deterrent and prevent future crimes, but not on why they do so. Few studies have looked into the causal mechanism when it comes to surveillance cameras in crime prevention (Piza et al., 2017). An exception is the work by Pawson and Tilley(1994), who attempt to explore the mechanisms and state that"CCTV does not remove offenders by catching them. […] It does seem that prospective offenders are (at least for a while) deterred by the (mistaken) notion that risk is increased by the operation of CCTV" (Pawson & Tilley, 1994, p. 303). Until recently the evidence on CCTV increasing the risk of offenders being apprehended was indeed very slim. Ashby(2017) however noted substantial increases in the clearance rate for crimes covered by the British Transport Police when CCTV footage was available and usable. While this remains to be replicated in other contexts, it suggests that the improved quality of footage may mean that CCTV can have meaningful impacts on crime clearance rate, and in turn on the risk of apprehension and certainty of punishment.

Most of the research on cameras in crime prevention is conducted in the UK and the US (Welsh & Farrington, 2009), but a small number of Swedish and Norwegian research does exist: Mikael Priks conducted Swedish studies on the effects of public surveillance on criminal behavior in the subways of Stockholm (Priks, 2015) and on unruly behavior in football stadiums throughout the country (Priks, 2014). Both his analyses show a reduction in antisocial behavior that can be attributed to the cameras. Regarding the stadiums he finds that "games in stadiums with surveillance cameras had approximately 65 percent less unruly behavior inside the stadiums relative to before the installation" (Priks, 2014, p. 1162). When

looking at the Stockholm subway the results are similarly positive: the crime in the city center stations decreased by 25 percent after the installation of cameras (Priks, 2015). The effects in these results are surprisingly strong compared to the rather low to medium effects in research from the UK or US. This poses the question whether cameras are simply more effective in a Swedish setting or whether there are other effects that influence the results. There are, however, a couple of studies on the impact of adding actively monitored CCTV to hot spot policing efforts in Sweden that find much weaker effects. Marklund and Holmberg(2015) examined the effect of actively monitored CCTV combined with hot spot policing in the two main night life districts of Stockholm and found no significant crime reducing effect. Gerell(2016) similarly considered the introduction of actively monitored CCTV at a night life hot spot in the city of Malmö and found that it had no impact on the rate of assaults. In the case of the drug hot spot in Oslo, Lomell reports that the operation"to 'clean up' the drug scene in Oslo" (Lomell, 2004, p. 355) failed and that the CCTV systems were instead mainly used to exclude marginalized groups from the public space.

Next to the advantages that public surveillance may provide, it naturally does not come without limitations. Several problems have been identified regarding the use of surveillance cameras that include technological and societal issues. A common critique is that the cameras have poor visibility at night or in bad weather and low resolution quality, resulting in unfeasible video footage (King, Mulligan, & Raphael, 2008; La Vigne et al., 2011). This may be less of a problem in the future since many modern cameras are equipped with infrared and night vision technologies (Welsh & Farrington, 2004, p. 501), but it is certainly a matter of time and budget whether all camera systems are endowed with the newest technology. The camera in focus in this study, however, is up-to-date and equipped with new technology allowing for clear video recordings.

Ratcliffe(2006) brings up the argument that the installation of cameras might actually increase the people's fear of crime since it suggests that there is a crime problem in the area. It has, however, been shown that people tend not to avoid places where cameras were installed (Gill & Spriggs, 2005, ix), suggesting that the argument is implausible. Yet, the fact that people are not discouraged from visiting places with cameras does not tell us anything about their attitude. Informal social control can only be effective when locals de facto act preventively. If they continue using a public space but are discouraged from intervening in antisocial or criminal behavior the mechanism fails. The guardians that routine activity relies on are not capable of preventing crime in that case, whether it is out of fear of becoming involved or plain disinterest. King et al.(2008) further observe that surveillance cameras can deter witnesses from cooperating with the police as they assume the incident is recorded and no further evidence necessary.

Street lighting

A method often overlooked in crime prevention work is the improvement of street lighting to increase natural surveillance (Clarke 1995). It generally entails the improvement of lighting in public streets and residential neighborhoods but can also include the lighting of parking lots, public areas such as shopping malls or campuses or private facilities in order to reduce crime (Clarke, 2008). It requires cooperation between the police and city authorities that are responsible for the installation of lighting. Welsh and Farrington mention that "substantial funding was poured into CCTV schemes on the basis of questionable research, while an effective alternative in the form of improvements to street lighting – supported by high quality research – was widely known" (Welsh & Farrington, 2004, p. 500).

The effect of improved street lighting as a form of natural surveillance is partly based on a situational approach, partly on informal social control. According to Welsh and Farrington(2004), the "situational approach to crime prevention suggests that crime can be prevented by environmental measures that directly affect offenders' perceptions of increased risks and decreased rewards" (Welsh & Farrington, 2004, p. 500). The increased likelihood of being captured and the increased opportunity costs of criminal activity due to more light are expected to act as a deterrent (Clarke, 2008; Doleac & Sanders, 2015). Additionally, improved lighting can lead to an increased social activity of the residents outside their homes, thus enhancing informal social control and in consequence preventing criminal activity (Clarke, 2008).

A problem in measuring the effects of this method to prevent crime is that it is often accompanied by other interventions such as foot patrols or camera surveillance. It can be difficult to disentangle the impact of the various measures and their impact on criminality. Nevertheless, research was able to show the beneficial effects of improved street lighting. Farrington and Welsh(2007) examined several studies on the effect of street lighting in a literature review and find mixed results. While four studies from the US found that street lighting was effective in decreasing crime, the four other US studies show no effect. British evaluations are somewhat more positive, showing that street lighting indeed reduced crime during daytime as well as nighttime. Farrington and Welsh(2007) conclude that their results support the theory of informal social control in explaining the effect of street lighting rather than deterrence as in the situational approach.

Research setting

The following section integrates knowledge gained from previous research into the context of this research project. Background information about the area in focus is provided and accompanied by a description of the specific police interventions at the roundabout that are to be evaluated.

The area in focus in this work is a roundabout located in Möllevången, a district in the southern inner city of Malmö, Sweden. Next to mainly residential buildings, the traffic circle is neighbored by Folkets Park (an open park and leisure area), a family house and preschool, a small café and a recycling station. The park wall facing the roundabout is one of Malmö's legal graffiti walls. The adjacent street heading from west to east is Kristianstadsgatan, Norra Parkgatan exits to the north and Södra Parkgatan to the south. As a control area, the study will look at the larger area of Möllevången in order to compare crime rates between the roundabout and the entire district.

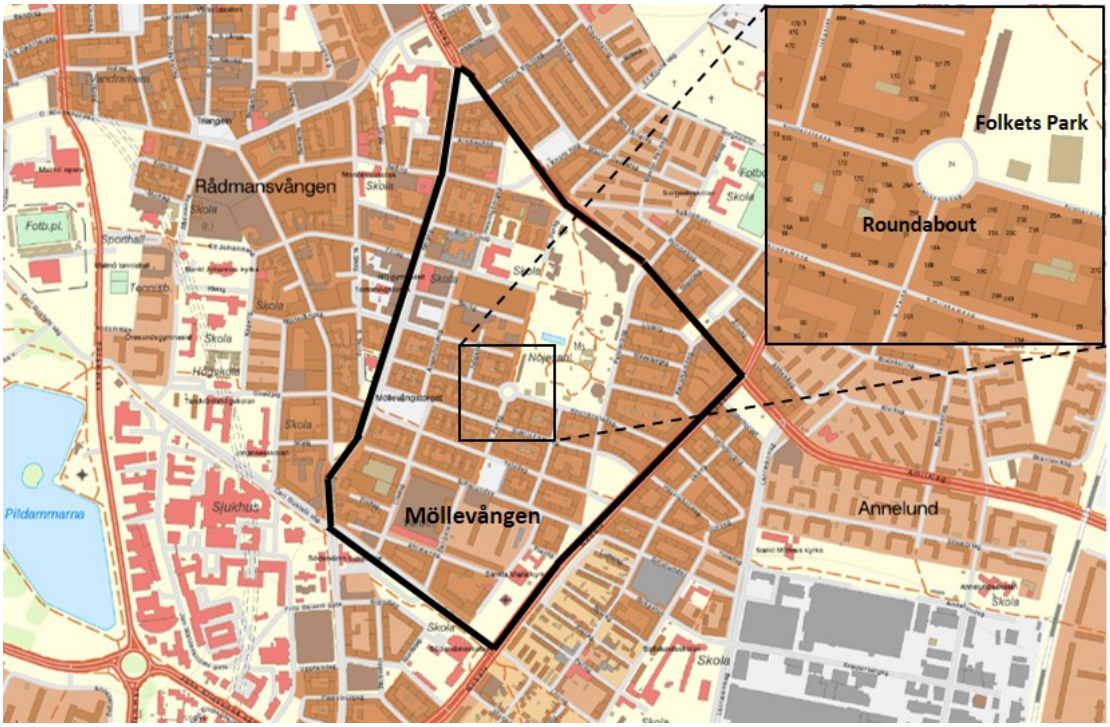

Figure 1: Map over Möllevången and the roundabout (Lantmäteriet, 2017)

The area: Möllevången

The area, also called 'Möllan', is characterized by its multicultural and ethnically diverse residents, restaurants and shops as well as multiple bars and clubs. Next to residential buildings the quarter's two main sites are Möllevångstorget, a large square accommodating a daily food market and several bars, and Folkets Park, a leisure area for both children and adults. Originally a working-class neighborhood, the district has been growing in the past and today houses over 11,000 people (Malmö stad, 2015), whereof more than half have a post-secondary education (54%; (Malmö stad, 2015). According to Malmö stad's (2015) statistics, about 14% of those aged 20 or older have at least one child under 18 living with them. The unemployment rate was 4,8% in 2014 compared to an overall unemployment rate of 3,6% in Malmö. The fact that cannabis and other drugs have been sold openly at the roundabout for quite some time caused its nickname 'Knarkrondellen'.

Why the roundabout? In 2016, Fredrik Meyer from Lund University performed a study on why the traffic circle is an attractive place for drug transactions with a focus on its spatial structure. It is argued, that in order for a place to be attractive for drug transactions, it needs to be located close to well-known gathering places (such as shops or bars) but away from the main routes of the people. This way the risk of being discovered and apprehension is lower for both seller and buyer (Meyer, 2016). Since the roundabout is placed close to several big streets, bus stops and meeting places it is easily accessible and especially since the media extensively reported about the problem it is well-known by the people that drugs are available there (Meyer, 2016). Meyer states that the balance between the geographical location and possible distractions are ideal at the roundabout (2016, p. 28).

Interestingly, it seems that informal social control, which is expected to reduce crime, does not have an effect at the traffic circle. According to Meyer's (2016) informants the sellers are ignoring the high number of people passing by (that could act as an informal social

network) and they continue providing drugs as there seem to be no consequences for them. Although a low police visibility was criticized by the informants, Meyer (2016) points out that it is not only the police but other individuals using the public space that are responsible to build a social control network that can act as capable guardian. It is, however, assumed that the fear of passersby of testifying has increased and as they are not directly affected by the drug transaction they choose to still use the streets and public space but to look away instead of intervening (Meyer, 2016). Additionally, no support for the broken windows theory was found in the study since the number of graffiti and physical disorder – despite the effort of the responsible to remove them – remained high but this did not seem to have any lowering impact on the number of people using the streets and area as the theory suggests (Meyer, 2016). What is left unanswered by Meyer is the question whether this disorder might nevertheless have influenced the peoples' willingness to intervene and therefore exerts an indirect lowering effect on the informal social control.

The combination of being located in an area that attracts many potential customers but also allows for an undisturbed transaction, and a weak informal social network where passersby look away is assumed to be the reason for the roundabout to be an attractive drug selling location (Meyer, 2016).

The police interventions. The police efforts undertaken at the roundabout are not only in accordance with one policing strategy but rather represent a combination of the policing strategies described before. Firstly, the measures are directed specifically at a crime hot spot and the additional allocation of human and technical resources to a small area clearly defines the interventions as place-based. Secondly, elements of broken windows policing can be recognized. The Police Department Malmö carried out a so-called 'trygghetsvandring' in 2016, which translates to 'safety walk'. The goal with these walks through the neighborhood of Möllevången was to identify places that are perceived as unsafe and need to be taken care of, objects that need to be fixed such as broken street lighting, and the occurrence of littering that needs to be removed. The intention to maintain the physical order in the area is also mirrored in the housing management's and City of Malmö's effort to remove illegal graffiti and litter on a regular basis. Lastly, the community aspect is reflected in the police's attempt to include the residents, housing management and shop owners in the area in a dialogue with the citizens ('medborgardialog') through surveys and meetings. The promises to the citizens ('medborgarlöfte') that the police made in fall 2016 are based on this dialogue and the safety walks. In cooperation with the City of Malmö they pledged to implement measures to increase traffic safety in the area, to employ social workers who work with the youth and especially to take action against the open drug trafficking by showing greater presence in the area (Police Department Malmö, 2016). Both the dialogue with the people as well as the safety walks are intended to be repeated and continued. In fall 2016 a range of actions were put in place, mainly in order to prevent the sale and purchase of narcotics. First, police foot patrols were reinforced by up to 22 additional officers (both uniformed and undercover) from the 17th of November 2016 on. The installation of stronger street lights was then carried out on the 28th of November 2016 and lastly a surveillance camera was installed on the 16th of December 2016. One of the main goals next to a general prevention of drug trafficking in the area was to detain the dealers from operating right in front of the door of a preschool located at the roundabout where the children could see them.

The surveillance camera located at the roundabout at Folkets Park was implemented following the dialogue between the police and the residents during which the desire for a camera was expressed by the residents. It has been installed and is actively monitored (though

not always) by the Malmö Police Department and the video surveillance is clearly indicated through signs, as required by Swedish law. The video camera is a semi-covert dome camera that is attached to a street lamp pole. The lamp is located exactly in the middle of the roundabout and the viewshed of the camera therefore covers the entire square including parts of the adjacent streets and buildings. Due to the opaque housing and the dome-like shape, the line-of-sight of the camera is not visible. It has been proposed in the literature that those models whose line-of-sight is not easily determined have a greater deterrent effect than traditional overt cameras with an obvious view line by producing "a sense of omnipresent monitoring of the viewshed at all times"(Caplan, Kennedy, & Petrossian, 2011, p. 261). Despite the technical capability to do so, the video footage is, however, not actively monitored at all times

Data and methods

This project conducts an evaluation of the efforts made by the police to reduce crime at the roundabout at Folkets Park in Malmö. It is realized in collaboration with the Police Department Malmö and the information on the intervention measures, as well as the data were provided by the police officer ('kommunpolis') in charge for the inner-city area, where the roundabout is located. To get as clear a picture as possible, the above review of previous literature is used as knowledge base and combined with data from the police and additional interviews and observations. Crime rates from the police register before and after the implementation of improved street lighting, additional police patrols and a surveillance camera at the roundabout are compared. Surveys conducted by the police in 2016 and 2017 with residents regarding their feeling of safety and perception of problems in the area are analyzed. Additional interviews with residents and on-site observations complement the analysis. This triangular method with a combination of literature, quantitative data and qualitative interviews and observations allows for a broad understanding of the situation and changes due to the interventions.

The time period examined in this paper begins on the 17th of November 2016 (the date when enhanced police patrols were implemented as the first measure) to the 29th of March 2017. This results in a period of 19 weeks. As comparison, the same time frame in the previous year is used. This way the problem of bias through seasonal variation is avoided, since crime rates at the roundabout are higher during the summertime.As target area, the roundabout and the adjacent streets (Norra Parkgatan, Södra Parkgatan and Kristianstadsgatan) are used.The surrounding area of Möllevången, defined as the area within the streets of Amiralsgatan, Bergsgatan, Södra Förstadsgata, Spårvägsgatan and Nobelvägen, functions as control area. Although another control area which is not in the direct vicinity of the target area and where a camera has been implemented for a longer time, would have been desirable for this study, there is no such place that mirrors the combination of residential area, public space and nightlife in Malmö. For example, the cameras at Stortorget, another crime hot spot in Malmö, are only monitored by the police during weekend nights (Gerell, 2016) and are thus not suitable for a comparison. Therefore, the decision was made to compare the roundabout to the adjacent area. No buffer or displacement area is defined for this study, since the places that are most likely to be buffer zones and to where crime could be displaced are in the same streets adjacent to the roundabout, just further down the street and outside the field of view of the camera. As only the street names but no house numbers or more specific locations are accessible in the data for this study, it is not possible to differentiate between target and buffer area in the same streets. As mentioned above, the sur-

rounding streets in the same neighborhood are however operating as a control area. That way effects originating from the police measures can be distinguished from more general changes in crime rates or types that might influence the results in both areas.

Data. Two main data sources are used to examine the impact of police interventions: data from the police register and surveys conducted by the police. In addition, qualitative interviews with residents at the target area and observations of the roundabout were performed to gain further insights.

Police register data

The police register data used for the quantitative analysis are provided by the Police Department Malmö. They consist of entries from the data management system RAR (Rationell AnmälningsRutin). RAR is a case management system registering filed police reports that is also the basis for the statistics on reported crimes (Brottsförebyggande rådet [Brå], 2015). The data are obtained for the following time periods:

Time period 1: 17/11/2015 – 29/03/2016
Time period 2: 17/11/2016 – 29/03/2017

The more than 2200 entries in RAR include over 170 different types of crime and antisocial behavior. To make the information more comprehensible and suitable for statistical analysis they are grouped into weeks (19 weeks per period, starting with the 17th of November each year) and categorized according to the type of crime. This results in 11 categories including theft, robbery, traffic offences, drug offences, crimes against the person (including harassment and violence), fraud, vandalism, weapons, sexual assault, no crime and other. For the analysis, the 'fraud' and 'no crime' categories were excluded as well as crimes that occurred inside buildings and therefore are not expected to be affected by the police measures (60 cases excluded in 2015/16, 77 cases in 2016/17). This results in n=1102 reported incidents for time period 1 and n=1029 in time period 2 that were included in the analysis.

Police survey. The Police conducted two surveys (one before and one after the implementation of the intervention measures) regarding the citizens' feeling of safety and perception of problems in the Möllevången area. Both times the interviews were carried out in Norra Parkgatan at the entrance to Folkets Park by police officers and volunteers recruited by the police and in the Swedish language.

The initial survey (N=135) was carried out on Tuesday the 17th of May 2016. The follow up (N=129) was undertaken on Thursday the 6th of April 2017 in the afternoon. The original questionnaire included six questions and asked amongst others whether the respondent experienced something in the area that makes him/her feel unsafe, what the biggest problems in the area were and what the respondent would want the police to focus their efforts on. The follow-up questionnaire has in the course of this project been extended by three questions regarding the respondents' awareness of the camera and their perception of the development of crime rates and the feeling of safety within the preceding year.

Qualitative interviews and observations. In addition to the police survey, a limited number (N=4) of semi-structured interviews have been conducted which lasted between 17 and 42 minutes. Informant 1 (20170417a), 2 (20170417b) and 3 (20170419) are residents living in a building adjacent to the roundabout and Informant 4 (20170418) is the former head of the preschool. All interviews were conducted face-to-face. Observations were carried out once a week on six occasions in order to obtain a better picture of the physical disorder at the roundabout and to follow up on how the responsible housing management and the City react to acts of vandalism and illegal graffiti.

Limitations. The RAR dataset repeatedly lists two or three entries with the same time and place stamp regarding narcotic offences, such as "drug possession" as well as "drug use" or "drug transaction". It cannot be read from the dataset whether these entries refer to one individual for several offences or to multiple people, such as a group of friends, for one offence each. Therefore, they are included in the analysis as separate incidents. Although this might lead to an overestimation of narcotics offences compared to other types of crime, it does not affect the comparison between the time periods or between target and control area since the relative change stays the same. Another limitation of the present study relates to the fairly low statistical power, in particular when looking at specific crime types, where in some cases only a handful of incidents were recorded in each time period respectively.

As mentioned before, the imprecise demarcation of the target area is a limitation of this study. The fact that the available police register data are street-dependent, meaning the entries on offences only include street names but no more specific information such as house numbers or intersections, makes it impossible to exactly account for offences at the roundabout. Instead, the results are based on streets that actually exceed the roundabout area, which is why no displacement area could be defined for this study. Realizing a more precise target area would have been possible given a larger time frame and extended technical resources. Future research should aim for a demarcation of the target area as concisely as possible in order to be able to also test for displacement effects.

Ideally, participants for a survey are chosen randomly, so that every individual has the same chance of getting chosen for an interview (Diekmann, 2016). Although the police surveys attempt to reach a diverse group of respondents, the sample cannot be labeled randomized. The timing of the survey on a weekday in the afternoon brings about a specific type of respondents that are at the roundabout during that time. It can, for instance, be assumed that most employees are still at work at that time which means they are underrepresented in this survey. On the contrary, groups of people that are free during the day, such as the elderly, might be overrepresented. Since especially the elderly usually experience a higher fear of crime (Ceccato & Bamzar, 2016) the results might be biased and the fear overestimated.

Research design

This study distinguishes between police-induced and non-police-induced, or public reported, offences. Police-induced crimes are those that are typically detected through proactive police work, such as person and vehicle stops. Consequently, enhanced patrols will call forward a higher number of reports of these offences, which is also referred to as"reporting/recording bias", meaning that "*reported* crime rates may increase with the size of the police force, even if the *true* victimization rate is falling" (Levitt, 1998, pp. 62–63). Ariel, Weinborn, and Sherman(2016) add that these proactively generatedcrime reports by the police are "essentially *outputs* rather than treatment outcomes"(Ariel et al., 2016, p. 292). In this study, narcotics offences, weapon crimes and traffic offences are considered police-induced. The increase in police activity and visibility in the target area is, on the other hand, expected to have a deterrent effect on non-police-induced crimes and to lead to a decrease in those (namely crimes against the person, theft, robbery, vandalism, sexual assault and others). These types of offences are typically reported by the public, more specifically by victims or witnesses.

Based on these considerations three hypotheses regarding the development of crime rates at the roundabout in relation to the control area are proposed: it is expected that after

the implementation of police interventions (H1) total crime rates are subject to minor change, (H2) police-induced offences increase and (H3) public reported offences decrease. In addition, a fourth hypothesis was formulated in relation to the police survey: it is expected that (H4) perceived problems decrease in the target area.

The data are analyzed with SPSS (IBM SPSS Statistics 22, IBM, New York, US). A *t*-test in both the target and the control area is conducted to describe changes in overall crime rates and specific crime types. Difference-in-difference tests are run to compare the target and the control area over time.

Difference-in-difference. A difference-in-differences (DiD) estimator was calculated to estimate the effect of the police interventions. The DiD estimator allows us to compare the differences in the mean crime rates between the target and the control area before and after the implementation of police interventions (2015/16 vs. 2016/17) (Gertler, Martinez, Premand, Rawlings, & Vermeersch, 2011). Although the difference in means can simply be calculated by hand, running it in a regression allows obtaining standard errors and the significance level of the effect.Therefore, three dummy variables have been created for the area, the year and the product of area and year.[1] To obtain the DiD estimator, the following regression was run (Columbia University, 2013; Field, 2013):

$$y_{at} = \beta_1 (area) + \beta_2 (year) + \beta_3 (area \cdot year) + \varepsilon$$
$$y_{at} = \beta_1 \gamma_a + \beta_2 \lambda_t + \beta_3 T_{at} + \varepsilon$$

Coefficient	Calculation
β_1	$M_{Target/Pre} - M_{Control/Pre}$
β_2	$M_{Control/Post} - M_{Control/Pre}$
β_3	$(M_{Target/Post} - M_{Target/Pre}) - (M_{Control/Post} - M_{Control/Pre})$

Thereby, y_{at} is the outcome variable 'crime rates' and ε the error term (Field, 2013). The parameter β_1 measures the mean difference in crime rates between the target and the control area *before* the implementation of interventions (difference between the two groups pre-intervention). The coefficient of the time variable, β_2, measures the effect of the interventions on crime rates *in the control area* before and after the implementation of interventions (time trend in the control group). β_3 is the difference-in-differences estimator we are interested in, which reports the difference in changes over time (Columbia University, 2013). Put more simply: the parameter β_3 allows us to identify the effects of the police measures on crime including area and time period concurrently.

Results

To answer the question whether the interventions implemented by the police had an effect on general crime rates as well as specific types of crime we first describe the results of the difference-in-difference (DiD) analyses as well as the *t*-tests that were conducted. Additionally, findings from the police surveys regarding the citizens' perception of the problems will be presented.The data are complemented by statements from the interviews conducted with residents at the roundabout.

1. γ_a as dummy for the area (1=roundabout, 0=control area), λ_t as dummy for the year (1=2016/17, 0=2015/16) and $T_{at} = \gamma_1 * \lambda_t$ as dummy for the product of γ_a and λ_t (1=if γ_a=1 *and* λ_t=1, 0=all other cases).

The results from this study support the first hypothesis, with no substantial overall change in crime at the hot spot. There was an overall decrease in crimes of 9% at the target area and 6% in the control area. The DiD analysis results in a relative DiD value of –0.03 (Table 1), meaning that the mean reduction in crime rates from pre- to post-interventions was 3% greater at the target area than in the control area. This DiD estimator however is non-significant and thus interpreted as no change (p=.547).

Table 1: Mean and relative differences in means of total no. of crimes and difference-in-differences estimator β_3

	2015/16	2016/17	Difference
Control area	*M*= 42.95 (1)	*M*= 40.42 (0.94)	–2.53 (β_2) (–0.06)
Target area	*M*= 7.84 (1)	*M*= 7.16 (0.91)	*–0.68 (–0.09)*
Difference	–35.11 (β_1) (0)	–33.26 (-0.03)	1.85 (β_3) (–0.03)

Looking at the mere frequency of specific types of crime, an increase can be observed for robbery and drug offences at the roundabout (Figure 2). An outstanding increase (600%) occurs regarding crimes violating the weapons act. In contrast, acts of theft, vandalism and crimes against the person decreased at the roundabout. In the control area, the overall number of crimes decreased by 6% from 2015/16 to 2016/17. While weapon crimes, robbery, and drug offences increased, a decline in vandalism and theft can be noted.

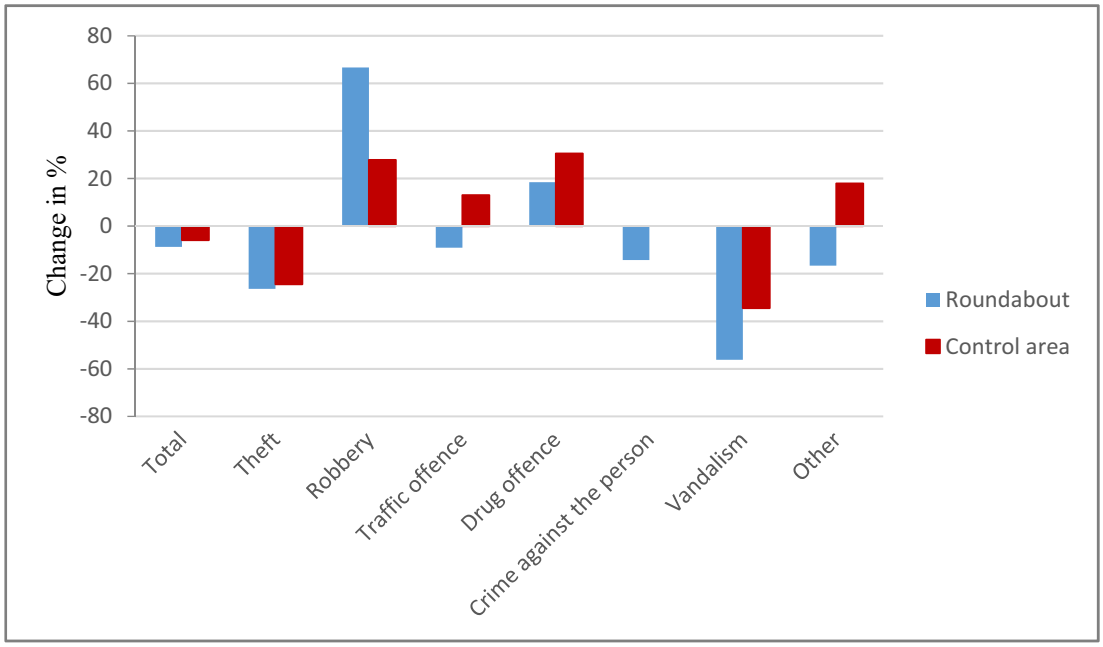

Figure 2. Change in crime rates for different types of crime from time period 2015/16 to 2016/17 in % (without weapon crimes and sexual assault).

In order to disclose which of these changes in frequency between the time periods 2015/16 and 2016/17 are significant, paired t-tests[2] were conducted for both areas separately. In the target area, a significant increase in the mean number of criminal acts can be found for vio-

2. Paired t-tests were conducted since the 'experimental group', the roundabout, stayed the same for both measurements (Field 2013). However, independent t-tests were conducted as a robustness test but no differences in the significance levels were found.

lations of the weapons act (t=–2.364; p=.030). At the control area, a significant development can be noted for the decline in theft (t=3.462, p=.003) and vandalism (t=2.295, p=.034) as well as the increase in weapon crimes (t=-2.577, p=.019).

To test the second hypothesis police-induced crimes relating to drugs, traffic and weapons, were analyzed separately. Drug offences have increased in both areas, although the growth is considerably larger in the control area (30,5%) than at the roundabout (18,4%). Figure 3 shows the development of narcotic crimes at the roundabout compared to the control area in the time period 2016/17. The vertical line in Week 1 marks the beginning of the increased police patrols; during Week 2 the street lights were installed and in Week 5 the surveillance camera was placed at the roundabout. The data show an increase in the amount of drug crimes at the roundabout after the enhanced police patrols started. The numbers start decreasing after the installation of the street lights and experience another drop after the camera was implemented. In Week 7 the rate even drops to zero. It can be observed that drug crimes in the control area decline after enhanced police patrols were implemented, strongly increase after the installation of improved street lighting and then follow a similar decrease to the one that can be seen at the control area. After Week 7 narcotic offences are slowly increasing again in both areas with another drop towards the end of the time period.

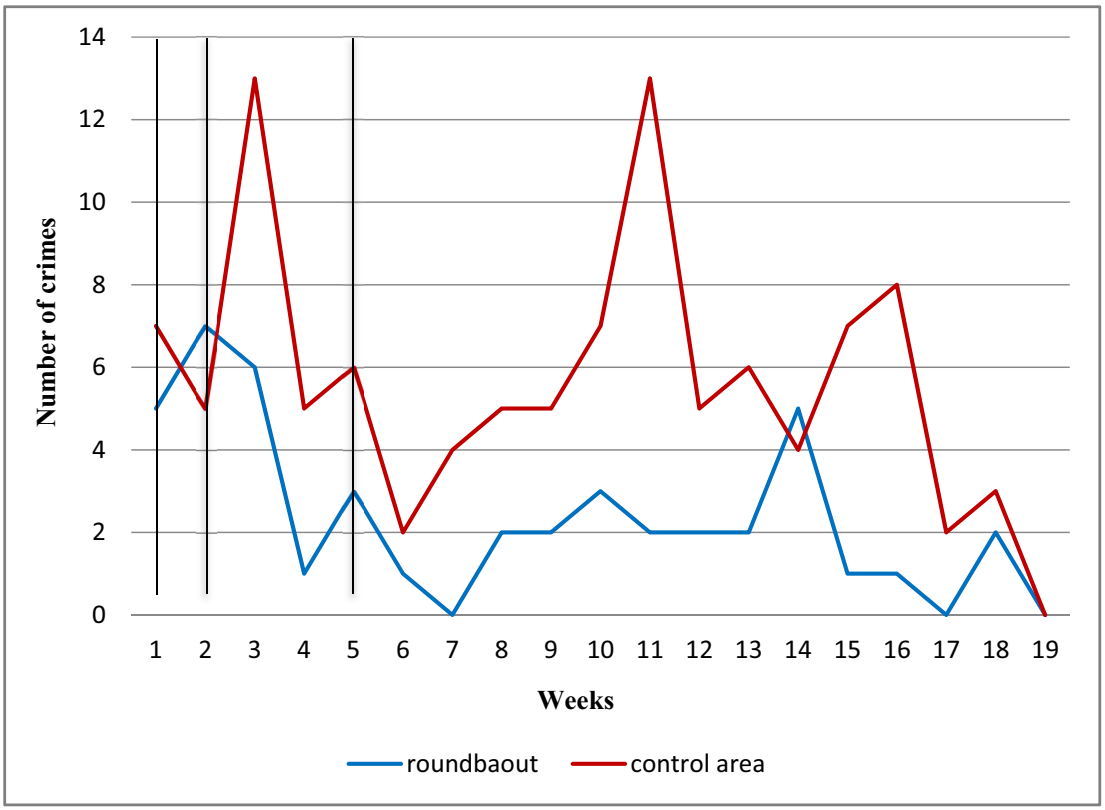

Figure 3. Development of drug offences in the control area and at the roundabout in the time period 2016/17.

In Week 11 a strong increase in drug offences can be observed in the control area. Since the data for narcotic crimes in that week contain several entries with the same time and place stamp, it is either possible that one individual is listed, e.g. for drug use, possession and transfer or that a group of individuals was registered for these different offences. As described in the limitations section before, the cases are considered as separate incidents due to the uncertainty of their context.

The difference-in-differences analysis for police-induced crimes results in a non-significant difference (β_3=-0.04, p=.229) when comparing the two time periods (Table 2). This shows that the changes in police-induced crimes between the roundabout and the control area do not differ meaningfully. Hypothesis 2, which assumed that police-induced crimes would increase to a larger extent at the roundabout than at the control area, is therefore not supported.

Table 2. Mean and relative differences in means for police-induced crimes and difference-in-differences estimator β_3.

	2015/16	2016/17	Difference
Control area	M=10.21 (1)	M= 13.11 (1.28)	2.9 (β_2) (0.28)
Target area	M= 2.63 (1)	M= 3.26 (1.24)	0.63 (0.24)
Difference	–7.58 (β_1) (0)	–9.85 (–0.04)	–2.27 (β_3) (–0.04)

To test the third hypothesis (stating that public reported offences are subject to a larger decrease in the target area than in the control area) finally those crimes that are usually reported by the public and not detected by the police on-site were analyzed. The mean number of incidents declined by 17% in the control area and 25% at the roundabout. This results in a non-significant difference (β_3=-0.08, p=.097) in the change of means, implying that public reported crimes decreased fairly similarly in both areas and therefore rejecting Hypothesis 3.

Table 3. Mean and relative differences in means for public reported crimes and difference-in-differences estimator β_3.

	2015/16	2016/17	Difference
Control area	M= 32.74 (1)	M= 27.32 (0.83)	–5.42 (β_2) (–0.17)
Target area	M= 5.21 (1)	M= 3.89 (0.75)	–1.32 (–0.25)
Difference	–27.53 (β_1) (0)	–23.43 (0.08)	4.1 (β_3) (–0.08)

In summary, it can be observed that the relative differences are non-significant for all three difference-in-difference analyses, suggesting that crime rates overall changed to about the same extent in the target and the control area.

Police surveys. Regarding the fourth hypothesis (H4), it is disproven by the data. The two surveys conducted by the police show no large differences with regards to the problems identified by the citizens, nor with their expectations of the police work. While the first survey in May 2016 was answered by only 39% men, in 2017 the number increased to 53%. The biggest group (38%) of respondents in 2017 was 36–50 years old, about a third was 20–35 and 23% were over 50 years old (the age was not recorded in 2016). Among the statements on what is the best about living in the area around the roundabout, the proximity to shops and park areas were the most frequently named. Notably, the respondents mentioning 'a safe residential area' as an asset rose from 17% in the first year to 22% in the follow-up. The percentage of individuals who had seen or experienced something that made them feel unsafe stayed the same at 76% in both surveys, with the main reason for this insecurity, drug trafficking, being stable at 79%. In contrast, the number of respondents that named concern about their car, motorbike or bike as reason for insecurity declined from 35% to

21%. When asked about the problems in the area, drug dealing is the most frequently mentioned problem, followed by cars driving too fast and littering (Figure 5). All three perceived problems slightly decreased from 2016 to 2017. An unchanging high percentage of respondents wish for the police to concentrate their efforts on narcotic crimes (about 70%) as well as to increase their visibility in the area. A larger number of people would like the police to concentrate on youth crime. Regarding the police's and City of Malmö's combined effort, those answering the surveys prioritized an increased police presence and meeting places for the youth amongst the suggested measures (appendix XII). However, the wish for more police in the area decreased slightly after the implementation of interventions. The request for speed bumps significantly declined even more since speed bumps had been installed in the area in the meantime ($\chi_1^2 = 3.850$, $p = .0497$). The barriers were positively received by the residents: "I like those [the speed bumps], more than the camera" (Informant 3, 20170419). Interestingly, camera surveillance was named more often as a desired police measure by the respondents in 2017, after the implementation of a camera in fall 2016. Except for the decrease in the demand for speed bumps, none of the changes were statistically significant.

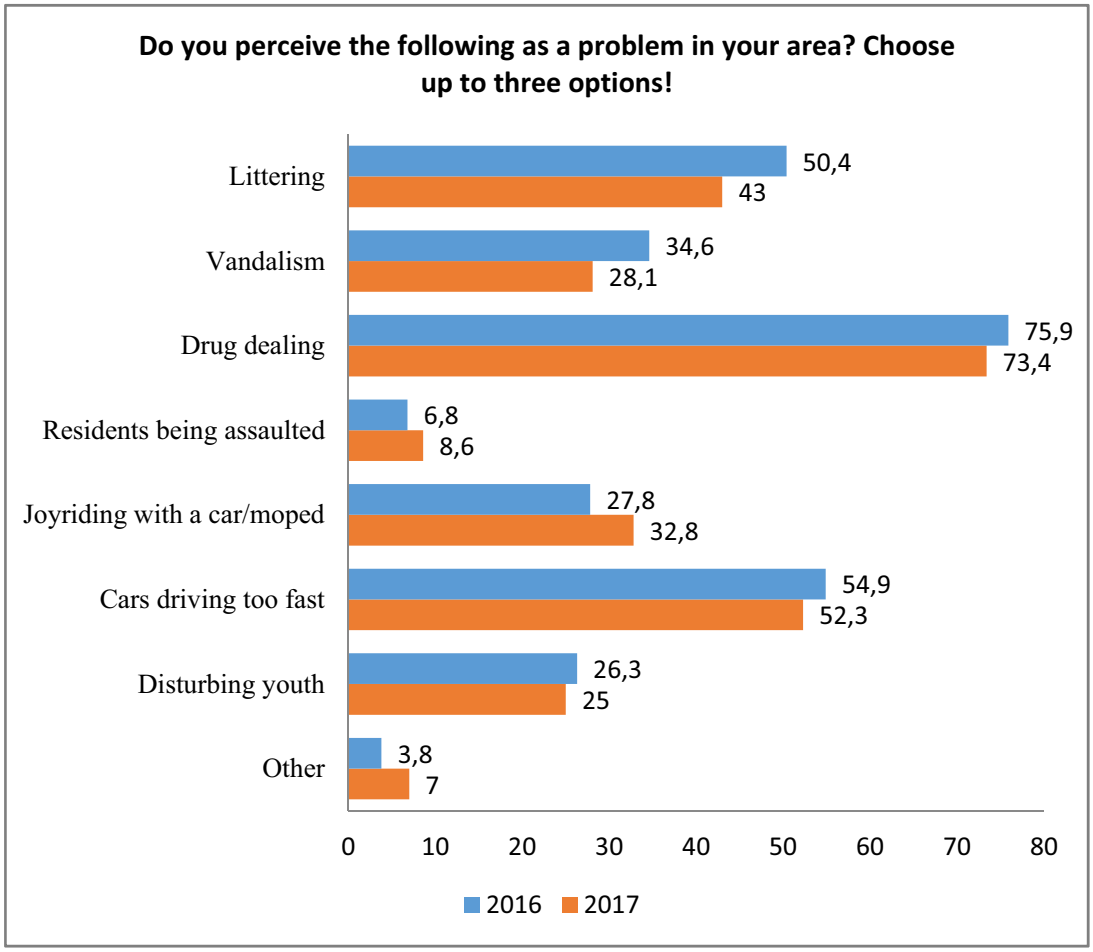

Figure 4. Answers from the police survey in %.

In the follow-up survey in 2017 the respondents were additionally asked whether they were aware of the camera that was installed. 59% reported that they knew about the surveillance camera, while 41% answered 'no'. Of those that were aware of the camera, 83% also reported that they had seen or experienced something that made them feel unsafe. In contrast, only

68% of those that did not know about the camera mentioned they experienced something similar. On the other hand, the respondents with knowledge of the surveillance mentioned 'a safe residential area' in 17% of the cases, whereas 22% of those not being aware named this as the best thing about the area. The answers of the residents at the roundabout show a somewhat more indifferent picture when they were asked whether they feel safer since the implementation of the camera. Informant 1 states: "I think I have never felt unsafe before. […] For me it doesn't really make a big difference" (20170417a).

When asked whether they perceived a change in their feeling of safety in the area during the previous year, 44% of the respondents of the survey reported that there was no change while 28% stated that they felt safer now. However, at the same time a third of the interviewed describe they perceived an increase in criminal activity during the previous year (compared to 32% that perceived no change).

Interviews and observations. A recurring statement in the interviews with the residents is that none of them is feeling unsafe or threatened because of the drug dealers' presence. As Informant 1 puts it: "They [the drug dealers] don't want to be bothered by me and I don't want to be bothered by them" (20170417a). Informants 2 and 3 report that they do not take detours to avoid the dealers. All four informants describe that the open drug trading has moved away from the roundabout since the camera appeared, three of them explicitly pointing to a new location a few hundred meters up on one of the streets from the roundabout. This was perceived as an improvement, since "it is much calmer now, the drug trade is not as visible anymore as it was before. Neither do I see the dealers in the same way" (Informant 4, 20170418). Informant 2 adds that "of course it is nice, nice not having to see it [the drug trafficking]" (Informant 2, 20170417b). Observations of the physical disorder at the roundabout show that graffiti and litter are regularly removed in order to keep the area clean. However, the fight against physical disorder and vandalism of the house walls and color light installations appears to be an ongoing struggle since new illegal graffiti occurs almost immediately after the old one is removed.

Discussion

The present study attempted to identify whether preventative efforts at a hotspot achieved the desired effect but finds no significant evidence of such effects. The hypotheses were that the overall crime rate would be largely unaffected (H1), that police induced crime would increase (H2) and that non-police induced crime would decrease (H3) due to the intervention. The first hypothesis was confirmed, while the other two were not since the change in the target area was not significantly different from that in the control area. Considering the relatively low statistical power and limited follow up period it may be warranted to consider the direction of change even if this change was not significant. The direction of change was in line with the third hypothesis, non-police induced crimes dropped more at the hot spot than the control area; but not for the second hypothesis with police-induced crimes increasing more in the control area than in the hot spot treatment area.

It is not surprising that narcotic crimes increased at the target area after the onset of enhanced police patrols, considering the fact that a higher amount of controls is expected to result in a higher number of detected and reported crimes (Levitt, 1998). The fact that drug offences increased in the control area, too, could be interpreted as a spillover effect, where increased patrols at the hotspot spill over to the surrounding area. The installation of CCTV and street lighting may have contributed to displacement of drug sales from the target area, mirrored in the fact that the increase in drug crimes was actually larger in the control area.

Combined with the increased patrols this could explain why police induced crimes increased more in the control area than in the treatment hot spot area, but such suggestions need to be further followed up and substantiated in the future with more detailed analysis and longer follow up periods. It is however in line with perceptions from the informants in the area that were interviewed, who agreed that the drug trading has merely moved down the street. While this is interesting, it is anecdotal evidence, and it is unknown how people closer to the new location for open drug sales perceive the issue. This problem of displacement has similarly been pointed out by Lomell(2004), who describes that stricter police interventions including CCTV at an open drug market in Oslo led to a spreading of the drug scene all over the city center. That in return called forth complaints from the retailers' association and ironically resulted in reinstating the former drug hot spot again (Lomell, 2004).

Similarly, it is not entirely implausible to expect a spillover effect from the police patrols to the surrounding area. This diffusion of benefits, as proposed by (Clarke & Weisburd, 1994; Weisburd et al., 2017), could help explain the decrease in non-police-induced crimes at both the target area and the control area. The fact that the decrease was larger in the target area could then possibly be related to the street lights and the camera. While police patrols and their deterrent effect likely spread over the whole of Möllevången, the lights and the camera can only directly have affected the roundabout. This too however is quite speculative, as none of these changes were significant.

Possible mechanisms to understand the relative (lack of) change in crime can also be highlighted. Regarding the time of the day, the level of reported incidents decreased in the time periods from 18:00 to 21:00 p.m. and 00:00 to 03:00 a.m. which used to be among the time spans with the highest crime levels. The strong decrease from 18:00 to 21:00 p.m. is potentially a consequence of the improved street lighting, since it is already dark at that time during the winter months and the stronger lights at the roundabout might deter offenders due to the higher risk of apprehension. Although the same outcome cannot be found for the time period from 21:00 p.m. to midnight, it is possible that the effect only occurred in the earlier time span because there are in general still more individuals on the street, for example on their way home from work or to after-work activities. This would suggest that the crime-preventing effect of informal social control through increased social activity as proposed by Clarke(2008) comes into force in addition to the situational deterrence. It can, however, not be ruled out that another, unknown factor caused this shift.

Several other circumstances need to be kept in mind when interpreting the effect of the police interventions. First of all, the relatively low statistical power of the sample (with 0–7 drug crimes at the roundabout and 0–14 incidents in the control area; see Figure 3) should be taken into consideration. Secondly, it has been argued in previous research that cameras in a closed, easy to monitor area are more effective (Priks, 2014). Although this study is not able to distinguish between the single effects of the police patrols, the street lighting and the surveillance camera, it could be reasoned that the implementation of the camera at the roundabout, a very open space, does not contribute meaningfully to the overall effect. Additionally, no information is available on the frequency and length of the police foot patrols as well as their manner. When interpreting the results, it certainly would be interesting to know whether police officers simply stopped and searched more people or whether they also talked to the citizens, trying to build a relationship with the community. Since previous research suggests that fewer but longer visits to a hot spot are more effective in reducing crime (Koper, 1995; Williams & Coupe, 2017), a closer look at the amount and duration of foot patrols at the roundabout could bring about more insights on their specific impact

on crime. Furthermore, the follow-up period might arguably be too short. In order to see the long-term effects of the measures further research is desirable. This would allow for an analysis of the rate of narcotic crimes and other offences in the long-run, beyond the initial increasing effect of the police interventions in the first weeks which Levitt (1998) described.

The findings from the police data analysis do not provide explicit evidence for a displacement of drug offences. With the exception of an increase of narcotic crimes in Weeks 3 and 11, the development of crime rates in the control area follows a similar pattern to the one at the target area. The increase in Week 3 is likely an effect of the increased police patrols, not only in the target area but also in the rest of Möllevången. The difference-in-differences analysis found a minor but non-significant divergence in the mean change of drug offences. It shows that the open sale and purchase of narcotics has seen a stronger increase in the control area than at the roundabout, suggesting a slight effect of displacement to the area around the roundabout. As mentioned above, interviews with the residents give anecdotal evidence that the drug trafficking has indeed moved away from the roundabout itself but established again in the same streets, just outside the viewshed of the camera. Although this development cannot be reflected in the police data due to the street names remaining the same, the respondents in the interviews state that the dealers are still present. This is suggestive of a deterrent effect of the camera as described by Pawson and Tilley(1994), forcing the dealers to move in order not to be caught on video footage. It, however, challenges the impact of the increased police patrols, since the suspects do not seem to be impressed by their presence and continue their activities in the same area.

Overall, these findings suggest that the desired preventative effect on drug crimes has not been reached in the given time frame. Yet, those responsible at the police are well aware that the camera is not the silver bullet in fighting crime. It is, however, a starting point since it appears to have yielded the effect that some criminal activities moved away from the direct vicinity of the preschool.

The police survey. When looking at the findings from the two police surveys concerning the feeling of safety of the citizens, no large differences between the two years can be found. The percentage of people that experienced something that made them feel unsafe did not change after the implementation of more police patrols, lighting and a camera. According to the police surveys 2017, narcotics remain the main cause for insecurity, and reductions in the perception of problems are small and non-significant. Similarly, the number of people who wanted the police to focus on camera surveillance increased (non-significantly) in spite of the police already having installed a camera. This is possibly related to the fact that a large part (41%) of the respondents was not even aware of the presence of the camera. The desire for more police presence decreased slightly from 2016 to 2017, most likely because the police was actually more present, but remains high with 63.3% and is still the main activity the respondents would like the police to focus on. Strikingly, it seems as if those residents that were not aware of the camera would rather label the area as 'safe' (26%) in comparison to those who knew about the camera's presence (only 17% of those mentioned it to be a safe area). Accordingly, 83% of the residents that were aware of the camera experienced incidents in the area that make them feel unsafe, compared to only 68% of those who did not know about the camera. Although these findings are not statistically significant, they go along with Gill and Spriggs' (2005) conclusion that the awareness of a camera does not necessarily lead to an increased feeling of safety.

Although it cannot be distinguished in this study whether the effects were caused by the police patrols, the improved lighting or the camera, this finding still contradicts the findings by for example La Vigne et al.(2011) and Priks(2015), who argue that the cameras

improve the feeling of safety amongst citizens. It rather supports Ratcliffe's (2006) assumption that the knowledge of a camera increases the fear of crime. It does, however, not seem as if the respondents who feel unsafe avoid the streets and places around the roundabout since the surveys took place in the very same area. This is underpinned by the interviews that were conducted with a few residents at the roundabout, in which the interviewees all agreed that even though they are aware of the problem they do not avoid the area. This could, however, also disclose an issue with collective efficacy and the "willingness to intervene" (Sampson et al., 1997, p. 919), since even though the people don't stay clear of the place they still refrain from interfering.

All in all, the police interventions don't seem to have influenced the citizens' perception of the problems, nor feeling of safety. A possible explanation is that a change in perceptions and feelings needs more time than a few months. Additionally, the small effect might be due to the remaining high numbers of crime. Since police-induced crimes even increased after the implementation of intervention measures at the roundabout (or rather were detected more often) and the non-police-induced offences practically did not change, it appears quite logical that the perception of the citizens regarding crime rates and problems in the area has not changed much either. Yet, it is striking that the manifold presence of intervention measures, which were based on a dialogue with the citizens and their wishes, did not improve the feeling of safety meaningfully.

Despite the fact that a decrease in crime rates due to formal surveillance measures will only be reflected in the data after a longer period of time, it is especially the natural surveillance aspects that need time and continuous work to take effect. Looking back at the mechanisms behind broken windows policing and measures like improved street lighting and surveillance cameras, we observe that they all to some extent rely on collective efficacy and informal social control. While the police and the city authorities can initiate the fight against criminality and implement formal forms of surveillance as a start, the community as a whole is needed in order for social control to emerge and have an impact on criminality. It appears as if the community at the roundabout is not yet involved and connected enough in order for it to provide a functioning social control. The few informants that were interviewed tended not to feel a need to intervene against the problems in the roundabout, nor were they aware of the community policing efforts to include residents in the police work. These findings suggest that more information needs to be provided to the citizens living in the area regarding the police's work and the residents' possibilities to be a part of it.

Conclusion

In this study, the effects of three police intervention measures on crime and primarily drug offences at a roundabout in Malmö were evaluated. The results suggest that the combined impact of increased police foot patrols, improved street lighting and the installation of a surveillance camera has not reached the desired preventative effect on crime rates in the given follow-up period. While a temporary increase in narcotic and police-induced crimes in general can be hypothesized to be associated with the enhanced proactive patrols, it is uncertain whether the interventions would bring about a stable decline in the long run. The occurrence of displacement of the open drug market a few hundred meters further away might be a small success from the viewpoint of the preschool and the residents at the roundabout, who don't have to witness the open trade any longer. Yet, with regard to the general problem of open drug use, purchase and sale in the area, this is a drop in the ocean. Previous research and the findings from this study suggest that the police are on the right

track with regards to their efforts to include the community and city authorities in their activities. However, far more work has to be put into the involvement of the citizens and the building of an actual community that experiences neighborhood concern. This may well be a promising area of future focus, although it for sure requires a larger amount of time and effort than for example a surveillance camera. The question is whether the police, but especially the citizens that live, work and spend time in the area are willing to invest this time and effort in order to build a safe and friendly environment to live in.

The findings from this study clearly ask for further research in the area. First of all, a follow-up study to evaluate the long-term effects of the police interventions is desirable. On that basis broader and more reliable conclusions and recommendations regarding the future police work can be made. This should also include interviews with police officers as well as an analysis of the frequency and length of police foot patrols at the roundabout. Since the control area in this study appears to rather be a displacement area and the border between target and control area is blurred due to technical limitations, prospective studies could benefit from a more concise geographical demarcation. Further, subsequent research should look deeper into the separate impacts of police patrols, street lighting and surveillance cameras. Although previous research indicated that a combination of intervention measures might be the most successful strategy in preventing crime, it seems reasonable to obtain an overview over how effective the individual measures are before integrating them. From a more theoretical perspective this study contributes to our understanding of crime and narcotics hot spots through highlighting that while the open drug market may well move as a response to situational countermeasures, this appears to have no discernible short-term impact on crime more generally. The displacement of open drug markets can however be seen as an important aim in itself if it can be moved away from particularly disadvantageous locations from the perspective of the general public. This can more broadly be considered from the perspective of signal crime (Innes, 2004), crimes that signal danger or disorder and have an impact on the local community. Future theoretical development should focus on combining such perspectives with perspectives relating to natural control or collective efficacy to further strengthen the theoretical base of both the motivations for- and the implementation of interventions to reduce the perceived problem of drug hot spots, and indeed for crime more generally.

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