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Law Enforcement Strategies to Disrupt Illicit Drug Markets[1-2]

Review of the Literature

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Abstract

This report reviews the research literature on illicit drug markets and law enforcement attempts to disrupt them. Attempts by law enforcement to disrupt illicit drug markets take many forms, including attempts to control or reduce the illicit supply or distribution of drugs, interfere with the activities of drug market participants, or arrest and convict some of these participants. Each type of illicit drug market disruption is triggered differently, requires different types of resources and strategies, and involves a different level of law enforcement intervention. The market disruption strategies reviewed in this report are not very promising. In fact, these interventions tend to have a very limited effect on drug markets or on the availability of illicit drugs. None of them seems to have a lasting impact on illicit drug markets and very few of them seem to have an impact on organized crime groups and networks that exploit and profit from these markets. In brief, illicit drug markets invariably prove themselves resilient and flexible, and they either promptly adapt to change and reconfigure or displace themselves. Furthermore, law enforcement disruption strategies often risk having a detrimental impact on affected communities, whether from a public health, quality of life, violence prevention, or police-community relation perspective.

Keywords: Illicit markets, drug markets, drug law enforcement, disruption strategies, drug policy, organized crime.

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SUMMARY

Law Enforcement Strategies to Disrupt Illicit Drug Markets

Attempts by law enforcement to disrupt illicit drug markets take many forms, including attempts to control or reduce the illicit supply or distribution of drugs, interfere with the activities of drug market participants, or arrest and convict some of these participants. Each type of illicit drug market disruption is triggered differently, requires different types of resources and strategies, and involves a different level of law enforcement intervention. However, much of law enforcement is local and, not surprisingly, many law enforcement disruption programs focus on local drug markets, most often street-level, open or open-air drug markets.

This report is based on a review of the research literature on illicit drug markets and law enforcement attempts to disrupt them. In total, 326 research articles were reviewed, including 53 evaluations and impact studies, a few of which were themselves systematic reviews of previous evaluations. Twelve (12) studies were identified that reviewed the impact of initiatives to disrupt the drug supply, by interfering with drug production and trafficking, including the supply of counterfeit and contraband pharmaceuticals and the supply of drugs through cyber markets. Twenty-three (23) studies on the impact of space-based disruption initiatives focused on local open drug markets, including high-visibility and zero tolerance policing and various forms of hot-spot crackdowns. Eighteen (18) studies on the impact of disruption strategies focused on participants in local drug markets, including disruption approaches through a focused-deterrence approach, or on key participants in criminal networks and organizations who play a key role in broader drug markets.

Illicit drug markets are complex and constantly changing; they also tend to be quite resilient. It is therefore useful to try to understand these markets, like other illicit markets, as ecosystems affected not only by law enforcement practices and strategies, but also by many other endogenous or exogenous factors, including factors that operate across borders and even in virtual space. Drug traffickers and drug dealers adapt themselves quickly to new circumstances and find ways to counter law enforcement strategies and initiatives. Drug trafficking activities are often displaced as soon as law enforcement attempts to disrupt them. Because of the dynamic nature of drug markets and the flexibility of the criminal organizations engaged in them, law enforcement agencies must constantly vary, refine and, if they can, perfect their strategies.

Law enforcement interventions to disrupt illicit drug markets are difficult to categorize because they often include many of the same components (e.g. increased law enforcement presence, arrests for drug offences, drug

and money seizures, undercover activities, enforcement of minor offences and public disorder infractions, raising public awareness, situational crime prevention elements, etc.). When dealing with local open drug markets, many of these interventions present themselves as community policing or problem-oriented policing initiatives, even if the level of community involvement in these initiatives varies considerably.

In the absence of a widely agreed upon typology of disruption strategies, the report proposes to examine three very broad types of strategies: (1) drug supply disruption initiatives (including various drug interdiction measures); (2) space-based disruptions of local open drug markets; and, (3) disruptions focused on drug market participants and their activities. To these three approaches, one could add disruptions of money laundering and the flow of illicit drug profits, and the confiscation of proceeds of crime through financial investigations or civil forfeiture, not covered in the report.

The report offers a review of the empirical research on various illicit drug market disruption strategies used by law enforcement, their stated goals and concrete objectives, the methods they are based on, their impact on drug markets, and their other consequences. From a policy perspective as well as from a cost-benefit point of view, it matters to know whether illicit drug market disruptions produced by law enforcement initiatives have a lasting and substantial effect on these markets. The report will hopefully contribute to a constructive discussion of how law enforcement approaches can be transformed to reduce the harm caused by the illicit drug markets and the violence and crime caused by the criminal organizations involved in them.

Drug supply disruption approaches

Supply reduction encompasses various national and international activities whose primary goal is to reduce the availability of illicit drugs. The report reviews five related law enforcement approaches to disrupting the illicit markets' drug supply: disruption of drug availability and prices, mostly through drug seizures; disruption of drug production; disruption of drug trafficking (importation and exportation); disruption of the supply of counterfeit and contraband pharmaceuticals; and, disruption of cyber drug markets. Despite countless national and international efforts to interdict drugs, disrupt the drug supply chain and limit the availability of drugs on illicit markets, drugs have remained plentifully available nearly everywhere on illicit markets.

The criteria against which one may measure the effectiveness or success of these approaches include: drug availability (including the availability of the drugs specifically targeted by the disruption activities); the price of

drugs (a proxy for drug availability, based on the assumption that the price of drugs goes up as a result of reduced availability, which can sometimes be misleading); the quality and toxicity of drugs (two proxies based on the assumption that the quality of drugs is often adulterated as a result of reduced availability); the length of time it takes for the supply to be replenished. There are also attempts to measure the extent to which changes in drugs prices affect the demand of these drugs.

Other effects of drug supply disruption interventions are not intended. These effects are measured by indicators such as: increased level of violence due to competition among drug dealers in response to temporary fluctuations in drug availability, quality and costs; displacement of drug production activities (sometimes to more vulnerable areas or areas that are more difficult to police); opportunities created for new actors to enter a particular drug market; drug users graduation to different, sometimes more dangerous drugs; public health effects including changes in the rates of drug overdoses.

Space-based disruption strategies

A second group of drug market disruption strategies reviewed in this report consists of local space-based disruption strategies focused on the bottom end of drug markets, the street level. Open drug market disruptions aim to achieve several goals, including disturbing established markets, thereby reducing public disorder, as well as interrupting supply and thereby driving up drug prices and increasing the time drug users must spend searching for drugs. Open-air drug market disruption strategies are the exact opposite of drug market geographical containment approaches. The strategies include police crackdowns, high visibility policing, and problem oriented policing, among others.

Most of the studies of space-based disruption strategies reviewed for this report failed to demonstrate the effectiveness of that approach in controlling drug markets. Many of them also identified significant negative outcomes associated with the approach. The question often boils down to whether negative outcomes outweigh the perceived positive impacts, which are rarely lasting and are achieved at significant public expense. There are obvious links between open drug markets, disorder, crime, and violence. However, effective policing policies that successfully address these linkages have yet to be fully articulated.

Disruption strategies targeting illicit drug market participants

The report also considers disruption strategies targeting the individuals involved in illicit drug markets. Three variations of that strategy are identified: (1) disruption strategies that focus on drug users; (2)

disruption strategies that focus on participants in local drug markets, including by using a focused-deterrence approach; and, (3) strategies that focus of disrupting the criminal organizations and networks involved in an illicit drug market by focusing on key individuals. The latter includes surveillance, the infiltration of criminal organizations to arrest and convict their leaders, and strategic attempts to identify the vulnerabilities of the criminal networks and targeting individuals that play a key operational role in them.

The fact that criminal organizations tend to have the ability to recover and pursue their criminal activities after a disruption suggests that isolated law enforcement disruption activities of that nature are likely to remain unsuccessful at reducing the activities of criminal networks.

Discussion

The market disruption strategies reviewed in this report are unfortunately not very promising. In fact, these interventions tend to have a very limited effect on drug markets or on the availability of illicit drugs. None of them seems to have had a lasting impact on illicit drug markets and very few of them seem to have an impact on organized crime groups and networks that exploit and profit from these markets. In brief, illicit drug markets invariably prove themselves resilient and flexible, and they either promptly adapt to change and reconfigure or displace themselves. Furthermore, law enforcement disruption strategies often risk having a detrimental impact on affected communities, whether from a public health, quality of life, violence prevention, or police-community relation perspective.

The above conclusions only highlight the limits of law enforcement efforts and the need to embed these efforts in broader social change initiatives. There is also a need to fundamentally rethink drug market enforcement strategies and priorities in light of the growing dominance of online markets. As the markets become increasingly global, thanks in part to the internet, stronger online regulation and enforcement are needed, as well as an entirely new level of international law enforcement cooperation.

CONTENTS

1. Introduction

Attempts by law enforcement to disrupt illicit drug markets take many forms, including attempts to control or reduce the illicit supply or distribution of drugs (legal or illegal), interfere with the activities of drug market participants, or arrest some of these participants. For instance, interdiction and drug supply control efforts involve attempts to curtail the illegal production of drugs and its trafficking, often on a transnational scale depending on the type of drugs and the country or countries involved. They tend to focus on drug supply and the drug supply chain, places (including virtual places) where the market operates, or the people involved in the drug trade at various levels of the drug market.

Each type of illicit drug market disruption by law enforcement is triggered differently, requires different types of resources and strategies, and involves a different level of law enforcement intervention. However, much of law enforcement is local and, not surprisingly, many law enforcement disruption programs have focused on local drug markets, most often street-level, open or open-air drug markets.

To some extent, these various law enforcement interventions and programs resist categorization because they often include many of the same components (increased law enforcement presence, arrests for drug offences, drug and money seizures, enforcement of minor offences and public disorder infractions, raising public awareness, situational crime prevention elements, etc.). When dealing with local open drug markets, many of these interventions present themselves as community policing or problem-oriented policing initiatives, even if the level of community involvement in these initiatives varies considerably. The goals of these interventions are sometimes presented in different ways, including 'reclaiming public spaces', 'community wellbeing', 'zero tolerance of disorder', or 'drug reduction'. There are many models of open illicit drug market disruption initiatives but they are very similar to one another, at least to the extent that most of them are: primarily organized around law enforcement, focused on drug law enforcement but also and often mostly on the disorder and criminality related or accessory to the drug market, based on a surge of activities by patrol officers sometimes accompanied by other prevention measures. They tend to be temporary, unsustained or unsustainable initiatives, with a limited impact on crime and drug markets, and some potentially troubling detrimental effects.

Illicit drug markets are complex and constantly changing; they also tend to be quite resilient. It can be useful to try to understand these markets, like other illicit markets, as 'ecosystems' affected not only by law enforcement practices and strategies, but also by many other endogenous

or exogenous factors, including factors that operate across borders and even in virtual space. Drug traffickers and drug dealers adapt themselves quickly to new circumstances and find ways to counter law enforcement strategies and initiatives. Drug trafficking activities are often displaced as soon as law enforcement attempts to disrupt them. Because of the dynamic nature of drug markets and the flexibility of the criminal organizations engaged in them, law enforcement agencies must constantly vary, refine and, if they can, perfect their strategies. They must take into account the many ways in which criminal elements are themselves acting strategically so as to defeat detection and prosecution. They must move beyond reactive responses and adopt strategic and proactive approaches to the investigation and prosecution of the organized crime groups who operate and benefit from illicit drug markets. They must also be able to sustain their efforts over time, something which in itself also presents some real difficulties.

This is not to say that law enforcement strategies to disrupt illicit drug markets cannot form part of a comprehensive drug control strategy. However, once illicit drug markets are understood as highly adaptable, dynamic ecosystems affected by numerous factors and not just by law enforcement, it becomes important to try to understand what can reasonably be expected to be achieved through law enforcement. This report offers a review of the empirical research on various illicit drug market disruption strategies used by law enforcement, their stated goals and concrete objectives, the methods they are based on, their impact on drug markets, and their other consequences. The report can hopefully contribute to a constructive discussion of how law enforcement approaches can be transformed to reduce the harm caused by the illicit drug markets and the violence and crime caused by the criminal organizations that support these markets.

Purpose of the study

This report reviews, assesses, and synthesizes available evidence on the relative effectiveness of various law enforcement approaches, in different contexts, for disrupting illicit drug markets. It is based on a review of the existing published and grey literature in Canada and in selected countries. That review aimed to:

- Identify the indicators (or evaluation criteria) used to measure the impacts and effectiveness of various methods implemented by law enforcement to disrupt illicit drug markets.
- Summarize the findings of recent studies on the impacts and effectiveness of methods used by law enforcement to disrupt illicit drug markets with reference to the quality, reliability and

completeness of the types and sources of data used to measure these impacts.

- Assess the overall quality of the findings of studies conducted to measure the effectiveness of various disruption methods and their impacts, and a synthesis of research findings.
- Identify the factors and circumstances that may lead law enforcement agencies to adopt a given disruption method.
- Assess the applicability or transferability of various market disruption approaches to the Canadian context.

Method

This report is based on a search of the research literature using criminal justice abstracts, social science abstracts and sociological abstracts, as well as a specific search of all the articles published in English since 2010 in 42 academic journals, covering criminology, criminal justice, law enforcement, and drug policy, using search words such as: crackdown (police crackdown); decriminalization; digital drug markets; drug interdiction; drug law enforcement; drug markets; focused deterrence; gangs and drugs; high visibility policing; hot spots policing; illicit markets; organized crime and drugs; pulling levers; supply reduction; threat-sanction approach; violence and drug markets. This was completed by an internet search of the grey literature with the same focus.

The academic journals that were searched systematically for relevant studies were: Addiction Research & Theory; American Sociological Review; British Journal of Criminology; Canadian Journal of Criminology; Crime and Delinquency; Crime and Justice; Crime Detection and Prevention Series; Crime Prevention Studies; Crime Science; Crime, Law & Social Change; Criminal Justice Matters; Criminal Justice Policy Review; Criminal Justice Review; Criminal Justice; Criminology & Public Policy; Criminology; Current Issues in Criminal Justice; Drug and Alcohol Dependence; Drug and Alcohol Review; European Journal of Criminology; European Journal on Criminal Policy and Research; Global Crime; Howard Journal of Criminal Justice; International Criminal Justice Review; International Journal of Comparative and Applied Criminal Justice; International Journal of Drug Policy; International Journal of Police Science & Management; Journal of Contemporary Criminal Justice; Journal of Criminal Justice; Journal of Criminal Law & Criminology; Journal of Drug Issues; Journal of Experimental Criminology; Journal of Psychoactive Drugs; Journal of Scandinavian Studies in Criminology and Crime Prevention; Justice Quarterly; Law and Social Inquiry; Police Practice and Research; Policing and Society; Policing: An International Journal of Police Strategies &

Management; Social & Legal Studies; Trends in Organized Crime; and, Victims & Offenders.

The broad search of relevant academic journals yielded 326 articles which were then reviewed and categorized. In addition to general studies on the nature and evolution of illicit drug markets, 53 evaluations and impact studies were identified and summarized. A few of these studies were systematic reviews of previous evaluations. Twelve (12) studies were identified that reviewed the impact of initiatives to disrupt the drug supply, by interfering with drug production and trafficking, including the supply of counterfeit and contraband pharmaceuticals and the supply of drugs through cyber markets. Twenty-three (23) studies on the impact of space-based disruption initiatives focused on local open drug markets, including high-visibility and zero tolerance policing and various forms of hot-spot crackdowns. Eighteen (18) studies on the impact of disruption strategies focused on participants in local drug markets, including disruption approaches through a focused-deterrence approach, or on key participants in criminal networks and organizations who play a key role in broader drug markets. Additionally, several other studies and research articles were reviewed and consulted in order to draw a picture of illicit drug markets as ecosystems, their dynamic nature, and their capacity to adapt to various changes and disruptions, including purposeful disruptions by law enforcement.

For each study, we reviewed the indicators of success (or evaluation criteria) used to measure the impact of the various disruption strategies used by law enforcement, and the study's findings based on these indicators. As will be discussed below, these indicators varied somewhat with the type of disruption strategies and the type of drug market targeted. The studies will be presented in this report according to three main types of disruption strategies, including in a summary table for each group of strategies.

In the absence of a widely agreed upon typology of illicit drug market disruption strategies, the following one is proposed and was used for our analysis of their respective impacts:

1. Drug supply disruption initiatives (including various drug interdiction measures)

- Disruptions of drug availability (through drug seizure, confiscation, or destruction)
- Disruptions of drug production
- Disruptions of drug importation and exportation (including

transportation)

- Disruptions of the supply and traffic of counterfeit or contraband pharmaceuticals
- Disruptions of the supply and traffic of various drugs through cyber markets

2. Space-based disruptions of local open drug markets
    - High-visibility policing, zero-tolerance, problem-solving, quality of life enforcement
    - Police crackdowns (hot-spots policing)
3. Disruptions focused on drug market participants and their activities
    - Drug users and user/dealers (local drug market)
    - Drug dealers and traffickers (local drug market), including the focused deterrence approach
    - Key members of criminal networks and organizations

That typology does not include illicit drug market disruptions based on disrupting money laundering and the flow of illicit drug profits, and the confiscation of proceeds of crime through financial investigations or civil forfeiture. This type of disruption requires a separate examination and fell out of the scope of the present review. The typology is also not completely satisfactory in different ways. It tends to hide the fact that many illicit drug market disruption strategies adopted by law enforcement agencies tend to be multifaceted and often include different types of specific interventions and partnerships over time. Some of the disruption strategies in question mostly differ form another in name only since they actually consist of a similar mix of complementary enforcement tactics and interventions. In practice, some of the disruption initiatives seem to be pursuing relatively unspecified objectives and are not necessarily rolled out as advertised. Also, the disruption initiatives in question do not occur in lieu of regular law enforcement activities, but in addition to them, thus making it sometimes difficult to distinguish between routine enforcement activities and activities that are specific to the drug market disruption initiative being evaluated.

In addition to the limitations of the above typology of disruption approaches, it must be noted that many of the studies reviewed did not provide a detailed account of the law enforcement activities undertaken to effect the desired disruption, thus making it difficult to actually distinguish

between various disruption initiatives. When studies described in some details the nature of the law enforcement activities undertaken as part of a disruption initiative, they rarely measured the activities themselves. In other words, the studies tended to report on some of the outcomes of these illicit drug market disruption initiatives without providing much data on the level of inputs and outputs behind these outcomes. Finally, very few studies attempted to distinguish between the impact of the law enforcement initiatives and that of concurrent initiatives in the same communities, thus making it difficult to confidently attribute some measured outcomes directly to the law enforcement initiative.

Illicit drug market disruption

Law enforcement operations designed to disrupt illicit drug markets, at least those mentioned in the research literature, very rarely specify the exact nature of the 'illicit drug market' they are targeting or what is meant exactly by 'disruption'. It may be helpful therefore to attempt to describe what is generally meant by these concepts and how they can be understood as they relate to law enforcement practices and strategies. The concepts will presented below, before listing the indicators that are typically utilized to measure the impacts (intended or not) of law enforcement strategies to disrupt illicit drug markets.

Illicit Drug Markets

The expression 'illicit drug market', depending on the context in which it is used, can refer to global, regional, or local markets trading in licit or illicit drugs. The 'market', so to speak, is not a single entity. Instead, it is just shorthand for multiple markets, specializing or not in different kinds of drugs, or different kinds of customers, operating in different regions, countries, or even parts of a city. Illicit drug markets can be wholesale, retail, or mixed. They rely on a supply chain, from production and trafficking to use, and sometimes on multiple and versatile supply chains.

In the expression 'illicit drug market', it is the market that this is designated as 'illicit' and not necessarily all the drugs that are traded in it. Some of the drugs that are produced and traded in an illicit drug market may have been declared illegal in some jurisdictions, as most jurisdictions have adopted their own drug prohibition laws that interdict the production and trade, except under license, of many types of drugs. Some of the drugs found on the illicit drug markets can be produced and traded legally but have been diverted to the illicit market (Tinti, 2019). Also, many of the synthetic drugs now traded on illicit markets are new and are neither licit or illicit (UNODC, 2020).

As with any other type of commodities, drugs are traded in markets where

buyers and sellers have to locate one another in order to conduct a transaction; locating one another in an illicit market involves additional risks for both parties to the transaction. At the retail level, one can distinguish between two types of retail market systems: those that are person-specific, relying on social networks to communicate information about vendors, potential customers, their location and prices; and those that are place-specific. Local open drug markets, where a variety of drugs may be sold, operate in geographically well-defined places at identifiable times so buyers and sellers can locate one another with ease. In an open illicit drug market, there are fewer barriers to customer access to drugs and dealer access to customers, but market participants are more vulnerable to police enforcement and the dangers of buying from strangers. Buyers have no effective recourse when they are dissatisfied with a transaction, as there is no mechanism for resolving business conflicts.

Because of law enforcement pressure or threats from competing suppliers, open markets sometimes transform into closed markets where sellers will only conduct business with buyers they know or have reasons to trust. Nowadays, many illicit drug markets operate in virtual space, through social media or cryptomarkets, where most of the transactions occur relatively safely for all participants. The latter is having an impact on most other illicit drug markets.

In addition to the general law of supply and demand, all markets are subject to the influence of numerous endogenous and exogenous factors that can affect the product supply or the supply chain, the demand for a product, or the market's ability to connect the supply to the demand. In addition to those, illicit drug markets are also affected by the pressure exerted by law enforcement and other interdiction efforts, as well as the violence resulting from the fierce and unregulated competition between rival participants in the market. National and international drug control strategies have attempted to significantly reduce both the supply and the demand for drugs, with law enforcement and interdiction measures focusing principally on the supply side of that equation. As will be discussed in more detail, drug markets can effectively adapt to enforcement efforts and continue to thrive, although sometimes with unintended consequences.

The structure, size and organization of illicit drug markets vary considerably and many participants are typically involved: users, user/dealers, dealers, wholesalers, bankers, wholesalers, producers, traffickers, and many others. Individuals come to and leave a given market or graduate to another. In other words, the participation of various individuals and groups in an illicit drug market is itself subject to various

fluctuations, without necessarily affecting the market's overall performance or permanence. None of these individual participants can function independently from others, thus the importance of organizations and networks which, because the market is illicit, are essentially criminal.

The links between criminal groups or networks and different types of illicit drug markets are complex and constantly evolving, sometimes as a result of the violent competition among them and sometimes of other factors such as new trends in the demand for certain products or breaks in the supply chain. As criminal groups fight for dominance of a particular market or part of a market, they typically seek control over part of the market's supply and distribution chains. In order to exercise that type of control more effectively, alliances are formed, whether a simple alliance between local dealers and producers, between street gangs, or a more complex international drug cartel.

In legal markets, a cartel is a group of market participants – usually rivals - who collude with each other in order to control prices for a product, improve their profits, control or secure a supply chain or distribution network, or generally dominate a market. In most countries, limiting competition by controlling the production and distribution of a product or service is considered an anti-competitive behavior and often proscribed by law. In illicit drug markets, the role of drug cartels is essentially the same as in legal markets, with the added aspects of collaboration in mitigating the risk of law enforcement interventions and the risk of inter-group violence.

Disruptions

As mentioned already, illicit drug markets can be disrupted or influenced by various factors. The concern here is with intentional or purposeful law enforcement strategies to disrupt an illicit drug market, rather than control it, limit it, or eliminate it. Unfortunately, what is meant by 'disruption' and what is meant to be accomplished by disrupting an illicit market is too often left open to conjecture. A disruption is generally understood to mean a disturbance which interrupts an event, activity, or process. It also refers to an upset, derangement, dislocation, or disturbance. In general, a 'market disruption' is a significant change in the trading patterns that forces a significant transformation of that market, sometimes accompanied by convulsion, disorder, unsettledness, confusion, disarray, or interruption.

At the production or wholesale level, disruption strategies tend to focus on weakening the market's supply and distribution chains. At the retail level, given the two types of retail market systems already mentioned, disruption initiatives tend to be either space-specific (including virtual

space), or person- or group-specific.

Law enforcement agencies seek clarity about the goals they pursue with respect to illicit drug markets. However, defining law enforcement goals in terms of 'illicit drug market disruption' may not be conducive to the implementation of clear and effective strategies. What is an 'illicit market disruption' meant to achieve? Is it meant to reduce drug availability and, if so, under what conditions could such a disruption achieve that goal? Does it simply amount to punctual, disjointed and unsustained interventions? If so, what results can this kind of approach realistically be expected to yield? If the goal of law enforcement is reduced to simply disrupting illicit drug markets, does this mean that we have given up trying to control, restrict or eliminate them?

Indicators of Impact

Disruptions in commodity markets are usually measured in terms of product availability, product price, product quality, or volume of trade and estimated profit margins. The same measures can be applied to disruptions of illicit drug markets, with the usual added difficulties involved in measuring product availability and volume of trade in a clandestine market. The United Nations uses drug seizure data, by type of drugs, to monitor changes in the global drug markets (UNODC, 2020). Most countries use drug-related data such as dug seizures, price, and purity, as well as the prevalence of drug offences (or drug arrests) to monitor policy and assess the drug problem (Singleton et al., 2018).

Monitoring the price of drugs available on illicit markets can help reveal the fundamental characteristics and structure of these markets. Drug price data can provide some insight into the patterns of variability and the stability or instability of a particular drug market. Examining drug markets through the lens of pricing and distribution systems may help determine how responsive these markets and distribution systems are to domestic measures designed to disrupt or eliminate them (Eligh, 2021). It makes sense therefore to measure the impact that law enforcement strategies to disrupt illicit drug markets have on drug prices. However, since the price of a product is influenced by its quality, it also makes sense to measure the impact of law enforcement disruption strategies have, not only on the price but also on the quality (potency, purity, toxicity, safety) of the drugs traded within the targeted market.

Furthermore, since prices can be related to the demand for a product, it is useful to try to understand the extent to which the demand for the drugs traded in a market disrupted by a law enforcement intervention is sensitive to price changes or changes in the quality, potency, and purity of the drugs. This is sometimes referred to as the price elasticity of the demand

for various drugs available on an illicit market (Payne et al., 2020). Finally, the demand for the drugs available in a given illicit market is hard to quantify. Most studies interested in measuring the impact of illicit drug market disruption strategies on the demand for a certain drug have relied on surveys of individuals likely to participate in the targeted market as purchasers (Maher & Dixon, 2001) or as low-level dealers. Two other related phenomena also require attention when measuring the impact of the pressure exercised by law enforcement interventions: the extent to which to demand moves to another more stable or less risky market; and, substance displacement or the extent to which the demand shifts from one type of drug to another (Payne et al., 2020).

Two proxies are frequently used to measure product availability, the ease with which an individual (a user, a researcher, or social dealer, or an undercover police officer) can procure a particular drug in a specific market or the perception of the availability of a particular drug among frequent users or low-level dealers who participate in that market. The volume of trade in an illicit market is nearly impossible to estimate and, therefore, estimates rely on the frequency of drug seizures, a very unsatisfactory proxy to measure changes in the volume of trade within a specific illicit drug market.

Since most forms of participation in the illicit drug market are criminalized, changes in the number of reported arrests for drug offences within an area is sometimes used an indicator of changes in an illicit drug market, particularly an open market. However, this is a misleading way of measuring changes in the illicit market, since what is being measured is essentially the level of proactive police activity as opposed to actual changes in the market. In fact, the number of arrests for drug offences is a measure of output (level of police activity) and it should not be confused with measures of outcomes or impacts.

Many studies of the impact of illicit drug market disruption strategies use changes in the level of reported drug-related crimes or drug-related violent crimes as indicators of impact, based on the assumption that illicit drug markets are associated with higher levels of violent crime, serious crimes, and property and other crimes. Changes in the incidence of various categories of officially reported crimes (or in some cases, the number of arrests) are used as indicators of the impact of a law enforcement attempt to disrupt an illicit drug market. In most instances, however, the nature of the association between the type of crime measured and the drug market in question is not clearly specified and, as some observers have argued, is sometimes exaggerated. Stevens (2015), for example, refers to the 'myth of drug-related crime'. Still, others have argued that the fact drug arrests and robbery arrests tended to occur in the same locations is

proof that robberies are drug-related crimes (Onat, Akca, & Bastug, 2018), and not a function of local police practices. Nevertheless, no one is disputing the fact that illicit drug markets can often be violent and that the impact of attempts to disrupt these markets can either increase or decrease or even spatially displace violent crimes.

Local open drug markets are most often accompanied by various forms of disorder and some law enforcement interventions in these markets are ostensibly aimed at reducing the level of disorder in a given location. The level of disorder, measured either through the perceptions of local residents and business people or through the number of complaints or calls for police service, is another indicator of the impact of some police disruption interventions.

Because illicit drug markets are highly adaptable, researchers use other indicators of market adaptation to disruption initiatives. In particular, various forms of market displacement are scrutinized: spatial displacement of market activities, displacement of drug users, drug displacement, or spatial displacement of crime and disorder associated with the drug market. Other indicators of market adaptations can sometimes be systematically observed, including: changes in source of supplies, changes in mode of transportation or trafficking routes; drugs stockpiling; partial transformation of an open market into a closed one; arrival of new participants in the market or exclusion or elimination of prior participants. Several of these changes in the market can occur with or without law enforcement disruption. Past experience has demonstrated the capacity of criminal groups involved in illicit drug markets to rapidly adapt their modus operandi or switch to other markets in response to shocks or new opportunities. It sometimes becomes difficult to attribute any of the observed changes in a market to any one factor, or specifically to law enforcement interventions.

Finally, the disruption of illicit drug markets by law enforcement may also have unintended consequences. In recent years, the impact of these law enforcement interventions on users, vulnerable communities, communities in general, and public health has received more attention. Several indicators have been used to measure that impact: frequency of drug use, spatial displacement of use, substance displacement, riskiness of drug use practices, frequency of drug overdoses, or frequency of enrolment in treatment programs. At the same time, there are many unanswered questions about the actual impact of law enforcement disruptions of local illicit drug markets on the immediate community. To answer these questions, researchers have relied on indicators such as: changes in the residents' perception of personal or public safety; local residents' confidence in or support for the police; or residents' satisfaction

with the police intervention.

Structure of the report

The report starts with a general introduction to illicit drug markets and then presents our findings about three broad types of strategies used to disrupt illicit drug markets according to the typology introduced above. This is followed by a general discussion of the review findings and their potential implications for law enforcement efforts to eliminate illicit drug markets or dismantle criminal networks and organized crime groups that supply and operate these markets.

2. UNDERSTANDING ILLICIT DRUG MARKETS

Illicit drug markets

Drug markets do not constitute a homogeneous entity. There can be great variance in the nature, structure, specialization and scope of both local, regional, transnational and even digital illicit drug markets. Based on a survey of 1,367 law enforcement agencies, Brownstein and colleagues (2012) observed that, "illicit drug markets vary organizationally and operationally in terms of things like the product being bought and sold, the community and population being served, the people engaged in the business, and the extent to which the market has matured" (Brownstein et al., 2012: 67).

Several different kinds of illicit drug market structures are observed. The most frequent structure is that of loosely connected networks that can quickly react to shifting market conditions. There is also great variance in the ways in which these markets connect and relate to one another and the extent to which they are dominated and controlled by various organized crime groups. A comparison of two cities in the U.K. showed how they differed in terms of drug market violence and other characteristics (Coomber, 2015). Similarly, an examination of the structure and mechanisms underpinning the local drug markets in a non-metropolitan area in the U.K. showed that differences existed within that market (Baika & Campana, 2020). Based on police records, the study showed that, overall, the supply side of local drug markets was a rather fragmented business, consisting of a large number of independent entrepreneurial actors or small cliques with a low level of structural differentiation in terms of positions and roles (Baika & Campana, 2020). It was also clear from the study findings that structural factors such as market fragmentation depended on the type of drug being circulated: heroin and cocaine networks were less fragmented and more tightly

connected than other parts of the market (e.g. cannabis).

Illicit drug markets are very dynamic, fluid, complex structures that operate at various levels of sophistication, and involve many different types of actors. Many span across borders and, in recent years, have moved at least partially to cyberspace. Drug markets are also remarkably resilient and adaptive, and they find ways to circumvent regulation, fake compliance, avoid law enforcement, or counter law enforcement market disruption efforts (Bright & Delaney, 2013). In one American study, the illicit drug markets were shown to adapt to the sudden disruption in different and identifiable stages (Dunlap, Graves, & Benoit, 2012).

Constant change in the flow of products and profits or in various aspects of drug market activities (production, transformation, storage, transportation, distribution, and sale) is a normal feature of most illicit drug markets. Some of these changes are the results of regulatory or law enforcement interventions (Public Safety Canada, 2019; Ladegaard, 2019). Most others are the result of various endogenous and exogenous factors, including events such as conflict, a drought or other natural disasters, or a pandemic, all of which are known to affect illicit drug markets. For example, the World Drug Report 2020 reviewed how drug markets were affected by the COVID 19 pandemic, including the fact that markets dependent on drug trafficking by air were deeply disrupted by air travel restrictions (UNODC, 2020). There is also evidence that lockdowns in response to the pandemic have disrupted drug cryptomarkets' activities and reduced the number of successful drug deliveries (Bergeron, Décary-Hétu, & Giommoni, 2020).

Illicit drug markets are also affected by technological developments, whether agricultural, chemical, phrenetical, transportation, or communication technologies. The internet (Walsh, 2011), e-commerce and e-transfer of currencies, cryptomarkets and cryptocurrencies, mobile phones (Sullivan & Voce, 2020), and even vaporizers (Lim et al. 2020) have produced measurable changes in illicit drug markets. Whereas drugs used to be mostly sold and distributed in person, drug-users and drug dealers are increasingly using the internet for these transactions (Walsh, 2011). The internet gives users the ability to communicate, distribute, and obtain drugs and supplies anonymously and at low risk from almost everywhere in the world (Maras, 2014; Walsh 2011). Illicit drug market participants have free access to an extensive amount of information on how to produce and distribute various products as well as how to evade law enforcement.

Participants in illicit drug markets

Several studies were able to derive a better understanding of illicit drug markets from surveys of or interviews with convicted drug offenders. As a result, researchers tend to know more about offenders who get caught by law enforcement than about individuals who successfully avoid contacts with law enforcement. There also studies of drug users, particularly intravenous drug users, their participation in these markets, and the impact on them of illicit drug market disruptions by law enforcement. In Quebec, a study of drug use patterns of injection drug users showed how these patterns changed over time, reducing certain risky behaviours but exacerbating others, seemingly due to drug market variations (Roy et al., 2017).

Diverse actors are involved in the operations of illicit drug markets, including growers, manufacturers, brokers, traffickers, retailers, payment processors, enforcers, and many more. Some of them are connected with each other through loosely affiliated networks while others are part of well-structured and relatively permanent criminal organizations and cartels. For instance, transnational drug networks apparently rely on a small number of brokers who also have connections to domestic markets. Since it is expensive and risky to distribute drugs across national borders, a relatively small number of brokers play a significant role in the movement of drugs within illicit markets (Leuprecht et al, 2016; Smith 2020; Duxbury & Haynie, 2019).

The role of individual actors in illicit drug markets varies and only a small number of them, with connections and resources, eventually take on higher positions within a network or in a criminal organization (Baika & Campana, 2020).

Drug market participants try to reduce the uncertainties created by the product's illegality, the lack of reliable information on product quality, and the low trustworthiness of trading partners. Drug dealers and middle-distributors therefore have to develop and maintain interpersonal trust and balance competitiveness with security concerns (Moeller, 2018).

Role of gangs and organized crime in drug markets

Some criminal organizations focus their activities entirely on illicit drug markets. Others have added illicit drug production and drug trafficking to their criminal activities. In general, the involvement of criminal organizations in various illicit markets seems to be a function of the nature of the market and the level of profits to be derived from it (Global Initiative Against Transnational Organized Crime, 2021).

Street gangs can serve as an entry point for deeper involvement in drug markets (Augustyn, McGloin, & Pyrooz, 2019). This is why

neighbourhoods, cities or countries exposed to intensified drug trafficking activities often have a high incidence of violence and corruption. However, a minimum level of sophistication and organization is required in order for any group to effectively exploit an illicit drug market. Organized crime networks, fostering cooperation and various forms of partnerships, can achieve this level of sophistication and therefore tend to dominate illicit drug markets. The most successful criminal groups are usually those that are able to make strategic use of violence and systematic use of corruption and intimidation to weaken official controls and law enforcement.

These criminal groups are also mobile. That mobility is best understood as a function of shifting business opportunities, the nature of a given criminal market, and the constraints under which it operates (including law-enforcement controls and territorial competition between criminal groups) (Morselli, Turcotte, & Tenti, 2011). In highly competitive drug markets, for example, criminal groups face important obstacles to growth. Dealers go to places where there are large volumes of potential consumers such as bars, hotels, clubs, and coffee shops. They are aware that they cannot always avoid arrest and they try to operate in places where there is a lesser risk of apprehension (Bernasco & Jacques, 2015). They may move their operations from an open to a closed market and only do business with those they trust or know (Harocopos & Hough, 2005).

Impact of local drug markets on communities

Local, street level drug markets tend to appear in already vulnerable or disadvantaged communities. They also have a disorganizing influence on communities and ultimately, street markets themselves are a form of social disorganization. There is clear evidence that street-level drug markets are both directly and indirectly related to property crime, as well as serious and violent crime. It is suggested the presence of an illicit market in and of itself may not be problematic (and there could actually be a positive relationship to the community); rather, a disorganized market may cause disorder within a community. Also, the structure of the market seems to influence the level of conflict that prevails within that market and in the community (Taylor et al., 2011).

Open or street-level drug markets are considered 'hotspots' by law enforcement and are more likely to experience disorder and violence. There is often a spatial link between drug hotspots, other overlapping illegal markets, disorder, and serious crime (Weisburg & Mazerolle, 2000) and also between open drug markets and the open sex trade (May, Edmunds, & Hough, 1999). Sex markets and drug markets often share similar spatial features such as near bus stops, motels, hotels, and disorganized neighborhoods (Onat, Akca, & Bastug, 2018).

Drug markets and violence

Not all illicit markets are necessarily violent; illegality itself is insufficient to generate high levels of violence in a market (Reuter, 2009). As Naylor (2009) convincingly argued, there is very little in the inherent logic of illegal markets to dictate the use of violence in their conduct, as the cause of such violence when it is observed is probably best explained by the societal and political context, including law enforcement and other measures to regulate and control these markets.

Illicit drug markets are not always characterized by violence, but violence is a fairly regular occurrence in most drug markets, particularly at the trafficking level, either among trafficking networks or between trafficking networks and the state (Friman, 2009; OAS, 2013). In the absence of state-backed dispute resolution and enforcement mechanisms, drug market participants must often resort to violence. Along with valuing reputation maintenance and loss recovery, street-level drug dealers also place value on vengeance as a mechanism of maintaining legitimacy among peers (Corsaro, Brunson, & McGarrell, 2010).

Illicit drug market violence is influenced by various factors (Coomber, 2015). Competition within illicit drug markets tends to be territorial because access to a share of the market is usually associated with a group's predominance within a given territory. Organized crime groups aim to control the allocation of territories or sectors of operation, and, at times, they must also compete with each other for territory. The particular drug matters less in determining patterns of violence at the systemic level than the aforementioned considerations of distribution networks and market share, patterns of law enforcement, and the political agendas of groups engaged in the trade (Friman, 2009). Some of this territorial violence may have been reduced by the emergence of a cyber drug market.

According to Dickinson (2017), variance between the level of violence in different drug markets can be explained by a number of factors, including the form of the market (open, semi-open, closed), the culture of the dealers or users, and the informal controls exercised by dealers. Closed markets are apparently less violent because of the nature of the relationships between participants and the presence of non-violent control mechanisms (avoidance, negotiation, shaming, rewards). Where gangs maintain street level open air drug markets, there may be a significantly higher incidence of violence and property crime, and an even more significant crime increase when more than one gang is operating in one space or seeking to use that same space for drug distribution (Taniguchi, Ratcliffe, & Taylor, 2011).

Violence is also used within or between groups for punishment, or to solve disputes. When a certain level of collusion exists between a criminal group and law enforcement, the use of violence is mitigated by a desire not to upset existing arrangements with law enforcement officials by obligating them to respond to the public pressure to counter such violence (Duran-Martinez, 2015).

In criminal markets, violence does not happen by accident, and it is seldom the first resort (Reuter, 2009). Specific factors are necessary to generate violence. Whether in licit or illicit markets, violence is typically selective and instrumental. In relation to drug markets, the selective use of violence lies in disputes between crime groups over control of lucrative distribution networks and market share (Friman, 2009). It is more likely to occur where there is greater competition and where the regulatory and law enforcement agencies are either weak or fragmented (Andreas & Wallman, 2009).

There is also evidence that instability in the economic value of drugs, for example cocaine, influence the level of violence within the countries that constitute the global cocaine trafficking network (Aziani, 2020). Violence has potentially high costs as a mode for dealing with drug market grievances. Drug market participants understand that violence is bad for business and therefore have good reasons to try to find peaceful solutions when conflicts arise (Bouchard, Soudijn, & Reuter, 2021). In fact, drug market participants appear to be motivated to find peaceful solutions when conflicts arise and recognize that violence is not good for business (Dickinson, 2017). Several studies have found that violence is only used reluctantly (Coomber & Maher, 2006; Desroches, 2007) and there exists multiple self-regulation practices and alternatives to violence among drug market actors (Meeson & Morselli, 2012).

Increases in violent confrontation and murders following interventions by security forces against criminal organisations involved in the illicit drug markets have also been documented. The destabilization of criminal organizations through capture or neutralization of key individuals typically triggers violent competition and succession battles as well as violence between and within groups (Atuesta & Ponce, 2017).

The World Drug Report 2020 summarized the complex relationship between illicit drug markets and violence as follows:

"The association between drug trafficking and violence is multifaceted. Large-scale organized crime activities including international drug trafficking can take place without outbursts of violence when stable criminal structures are in place. In the short run, the presence and level of violence is dependent not so much on the quantities trafficked as on

certain changes that produce instability in the balance of power between organized crime groups, such as changes in the size of illicit markets, the death or incarceration of high-profile criminals and law enforcement measures that weaken one group relative to another" (UNODC, 2020: 15).

Comparison with other illicit markets

Looking at other illicit markets offers a different perspective on the use of violence in relation to criminal markets. Illicit markets are not necessarily violent. Some of them do not or rarely involve overt violence. All illicit markets, particularly those that are facilitated by criminal networks, are adaptive. Their capacity to adapt may perhaps sometimes be exaggerated (Fabiani & Behlendorf, 2021), but we do not know much about networks that fail. Adaptability eventually determines the resilience and, ultimately, the survival of any licit or illicit market.

Organized crime groups are also involved in licit markets which they often try to infiltrate and dominate through investments of proceeds of crime, violence, fraud, coercion and corruption. In fact, many illicit markets exist parallelly to their licit counterpart and the limits between them are often permeable and there are countless opportunities for diverting products and profits from one market to the other. The illicit trade in legal goods, including the theft and diversion of products, and the adulteration, counterfeiting and production of substandard goods and various forms of contraband, is characterized by the relatively free exchange and substitution of legal and illegal goods, often using the same supply chains and marketed by the same vendors and distributors (Naím, 2005).

It is interesting to think about how the partial decriminalization of cannabis, in an international environment where the production and sale of that drug continues to be heavily criminalized, has drastically changed the position of that cannabis market on the continuum of licit to illicit markets. The growing influence of and investment in the cannabis industry by large corporations, competing with the illicit market with varying levels of enforcement of emerging regulatory regime is something which, as the United Nations suggested (UNODC, 2020), should be monitored closely. The implications of this policy shift for law enforcement and for law enforcement cooperation between countries which have legalized the non-medical use of cannabis and those who have not are quite complex.

As all criminal markets constantly evolve, trying to control, eliminate or disrupt them typically requires more than a superficial understanding of their structure, organization, participants, and dynamics, as well as timely information about the profits that are realized, laundered, distributed and reinvested. Unfortunately, developing that kind of intelligence is often beyond the capacity of most law enforcement agencies, unless they are

specialized in that area or were created to regulate and control a specific market. When thinking about disrupting a market, licit or illicit, it is important to think in terms of how to reach out and influence the consumers of that market's products and services. One may think, for example, of consumers of illicit wildlife trade (Delpech, Borrion & Johnson, 2021), or of counterfeit medicine (Global Initiative against Transnational Organized Crime, 2020).

The vulnerabilities and resilience of drug markets

Criminal networks and organizations take actions to minimize the likelihood of their detection and increase their security, including limiting the visibility of key participants, the number of interactions among network members, and the overall knowledge each member has of the network (Duxbury & Haynie, 2019). Examining the ability of criminal organizations to recover and pursue their criminal activities after a disruption tends to reveal that isolated law enforcement disruptions are usually unsuccessful at reducing the activities of networks.

Researchers have been interested in assessing the vulnerability and resilience of illicit drug markets (Bouchard, 2007). All distribution networks are susceptible to changing market conditions and usually adapt themselves to the new circumstances. It has been suggested that the resilience of illicit drug markets can be understood in terms of the structural characteristics of drug networks and actors involved in various aspects of that illicit commodity chain (Malm & Bichler, 2011). One can also use social network analysis to understand how individuals progress through networks and become entrenched in more serious criminality (Ouellet, Bouchard, Malm, Aili, 2016), or analyse offenders' co-offending records or co-offending patterns to better understand the functioning of illicit drug networks (Tenti & Morselli, 2014). This suggests the idea that social network analysis could lead to an understanding of these markets, their vulnerabilities and redundancies, and generate market disruption practices aimed at key pressure points within that chain. However, the limitations of that approach are obvious when considering the general paucity of reliable data on criminal networks and those participating in them.

Morselli and Petit (2007) hypothesized that a criminal network's flexibility, a feature generally presented as a sign of resilience, may contribute to a more significant demise within a context of intensive control. Networks engaging in illicit activity have to balance the need for efficient business connections and communication with security and secrecy. Involvement in markets for certain drugs (e.g., cocaine) can hold a greater a greater risk of arrest and conviction than for others (e.g., cannabis). Certain organizations or individual dealers are perhaps more successful than

others at avoiding arrest and incarceration, but this may be due more to the strength and resilience of the network than to its size (Bouchard & Ouellet, 2011).

3. DRUG SUPPLY DISRUPTION APPROACHES

Supply reduction encompasses various national and international activities whose primary goal is to reduce the availability of illicit drugs. There are numerous bilateral and multilateral cooperation agreements through which intelligence gathering and interdiction operations seek to disrupt international drug trafficking. Initiatives to reduce the illicit supply of drugs range from customs and border control initiatives to local-level policing strategies, each with the objective of reducing street-level supply by dismantling local production capabilities and disrupting international and national distribution networks. Despite these efforts and all the law enforcement seizures and other measures, the Commission on Narcotic Drugs reports year after year an overall increase in drug availability (with some variance depending on the type of drugs). In 2021, the Commission reported large increases in the production and availability of cannabis as well as all-time highs in the amounts of amphetamine, methamphetamine and ecstasy-type substances available seized all reached all-time highs, indicating an increasing global problem (Commission on Narcotic Drugs, 2021).

These initiatives are also assumed to have some impact on aggregate and individual-level demand for drugs by, among other things, an increase in the price of drugs. To put this assumption in perspective, it should be noted that UNODC's World Drug Report 2020 reveals that drug use and the demand for drug around the world has been on the rise, in terms of both overall numbers and the proportion of the world's population that uses drugs: "In 2009, the estimated 210 million users represented 4.8 per cent of global population aged 15–64, compared with the estimated 269 million users in 2018, or 5.3 per cent of the population". (UNODC, 2020: 7).

Despite countless national and international efforts to interdict drugs, disrupt the drug supply and limit the availability of drugs on illicit markets, drugs have remained plentifully available nearly everywhere through these markets. In some instances, in drug-exporting countries, drug enforcement efforts became increasingly militarized and drug eradication efforts became increasingly violent, leading not so much to a weakening of existing drug supply markets or a lasting reduction in drug availability, but to an escalation of societal violence.

This section reviews five related law enforcement approaches to disrupt the illicit markets' drug supply: disruption of drug availability and prices, mostly through drug seizures; disruption of drug production; disruption of drug trafficking (importation and exportation); disruption of the supply of counterfeit and contraband pharmaceuticals; and, disruption of cyber drug markets.

In total, twelve studies were identified which were attempting to measure the impact of law enforcement disruption strategies targeting the supply of drugs at various level of the supply chain (see Table 1). Three of these studies relate to the drug cybermarket which some may argue involves not only a different kind of drug distribution system, but also a very different type of distributed supply system.

TABLE 1 - DRUG SUPPLY DISRUPTION APPROACHES

Disrupting Drug Availability and Prices			
Study	Country	Indicators of Impact	Key Findings
Best et al., 2001	England	• Drug availability • Price of drugs • Quality/purity of drugs	• No discernible impact on drug availability, price or purity.
Mazerolle, Soole, & Rombouts, 2007	Systematic review. Various countries.	• Drug availability • Arrests • Drug seizures	• Interventions that aim to reduce supply at a national or international level reveal little empirical evidence on which to base an overall assessment. Moreover, the evidence that does exist fails to support interdiction or crop eradication strategies. • Multi-jurisdictional task forces sometimes produced a large increases in police outputs, such as arrests and seizures. Uncertain impact on drug market.
O'Reilly, Hughes, Bright, & Ritter (2020)	Australia	• Changes in drug supply • Structural and functional changes within the drug trafficking network	• 32 disruptions of the drug supply of a particular network did not prevent that network from continuing to sell large quantities of drugs for at least 15 years. • The supply disruptions were associated with a variety of structural and functional changes in the network, including shift from mostly international trafficking to mostly domestic manufacture (and vice-versa), recruiting

			corrupted public officials, decentralization, as well as changes in network density, roles, and sizes).
Payne, Manning, Fleming, & Pham, 2020	Systematic review of 35 studies. Various countries.	• Price elasticity of demand (relative sensitivity and responsiveness of drug users to an increase in the price of drugs).	• The demand for illicit drugs is, on average, weakly price inelastic. • Law enforcement activities that increase drug prices can have a substantial effect on the quantity demanded. • Price elasticity of demand varies by type of drugs and is highest for methamphetamine. • A change in price of a drug is not experienced or responded to equally by all drug users. • The extent to which drug users are prepared to switch between drugs as relative prices change needs further research.
Disrupting Drug Production			
Study	Country	Indicators of Impact	Key Findings
Petruželka & Barták, 2020	Czech Republic	• Number of arrests • Number of non-fatal intoxications • Drug availability • Violent crime	• Control over methamphetamine precursors was associated with the proliferation of international and organized crime groups and increase violence. • No change in the overall number of arrests and nonfatal intoxications.

Measuring the effectiveness of law enforcement actions to disrupt drug supply is difficult. There is a broad range of criteria for measuring what counts as 'effectiveness' in action against high, middle and low levels of drug supply (Dorn, Bucke, & Goulden, 2003). Furthermore, studies are not always able to quantify the nature, scope and actual extent of the law enforcement activities involved in supply disruption initiatives. A variety of proxy variables are used to quantify drug law enforcement actions, number of drug arrests, drug arrests as a proportion of total arrests, police expenditure, number of police officers, and quantity of drug and financial proceeds seized.

The criteria against which one may measure the effectiveness or success of these approaches include: drug availability (including the availability of the drugs specifically targeted by the disruption activities); the price of drugs (a proxy for drug availability, based on the assumption that the price of drugs goes up as a result of reduced availability, which can sometimes

be misleading); the quality and toxicity of drugs (two proxies based on the assumption that the quality of drugs is often adulterated as a result of reduced availability); the length of time it takes for the supply to be replenished. There are also attempts to measure the extent to which changes in drugs prices affect the demand of these drugs.

Other effects of drug supply disruption interventions are not intended. These effects are measured by indicators such as: increased level of violence due to competition among drug dealers in response to temporary fluctuations in drug availability, quality and costs; displacement of drug production activities (sometimes to more vulnerable areas or areas that are more difficult to police); opportunities created for new actors to enter a particular drug market; drug users graduation to different, sometimes more dangerous drugs; public health effects including changes in the rates of drug overdoses. However, because these effects are often minor and very temporary and because most measurable changes in a drug market can be attributed to many factors other than a specific disruptive law enforcement intervention, very few studies have been able to satisfactorily measure the impacts of these law enforcement disruption initiatives.

Disrupting drug supply and drug markets (drug seizures)

A study of a series of high profile arrests and drug seizures in England did not find a discernible impact on drug availability, prices, or quality (Best et al., 2011). An early review of the drug law enforcement evaluations noted the poor quality of research in drug law enforcement and the fact that the range of interventions that had been evaluated was limited. The authors concluded that there was no indication that police strategies such as interdictions and seizures had an impact on drug supply and that research findings were also inconclusive concerning whether police crackdowns, raids, and undercover operations substantively impact drug-related crime rates (Mazerolle, Soole, & Rombouts, 2007). On the contrary, that review uncovered fairly strong evidence that this kind of drug law enforcement generally fails to achieve its stated objectives of reducing the supply and use of illicit drugs (Mazerolle, Soole, & Rombouts, 2007).

Analyses of illicit drug markets across multiple countries and time periods show that frequent supply changes occur. However, a temporary disruption in a market's drug supply, if it results in higher drug prices, may not necessarily reduce the demand for that drug (Payne et al., 2020). Also, it may not necessarily produce its intended effect on that drug market either. A study by O'Reilly, Hughes, Bright, and Ritter (2020), in Australia, examined how a high-level drug trafficking network adapted to supply changes and highlighted the complex adaptive nature of the illicit drug trade and its resilience to market change. The researchers identified 32

supply changes (59% were law-enforcement-caused and 41% not) and found that despite these significant changes the network continued to sell large quantities of drugs for at least 15 years. The supply disruptions were associated with a variety of structural and functional changes in the network, including shift from mostly international trafficking to mostly domestic manufacture (and vice-versa), recruiting corrupted public officials, decentralization, as well as changes in network density, roles, and sizes). Some of these changes resulted in negative consequences such as corruption or the increased domestic manufacture of methamphetamine (O'Reilly et al., 2020).

The effectiveness of supply reduction efforts is conceivably dependent on the relative sensitivity and responsiveness of drug users to an increase in price, including an increase in in price (or in risk) due to law enforcement (Pacula & Lundberg, 2013). Payne and his colleagues conducted a systematic review of studies of the price elasticity of the demand for illicit drugs, or the extent to which the demand for certain drugs is influenced by its price (Payne, Manning, Fleming, & Pham, 2020). They reported that the price elasticity of demand for illicit drugs, varies according to the type of drugs affected and the type and gender of users, and that this appears to be country specific. They observed that users' demand is most sensitive to price changes of methamphetamine, but that there seems to be a weak link between price and demand for all other drugs, such as heroin, cocaine, and cannabis (the latter having the weakest link between price and demand). Moreover, user demand was less influenced by price in the short run compared to the long run; users in specific geographic locations (i.e., Australia or Norway) were more sensitive to price changes compared to users in other locations (such as the U.S.). Regular users were more sensitive to price changes compared to new users. Female users were more sensitive to price changes compared to male users (Payne et al., 2020). Purity may play a role in shaping users' demand: demand may be more sensitive to price changes in low-quality product compared to price changes in high-quality product – however, purity may play an insignificant role in user demand as users may only be able to perceive the quality rather than know the actual purity of the drug. Users may also substitute drugs as a reaction to drug price changes (Payne et al., 2020). Together, the studies these researchers reviewed suggested that the demand for illicit drugs is, on average, weakly price inelastic. The authors also cautioned that the demand reduction benefit of any supply reduction strategy must be weighed against these other potential outcomes and the hidden harms that can result (Payne et al., 2020: 12).

Bennet's review of the links between drug law enforcement initiatives designed to reduce the availability of illicit drugs, and the illicit drug problem in Australia concluded that:

> "(…) harsher penalties, increased surveillance and policing have produced a more difficult and ruthless environment in which drugs are produced, distributed and used. They have increased the price and value of drugs and with it the potential profit. The risks are high but so are the profits, serving as an incentive for criminal perseverance and innovation" (Bennett, 2010: 130).

Disrupting drug production

Various strategies have been used to disrupt the production (and transformation) of various drugs, including: locating and destroying illegal crops (or unauthorized crops), labs, and storage facilities; prosecuting growers and others involved at various stages of the drug production process; controlling access to drug precursors; and, encouraging farmers to switch their production to alternative crops. Yet, the production of plant-based substances such as heroin, cocaine and cannabis remain at some of the highest levels recorded in modern times and drug markets include hundreds of synthetic drugs, many of them not under international control (UNODC, 2020).

Efforts to decrease the drug supply have usually had a negligible impact on the availability of these drugs on local markets. In Canada, for example, at the end of the last century and beginning of this one, enforcement agencies intensified their effort to control the production and distribution of cannabis and deployed significant resources in an effort to eradicate cannabis growing operations which, at that time, were not only becoming more numerous, but also larger and more sophisticated. The cannabis market was generating huge illicit profits for criminal groups with little apparent risk and a minimum investment (Plecas et al., 2002). The cannabis market, however, was never seriously affected and cannabis continued to be widely and easily available across the country. In fact, worldwide, an estimated 192 million people used cannabis in 2018 (UNODC, 2020), making it the most available and the most used drug globally.

Because of the increasing numbers of clandestine drug laboratories detected each year, law enforcement agencies have tried to target these activities. However, most law enforcement responses to illicit drug manufacture are reactive, utilizing methods such as informants, undercover operations, crackdowns and raids, and suffer from a general lack of high-quality evaluations (Mazerolle et al., 2007). The reasons for this may be found in law enforcement agencies' preference for approaches leading to arrests, convictions and seizures, as well as a lack of understanding of the criminal groups' versatile and highly adaptable operating practices (Chiu, Leclerc, & Townsley, 2011).

The regulation and control of drug precursors is often seen as one of the

most important tools of supply reduction and a positive public health impact. However, a study of the impact of precursor regulation on the methamphetamine market in the Czech Republic showed that methamphetamine precursor regulation was associated in that country with the proliferation of international and organized crime groups and with no change in the overall number of arrests and nonfatal intoxications (Petruželka & Barták, 2020). That drug market was indeed affected, but changes in drug supply patterns led towards more organized groups and to an increasing involvement of foreign nationals in that market.

According to the 2020 Global Report on Drugs, "Many of the chemicals most commonly used as pre-cursors to synthesize drugs such as amphetamine, methamphetamine and "ecstasy" have been placed under international control. Traffickers and manufacturers have sought alternatives – not only less well-controlled substances but also chemicals specifically designed to circumvent controls, known as "designer precursors" (UNODC, 2020: 11).

Disrupting drug trafficking (importation and exportation)

Border interdiction is usually seen as an important governmental strategy because it is believed to hold the greatest promise, including disrupting drug transportation, exportation and importation, through border controls, searches on various modes of transportation (boats, cargo ships, planes, trains, containers, cars and trucks), use of informants, and infiltration of criminal organizations. In recent years, border control inspection technology has evolved considerably leading to greater effectiveness matched only by the equally creative use of technology by traffickers further facilitated by digital communication. However, traffickers show resilience by changing routes, methods, production practices, transportation modes. Major heroin, cocaine and methamphetamine traffickers, for instance, have varied routes and continue to develop new trading patterns (UNODC, 2020).

Border interdiction strategies are an important part of law enforcement efforts to disrupt the supply of drugs to and through illicit markets, but they too have never had a lasting effect on drug markets. With the greater ease of international travel, massive increases in international trade and the transnational flow of goods and people, not to mention the containerization of the transport industry, the drug interdiction or disruption approach became increasingly expensive and much less effective over the years. In many instances, drug-related corruption, or "narco-corruption" as it is often called, allowed criminal organizations to perpetuate their illicit activities, to operate with minimal interference from the authorities and to derive maximum profit from illicit drug markets. For international drug control to be more effective, the violence and corruption

associated with drug trafficking would have had to be addressed more resolutely and more systematically (International Narcotics Control Board, 2010).

A study of the impact of drug interdiction efforts in several countries, based on interviews with informants embedded in drug trafficking organizations, showed that sporadic counter-drug interdictions do not a have permanent deterrent effect on transnational drug smuggling operations (Toth & Mitchell, 2018). According to that study, law enforcement interdiction operations produced temporary changes in drug trafficking, as traffickers adopted a variety of methods to thwart the efforts of law enforcement, often by relying on information acquired from corrupt local law enforcement. Interdiction operations displaced trafficking activities (temporally, spatially, and methodological), but there was little evidence that drug traffickers responded to such operations by moving into new areas (i.e., malign spatial displacement). Drug traffickers continued to engage in their illegal activities because the perceived rewards appeared to be greater than the actual risk of apprehension (Toth & Mitchell, 2018).

The effectiveness of drug trafficking disruption activities typically rests on the presence of effective transnational law enforcement cooperation and mutual legal assistance in criminal matters, something which is often in short supply. According to the World Drug Report, the drug problem has never been more international in nature and national-level responses are by themselves insufficient (UNODC, 2020: 34); dismantling transnational networks is possible only through multi-country efforts. However, it is easy to see that international cooperation did not grow fast enough to keep up with the pace of change in patterns of transnational crime, the movement of criminals, and their growing technological sophistication. By most accounts and in most parts of the world, this international cooperation regime remains very weak, fragmented and capricious (Dandurand & Chin, 2015). Current international cooperation mechanisms and processes have been rendered even less efficient by new technological developments and constant shifts in criminal patterns, not to mention the paralyzing politicization of international cooperation in criminal matters.

Organized crime groups are almost always present in one way or another at the various nerve centres of the transportation sector, in particular marine ports and airports which they often have successfully infiltrated for decades. Organized crime on the waterfront has been a feature of the marine transport industry for hundreds of years (Brewer, 2014). The containerization of transportation has multiplied the possibilities for criminal activities and drug trafficking. Internal conspiracies at marine ports serve to move contraband-filled containers, steal containers, or tip

off criminal groups of impending law enforcement activities. Organized crime groups control many of these activities or directly benefit from them (Presidia Security Consulting, 2011). They support and enforce these conspiracies through the intimidation of dock workers, supervisors, regulators and even law enforcement personnel. Similarly, airport facilities are susceptible to criminal exploitation and infiltration, particularly at the major international airports that receive frequent flights from either source or transit countries for various types of contraband (RCMP, 2017). Organized crime groups exploit the situation by corrupting or intimidating existing employees or by placing criminal associates into the airport workforce.

A qualitative study of organized crime, policing and security across based on interviews with law enforcement officials in five major seaports, Genoa (Italy); Melbourne (Australia); Montreal (Canada); New York (USA); and Liverpool (UK) presents the policing and security struggles to disrupt importations (Sergi, 2020). According to the officials interviewed by the researcher, it is the rules of trade that affect the success of drug importations the most, rather than the failures of effective security and policing. Law enforcement interventions create obstacles and force importers to adapt and modify their practices; certain trafficking activities are displaced as a result of the disruption, but new opportunities for offending are created (Sergi, 2020).

Transport companies are often part of the logistics of organized crime, willingly or unwillingly playing the role of facilitators. Organized crime groups find ways to use these companies, infiltrate, exploit, and control them using front organizations or other means (Klima, 2011). The transportation sector is especially vulnerable to criminal infiltration because of the opportunities it offers and the fact that it is often poorly regulated. Transport companies that find themselves in a precarious financial situation, sometimes because of unfair competition or corruption, become particularly vulnerable to infiltration or control by an organized crime group.

The use of Social Network Analysis (SNA) to identify key actors that are vital to drug trafficking network and actors' attributes has been proposed to help law enforcement tailor drug market disruption activities by removing from a market or criminal network those key actors that supply critical resources for the network to function (Bright et al., 2015). An examination of the structure and evolution of a drug importation network that was the target of an extensive two-year criminal investigation in Montreal focused on communications within the network as well as the structural features and inner workings of the targeted criminal network (Morselli & Petit, 2007). An analysis of these communications revealed

how network centralization and critical node status are variable, and not static, properties of a criminal network under considerable constraint. The study showed how a criminal network decentralizes and is re-ordered in response to intense law-enforcement targeting (Morselli & Petit, 2007).

Disrupting the supply of counterfeit or contraband pharmaceuticals

There has been a rapid rise in the non-medical use of pharmaceutical drugs (UNODC, 2020) and the diversion of pharmaceutical products from the licit to the illicit markets is a growing problem. Given the complexity of the supply chain of most pharmaceuticals, attempts to disrupt that source of supply for the illicit drug market have tended to focus on increasing the traceability of products and on various levels of market inspection ('track and trace') to protect the supply chain integrity. New regulations have been introduced in several countries that require producers and distributors to track and trace packages of their products throughout the supply chain, and pharmaceutical companies are investing in traceability technologies (Tinti, 2019). However, for this report, no study was identified that actually measured the impacts of this particular approach.

The global market in counterfeit, falsified and illegally traded medicines has expanded very rapidly, evolves constantly, and offers lucrative and low-risk opportunities for criminal entrepreneurs and networks (Hall, Koenraadt, & Antonopoulos, 2017). A study of these networks in Europe demonstrated that the trade involves flexible and complex structures that straddle the categories of licit and illicit. Innovative and accessible information and communications technologies have also transformed that market. The study also showed that, in the countries studied, the great majority of illegal exchanges are carried out by numerous, relatively small and often ephemeral enterprises (Hall, Koenraadt, & Antonopoulos, 2017). The internet is a primary market for counterfeit pharmaceuticals (Lavorgna, 2015).

States are increasingly monitoring patients and providers through prescription monitoring programs (PMPs). The programs monitor misuse by gathering information about controlled substances dispensation from all pharmacies in a state, then compiling that information into a database for health care providers and law enforcement agents. There are however some concerns with these programs, including the potential for misidentification, the misuse of discretion, or the creation of barriers for already disadvantaged groups (Chiarello, 2015).

Disrupting the cyber drug markets

Illicit drug markets are active on both the surface and dark web, where illegal drugs constitute a large proportion of the products sold. The internet allows market participants to communicate, distribute, obtain supplies amidst much anonymity and relatively safely (Maras, 2014). All cybermarkets use a non-contact drug dealing method where sellers and purchasers conduct their transactions without meeting face-to-face (Mikhaylov & Frank, 2018). Some drugs can be procured on the surface web or through social media. Most others are available on the dark web, where the drug trade is characterized by low operating costs and high profits, as well as high use of cryptocurrency and tech-savvy dealers, rather than cartels. For the consumer, anonymity is easier to maintain and the risks of making purchases in open-air markets are reduced. Illegal drugs are also marketed and sold on social media platforms, where sellers advertise illicit substances and consumers can contact them directly to make a purchase (Global Initiative Against Transnational Organized Crime, 2021:19).

Drug dealing on public social media platforms opened up new space of trading in illicit goods between strangers. A study of illicit drug dealers on the cybermarket revealed that they perceive less risk of violence, less risk of police intervention, and a potential for greater profits when selling drugs online instead of offline (Munksgaard & Martin, 2020). Even when the information media reported increased law enforcement efforts to halt cryptomarket trade, and potentially increased risk for traders, the level of trade and revenues increased instead of decreasing in three regions under observation (Ladegaard, 2018).

However, drug trading on social media requires different skills of handling risk than trading on online cryptomarkets (Bakken, Moeller, & Sandberg, 2018). An enhanced skillset for operating online may include, trust building and reputation building skills and technical literacy. Drug dealing on social media varies according to the structure of the chosen media and users' risk perceptions and motivations: public digital markets (e.g., Facebook groups and Instagram) allow sellers to expand their customer lists, but the risk is quite high, while private digital markets are based on one-on-one communication and demand greater knowledge but are perceived as more secure. Sellers choose which media to use and how to use them based on perceived risk and, therefore, have a significant impact on the formation of social media drug markets (Bakken & Demant, 2019). The profile of sellers on social media varies. Bakken identified three main persona types: the professional dealer, private dealer, and cultural dealer (Bakken, 2021).

A Nordic comparative study on social media drug dealing reported that despite national differences, social media is a common tool used in selling

and buying illegal drugs. Many participants reported easily drifting in and out of social media dealing and buying, without being aware of the seriousness of the offence (Demant et al., 2019).

Darknet markets provide the digital infrastructure for the trade of illicit drugs using anonymizing software and cryptocurrencies. Online sales via the deep web are experiencing exponential growth in most parts of retail-level sales, except heroin and crack users where face-to-face transactions remain predominant (Barratt & Aldridge, 2016). Cryptomarkets are more like closed markets than open or street markets, given that these drug types are most often distributed through social supply networks (Barratt, Ferris, & Winstock, 2016). The online context circumvents earlier coordination problems in illegal markets, making darknet markets more structurally efficient compared with conventional drug markets (Bakken, Moeller, & Sandberg, 2018). Given the plasticity of technology, digital markets are highly mouldable and allow online drug dealers to shape the markets in which they participate (Bakken & Demant, 2019).

From a law enforcement perspective, cryptomarkets are more difficult to disrupt and resource intensive to investigate (Barratt, 2015). In fact, tracking vendors (and vendor aliases) over time and across markets is difficult and sometimes futile, and Pretty Good Privacy (PGP) encryption keys are difficult to test (Broadhurst et al., 2021). Nevertheless, some significant cyber drug market disruption operations have been successful. For example, Operation DisrupTor was designed to disrupt opioid trafficking on the darknet. The success of this operation was measured by the number of arrests of Darknet drug traffickers/criminals (179 arrests), the amount of money seized ($6.5 million), and the quantity of drugs seized (500 kg: fentanyl, oxycodone, hydrocodone, methamphetamine, heroin, cocaine, ecstasy, MDMA, and medicine containing addictive substances) (U. S. Department of Justice, 2020). However, there was no assessment of the net impact of that intervention on the drug market or on drug availability through the dark web.

Van Buskirk, Bruno, Dobbins, Breen, Burns, Naicker, & Roxburgh (2017) did a study on "Operation Onymous" which shut down the biggest crypto market called "Evolution". Furthermore, Van Buskirk and colleagues (2017) explained that the disruption only had a short-term impact on the drug market and many crypto markets had an increase in vendors at a steady rate.

A study of the impact of police crackdowns on drug cryptomarkets, specifically the impact of a large-scale police operation that targeted many cryptomarkets, demonstrated that cryptomarket participants adapt to police operations and that the effects of the crackdown was limited in time and scope (Décary-Hétu & Giommoni, 2017). The police operation affected

market participants but only for a short time. Both the supply and the purchase of drugs were temporarily impacted, though drug prices appear to have remained unchanged. The study's authors concluded that: "Investing time and resources into the seizure and take down of cryptomarkets therefore appears to be an ineffective way to enforce drug laws on the Internet, whatever their symbolic value to enforcement and to politicians of showing that something is being done" (Décary-Hétu & Giommoni, 2017: 72).

Broadhurst, Ball, Jiang, Wang, & Trivedi (2021) reported on the extent to which drug seizures disrupted the drug markets. The researchers analyzed opioid availability, vendor or trader movement and cross-market activity, market stock value and variations in the prices of opioid products of online drug markets to evaluate the impact of the seizures (Broadhurst et al., 2021). They found that the market closures and seizures decreased the availability of opioids, especially fentanyl, increased prices, and caused the displacement and dispersal of vendors to other drug markets.

Cryptomarkets are apparently associated with substantially less threats and violence than alternative market types used by cryptomarket customers (Barratt, Ferris, & Winstock, 2016). The shifting of the transactional setting from the physical to virtual realm has decreased the likelihood of violence at a situational level. There is also clear evidence that effective self-regulation and conflict resolution mechanisms have emerged that are specific to the online market (Morselli et al., 2017). It is quite possible therefore, as suggested by Morselli and his colleagues (2017: 242) that, with the rise of illegal drug cryptomarkets, the theories that have helped us understand illegal drug market conflicts have become partly obsolete.

In the current online environment, police crackdowns on cyber drug markets are unlikely to be effective in the long run. They may reduce the number of available drug markets, but this is temporary. Online drug markets adapt very rapidly and several new markets are created. Participants in the cyber drug markets reorganize via communication technologies (Ladegaard, 2019). Relocation of dealers to other e-commerce sites is relatively easy. All of this and the fact that a lot of interactions are deterritorialized and involve individuals in different countries (and are therefore possibly out of the legal jurisdiction of an investigating agency) create huge challenges for law enforcement's attempts to effectively disrupt digital drug markets. The World Drug Report 2019 (UNODC, 2019) suggested that law enforcement should invest in research to understand online drug markets and how to design effective disruption interventions.

4. SPACE-BASED DISRUPTION STRATEGIES

A second group of drug market disruption strategies reviewed in this report are local space-based disruption strategies focused on the bottom end of drug markets, the street level. Open drug market disruptions aim to achieve several goals, including disturbing established markets, thereby reducing public disorder, as well as interrupting supply and thereby driving up drug prices and increasing the time drug users must spend searching for drugs. Open-air drug market disruption strategies are the exact opposite of drug market geographical containment approaches. The latter involve a certain level of tolerance by law enforcement, provided that drug transactions and associated disorders remain confined to a certain area (street, park, building, or even district). These disruption strategies are also different from low-level routine law enforcement strategies, including sporadic buy-and-bust tactics, response to complaints or information received from informants, and limited-scope street-level undercover operations.

Different disruption strategies have been used to deal with open drug markets and the crime and disorder that are associated with them. Some of them focus more on the related crime and disorder than on the actual drug market. However, it is not easy to distinguish these strategies from each other because: (1) these approaches publicly present themselves differently, at least in name, but they usually borrow elements from each other and often evolve over time; and, (2) published studies of these approaches do not always specify the precise nature, scope, and level of intensity of the police interventions involved in these strategies, and all of these elements vary from one police initiative to another. Furthermore, it is not always possible to identify what essentially triggered the deployment of the law enforcement interventions (e.g., drug market violence, property crime, drug overdose; resources; national policies; gentrification and development of an urban area; population flows; political ambition) or why a particular approach was preferred to another.

For ease of presentation, two categories of strategies are distinguished from each other even if they have a lot in common. The first one, known under different names (e.g., high visibility policing, quality of life policing, etc.) typically consists of a strict order-maintenance approach, coupled with high police visibility and presence, focusing on disorder and minor infractions. The second category includes police interventions to disrupt open air drug markets, through different types of police crackdowns.

Our literature search yielded a total of (23) studies that measured the

impact of space-based disruption initiatives focused on local open drug markets, including high-visibility and zero tolerance policing and various forms of hot-spot crackdowns. Five of them were systematic reviews of previous studies. The are all summarized in Table 2.

TABLE 2 – SPACE-BASED DISRUPTION OF DRUG MARKETS			
High Visibility Policing – Zero Tolerance Policing – Quality of Life Enforcement			
Study	Country	Indicators of Impact	Key Findings
Agnew-Pauley & Hughes, 2019	Australia	• Recorded criminal incidents and persons of interest that led to a formal police response	• Stop-and-search approaches using drug detection dogs produced a greater number of arrests, but mostly users rather than dealers. • Impacts of the approach on drug transactions, drug availability, or local drug markets were not measured.
Best et al., 2001	England	• Drug availability • Price of drugs • Quality/purity of drugs	• No discernible impact on drug availability, price or purity.
May & Hough, 2001	England	• Perceptions of police officers • Perceptions of users and dealers	• Markets adapted rapidly. • Very little impact of police intervention on drug markets. • Open drug market started to transform into a closed market.
Mazerolle, Soole, & Rombouts, 2007	Reviewed 24 evaluations of (US, Canada)	• Drug activities • Drug arrests • Disorder • Crime and violent offences	• Proactive interventions involving partnerships between the police and third parties or community entities appear to be more effective at reducing both drug and nondrug problems in drug problem places than are reactive/directed approaches • All drug nuisance abatement, civil remedy, and third-party policing interventions evaluated showed some impact on drug dealing and drug offences. • The programs appeared to also have success addressing associated crime problems, such as property, violence, and/or disorder-related offenses. • Improvements in quality of life often resulted from interventions.

			• Displacement of drug and crime problems was not a major problem and occurred about as often as diffusion of benefits effects
Mazerolle, Soole, & Rombouts, 2006	Systematic review. Various countries	• Reduction in number of calls for services • Number of crimes against the person	• Community-wide policing associated with significant impact on drug and disorder offences. • Problem-oriented/partnership policing appeared more effective in dealing with drug offences, drug-related calls for service, and overall total offences than are other types of drug law enforcement tactics.
Piza et al., 2015	Review of 80 studies on use of CTV in hot spots. Various countries	• Drug crimes • Crime	• Modest and significant reduction in prevalence of crime and drug crime, particularly when CTV is used with other interventions. • Some displacement observed.
Sherman et al., 1995	USA	• Frequency of calls for service • Frequency of offence reports	• A randomized, controlled evaluation of the block-level deterrent effects on crime of uniformed police raids of crack houses. • Experimental blocks, in relation to controls, showed reductions in both calls for service and offence reports, but effects were quite small and decayed in two weeks. • Raids in which arrests were made had no consistently different impact from raids in which no arrests were made.
Werb et al., 2011	Reviewed 15 studies. Various countries.	• Violent crimes • Homicides	• An increase in drug law enforcement interventions to disrupt drug markets is unlikely to reduce violence attributable to drug gangs. • Existing evidence strongly suggests that drug law enforcement contributes to gun violence and high homicide rates. • Increasingly sophisticated methods of disrupting organizations involved in drug distribution could unintentionally increase violence.

Police Crackdowns – Hot Spots Policing			
Study	Country	Indicators of Impact	Key Findings
Aitken et al., 2002	Australia	• Visibility of drug transactions • Displacement of drug activities • Users' risk behaviour • Perceived violence	• The market rapidly adapts to new conditions. • Some displacement of drug market activities observed. • Injecting practice and safe disposal were negatively affected. • Increased in perceived occurrences of violence and fraud.
Coomber & Moyle, 2018	England	• Movement of drug dealers and markets • Recruitment of dealers • Structure of drug markets	• Intensive policing affects the structure of drug markets. • Drug markets are very adaptive following a local police pressure on drug users/dealers.
Dandurand et al., 2004	Canada	• Visibility/openness of drug transactions • Price of drugs • Availability of drugs • Calls for services • Number of fatal drug overdoses • IV drug users' access to HIV prevention, needle exchange and other services • Community perception • Displacement of drug market activities	• The price and availability of drugs in the area were not significantly impacted • The drug market became more orderly, dispersed and moving out of the public realm into private locations. • There was displacement of drug market activities and associated crime to neighbouring areas. • No measurable impact on the number of fatal drug overdoses in the immediate area. • Positive public perception of police intervention.
Kim, Phillips, & Wheeler, 2019	United States	• Citywide impacts on drug arrests, calls for service, and crime reported	• No evidence that Special Weapons and Tactics (SWAT) raids had impacts on drug arrests, calls for service, and different types of crimes. • The SWAT intervention resulted in significant but short-term decreases in street crimes involving property (robberies and larcenies).
Lilley, 2015	United States	• Violent crime	• A federally funded Weed and Seed program in five jurisdictions, with intensive drug enforcement and community restoration resources, was associated with reductions in robbery, burglary, and vehicle theft.

			• Impact on drug market unknown.
Maher & Dixon, 2001	Australia	• Harmful drug use practices • Public health risks	• Threatens to increase, rather than reduce the risks and harms associated with illegal drug markets.
Mazerolle, Soole, & Rombouts, 2007	Reviewed 23 evaluations of 20 separate crackdowns (US, U.K., Australia, Canada)	• Drug use • Drug dealing • Drug offences • Other crimes • Violent crime • Displacement • Lasting effect • Public health and harm reduction	• Certain geographical and drug market characteristics influence the effectiveness of crackdowns. • Crackdowns were largely ineffective in dealing with drug problems such as use, dealing, and drug offenses. • Crackdowns appeared to have more success addressing associated crime problems, such as property, violent crime. • Displacement (both spatial and temporal) of drug and crime problems was a common problem. • The duration of the effects of crackdowns were studied in only a few studies. The latter showed that crackdowns are only effective at reducing drug problems in the short term. • Crackdowns generally do not align with harm reduction and tend to have a negative impact on patterns of drug use, injecting practices, and demand for treatment. • Less established markets being more vulnerable to the positive effects of crackdowns than more entrenched drug markets.
Moeller & Hesse, 2013	Denmark	• Violence and violent competition between criminal groups (rates of violent crimes)	• The police crackdown on a large and stable cannabis market disrupted established hierarchies among criminal groups and spurred renewed competition. • In the five-year period after the crackdown in 2004 there were more homicides and attempted homicides in Denmark than in any five-year period for the previous 20 years.
Moeller, 2010	Denmark	• Cannabis seizures • Number of drug offences	• Increased police focus on cannabis possession offences and an increase in the

		• Structure of and participants in drug market	number of cannabis seizures were followed by a decreased amount of cannabis seized. • The number of fines for misdemeanour drug offences increased. • The proportion of persons of non-Western origin among the sanctioned increased.
Moeller, 2017	Denmark	• Structure of drug market • Participation by youth gangs	• Increased police deterrence activities in specific geographic areas may displace buyers and shift market shares between competing groups. • Increased cannabis dealing furthered gang evolution even at the lowest organizational steps, from neighbourhood groups to more delinquent collectives.
Payne & Langfield, 2021	Australia	• Offenders' perception of risk of apprehension • Self-reported offending	• Interviewed arrestees were aware of the considerable risk of detection and sanctions involved in buying heroin but apparently remained undeterred.
Ratcliffe et al., 2015	United States	• Public perception of impact of intervention	• Surveys of residents conducted before and after a hot spot police intervention showed no measurable changes in resident perceptions within the targeted communities. The operation did not appear to have negatively impacted the community nor generated positive benefits
Small et al., 2006	Canada	• Displacement of users • Safer injection practices and users access to health services • Safe disposal of syringes	• The police intervention prompted riskier injection practices. • Increase in unsafe disposal of syringes. • Evidence of widespread displacement of drug use activities to other locations. • Negative impact on contacts between health services and users.
Sousa & Kelling, 2010	United States	• Public perceptions of disorder and safety	• The public space (a park) was effectively reclaimed and there was an increase in public perception of safety.
Wood et al., 2004	Canada	• Price of drugs • Frequency of use	• The price of drugs or the frequency of use were not affected, nor was the level of

		• Enrolment in methadone treatment programs • Displacement of injection drug use	enrolment in methadone treatment programs. • Clear evidence of displacement of injection drug use from the area targeted by the police intervention into adjacent areas of the city.

High visibility policing – Quality of life policing – Confident policing

A drug market disruption strategy which was very popular around the turn of the century was variously referred to as 'zero tolerance policing', 'confident policing', 'proactive policing', 'order maintenance police strategies', 'quality of life policing', and even as 'community policing with the gloves off' (Dennis & Mallon, 1998; Hopkins Burke, 1998; 1998a; Johnson, Golub, & McCabe, 2010; Orr, 1998; Romeanes, 1998). The desired effect of high visibility policing is to disrupt the drug market by increasing the risk of arrest and making it inconvenient for sellers and buyers to exchange drugs and money. The approach was often used in conjunction with police crackdowns on open drug markets and other interventions in so-called 'hot spots'. It typically consisted of a strict order-maintenance approach, coupled with high police visibility and presence, and focusing on disorder and minor infractions (Knox, 2001). Zero tolerance policing (or intensive policing) of illicit drug markets often involved a variety of tactics: sweeps, blockading, mass uniformed presence, undercover buy-bust, surveillance via closed-circuit television, civil law enforcement (Mazerolle, Soole, & Rombouts, 2007).

This report considered eight studies, half of them individual program evaluations conducted in Australia, the United Kingdom, and the United States (Agnew-Pauley & Hughes, 2019; Best et al., 2001; May and Hough, 2001; Sherman et al., 1995), and half of them systematic reviews of previous studies (Mazerolle et al., 2006; 2007; Piza et al., 2015; Werb et al., 2015). The vast majority of these studies used police data as indicators of program impact: number of arrests, crime rates, number of homicides, number of violent crimes, number of property crimes, number of drug offences, and the number of calls for police service. In most instances, the studies found a modest but significant reduction in the frequency of drug crimes, crimes in general and violent crimes, as well as a reduction in calls for service. The duration of that effect was not always measured, but did not appear to be long lasting. Police interventions accompanied by other community-based measures and partnerships fairly consistently had a greater impact on drug offences and crime than other types of police interventions. Some of the studies considered whether some crime displacement took place and concluded that displacement occurred but

was not very significant. One study considered the impact of law enforcement interventions on drug prices, availability and quality and found no discernable impact of a police intervention on drug availability or drug prices.

The sudden and targeted enforcement of a strict intolerance of disorder was assumed to not only reduce disorder, but also to reduce crime and restore public confidence in the police. The 'broken windows theory' which inspired that approach posited a relationship between disorder and crime, based on the hypothesis that serious crime flourishes in geographical areas where disorder goes unchecked (Kelling and Coles, 1996). As Burke observed, the central thesis of that theory was that "the existence of unchecked and uncontrolled minor incivilities in a neighbourhood – for example, panhandling, public drunkenness, vandalism and graffiti – produces an atmosphere conducive to more serious crime" (1998: 667). Right from its beginning, that theory was controversial, and questions were raised as to the effectiveness of the various policing strategies that were based on its tenets, their costs, and their unintended consequences (Knights, 1998; Bowling, 1999; Grabosky, 1999; Harcourt, 2001; Kelling and Sousa, 2001).

Some high-visibility policing strategies emphasized the sentinel role of the police during or after other higher intensity interventions, for example a 'post-crackdown residual deterrence' (Moeller, 2016: 37). By adopting a sentinel role and forcing drug sellers to constantly change anchor points post transaction, without proceeding to any arrests, police disrupted drug markets by preventing buyers from easily locating sellers (Sytsma & Piza, 2018). The idea behind this approach was that the mere presence of law enforcement can prevent crime due to the credibility that was built up during the previous implementation of a crackdown (Moeller, 2016). The aim is to eventually persuade buyers to avoid the area and scatter sellers, making it difficult for buyers to locate new markets. This approach may be more effective when based on intelligence on temporal patterns of transactions in an illicit open-air drug market (Moeller, 2016).

Order maintenance activities of the police are, by their very nature, highly discretionary (Kelling, 2001) and the concept of 'zero tolerance' frequently associated with that form of intervention is itself quite ambiguous (Cunneen, 1999). Interventions targeting quality of life crimes can have an impact on the public feeling of safety, but it is not clear that they actually affect crime (Orr, 1998; Harcourt, 2001; Cohen, 1999; Sampson & Raudenbush, 1999; Sampson & Scott, 2001). Existing evidence on the effectiveness of targeting public disorder incidents and quality of life offences to reduce crime is inconclusive. Crime reduction, however, is only one of the objectives of modern policing. And, while the debate over the

'broken windows theory' continues, there is growing recognition that an order-maintenance approach centred on preventing disorder in the community can result in a reduction in the levels of fear among citizens and a corresponding increase in their quality of life (Dixon & Coffin, 1999; Maher & Dixon, 1999; Scott, 2003).

High visibility policing appears to be slightly more effective when applied in conjunction with a wide variety of other police tactics and community development initiatives (Piza et al, 2015; Mazerolle et al., 2006; 2007). In particular, problem-oriented policing initiatives that modify places, routine activities, and situations are seen as particularly promising and can, at least initially, be facilitated by order-maintenance tactics (Braga et al., 1999). As Silverman pointed out, "there is nothing in zero-tolerance policing that is inherently incompatible with simultaneously addressing related community problems through other strategies" (1998: 61). Order-maintenance policing does not in any way imply that no other attempt is made concurrently to solve problems associated with the disorder. The success of such interventions is often predicated on meaningful community consultation and involvement, and it requires interventions to elicit the cooperation of residents, community groups, and other agencies (Read and Tilley, 2000; Rivers, Norris, & McGarrell, 2012). However, that success can be compromised by "a failure to fully involve partners" or an "insensitivity to others' agendas, styles, constraints or ideologies" (Read & Tilley, 2000: 24).

The experience of the Cleveland Constabulary (U.K.) (Romeanes, 1998) seems to have demonstrated that short-term zero tolerance strategies can allow officers to reclaim the streets and implement longer-term strategies of problem-oriented policing, crime prevention, and community safety. However, there invariably remain issues about how a police intervention must evolve once the streets have been 'taken back'. Whether such a strategy has an enduring impact or not, seems to depend on whether it is pursued in partnership with – and complementarily to – the work of other social agencies (Pollard, 1999).

Many of the law enforcement-led disruption initiatives that fall in the present category involve elements of community policing or problem-oriented policing. As such, they attempt to enlist the support and sometimes also the participation of the community. For example, between 2005 and 2010, several cities in the State of Kentucky initiated types of community-policing initiatives to disrupt the production and use of methamphetamine. These initiatives relied on public education and awareness raising and increased law enforcement, and in some cases the tracking of pseudoephedrine transactions in pharmacies. The target hardening aspect of these initiatives aimed to make it more difficult for

criminals to acquire pseudoephedrine (a precursor substance in the production of methamphetamine), but this was not confirmed by hard evidence. In Louisville, between 2007 and 2009, as a result of this type of program, there was an average 37 percent increase in the number of arrests and dismantling of methamphetamine labs (mostly one-pot labs, in family dwellings and open air/no structure locations) (Vito et al., 2012). It is not clear from that study that these initiatives had a lasting impact on the methamphetamine market in that state.

Another law enforcement high-visibility street-level policing method associated with crackdowns and stop-and-search approaches is the use in many parts of the world of drug detection dogs. A study of the practice in New South Wales (NSW) examined the drug dog deployment over a period of ten years, including an analysis of unit-record data on all recorded criminal incidents and persons of interest involving drug detection dogs that led to a formal police response. It concluded that the result of this approach was on detecting users, rather than suppliers (Agnew-Pauley & Hughes, 2019). Some potentially detrimental effects of that approach were also identified. However, the impact of the approach on drug transactions, drug availability, or local drug markets was not measured.

Finally, in recent years, more attention was paid to the possibility of using CCTV surveillance, sometimes with increased patrol responses to observed incidents, as a way of responding and preventing crime and disorder (Piza, Caplan, Kennedy, & Gilchrist, 2015). It is a type of situational crime prevention (SCP) strategy based on increased levels of formal surveillance (and response) within a target area. In some instances, the surveillance is applied to drug markets and drug transactions. A systematic review of existing studies found that CCTV cameras may help control some street-level drug transactions, despite the situational prevention techniques adopted by the drug sellers to avoid apprehension by police, by providing real-time intelligence to street-level police officers (Piza, Welsh, Farrington, & Thomas, 2019). The approach, however, is susceptible to producing physical displacement of open drug transactions and may have a greater effect on other forms of crime.

Police crackdowns and drug hot spots

Police crackdowns are sudden and dramatic surges in police activity or increases in police officer presence and enforcement activities either for specific offences or for all offences in specific places. Police crackdowns take many forms, "ranging from highly planned, coordinated, intensely focused operations in which officers know the operational objectives and perform their duties precisely, to loosely planned initiatives in which officers are given only vague guidance about objectives and tasks, sometimes being told little more than to 'get out there and make your

presence felt'" (Scott, 2003: 2). Crackdowns can be categorized according to several key dimensions, including the extent to which the initiative involves increased police presence and enforcement actions in an area, the tactics used by police officers, the geographic area in which the initiative is concentrated, and the specific offences that are targeted (Scott, 2003). Some crackdowns emphasize police visibility only, whereas others emphasize police interventions, drug confiscation, and arrests. Many of them are not sufficiently strong and prolonged to produce a significant effect. Not all of them are well designed in terms of the actions needed by law enforcement or other agencies to build upon or consolidate the results achieved through the crackdown.

Police crackdowns on open drug markets are variously designed to reduce the visibility of the drug trade, reduce the number of drug-related crimes, particularly those involving theft of property by drug users, and to improve the quality of life in the community (Aitken et al., 2002; Davis & Lurigio, 1996; Caulkins, Larson, & Rich, 1993; Maher & Dixon, 2001; May et al., 2000; Smith et al., 1992; Jacobsen, 1999). Generally, police-led strategies focusing on open-air drug markets are primarily (if not solely) concerned with suppressing particular marketplaces and the local disorder they cause rather than disrupting the overall drug market. Their primary goal is typically to reduce public sales of illicit drugs in a given space or area and related crime and disorder (Reuter and Pollack, 2012). In practice, the precise goals and objectives of these crackdowns are not always explicitly stated.

A primary objective of crackdowns is to create the perception, among participants in the drug market and related criminal activities, of an increased threat of apprehension and intervention. Exactly how much intervention is required to create that perception is not always clear. Presumably, one of the main objectives of a police crackdown is to "raise the non-financial costs of dealing and buying, increasing the time it takes dealers and buyers to find one another and make a deal, increasing the risks of getting arrested, and increasing the risks of having drugs confiscated" (Scott, 2003: 25).

It may be argued that crackdowns should never be more than just one component of a broader policing policy. Indeed, research suggests that crackdowns, like other law enforcement interventions, are most effective when utilized in conjunction with other responses to address underlying conditions that contribute to the particular problem (Braga, 2001; Scott, 2003; Weisburd & Green, 1995). It is often suggested that attempts to disrupt street-level drug markets are most successful when efforts are multi-dimensional and involve a diverse approach of civil, enforcement, community, and environmental elements (Butera, 2013). For instance, a

local drug market disruption strategy can also include situational crime prevention measures that are sometimes taken by police and other agencies to make a particular location less appealing to dealers and users.

Since the early 2000s and even before, evaluations of police crackdowns on drug markets have been reporting that the effects of such police initiatives are essentially superficial and temporary, and that the drug markets adapted quickly to the new conditions. However, researchers noted the symbolic effect of a police space-based disruption intervention, its ability to signal crime control to drug market participants as well as the community, or to assuage public fears and expectations (Coomber, Moyle, & Knox Mahoney, 2019). That kind of intervention may not reduce drug supply per se or assuage public fear, but it may perhaps have a beneficial effect for the community as a whole if it reduce the amount of violence in specific drug markets (Coomber, 2015).

Evaluations

For this report, we reviewed the following studies on police crackdowns: Aitken et al., 2002; Coomber & Moyle, 2018; Dandurand et al., 2004; Kim, Phillips, & Wheeler, 2019; Lilley, 2015; Maher & Dixon, 2001; Moeller, 2010; Moeller, 2017; Moeller & Hesse, 2013; Payne & Lanfield, 2021; Ratcliffe et al., 2015; Small et al., 2006; Sousa & Kelling, 2010; Wood et al., 2004, as well as one systematic review of several studies (Mazerolle, Soole & Rombouts, 2007).

These studies took various approaches to evaluating the effectiveness and impacts of police crackdowns. Some studies relied mostly on official crime data or data on complaints received comparing data from before and after the police intervention, sometimes measuring the same fluctuations in neighbouring areas to control for potential crime displacement (e.g., Kim, Phillips, & Wheeler, 2019). A few studies used ethnographic data, including one which drew from in-depth ethnographic study of a drug market which has been underway for years prior to the police intervention (Maher & Dixon, 2001). Some studies relied mostly on perception data, collected from drug users, dealers, residents, and visitors (e.g., Aitken et al., 2002; Sousa & Kelling, 2010). A Canadian study used multiple methods, including an analysis of police and ambulance data in the targeted area and beyond, interviews with community members, street observations, interviews with officials and persons involved in the delivery of social services, sex trade workers, and members of NGOs in the targeted area (Dandurand et al., 2004).

The indicators or criteria used by these studies also varied and were dictated, at least in part, by the stated objectives of the police intervention. Few of these studies carefully measured the police

interventions themselves, their scope, persistence or intensity. None of them measured the actual costs of these police interventions or attempted to conduct a cost-benefit analysis. The main criteria used, often in conjunction with each other, were the impact of the intervention on:

- The incidence of crime (data on incidents reports, complaints, arrests) (e.g. Dandurand et al., 2004; Aitken et al., 2002; Kim, Phillips & Wheeler, 2019; Mazerolle, Sooler, & Rombouts, 2007).
- The incidence of violent crime (complaints, arrests) (Lilley, 2015, Kim, Phillips & Wheele, 2019; Mazerolle, Sooler, & Rombouts, 2007; Moeller & Hesse, 2013;
- The incidence of drug offences (Kim, Phillips & Wheeler, 2019; Mazerolle, Sooler, & Rombouts, 2007; Moeller, 2017).
- The frequency of calls for police service (Dandurand, 2004; Kim, Phillips & Wheeler, 2019; Mazerolle, Sooler, & Rombouts, 2007).
- Self-reported offending (Payne & Langfield, 2021).
- Public perceptions of safety and disorder (Sousa & Kelling, 2010; Ratcliff et al., 2015; Aitkens et al., 2002).
- The visibility/openness of drug transactions and/or associated disorder (e.g., Aitken et al., 2002; Dandurand, 2004; Coomber & Moyle, 2018).
- The displacement or partial displacement of the drug scene to nearby areas (e.g., Aitken et al., 2002; Coomber & Moyle, 2018; Dandurand, 2004; Maher & Dixon, 2001; Dixon & Coffin, 1999; Dixon & Maher, 2005; Mazerolle, Soole, & Rombouts, 2007), including the displacement of users (Wood et al., 2004; Small et al., 2006), and substance displacement (Maher & Dixon, 2001).
- The price and quality of drugs (Wood et al., 2004)
- Drug users (Aitkens et al., 2002; Maher & Dixon, 2001; Wood et al., 2004).
- Public health, such as discouragement of safe injecting practice and safe needle and syringe disposal increases in injection risk taking practices, and drug overdoses (Aitken et al., 2002; Maher & Dixon, 2001; Mazerolle, Soole, & Rombouts, 2007; Dandurand et al., 2004).
- Quality of life in affected area (Dixon & Coffin, 1999; Dandurand, 2004).

- Police-community relations (Maher & Dixon, 2001; Radcliff et al., 2015).
- The structure, organization, and spatial characteristics of the drug scene (e.g., localized dispersals) (Coomber & Moyle, 2018; Moeller 2010; Moeller, 2017; Aitkens et al., 2002).

In Australia, an ethnographic evaluation of a police crackdown initiative involving an enhanced deployment of law enforcement resources in Cabramatta, Sydney's principal street-level heroin market, highlighted the counterproductive effects and concluded the practice threatens to increase, rather than reduce the risks and harms associated with illegal drug markets. It concluded that the crackdown created a local climate of fear and uncertainty which resulted in several unforeseen negative consequences for public health (Maher & Dixon, 2001).

In 2000, a police crackdown initiative, Operation Clean Heart, attempted to disrupt a burgeoning street drug scene in Footscray, a suburb of the Municipality of Maribyrnong (Australia) where injectable heroin was the primary commodity (Aitken et al., 2002). The initiative involved a significant increase in resources dedicated to disrupting that drug market, including a total of 18 extra full-time police. These extra resources were a permanent foot patrol of four police officers, two police officers occupying an observation booth opposite the prime dealing corner, two mounted officers, and two officers with sniffer dogs. Police activities consisted of making themselves more visible in the area and intensifying their efforts to intercept people buying, selling and in possession of illicit drugs. There was also a clear focus on stopping people from other suburbs arriving in Footscray who were suspected of intending to buy or sell drugs were stopped. Many of them were asked to leave. Others were arrested. In fact, the vast majority of those arrested during the initiative came from other suburbs. A review of the impact of that police crackdown initiative confirmed that it had reduce the visible aspects of this street drug scene, but that the impact had been essentially superficial and temporary as the drug market rapidly adapted to its new conditions (Aitken et al., 2002). However, there appeared to be numerous (unintended) negative consequences, including the partial displacement of the drug scene to nearby metropolitan areas, the discouragement of safe injecting practice and safe needle and syringe disposal, and more frequent occurrences of violence and fraud (Aitken et al., 2002).

A study in Buffalo (New York), examined the instrumental function of a police agency’s use of Special Weapons and Tactics (SWAT) teams, arguably the highest level of aggressive law enforcement, to crackdown on high-crime locations (hot spots) to reduce crime and disorder (in Buffalo). These raids, basically abrupt-temporary interventions may have

had an immediate but very short-lived impact on criminal activity (street crimes involving property, such as robberies and larcenies) in the area, but there was no evidence of a deterrent effect of these raids on drug arrests and calls for service rates (Kim, Phillips, & Wheeler, 2019).

In Los Angeles, in 2003, the Alvarado Corridor Initiative was designed to tackle the open-air drug market within MacArthur Park. This was a police-led initiative designed to address crime and disorderly behaviour in MacArthur Park through a combination of increased patrol capacity problem-solving, order-maintenance, and situational crime prevention efforts (Sousa & Kelling, 2010). The core of the Alvarado project was the patrol unit and additional officers were deployed to the area with an emphasis on enforcement of all offences, big and small. However other special units supported patrol operations and undercover narcotics operations were conducted to reduce drug activity. The evaluation consisted of a review of the number of weekly complaints for serious crime in the area, as well as interviews and focus groups of police, community members, business individuals, and residents that had knowledge of the park and the area (Sousa & Kelling, 2010). According to the people interviewed, there were significant changes in MacArthur Park, but the evaluation could not measure the impact of the intervention on minor crime and disorder incidents or determine how the drug market was affected or whether there was any displacement to other areas.

In Vancouver, an evaluation of police crackdown initiative targeting the open drug market of the Downtown Eastside area used multiple indicators of outcomes and other impacts (Dandurand, Griffiths, Chin, & Chan, 2004). It indicated that the short-term intervention was successful in disrupting the open drug market, reducing the general levels of social disorder, and enhancing the general feelings of safety and security among persons who live and work in the area. The intervention had three primary objectives: 1) to bring order to a disordered community; 2) to disrupt the open drug market; and 3) to disrupt the flow of stolen property into the area. These objectives were to be achieved by providing an enhanced police presence in the area in an attempt to disperse drug dealers and their user-clients and, in doing so, reduce the level of disorder and increase safety and security in the area. The intervention represented a dramatic departure from the previous 'containment' approach wherein policing services were provided to the area on a primarily reactive basis. Senior police personnel viewed the initiative as a long-delayed fulfilment of their legislated mandate to provide full policing services to the residents of the area. However, the intervention was less successful in pursuing drug dealers and the associated criminal activity that was displaced into other areas in the same police district and into adjacent police districts. The local open drug market adapted rapidly to the increased police presence,

becoming more orderly, dispersed and moving out of the public realm into private locations. Drug dealers and their clients who were displaced to other areas created localized crime "hot spots" of drug dealing and associated disorder. The price and availability of drugs in the area were not significantly impacted. With respect to potential detrimental effects of the initiative, the evaluation did not find any evidence that the police intervention had had a measurable impact on the number of fatal drug overdoses in the immediate area or had adversely affected intravenous drug users with respect to their access to HIV prevention, needle exchange and other services.

The same evaluation also showed that, there was general support among community residents, business owners, sex trade workers, and intravenous drug users for the increased police presence in the area and greater satisfaction with the performance of the police. However, residents were divided as to whether the overall quality of life in the community had improved, although their overall feelings of safety and security had increased. The study also revealed that the effectiveness of the police intervention was affected by insufficient coordination and joint planning with other agencies and organizations active in that local area and inconsistency in the policing strategies used by participating police officers. Finally, the study suggested that the whole initiative would have benefited from a comprehensive communication strategy to increase the awareness of community residents and business owners and others involved in the delivery of services in the area (Dandurand, Griffiths, Chin, & Chan, 2004).

Another study examined data collected from 244 active injection drug users in the three months before the police intervention and 142 active users in the three months after the start of the crackdown (Wood et al, 2004). Based on the experience of injection drug users, the police intervention did not seem to alter the price of drugs or the frequency of use, nor did it encourage enrolment in methadone treatment programs. There was clear evidence of displacement of injection drug use from the area covered by the police intervention into adjacent areas of the city (Wood et al., 2004). A separate study sought to assess the impact of the same police intervention upon drug consumption activities as well as access to sterile syringes and health services among injection drug users (Small et al., 2006). Based on interviews with 30 individuals recruited from an ongoing cohort study of injection drug users and nine individuals who provided health services to drug users, the study suggested that the police intervention had prompted 'rushed' injections and injecting in riskier environments, discouraged safer injection practices, and increased unsafe disposal of syringes. It led to widespread displacement of drug use activities to other locations and service providers observed that increased

police presence had negatively impacted contact between health services and users (Small et al., 2006).

Effectiveness and impact of open drug market disruption approaches

Most of the studies of space-based disruption strategies that were reviewed failed to demonstrate the effectiveness of that approach in controlling drug markets. Many of them have also identified significant negative outcomes associated with the approach. The question often boils down to whether negative outcomes outweigh the perceived positive impacts, which are rarely lasting and are usually achieved at significant public expense (Aitken et al., 2002; Maher & Dixon, 2001). Based on the indicators or outcomes used in the studies reviewed, the following will summarize the observed impacts of open drug market disruption approaches in the following areas: impact on price, availability, quality and toxicity of drugs; crime reduction; impact on offenders' behaviour; impact on the targeted illicit drug market itself; displacement; residual deterrence and diffusion effects; impact on community and on police-community relations; impact on the level of violence associated with the illicit drug market; impact on vulnerable groups and drug users; impact on public health; other unintended impacts; and the costs and benefits of that type of illicit drug market disruption.

Price and Availability of Drugs

There is no consistent evidence that space-based illicit drug market disruption actually impacts drug accessibility, price or quality of heroin, cannabis or crack cocaine. Following a high-profile police initiative targeting drug dealers in London, England, street drug users were interviewed about drug price, availability and purity. The majority stated that there had been no discernable change in drug availability, price, or purity) (Best et al., 2001).

A British survey of arrestees for drug offences found that, despite police efforts to disrupt drug markets, over 80 percent of the arrestees reported that their ability to buy crack cocaine or heroin in their local neighbourhood had not been impaired (Bennett, 2000). In interviews with drug users conducted within weeks of the beginning of a time-limited police operation which included a series of drug raids conducted across ten London boroughs, researchers found that more than two-thirds of the drug users residing in areas targeted by the police crackdown had not noticed any significant change in the price or availability of heroin, crack cocaine or cannabis in the initial two weeks following the beginning of the crackdown (Best et al., 2001). This led the researchers to conclude that there was no

evidence that the police crackdown "had any instant impact on the price, availability or purity of illicit drugs, nor on the use patterns of consumers, even those consumers who are aware of and have been personally affected by the police operation" (Best et al., 2001: 744). Among the possible reasons offered by the researchers for these findings was the short time that had elapsed (two weeks) since the beginning of the crackdown and the fact that drug markets are adaptable and resistant to the specific strategies being employed by the police. A prospective cohort study of intravenous drug users using data collected three months prior to and after the beginning of a police crackdown on an open-air market in Vancouver found that the police intervention did not alter the price of drugs or the frequency of drug use among regular users (Wood et al., 2004: 1551).

Substance displacement can also occur due to the pressure exercised by the crackdown on the market for a certain type of drugs. For example, law enforcement pressure on the heroine market, contributed in at least one instance to an increase in the illicit sale and use of diverted pharmaceuticals (Maher & Dixon, 2001).

It is sometimes suggested that crackdowns aimed at disrupting drug markets can sometimes drive drug prices up and that, under such circumstances, higher drug prices may contribute to an increase in property crime as drug addicts must commit more property crime to finance their habit. However, that causal link between drug prices and reported property offences is difficult to establish. An alternate explanation offered by Benson, Lerburn, and Rasmussen (2001) for the apparent link between the disruption of a local illicit drug market and any observed increase in property crime in the same area is that, because police resources are limited, concentrating on drug enforcement can sometimes reduce the resources that police devote to control property crime and inadvertently lead to an increase in property crime (Benson Lerburn, & Rasmussen, 2001).

Crime Reduction

There are potential benefits of focusing police crime prevention efforts on crime places, in particular where there is a significant clustering of crime in a small place or hot spot. A systematic review of 19 evaluations of police interventions in hot spots (including some open drug markets) identified problem-oriented policing, as compared to high-visibility policing or multiplying arrests, as a preferable strategy for reducing crime in such locations (Braga, Papachristos, & Hureau, 2014). It noted also that short-term crime reduction gains observed after some hot spot policing initiatives may in fact have been realized at the expense of the long-term stability of a neighbourhood (Braga, Papachristos, & Hureau, 2014).

A review of evidence-based crime reduction initiatives in England and the United States led Tilley and Laycock to conclude that many of the crime reduction tactics employed as part of these initiatives have a "characteristic life-cycle" (Tilley & Laycock, 2004: 33). After an initial success, the effect fades and crime start to rise again. Research studies have found that police crackdowns can disrupt drug markets but that their impact tends to be short-term. Even when successful, crackdowns do not appear to have a long-term crime reduction effect. As such, they do not constitute a very sustainable intervention strategy. The success or impact of a crackdown is rarely measured carefully. When an immediate impact on a space-based disruption strategy is noticed, often as a the result of a predictable geographic displacement effect, little attention is given to ascertaining whether that impact lasted for come time or whether achieving it was worth a considerable investment of resources.

Maximizing the impact of drug crackdowns requires that there be a multi-faceted approach involving other agencies and organizations to provide treatment services for drug users and, as well, sentencing by the courts to ensure that drug dealers are taken off the street. Reflecting on the experience of various police forces and on what seems to work best in attempting to restore order, Kelling and Coles (1996) argued that initiatives aimed at 'taking back the streets' must be part of an overall crime control strategy and that it is a mistake to plan order maintenance strategies that are not part of broader more sustainable approach.

Studies of the longer-term impact of police crackdowns often find that the impact of such interventions on crime and disorder tends to dissipate rather quickly for a variety of reasons, "including the tendency for police implementation to become less rigorous over time and for offenders to adapt to the crackdown" (Scott, 2003: 15). The inability of a police department to maintain the momentum it acquired through an initial crackdown and to sustain it over an extended period is often an issue.

Impact on Offenders' Behaviour

It is not clear how offenders respond to police crackdowns and increased proactive interventions. Law enforcement approaches based on a deterrence approach assume that a greater impact can be achieved through law enforcement strategies that seek to deter drug market transactions by increasing and sustaining the level of risk of apprehension and sanction. However, most studies reveal the great versatility and adaptation capacity of street-level drug dealers (e.g., Coomber & Moyle, 2018). A recent Australian study, suggests that simply increasing the perceived risk of apprehension and sanction may have little impact on offending among the target offender population, if that group is resistant to the implicit consequences of their involvement in the drug market

(Payne & Langfield, 2021). That same study of self-reported risk perception of police detainees involved in drug markets (specifically heroin markets) revealed that the majority of these detainees were aware of the considerable risk of detection and sanctions involved in buying heroin but apparently remained undeterred (Payne & Langfield, 2021).

Impact on Illicit Drug Markets & Market Displacement

Researchers have documented the flexibility and adaptability of illicit drug markets in the face of space-based law enforcement disruption strategies, and they observed that police disruption of a local illicit drug market can affect the structure and organization of that market (Coomber & Moyle, 2018; May & Hough, 2001; Moeller, 2017). Some level of market displacement and restructuring usually follows the space-based disruption of an illicit drug market. The disruption can also facilitate market access for new cannabis selling actors who could not previously compete with the more established marketplaces (Moeller, 2017).

A study conducted of two drug markets in England showed that these markets had responded to law enforcement efforts and had adapted to the new circumstances through physical displacement and other means, and the better organized market adapted more rapidly (May & Hough., 2001). In these markets, drug dealers and drug users believed that the police posed little threat and were seemingly unconcerned with the risk associated with police activities. The police officers involved felt that their low-level enforcement strategies were ineffective at disrupting the activities of the suppliers and users (May & Hough, 2001).

In Australia, a study showed that a crackdown on drug dealers achieved some success in reducing the visible aspects of the drug scene, but the impact was mostly superficial and short-lived (Aitken et al., 2002). The operation involved significant public expense and seemed to produce several undesirable effects, including the displacement of the drug scene to other nearby areas, the discouragement of safer injection practices and safe needle and syringe disposal, as well as more frequent occurrence of violence and fraud (Aitken et al., 2002). Also, in Australia, a series of initiatives in the Cabramatta District (Sydney) involved high profile, intensive, and sustained policing interventions that targeted heroin users and user-dealers. The main tactic consisted of 'buy and bust' operations (Maher & Dixon, 2001). The main objective of the initiative was not so much drug law enforcement, as the restoration of quality of life in the district by disrupting and displacing the drug market. The initiative was a controversial one and a subsequent evaluation raised serious doubts about its value (Maher & Dixon, 1999; 2001).

As compared to other strategies where the evidence of success is much

slimmer, increasing patrols directed at hot spots seem to be producing some clear, if not always lasting, results (Sherman et al., 1998, Scott, 2003). A major problem with more intensive attempts to disrupt open drug markets is that they tend to also encourage the displacement of crime and disorder. While displacement is often regarded as a potentially problematic effect of crackdowns, it has been noted that law enforcement officials may sometimes also see it as a positive effect: the intervention breaks down the problem into more manageable pieces as part of the problem is moved to other areas (Dixon & Maher, 2005: 130). This view was part of a Vancouver police crackdown initiative which had anticipated being able to move the crackdown on a citywide basis as the problem was being displaced to different communities, naming the crackdown a "City-wide Enforcement Team" or CTE initiative (Dandurand et al., 2004). To be effective, obviously, such a 'mobile crackdown' strategy should have allowed for the constant analysis of evidence of movement of the problem and a refocusing of the interventions.

Police crackdowns may lead to the displacement of crime and social disorder to previously unaffected areas or areas with lower levels of crime and disorder prior to the initiative. These newly affected areas tend to be close geographically to the area initially affected. Some disruption initiatives dealing with open drug markets focused on order maintenance strategies and have accepted that disorder will be displaced, at least partly, to other locations. The fact that many of these initiatives are inspired by the broken window theory is ironic, as Dixon and Coffin (1999) noted, because that theory would predict that displacement of minor disorders to a new neighbourhood would lead to a deterioration of that neighbourhood and eventually lead to more crime in that neighbourhood.

The displacement created by crackdowns may occur within the targeted area, displacing the problem from one part of a community to another and sometimes from a fairly resilient part of a community to a more vulnerable one which is less able to protect itself from crime or promote its own safety. Displacement is also responsible for instances in which one municipality or region inherits some of the crime problems displaced as a result of a regulatory or administrative scheme implemented in a neighbouring city or region. Displacement may also lead to criticism that the police, rather than solving problems, have only succeeded in moving the problem to another area. However, as was observed, "the potential for criticism does not necessarily make crackdowns inadvisable; sometimes, displacing a problem from an area that has suffered disproportionately, to other areas that haven't, can be justified as a more equitable distribution of suffering" (Scott, 2003:16). Additionally, because of problems associated with illicit drug market displacements, questions are sometimes raised about the relative effectiveness of local versus regional, national or

even international illicit drug market disruption efforts.

In the case of the CET initiative in the Downtown East Side (DTES) of Vancouver, it was clear that certain forms of criminal activity, particularly drug related activities, had been displaced within a period of six months to adjacent areas and possibly other police districts within the city (Dandurand et al., 2004: 182). Displacement led to the "establishment of entirely new drug using areas outside of the DTES" (Small et al., 2006: 91). Moreover, the evaluation revealed that the police department did not have the resources to adequately police the crime hot spots that developed in other locations within the same district (Dandurand et al., 2004:183).

Some researchers have suggested that the identification of drug hot-spots following displacement or other changes in local drug markets, including some markets becoming more covert, could be facilitated by making use of emergency medical call data sets (Hibdon & Groff, 2014).

Residual Deterrence and Diffusion Effects

Displacement is possibly only one aspect of the question, albeit a complex one. There is also the prospect that a market disruption intervention may create a 'diffusion of benefits' effect. It is sometimes suggested that a place-based illicit drug market disruption intervention can continue to have an effect after it ends (i.e., a 'residual deterrence effect') and that it can have an impact outside of the targeted space or immediate geographic area (i.e., a 'deterrence diffusion effect') (Scott, 2003). However, irrespective of the strength of the empirical evidence of the presence of such diffused or residual effects, it appears that in most instances the effects, if any, are short lived. One needs to consider the conditions under which displacement occurs following a space-based police intervention and understand the exact nature of the displacement and diffusion effects produced (Silverman, 1998: 64; Bowers, 2003). Existing methods to measure drug market displacement and the potential diffusion of deterrence to other locations following a disruption initiative are relatively unsophisticated and usually produce inconclusive or disputable findings.

Two randomized, controlled studies published in 1995 reviewing the impact of hot spot policing reported a diffusion of benefits effect following the intervention. One of these studies reported on drug hot spots policing initiative, in Jersey City (New Jersey), which included community engagement in crime control, pressure to reduce drugs and drug-related activity through crackdowns, and maintenance of gains from the intervention. The control areas were hot spots where police practiced normal, unsystematic, arrest-oriented narcotics enforcement (Weisburd & Green, 1995). These researchers found a spread of benefits in the areas

surrounding the experimental location such as fewer calls for services concerning public morals and narcotics as compared to the area that received the more unsystematic enforcement. They also noted fewer instances of displacement for the experimental hot spots as compared to the control locations (Weisburd & Green, 1995). The other study evaluated an intervention in Oakland (California) which used municipal codes and drug nuisance abatement laws to control drug and disorder problems, without a police crackdown. In that case, a benefit diffusion effect, similar to the one observed in the first study, was also observed (as well as little displacement) even if the intervention did not focus on a police crackdown (Green, 1995). A systematic review and meta-analysis of 19 studies concluded that hot spots policing programs, specifically those based on a problem solving approach, generate modest crime control gains and are likely to produce a diffusion of crime control benefits into areas immediately surrounding targeted high-activity crime places (Braga, Papachristos, & Hureau, 2014). The diffusion of deterrence effect is rarely measured or reported in other evaluations of police disruptions of local drug markets. However, it has also been suggested the diffusion of deterrence effect, when observed, is likely to be attributable to other concurrent interventions rather than the immediate police intervention itself.

Impact on Communities and Police-Community Relations

Displacement is responsible for some of the social costs of police crackdowns including threats to public health and to community safety as a result of geographical, social and substance displacement (Maher and Dixon 1999). For instance, because of the levels of harm that can flow from integrated drug and sex markets, law enforcement strategies must be properly coordinated with other interventions to ensure that sex trade markets take the least socially harmful shape (May et al., 1999). Sex markets can play a significant role in the development of drug markets and vice-versa. Displacement of the sex trade may have public health consequences for other communities, as well as consequences for the sex trade workers themselves, their physical safety and their exposure to violence and abuses (Hubbard, 1998).

Displacement of the drug market makes drugs available in neighbourhoods where they were previously scarce (Maher & Dixon, 1999; 2001). Concerns are often raised about the impact of such displacement in terms of potentially encouraging previously unexposed at-risk youth to experiment with drugs (Wood et al., 2004: 1,555), although one could also argue that a visible, well-known, and easy to find open drug market is far more of a temptation for at-risk youth, than a newly displaced market.

Crackdowns may have an impact on police-community relations. Improperly conducted, these initiatives may serve only to alienate community residents and increase criticism of the police, undermining the legitimacy of the police and of the disruption intervention (Dixon & Coffin, 1999; Maher & Dixon, 1999; 2001). As Herman Goldstein observed: "It's one thing to realize a quick dramatic decrease in some types of offences, but if that's at the cost of creating great antagonism toward the police (…) then police departments are going to have to deal with the consequences of that hostility" (cited in Rosen, 1997: 9).

There is a public demand for more police presence on the streets and more assertive policing, particularly in neighbourhoods affected by drug markets and the disorder that accompanies them (Hopkins Burke, 1998; Romeanes, 1998). Police services need to respond to these expectations and restoring public confidence in the police is often an explicit goal of 'confident policing' or 'proactive police interventions' to disrupt illicit markets (Dennis & Mallon, 1998). However, the police face complex problems in neighbourhoods that are characterized by diverse and fragmented interest groups (Romeanes, 1998). In fact, it cannot even be assumed that the police and the community share the same understanding of what constitutes disorder or what zero-tolerance actually involves (Walkate & Evans, 1999). The community's desire for more police presence may not necessarily be unanimous.

In Philadelphia, surveys of residents conducted before and after a hot spot police intervention revealed that none of the policing tactics had measurable changes in resident perceptions within the communities that were targeted. The operation did not appear to have negatively impacted the community nor generated positive benefits (Ratcliffe et al., 2015).

There is also the risk of racial or ethnic biases in drug enforcement (Beckett, 2012; Moeller, 2010; Mitchell & Caudy, 2014; Khenti, 2014; Owusu-Bempah & Luscombe, 2020). The further marginalization of certain groups is always a risk during major space-based illicit drug market disruption initiatives, particularly when the police do not develop partnerships with the communities or fail to develop their strategies in close consultation with these communities (Cunneen, 1999). There is no doubt that the police must be sensitive to the demands of different communities within a neighbourhood, and the conflicting nature of such demands. Silverman argued that zero tolerance policing is "more in harmony with community wishes than the alternative widespread abandonment of public spaces to the perpetrators of incivilities" (1998: 57). Police services cannot neglect the communities' quality of life problems. Communities may at times be supportive of proactive enforcement and drug market disruption initiatives provided that these

policing activities are perceived as "fair" by the various "interest groups that constitute those micro-societies" (Hopkins Burke, 1998).

The effectiveness of community-based law enforcement approaches needs to be considered carefully, given that aggressive policing efforts have often been shown to negatively impact citizen views of police in terms of perceived fairness, effectiveness, and legitimacy (Corsaro, Brunson, & McGarrell, 2010). As observed by two Australian researchers, "it is simply irresponsible not to acknowledge the dangers of conducting intensive street operations in areas where police legitimacy is low" (Maher & Dixon, 2001: 14).

Impact on Violence

There is always a risk that increased law enforcement and, in particular a successful disruption of an illicit drug market, may bring about power struggles between dealers, and conflicts between dealers and users, and thus increase the amount of violence around that market. Finally, there is a possibility that the increased police presence may lead to more frequent confrontations between the police and various participants in the drug market.

Several studies have shown that there usually is an increase in the level of violence in an open drug market resulting from drug law enforcement (Jacques & Allen, 2015; Moeller & Hesse, 2013). A systematic review was conducted of 15 studies which evaluated the impact of drug law enforcement on violence, as violence is among the primary concerns of communities around the world (Werb et al., 2011). The studies in question had used official violent crime data to measure changes in the level of violence and various proxy variables to quantify drug law enforcement, such as drug arrests as a proportion of total arrests, police expenditure, number of police officers, and drug seizure rates. Most of these studies found that increasing drug law enforcement intensity resulted in increased rates of drug market violence. Only one of the studies reviewed by these authors reported no significant association between drug law enforcement and drug market violence (Werb et al., 2011).

Some authors have observed that, as dealers exit or are removed from the illicit drug market, those willing to work in a high-risk environment enter, and that street-level drug dealing becomes more volatile and violent (Maher & Dixon, 1999).

Arrests and incarcerations of drug dealers alter the power balance between criminal groups and lead to increased violence in the struggle for market shares. For example, a police crackdown on a large and stable cannabis market in Copenhagen disrupted established hierarchies among criminal

groups and spurred renewed competition, numerous shootings were observed in the cannabis-selling locations whereas no such episodes were known prior to the crackdown (Moeller & Hesse, 2013).

Impact on Vulnerable Groups and Drug Users

It is important to consider the impact that drug market disruption strategies have on drug users and those providing services to them. Open drug market disruption tactics may have a negative impact on vulnerable groups of people or contribute to systemic biases within the criminal justice system as they involve the disproportionate targeting of certain populations (Rinehart, 2011). The low-level drug arrests may not have an impact on reoffending, but it can seriously and negatively hinder the employability and social mobility of the targeted individuals (Mitchell, 2016). Organizational culture, systemic tendencies and racial biases can also be seen through the lens of disruption interventions targeting certain types of drugs, for example crack cocaine, with a concomitant impact on populations and groups who favour these drugs (Beckett, 2012).

Several studies have shown how drug laws are enforced more aggressively against minorities. In the United States, racial disparities in drug arrests cannot be explained by differences in drug offending, nondrug offending, or residence in the kind of neighborhoods likely to have heavy police drug enforcement (Owusu-Bempah & Luscombe, 2020). In Canada, an analysis of cannabis arrests data obtained from police services in five Canadian cities (Vancouver, Calgary, Regina, Ottawa, Halifax) to determine whether racial differences exist in rates of arrest for minor cannabis possession found that both Black and Indigenous people were over-represented amongst those arrested for cannabis possession (Owusu-Bempah & Luscombe, 2020).

In an analysis of the impact of low-level drug arrests, Moeller (2010) showed how the police's drug seizures tactics and practices were focused on the lower levels (street-levels) of drug distribution: as the number of fines for misdemeanour drug offences increased, so did the proportion of sanctioned persons who were of non-Western origin.

Street-level disruptions of open drug markets tend to target users, many of them unemployed or homeless individuals with complex needs, without ensuring that these needs are addressed concurrently or following the police intervention (Werb et al., 2008).

A serious unintended consequence of disruption initiatives that affect the short-term supply of certain drugs and creates an increase health risk for drug users comes from the fact that suppliers, when confronted with a reduction of their regular drug supply, tend to use various adulterants and

decrease the purity of the drug instead of increasing its price (Payne et al., 2020; Voce et al., 2020).

Small and colleagues assessed the impact of a police crackdown on drug users and found that the intensified police presence seriously exacerbated the negative health consequences for users: users rushed their injecting; injections took place in riskier environments which heightened the risk of diseases and overdoses; the contact between users and health services was compromised due to fear of police involvement; and, users were not only less able to access, but also less willing to carry syringes with them (Small et al., 2006; see also Kerr et al., 2005).

Other researchers have noted the impact on people with mental illness and taken exception to policing policies that target the behaviour of excluded groups that are found in the targeted areas and are involved in disorderly behaviour and visible incivilities (Barr, 2001; Crowther, 1998, Hopkins Burke, 1998a). Barr (2001) explained how a particular quality of life policing approach had multiplied the contacts between the police and people suffering from mental illness and had a detrimental impact on their quality of life. This is sometimes also a concern with respect to officers who are not normally assigned to the location where the crackdown is being conducted and the "heightened risk that they will not be able to distinguish the truly suspicious from the ordinary as effectively as locally assigned officers" (Scott, 2003:18).

Impact on Public Health

Public health consequences can result from a successful disruption of an illicit drug market. There is a growing body of research on the public health risks associated with injection drug use which points at the potential impact of police interventions on drug injecting practices, of syringes sharing, exchange and disposal practices, and on access to medical treatment among drug users (Aitken et al., 2002; Maher & Dixon, 1999; Small et al., 2006; Kerr et al., 2005; Maher & Dixon, 2001; Rhodes et al., 2003; Wood et al., 2004). Several Australian studies have shown that crackdowns on street drug scenes can have potentially harmful consequences for public health (Aitken et al., 2002; Maher & Dixon, 1999; Maher & Dixon, 2001). These space-based drug market disruption activities can discourage safe injection practice and safe needle disposal or produce an increase in injection risk-taking practices: "The overt police presence also exacerbated the incidence of high-risk injecting episodes in the area. Fear and uncertainty are not conducive to safe injection practices." (Maher & Dixon, 2001: 8). These negative public health outcomes, Aitken and his colleagues argue, "may outweigh the perceived positive outcomes, which are largely superficial and temporary and are achieved at significant public expense" (Aitken et al., 2002:197).

Law enforcement strategies focused on disrupting local drug markets have a substantial potential to produce harmful health and social impacts, including disrupting the provision of health care to injection drug users (IDU), increasing risk behaviour associated with infectious disease transmission and overdose, and exposing previously unaffected communities to the harms associated illicit with drug use (Maher & Dixon, 1999; 2001; Kerr, Small, & Wood, 2005).

Many years ago, Scott Burris and his colleagues offered an excellent overview of the research on the individual risk factors associated with injection drug use and how they can be heightened or possibly reduced by policing practices (Burris et al., 2004). They presented clear evidence that law enforcement practices are significant ecological factors structuring intravenous drug users' risks and behaviour (Burris et al., 2004: 131-134). It is quite clear that some specific police tactics, such as increased surveillance of public areas and frequent body searches of suspected users, can adversely affect the capacity of drug users to engage in harm reduction practices and inject as safely as possible (Cooper et al, 2005: 681).

Increased police presence may reduce access to needle exchange programs, safe injection sites and other health and outreach programs by drug users (Kerr et al., 2003; Fry, 2003; Wood et al., 2003; 2004). It can also lead to increases in syringe exchange and the risk of infectious disease transmission (Bluthenthal et al., 2000). Disruption of the open drug market may encourage the movement of drug users to different parts of the city and may affect their access to medical and other social services and create an increased public health risk.

A Vancouver study found that the confiscation of drugs and syringes through discretionary policing practices had the potential to exacerbate drug market activity or prompt increased syringe borrowing (with adverse public health consequences) (Werb, et al., 2008). The study examined factors associated with being stopped, searched, or detained by police among participants in the Vancouver Injection Drug Users Study (VIDUS), and the actions taken by study participants immediately following instances in which drugs or syringes were confiscated by police. Results showed that drug users most affected by street-level policing tended to possess various characteristics, such as homelessness, that place them at heightened risk for various adverse health outcomes. The authors concluded that confiscation of drugs and syringes through discretionary policing practices have the potential to exacerbate drug market activity or prompt increased syringe borrowing.

When it comes to open drug markets, some models of policing are clearly more compatible than others with a harm reduction model. Three

approaches were compared by Canty, Sutton, and James (2001), including a market regulation model in which police and community partners assess drug related harm and use law enforcement to reshape a drug market. Two of these researchers also suggested that the police need to develop their own taxonomy of drug-related harms and use their discretion to focus on the most harmful activities, while making sure that they minimize the harm that they may themselves cause through their own interventions (James and Sutton, 2000: 269). There may be alternatives to the current space-based illicit drug market disruption approaches involving greater partnerships and collaboration between policing and public health agencies that can complement rather than negate public health efforts (Kerr, Small, & Wood, 2005).

Other Unintended Impacts

Drug law enforcement carries it own "pathogenic and criminogenic costs" (Maher & Dixon, 1999; Coomber, Moyle, & Knox Mahoney, 2019). Australian researchers have noted how drug enforcement is characterized by waves of activity that produce a "pattern of crackdown and back-off" which is particularly prone to unwelcome side effects:

> "Drug market participants adopt risky practices in storing, transferring and administering heroin. The illegal activity is suppressed, but the threat of intermittent law enforcement encourages the development of a level of organization that protects participants and increases the potential for police corruption. Geographical, social, substance and temporal displacement may occur, and relations between police and ethnic minorities deteriorated" (Maher & Dixon, 1999: 508).

Another concern that surrounds police attempts to disrupt open drug markets is that police officers may abuse their authority in attempting to achieve the goals of the initiative (Eterno, 2001; Harcourt, 2001; Knox, 2001; Scott, 2003; Wadham, 1998). According to Erzen, the most damaging repercussion of quality-of-life and similar initiatives is the "increased harassment in certain neighbourhoods and against certain people" (Erzen, 2001: 31). For that researcher,

> "The most dangerous consequence of the increasing security and number of arrests under Quality-of-Life initiatives is the potential for more brutality on the part of the arresting officer. The very vagueness of the enforcement options and the arbitrary way in which community and disorder get defined leave too much discretion to the police. Too often the result is heightened harassment and violence." (Erzen, 2001: 35)

Cunneen (1999) and Greene (1999) have noted that public complaints against the police in New York between 1993 and 1996 (as the zero-tolerance approach was being enforced) increased significantly.

The Costs and Benefits of Crackdowns

A mentioned previously, there are clear links between open drug markets, disorder, crime, and violence. However, effective policing policies that successfully address these linkages have yet to be fully articulated. Affected communities, nevertheless, often complain about being under-policed or over-policed and under-protected. A Home Office (U.K.) study of eight open drug markets in deprived neighbourhoods in six different regions of England documented how open drug market activities affected these neighbourhoods and how the communities responded (Lupton et al., 2002). In all these areas, the drug market was only one of many neighbourhood problems and it affected the community in different ways. The study pointed at the need for local strategies to be designed based on local information. A simple solution, based solely on law enforcement, is unlikely to produce, by itself, the desired results in addressing the problems of that community, including those created or exacerbated by the presence of an open drug market. Nonetheless, in the presence of strong public pressure to act to deal with an open drug market, doing nothing is often not an option for the police. Being seen to be taking decisive steps to disrupt an illicit drug market helps counter the perception that the police have abandoned the community to its own means.

5. DISRUPTION STRATEGIES TARGETING ILLICIT DRUG MARKET PARTICIPANTS

One important illicit drug market disruption approach consists of focusing on key drug market participants and the criminal networks and organizations that exploit an illicit drug market. Three variations of that strategy can be identified: (1) disruption strategies that focus on drug users; (2) disruption strategies that focus on participants in local drug markets, including by using a focused-deterrence approach; and, (3) strategies that focus of disrupting the criminal organizations and networks involved in an illicit drug market by focusing on key individuals. The latter includes surveillance, the infiltration of criminal organizations to arrest and convict their leaders, and strategic attempts to identify the vulnerabilities of the criminal networks and targeting individuals that play a key operational role in them.

A total of eighteen (18) studies were identified for the present report. Five of these studies concerned disruption activities focused in large part on drug users (or customers of the drug markets) (see Table 3). Eleven studies (including one systematic review of 24 previous studies) analyzed

the impact of various focused deterrence programs, and two studies focus on police interventions on intercepting and arresting key members of criminal networks.

TABLE 3 - DISRUPTION STRATEGIES TARGETING ILLICIT DRUG MARKET PARTICIPANTS

Focus on Drug Users

Study	Country	Indicators of Impact	Key Findings
Aitken et al., 2002	Australia	• Special organization of drug scene • Perceptions of disorder and violence • Displacement	• The market was resilient and rapidly adapted to new conditions. • The operation partially displaced the problem to other areas. • The operation discouraged safe injecting practice and safe disposal. • The operation increased the frequency of occurrences of violence and fraud.
Maher & Dixon, 1999	Australia	• Drug use • Risk practices • Crime • Substance displacement • Displacement of use	• The street policing of drug users and user/dealers has particular pathogenic and criminogenic costs. • As regards substance displacement, there is some evidence that pressure on the heroin market has led to an increase in the illicit sale and use of diverted pharmaceuticals • Displacement of drug users to less desirable locations occurred. • More risky injection practices are observed.
Maher & Dixon, 2001	Australia	• Drug use • Risk practices • Substance displacement	• A police crackdown substantially increased the risk that those who participated in drug use and distribution would come to police attention. • There negative public health consequences and increase in risk practices. • A displacement of the drug market was observed.
Moeller, 2010.	Denmark	• Drug (cannabis) seizures by district • National origin of people who have been fined for a	• An increase in number of cannabis seizures was followed by a decreased amount of cannabis seized.

		drug law misdemeanour.	• As the number of fines for misdemeanour drug offences increased, the proportion of persons of non-Western origin among the sanctioned also increased.
Wood et al., 2004	Canada	• Price of drugs • Frequency of use • Enrolment in treatment programs • Risky practices • Displacement of drug use	• The police intervention did not alter the price of drugs or the frequency of use, nor did it encourage enrolment in methadone treatment programs. • A displacement of injection drug use was observed from the area of the intervention into adjacent areas. • Escalated police presence may explain an observed reduction in willingness to use a safer injection facility.
The Focused Deterrence Approach			
Study	**Country**	**Indicators of Impact**	**Key Findings**
Braga, Weisburg & Turchan, 2018	Systematic review of 24 studies. Several countries	• Crime rates • Displacement	• Overall statistically significant, moderate crime reduction effect, but statistically significant change observed less frequently during drug market interventions. • Effect sizes varied by type of program. • Displacement generally not measured in studies of drug market interventions.
Corsaro et al., 2011	United States	• Violent, property, and drug related offences • Calls for police service • Residents' perceptions of crime • Change in drug market dynamics	• Crime and calls for service within the target area remained relatively stable between pre- and post-intervention periods.
Corsaro & Brunson, 2013	United States	• Crime rates in targeted area • Community awareness of intervention • Public perception of crime, drug use and disorder	• No significant change in neighbourhood crime offense rates between pre- and post-intervention periods. • Low community awareness of the intervention. • Community members surveyed did not perceive changes in illegal drug sales, people using drugs in public or crime.

Corsaro et al., 2012	United States	• Number of violent crime incidents in targeted areas • Violence trends in targeted and nontargeted areas • Displacement	• Likely reduction in violent crime, in specific contexts, at least for a short-term follow-up period. • Elevating risks of punishment through the use of offender notification sessions in targeted areas produced significant but modest reduction in violent crimes in the targeted areas. • No apparent displacement to areas adjacent to targeted areas.
Corsaro, 2013	United States	• Violent offences • Property crimes • Drug/disorder incidents	• Mixed findings • Some modest impact on crime in two sites (more so in one than the other), but no impact on crime in the other two sites. • Characteristics of the site, the offenders, and the intervention may explain mixed findings.
Corsaro, Brunson, & McGarrell, 2010	United States	• Drug and narcotics incidents • Perceived changes in neighborhood disorder within the target community • Homicides, forcible rapes, robberies, aggravated assaults, burglaries, larcenies, and motor vehicle thefts • Total number of monthly citizen-initiated requests for police assistance or investigation	• A statistically significant reduction in drug and narcotics incidents was observed. • There were perceived changes in neighborhood disorder within the target community. • No clear evidence of significant impact on other outcomes (violent crimes, motor vehicle-theft, larcenies, citizen-initiated calls for assistance).
Kennedy & Wong, 2009	United States	• Violent crime in target area • Reported drug crimes • Call for services	• Drug market less open • Reduction on violent crime, reported drug crimes. • Reduction in call for services
McGarrell, Corsaro, & Brunson, 2010		• Violent crime in targeted areas • Property crimes • Drug crimes • Calls for service	• Interventions in three sites showed some reduction in violent crime and calls for service. • Statistically significant reduction in violent crime in only one of three sites. • Statistically significant reduction in property crime in only one of three sites.

			• The most consistent evidence was for drug offenses where the declines were substantial and significant in the two sites where the data were available.
Morselli & Petit, 2007	Canada	• Impact on criminal networks	• Criminal network decentralized and was re-ordered in response to intense law-enforcement targeting.
Payne & Langfield, 2021	Australia	• Drug users' risk perception.	• Drug law enforcement may have differential impacts, both positive and negative, on different members of the drug using community.
Saunders, Robbins, & Ober, 2017	United States	• Drug crimes • Crime rate in target area	• Implementation of the strategy in four sites and only one was successful at reducing overall and drug crime.
Focus on Key Members of Drug Networks			
Study	**Country**	**Indicators of Impact**	**Key Findings**
Nunn et al., 2006	United States	• Volume of service calls for serious crime • Volume of service calls for drug transactions • Impact on drug market violence • Permanence or decay of effect	• Serious crimes considered as a whole dropped significantly during first year after the operation and continued to drop significantly during a second year. • Calls for services for drug offences did not drop significantly. • Disruption of the network did not result in drug market violence.
Smith, 2021	United States	• Rate of co-offending network involvement	• The US Marshals' focus on the apprehension of prominent gang-affiliated fugitives and seizure of fire-arms, funds, and narcotics appears to have an impact on criminal network dynamics.

Focus on drug users

Some of the disruption strategies targeting local illicit drug markets focus on arresting drug users for drug possession, drug purchase, or drug sale (Harocopos & Hough, 2005). In Canada, simple possession of drugs for personal use is still criminalized, but arrests are also subject to police discretion. Most open drug market disruption interventions include some level of drug offence enforcement and that often boils down to arresting users and dealers for small drug transactions or for possession of illicit drugs. However, the present review found five studies that addressed the impact of disruption strategies that targets users and user/dealers (Maher

& Dixon, 1999; 2001; Aitken et al., 2002; Moeller, 2010; Wood et al., 2004). The indicators of outcomes used in these studies are generally the following: impact on drug use frequency and drug use practices; substance displacement; displacement of use; changes in drug market structure or organization; and prevalence of crime in a given area. We note that none of the studies reviewed have measured desistance from drug use or desistance from crime as a measured outcome. It is in fact not clear what the criminalization of users is actually meant to achieve in concrete terms. Increasing the risks of arrest for drug users may also push them to accept other risks to satisfy their addiction and, in the process, create a public health risk (Maher & Dixon, 1999). On that basis, researchers have argued that street-level drug policing strategies (mostly focused on low level dealers, as well as users and user/dealers) are fundamentally flawed because of their concomitant public health risks (Maher & Dixon, 1999; 2001; Dixon & Coffin, 1999; Wood et al., 2003; Wood et al., 2004). The five studies reviewed for this report indicate that the disruption strategies focused on stopping and arresting drug users tend to have detrimental consequences on the users, and no real impact on the illicit drug market itself except the temporary displacement of drug use.

By contrast, various harm reduction programs, including supervised injection sites and safe supply programs, have had either no negative impact or a positive impact on community safety. For example, the establishment of Australia's first Medically Supervised Injecting Centre (MSIC) had no discernable impact on acquisitive crime and loitering by drug users/dealers. There was no evidence that the MSIC led to an increase or decrease in theft or robbery incidents; there was no evidence that it led to an increase in 'drug-related' crimes, suggesting that setting up these sites does not necessarily lead to an increase in drug-related problems of crime and public loitering (Freeman et al., 2005).

Police interventions in open drug markets have several effects on scoring and dealing practices (Aitken et al., 2002), particularly when the interventions take place at the point of self-administration and potentially increase the health and safety risks to police and drug users alike (Maher & Dixon, 2001).

In British Columbia, the Provincial Health Officer, explained that:

> "The predominately criminal-justice-based approach that channels people who use drugs—some of whom live with a substance use disorder—into the criminal justice system (e.g., jail sentences for possession of a small amount of an illegal substance) does not address what is ultimately a health issue. In addition, engagement with the criminal justice system exposes non-violent, otherwise law-abiding people to a great deal of harms that they would otherwise not

experience." (B. C. Provincial Health Officer, 2020: 4)

The focused deterrence approach

Some of the most popular law enforcement strategies are focused on identifying and neutralizing local drug market actors as a way of disrupting or destabilizing that market. The strategies, based on what is referred to as the focused deterrence (or pulling levers; or threat-sanction) approach, have been deployed to reduce various forms of crime, including for the purpose of disrupting crime and disorder problems generated by overt street-level drug markets. They are a blended strategy of law enforcement, community mobilization, and social service actions aiming to change offender behaviour by understanding underlying crime-producing dynamics.

Different applications of that approach have emerged over the last decade, but it is essentially aimed at influencing the criminal behavior of individuals through the strategic application of enforcement and social service resources to facilitate desirable behaviours. Drug market interventions based on a focused deterrence strategy are used to identify street-level dealers, immediately apprehend violent drug offenders, and suspend criminal cases for nonviolent dealers. Nonviolent drug dealers, their families, law enforcement and criminal justice officials, service providers, and community leaders are brought together to exert pressure on the offenders to stop their drug dealing activities, while offering them some form of assistance.

The focus deterrence approach hinges on unsettled theories on the role of deterrence in promoting offenders' desistance from crime. Without embarking on a discussion of deterrence and recidivism, we can note that offenders' desistance from the drug business involves factors such as arrest and punishment, self-image and identity, social ties, life course changes, and drug use/abuse, and access to treatment. A study of the link between criminal sanctions and market participants' risk avoidance showed that the link is weak and suggested that policies based on deterrence may not be very effective in combating drug market operations; in fact, other life course events (i.e. parenthood, employment) may be more relevant than arrest to desistance (Fader, 2016). In a study of offenders' decisions to stay or leave the drug business, Campbell and Hansen (2012), found that many traffickers may want to exit but feel like they are compromising their identity, their social ties or livelihood. It also appears that many street-level drug dealers cannot make ends meet through any single income-generating activity: even if they want to leave the activity, they find few economic opportunities or opportunities for desistance (Fader, 2019). They are lacking a safe and realistic pathway to exit the drug trade (Campbell & Hansen, 2012).

For this report, the following evaluations of focused-deterrence initiatives to disrupt illicit drug markets were reviewed: Corsaro & Brunson, 2013; Corsaro et al., 2012; Corsaro, 2013; Corsaro, Brunson, & McGarrell, 2010; Corsaro et al., 2011; McGarrell, Corsaro, & Brunson, 2010; Kennedy & Wong, 2009; Morsalli & Petit, 2007 Payne & Langfiled, 2021, and Saunders & Robbins, 2017; as well as a systematic review of 24 focused deterrence studies (Braga, Weisburg & Turchan, 2018). These studies tended to measure the impacts of drug market interventions based on focused deterrence in terms of their impact on the violent crime associated with these drug markets (based on police data). They also used other indicators, such as pre- and post-intervention crime rates and the incidence of drug related incidents and public disorder complaints, while making comparisons between targeted and non-targeted areas. A few of these studies also considered community members' perceptions of safety and disorder. Very few of these studies measured crime displacement or drug market displacement, when this indicator was used, there was no clear evidence of spatial displacement.

Effectiveness and Impact

One systematic review included twenty-four quasi-experimental evaluations of focused deterrence police strategies. It concluded that focused deterrence strategies, designed to change offender behaviour through a blended enforcement, social service and opportunity provision, when applied during drug market interventions, were associated with an overall statistically significant but moderate crime reduction effect (Braga, Weisburg & Turchan, 2018). Unfortunately, the overall effect of these strategies on the drug markets themselves was rarely measured.

An evaluation of the impact of the focused deterrence approach applied to open drug markets in High Point, North Carolina, considered the impact of that approach on several open drug markets across the city and violent crime problems associated with them (Kennedy & Wong, 2009). Law enforcement activities were focused on the geographic environments where a clear nexus was observed between illicit street drug dealing and rates of violent, weapon, and sex crimes. The plan was to identify and shut down each problematic drug market. The purpose of the evaluation was to examine whether deterrent-based police strategies that drew on the pulling levers framework had a substantive impact on violent crime when a series of interventions were directed at offenders who were involved in illicit street drug markets. The approach was shown to have had a significant, although modest, impact on violent crime (in some areas more than in others, because of factors such as the size of the drug market) (Corsaro et al., 2012). A review of official data on violent crime, property crime, and drug and disorder crime in the four targeted areas showed that

the impact of the intervention on these types of crime varied from one targeted area to another, from statistically significant impact in one area to no impact in two areas where the intervention did not produce significant crime changes (Corsaro, 2013). The author suggested that the mixed findings could perhaps be explained by the differences observed among the intervention sites in terms of the structural characteristics of the neighborhoods, the sheer size of the drug markets, and the prior arrest histories of the offenders that were called in to the notification sessions, as well as the structural challenges associated with sustaining the police intervention (Corsaro, 2013: 425).

An evaluation was also conducted of the impact of a 'pulling levers' drug market intervention strategy in Peoria (Illinois) designed to reduce patterns of crime and violence associated with an open-air drug market in a specific neighbourhood (Corsaro & Brunson, 2013). A comparison of crime rates prior to and after the police intervention did not reveal significant changes in neighbourhood crime offense rates. Residents of the targeted area were surveyed by the researchers and the majority of them did not demonstrate an awareness of the police intervention nor did they report perceived changes in local crime patterns (Corsaro & Brunson, 2013). An assessment of the Nashville Drug Market Intervention (DMI), in McFerrin Park, showed that the intervention significantly reduced offences associated with illicit street-level drug dealing (McFerrin Park), as well as perceived changes in neighbourhood disorder within the target community, but no significant impact on other measured outcomes (e.g., violent crimes, motor vehicle-theft, larcenies, citizen-initiated calls for assistance) (Corsaro, Brunson, & McGarrell, 2010). In Rockford, Illinois, an evaluation of a pulling levers intervention to address drug markets in a high-crime neighbourhood revealed a statistically significant and substantive decline in crime, drug, and nuisance offenses in that neighbourhood (Corsaro, Brunson, & McGarrell, 2013).

The focused deterrence strategy has been replicated multiple times, often based on the success of the original High Point program, but it is difficult to know how often it was properly implemented or how often it resulted in significant reductions of crime. It appears that the approach was not always successfully implemented across various settings and did not always produce the expected outcomes (Saunders, Robbins, & Ober, 2017). The approach poses its own implementation challenges (Frabutt et al., 2009). Some studies have shown that the approach to local drug markets could reduce crime (Frabutt et al., 2009; Kennedy & Wong, 2009; Corsaro, Brunson, & McGarrell 2013; Corsaro, Brunson & McGarrell, 2010), while others found no evidence of statistically significant decrease in any crime measure (Corsaro, Brunson, Gau, & Oldham, 2011; Corsaro & Brunson, 2013). The "High Point" program was modestly effective in

reducing violence, but not the sort of change that would transform a neighbourhood (Cook, 2012; Corsaro et al., 2012). The duration of the impact on violent crime of a drug market intervention based on focused deterrence was not measured (Corsaro et al., 2012).

It appears that direct communications with offenders in a procedurally just manner and maintaining an enforcement environment that increases the risk of apprehension and prosecution are important elements increasing the likelihood of success of such focused deterrence interventions (Braga, 2012: 207). It also appears that the approach works best when based on community engagement and other law enforcement actions following the intervention with the chronic offenders.

Even when successfully implemented, a drug market disruption based on focused deterrence may not necessarily lead to improved police-community relations, even when area residents appreciate the removal of the most dangerous actors from the community. An American study based on focus groups with community residents in three sites over 15-months after a focused deterrence drug market intervention took place, examine community members' perceptions (Saunders, Ober, Barnes-Proby, & Brunson, 2016). Focus group participants appreciated police efforts to improve neighbourhood conditions, but maintained many negative feelings about the overall policing profession; they remained ambivalent about police legitimacy and worried that the increased police presence might lead to greater harassment. According to Pollack (2017), suppressing an open-air drug market is usually necessary but often insufficient to establish public safety in a given public space, neighborhood, or community. Many problematic police-community interactions continue to cause frictions, and they may undermine efforts to repair community-police relations.

It is hard to estimate the total costs of properly implementing a focused-deterrence operation, but they can be substantial (Burgdorf & Kilmer, 2015). In the absence of reliable data on the lasting benefits of such interventions and the costs of the interventions, a cost-benefit analysis is not possible.

Focus on key members of drug networks

Infiltration, surveillance and the use of informants are often at the core of initiatives to disrupt the activities of criminal groups by arresting and convicting leaders of these organizations. The systematic use of police intelligence and sophisticated data analysis has apparently improved law enforcement's capacity to strategically target individuals and temporarily

affect the networks or markets in question. However, the main flaw of all these approaches resides in the fact that the markets are typically able to adapt quickly after an intervention. Criminal organizations and networks take various measures to protect their leaders and some of these measures can be quite effective in protecting them against law enforcement (Hofmann & Gallupe, 2015). However, when leaders are arrested or otherwise neutralized, they are quickly replaced, often after some heightened violence from a succession struggle or increased competition from other networks. Additionally, in response to intense law enforcement targeting, the networks tend to decentralize, reorganize and re-order themselves (Morselli & Petit, 2007). Targeting individuals for removal from the network may lead to increase network density, and increase the network's efficiency and inherent resilience (Bichler, Malm, & Cooper, 2017). Disruption strategies must be flexible as networks continually evolve.

Another type of police intervention focusses on disrupting criminal networks and impeding the activities of prominent individuals within criminal networks. One such method consists of targeting fugitive gang members and their networks. An example of this approach was Operation Triple Beam (OTB), in and around Houston in 2018, which involved an on-going series of law enforcement crackdowns led by the US Marshals Service (Smith, 2021). However, the targeted arrests of gang-affiliated fugitives may not have a sufficient or lasting impact on co-offending networks to really destabilize illicit drug markets.

One study reviewed the impact of a covert police interdiction in an inner-city drug market which targeted a group of more than two dozen chronic offenders with long arrest records who were living and operating in a specific neighborhood and using it as a site for drug trafficking (Nunn et al., 2006). This was the opposite of a high visibility policing operation and it had a different impact as well. The police operation resulted in all of the offenders being sentenced to long prison terms. The study observed that after the operation, once the whole group had thus been removed from the area, there was a significant drop in calls for police service to respond to serious crimes in that neighbourhood, for all serious crime categories except drugs. Serious crimes considered as a whole dropped significantly during the first year after the operation and continued to drop significantly during a second year (Nunn et al., 2006). As the researchers noted, "(t)here has always been some speculation that "upsetting" a major, somewhat stable drug network could result in an increase in the systemic forms of drug-related crimes - drive-by shootings and other territorial declarations - but this does not appear to have been the case in Brightwood" (Nunn et al, 2006: 95).

Strategic law enforcement tactics grounded in intelligence may realize some benefits from better understanding and steering their intervention efforts against particular individuals in networks. Brokers, for example, operate at vulnerable points of drug networks since they provide risky linkages between various parties in the network. They can be strategic targets for illicit drug market disruption interventions. A study by Smith (2021) focused on organized crime networks and the removal of brokers and suggested that such removals of brokers may be an effective way to disrupt the whole network. These key members of criminal networks serve a unique integrating function and their removal can generate significantly damaging effects (Smith, 2021). The targeting of brokers is outlined as an important and useful way to weaken the capabilities of drug networks and disrupt their activities (Dorn, Bucke, & Goulden, 2003). Other researchers suggested that intelligence efforts by agencies seeking to disrupt security-oriented criminal networks may boost their chances of success by targeting brokers for arrest rather than highly connected actors (Duxbury & Haynie, 2019).

Since drug networks vary substantially in terms of their 'vulnerability' to police interventions, police intelligence and relational analysis techniques can help identify characteristics of a market structure and the respective role of participants in order to identify those vulnerabilities and guide strategic law enforcement interventions. The approach is predicated on securing solid intelligence data and being able to identify the factors contributing to the resilience of various drug networks and criminal groups. Although the approach is inspiring and perhaps also guiding various drug market disruption interventions, we were not able to find any independent evaluation of the effectiveness or impacts of that approach.

6. DISCUSSION

Prohibiting certain commodities and services, and thereby making some markets illegal, unavoidably creates very lucrative business opportunities for organized crime. These prohibitions also lead to unrealistic public expectations about the role of law enforcement in enforcing these prohibitions and eliminating or controlling the resulting illicit markets.

The market disruption strategies reviewed in this report are not very promising. In fact, some of them are being abandoned altogether and the general rationale for 'disrupting' illicit drug markets seems to have been successfully challenged. Interventions of this type have only had a very limited effect on drug markets or on the availability of illicit drugs. None of them seems to have had a lasting impact on illicit drug markets. Many of them have had a detrimental impact on affected communities, whether

from a public health, quality of life, violence prevention, or police-community relation perspective. Unfortunately, illicit drug markets invariably prove themselves resilient and flexible, and they either promptly adapt to change and reconfigure or displace themselves.

Space-based interventions to disrupt open drug markets are often more about policing vulnerable and disadvantaged communities than about seriously neutralizing illicit drug markets. The stated goal of these illicit drug market disruption interventions is often to improve the quality of life in the neighbourhoods affected by open drug markets, often in response to public or media pressure. It is seldom very clear what benefits an intervention to disrupt an open drug market is, in itself, intended to achieve. In a typical intervention, the intended effect of the initiative is rarely spelled out in any great detail and the public support they frequently attract seems to be partly the result of the fact that their objectives are defined in very vague terms, such as 'reclaiming the streets', 'disrupting crime', 'giving a message to the criminals', or 'eliminating drugs from the community'. Such statements of law enforcement objectives are more akin to political slogans than to a policing strategy (Dandurand, 2020).

In fact, police space-based disruptions of open drug markets can be antithetical to effective law enforcement, healthy police-community relations, and public health goals. Some researchers noted the symbolic effect of a police crackdown, its ability to signal crime control to drug market participants as well as the community, or to assuage public fears and expectations (Coomber, Moyle, & Knox Mahoney, 2019). It was also noted that, while crackdowns may not reduce drug supply or assuage public fear, targeted policing that aims to reduce the amount of violence in specific drug markets may be more beneficial to the community as a whole (Coomber, 2015).

Disruption strategies focused on criminalizing users have had nothing but negative impacts. Focused deterrence strategies have shown some promises, but generally failed to address market adaptability and displacement issues. Tactical targeting of individuals and groups is also proving insufficient to significantly affect illicit drug markets. The most promising disruption strategies, although they have yet to be properly evaluated, are those targeting criminal networks or key individuals within them. Unfortunately, because many of the networks are transnational and often operate to a large extent in digital space, these strategies are also the most difficult ones to execute. What law enforcement agencies need is a capacity to develop an up-to-date understanding of the highly adaptive markets that fuel organized crime, including financial markets. Organized crime has evolved into complex, flexible, highly adaptive networks, but law enforcement methods often fail to adjust their methods. Current

approaches are limited because of a lack of law enforcement capacity to match the fluidity and adaptability of criminal networks. Furthermore, despite attempts to systematically use law enforcement data and apply relational analysis for intelligence purposes, including for mapping and understanding criminal networks, law enforcement's understanding and penetration of networks that span across borders are still extremely limited.

Police interference and disruption of illicit drug markets are most likely seen by criminal groups as simply part of a business risk to be mitigated and managed, the cost of doing business. Disruptions seem to work like a tax, imposing additional costs on suppliers, who then pass them on to drug users when necessary. Disruptive law enforcement actions certainly engender greater sophistication on the part of organized crime groups, including the use of various technologies and methods to anticipate and foil disruption activities. Disruption also tends to generate violence, particularly among competing criminal groups for whom the weakening of one organization by a police intervention is an opportunity to grow their own business, or within a criminal organization where individuals and factions compete for ascendency following the arrest or neutralization of prominent group members. Additionally, disruption activities can increase the risk of police corruption, as criminal organizations attempt to bribe their way out of sporadic police interventions or, better still from their point of view, direct police interventions against their competitors.

At the same time, law enforcement agencies are in search of effective cyber-enabled disruption methods for the illicit drug markets, but also for all other illicit markets that have a substantial web presence (Haysom, 2019). These agencies currently struggle to address cybercrime in a coherent manner. The large volume of online drug sales and the transnationality and adaptability of online drug markets can make the task quite daunting. From the point of view of law enforcement, a critical feature of an illicit market is its 'penetrability', or the cost of creating a level of risk of arrest and conviction for the average transaction. The costs of creating and maintaining that level of risks may eventually prove prohibitive. Some observers even wonder whether we could soon be facing an era where digital crime can no longer be effectively policed (Walker, 2019).

The continued proliferation of illicit drugs, organized crime's penetration of every sector of social, commercial and economic activity, as well as the never-ending cycle of gang violence are probably proof enough of the relative failure of existing disruption strategies to seriously confront organized crime and control illicit drug markets. The central role of organized crime in most drug markets is regularly acknowledged but

poorly tackled. As Professor Nikos Passas (2019) remarked during an international conference on organized crime, law enforcement organizations have learned to "fake success", thus avoiding accountability for misguided and ineffective enforcement policies and strategies. It is unfortunate, as Professor Zvekic observed during the same event, that so many law enforcement agencies have been able to continue to promise to combat organized crime and corruption without really doing much about it (Zvekic, 2019).

Clearly, strategies to temporarily disrupt illicit drug markets are no substitute for proactive enforcement strategies based on sustained efforts to understand the structure of the targeted criminal organizations/networks, their changing nature and mode of operation, or the dynamics of the markets they exploit (Levi and Maguire, 2004). These disruptions strategies do not have much of an impact on organized crime groups and networks that exploit and profit from illicit drug markets. The Global Commission on Drug Policy (2013) observed that breaking up drug gangs or networks and arresting some of the individuals involved in them has little or no impact on drug supply and that destabilizing local markets can increase violence. The Global Commission suggested that government could take control of currently illegal drug markets through responsible regulation, thereby weakening criminal organizations that now profit from them. Given the unique dynamics of illegal drug market economies, the Global Commission noted that "enforcement that targets other forms of organized crime can reasonably aspire to deliver more positive outcomes than the historic failings of drug enforcement" (Global Commission on Drug Policy, 2018: 33).

7. CONCLUSION

Law enforcement strategies to disrupt illicit drug markets, as controversial as they may be, are likely to remain a popular police strategy and a poor substitute for good strategic planning, evidence-based approaches and methods, and sustained longer-term enforcement initiatives. These disruption strategies are easily attacked, even if they tend to be politically popular.

Most of the disruption strategies reviewed in this report were unable to produce a substantial or lasting impact on illicit drug markets. This conclusion, in a sense, only highlights the limits of law enforcement efforts and the need to embed these efforts in broader social change initiatives. There is an urgent need to address the current opioid crisis and the senseless level of drug overdose deaths associated with it. According to

the Public Health Agency of Canada (2021), there were 19,355 apparent opioid toxicity deaths in Canada between January 2016 and September 2020. None of the disruption methods reviewed in this report hold any serious promises of controlling the illicit market in opioids and stimulants or reducing the availability of fentanyl and other opioids. At the same time, law enforcement agencies are also expected to support this country's new cannabis legalization scheme and protect it against organized crime. There again, however, the likelihood of success of present disruption methods in reducing the illegal production and contraband in cannabis, both nationally and internationally, is very low.

There is also a need to fundamentally rethink drug market enforcement strategies and priorities in light of the growing dominance of online markets. As the markets become increasingly global, thanks in part to the internet, stronger online regulation and enforcement are needed, as well as an entirely new level of international law enforcement cooperation. It is becoming inescapably clear that drug policy and drug market enforcement strategies need "a reset to ensure that responses can be designed both to suppress illegal drug trafficking and the criminal groups involved, and to reduce the harms that come from the illicit trade in narcotic" (Global Initiative Against Transnational Organized Crime, 2021:102).

Despite some residual resistance within law enforcement agencies, there is growing support among them for rethinking enforcement strategies and approaches in order to focus on managing drug markets in a way that minimizes the various associated harms instead of compounding them (Bacon, 2016). Instead of assuming that multiplying arrests, seizures and prosecutions necessarily have a positive impact on individuals and communities, there is a growing willingness to apply harm reduction principles to the policing of drug markets and adopt a community damage limitation approach (Bacon, 2016). The Canadian Association of Chiefs of Police, for example, officially subscribed recently to the four-pillars approach to the opioid crisis. It also agreed that decriminalization of simple possession of drugs could help reduce the public health and public safety harms associated with substance use, while at the same time reiterating its commitment to "combatting organized crime and disrupting the supply of harmful substances coming into our communities by targeting drug trafficking and illegal production and importation" (CACP, 2020: 2). A very recent resolution of the International Association of Chiefs of Police (IACP, 2021), made reference to the need for law enforcement agencies to grapple with the epidemic of opioid overdoses and proposed a paradigm shift toward a public health approach to substance use and prevention. The resolution calls for the prioritization of actions against drug traffickers who pose the greatest threat to our communities and exacerbate the drug

problem by employing violence to facilitate the drug trade.

The Canadian Drugs and Substances Strategy (Government of Canada, 2018) prioritizes the following important law enforcement measures: increasing law enforcement's capacity to target the involvement of organized crime in making and distributing illegal drugs; preventing the cross-border movement of illegal drugs; reducing the possibility for controlled substances to be diverted from otherwise legal activities; preventing money laundering and stopping the flow of money organized crime makes from the illegal drug trade. These are clear objectives and all of them call for strategic and sustained actions instead of temporary disruptions of illicit drug markets. Unfortunately, the strategy does not specify how these goals are to be achieved. Research is required in all of these areas, including in the area of illicit cyber-markets and cyber criminal networks. Deeper research is required on organized crime and illicit markets in general and, specifically, on criminal networks, how they operate and how they may be vulnerable to police interventions.

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