



INTERNATIONAL CENTRE  
FOR SCIENCE IN DRUG POLICY



## Effect of Drug Law Enforcement on Drug-Related Violence: Evidence from a Scientific Review

**Effect of Drug Law Enforcement on Drug-Related Violence: Evidence from a Scientific Review**

International Centre for Science in Drug Policy

**Report working group:** Dan Werb, Greg Rowell, Gordon Guyatt, Thomas Kerr, Julio Montaner, Evan Wood

**International Centre for Science in Drug Policy (ICS DP)** is an international network of scientists, academics, and health practitioners committed to improving the health and safety of communities and individuals affected by illicit drugs. The network is comprised of leading experts from around the world who have come together in an effort to reduce drug-related harms by informing international drug policies with the best available scientific evidence. The primary objective of the ICS DP is to conduct and disseminate original scientific research, including systematic reviews and evidence-based drug policy guidelines. Through this work, the ICS DP seeks to meaningfully reduce drug-related harms by working collaboratively with communities, policy makers, law enforcement, and other stakeholders to help guide effective and evidence-based policy responses to the many problems associated with illicit drugs. The ICS DP's research maintains the highest scientific standards through adherence to internationally accepted guidelines and protocols for systematic reviews and meta-analyses. Systematic reviews are conducted by designated working groups which include individual experts in systematic database searching (e.g., library science) and data synthesis (epidemiology) techniques and, where appropriate, seek to adhere to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The ICS DP is a non-profit society registered in British Columbia, Canada. To learn more about the ICS DP and how your support can help improve the health and safety of communities and individuals affected by illicit drugs, please visit [www.icsdp.org](http://www.icsdp.org).



**INTERNATIONAL CENTRE  
FOR SCIENCE IN DRUG POLICY**

608 – 1081 Burrard Street  
Vancouver BC V6Z 1Y6  
Canada

[info@icsdp.org](mailto:info@icsdp.org)  
[www.icsdp.org](http://www.icsdp.org)

Copyright © 2010

## CONTENTS

Executive Summary .....	5
Background.....	7
Methods.....	9
Results .....	10
Discussion .....	15
Report Working Group .....	23
Acknowledgements .....	23
References .....	24

**Cover:** Police officers drive past a burning police vehicle in the Pacific resort town of Zihuatanejo, Mexico, on February 25, 2009. Earlier, gunmen opened fire and hurled grenades at the patrol car, killing four officers. (AP photo / Felipe Salinas)

All images used with permission.

“Violence in drug markets and in drug-producing areas such as Mexico is increasingly understood as a means for drug gangs to gain or maintain a share of the lucrative illicit drug market.”



Alleged gunmen and kidnapers are displayed to the media in front of seized guns and drugs in Tijuana, Mexico, on January 19, 2010. According to the army, the suspects were arrested during an operation in a house where soldiers seized the guns and drugs and also found an unidentified dead body. (AP photo / Guillermo Arias)

## EXECUTIVE SUMMARY

Violence is among the primary concerns of communities around the world, and research from many settings has demonstrated clear links between violence and the illicit drug trade, particularly in urban settings. While violence has traditionally been framed as resulting from the effects of drugs on individual users (e.g., drug-induced psychosis), violence in drug markets and in drug-producing areas such as Mexico is increasingly understood as a means for drug gangs to gain or maintain a share of the lucrative illicit drug market.

Given the growing emphasis on evidence-based policy-making and the ongoing severe violence attributable to drug gangs in many countries around the world, a systematic review of the available English language scientific literature was conducted to examine the impacts of drug law enforcement interventions on drug market violence. The hypothesis was that the existing scientific evidence would demonstrate an association between increasing drug law enforcement expenditures or intensity and reduced levels of violence.

This comprehensive review of the existing scientific literature involved conventional systematic searching, data extraction, and synthesis methods, and adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Specifically, a complete search of the English language literature was undertaken using electronic databases (Academic Search Complete, PubMed, PsycINFO, EMBASE, Web of Science, Sociological Abstracts, Social Service Abstracts, PAIS International

and Lexis-Nexis), the Internet (Google, Google Scholar) and article reference lists from date of inception to October 2009.

The initial search captured 306 studies for further analysis. Of these, 15 were identified which evaluated the impact of drug law enforcement on violence: 11 (73%) presented findings from longitudinal studies using regression analysis, 2 (13%) presented theoretical models of drug market responses to drug law enforcement, and 2 (13%) presented qualitative data. Contrary to our primary hypothesis, 13 (87%) studies reported a likely adverse impact of drug law enforcement on levels of violence. That is, most studies found that increasing drug law enforcement intensity resulted in increased rates of drug market violence. Notably, 9 of the 11 studies (82%) employing regression analyses of longitudinal data found a significant positive association between drug law enforcement increases and increased levels of violence. One study (9%) that employed a theoretical model reported that violence was negatively associated with increased drug law enforcement.

The present systematic review evaluated all available English language peer-reviewed research on the impact of law enforcement on drug market violence. The available scientific evidence suggests that increasing the intensity of law enforcement interventions to disrupt drug markets is unlikely to reduce drug gang violence. Instead, the existing evidence suggests that drug-related violence and high homicide rates are likely a natural consequence of drug prohibition and that increasingly sophisticated and well-resourced methods of disrupting drug distribution networks

may unintentionally increase violence. From an evidence-based public policy perspective, gun violence and the enrichment of organized crime networks appear to be natural consequences of drug prohibition. In this context, and since drug

prohibition has not achieved its stated goal of reducing drug supply, alternative models for drug control may need to be considered if drug supply and drug-related violence are to be meaningfully reduced.

**“In Los Angeles, gang-related homicides accounted for 43% of the 1,365 homicides that took place between 1994 and 1995.”**



Los Angeles County Sheriff Lee Baca, at podium, speaks during a news conference October 21, 2008, in Los Angeles. Dozens of burly, tattoo-covered Mongol motorcycle gang members were arrested by federal agents in six states, including Washington, on warrants ranging from drug sales to murder after a three-year undercover investigation in which four agents successfully infiltrated the group. (AP photo / Ric Francis)

## BACKGROUND

Violence is among the primary concerns of communities around the world, and the illegal drug trade has been identified as a key cause of violence, particularly in urban areas.<sup>1-4</sup> While violence has traditionally been framed as resulting from the effects of drugs on individual users (e.g., violence stemming from drug-induced psychosis), violence is increasingly being understood as a means used by individuals and groups to gain or maintain market share of the lucrative illicit drug trade.<sup>5-9</sup>

In a variety of settings, gangs or cartels that derive their primary financing from illicit drugs have been implicated in a substantial proportion of homicides.<sup>10-17</sup> For instance, studies of drug gangs in Chicago have demonstrated that as much as 25% of gang activity involves violent assault and homicide,<sup>13</sup> and in Los Angeles, gang-related homicides accounted for 43% of the 1,365 homicides that took place between 1994 and 1995.<sup>11</sup>

In some instances, response to the illicit drug trade may have contributed to increased militarization of both law enforcement and criminal elements, with a resulting increase in drug-related

homicides. For instance, as a result of fighting between the military and Colombian drug cartels, in the year 1991 nearly 1 in 1,000 Colombians was murdered, a rate three times that of Brazil and Mexico and ten times that of the United States at the time.<sup>14</sup> More recently, Mexico has experienced extreme violence subsequent to the 2006 launch of a massive nationwide counter-narcotics campaign.<sup>15</sup> In 2008 alone, 6,290 drug-related deaths were recorded in that country, and approximately 17,000 individuals have been killed as a result of the Mexican drug war since 2006.<sup>16, 17</sup>

In the wake of the upsurge in drug-related violence, governments have often redoubled efforts to reduce this phenomenon through the application of interventions aimed at addressing illicit drug use and supply. Generally, this approach has involved the increased allocation of resources to policing efforts, and governments continue to prioritize the punishment of drug users and the pursuit of drug dealers through law enforcement interventions.<sup>18-21</sup> Despite the ongoing emphasis on policing as the primary means to reduce drug-related harms, prior to this

**“Global drug control efforts have had a dramatic unintended consequence: a criminal black market of staggering proportions. Organized crime is a threat to security. Criminal organizations have the power to destabilize society and governments. The illicit drug business is worth billions of dollars a year, part of which is used to corrupt government officials and to poison economies.”**

United Nations Office on Drugs and Crime

report the existing research on the association between drug law enforcement and violence had not been systematically evaluated. We therefore conducted a systematic review to examine the role that drug law enforcement interventions may play in reducing drug-related violence. Given the widespread assumption that drug law

enforcement interventions reduce drug market violence, our primary hypothesis was that the available scientific evidence would demonstrate an association between increased drug law enforcement expenditures or intensity and reduced levels of violence.

**“Mexico has experienced extreme violence subsequent to the 2006 launch of a massive nationwide counternarcotics campaign.”**



Bodies awaiting autopsies crowd a walk-in refrigerator at the morgue in the border city of Ciudad Juarez, Mexico, on February 18, 2009. Bodies stacked in the morgues of Mexico’s border cities tell the story of an escalating drug war. Drug violence claimed 6,290 people in 2008—double the number from the previous year—and more than 1,000 in the first eight weeks of 2009. (AP photo / Eduardo Verdugo)

## METHODS

This review involved conventional systematic searching, data extraction, and synthesis methods. Specifically, a comprehensive search of the literature was undertaken using electronic databases (Academic Search Complete, PubMed, PsycINFO, EMBASE, Web of Science, Sociological Abstracts, Social Science Abstracts, PAIS International and Lexis-Nexis), the Internet (Google, Google Scholar), and article reference lists. Search terms included *violence*, *homicide*, *prohibition*, *drug law enforcement*, *enforcement*, *drug crime*, *gangs*, *drug gangs*, and *gun violence*. The terms were searched as keywords and mapped to database-specific subject headings or controlled vocabulary terms when available. Each database was searched for English language articles from its inception to its most recent update as of October 2009.

### Inclusion & Exclusion Criteria

Studies published in peer-reviewed journals, abstracts from international conferences, and publications from governments and non-governmental organizations that reported on a link between drug law enforcement, illicit drug strategies, and violence were all eligible for inclusion in the systematic review. Editorials, advocacy articles, and studies of police violence were excluded. We also excluded studies that focused on violence associated with military action against insurgencies funded through the drug trade.

### Data Collection Process

Two investigators (DW, GR) conducted data extraction independently, in duplicate, using standardized techniques. Data abstractors collected

information about the study design, sample size, methods of effectiveness measurement, and outcomes (i.e., violence). The data were entered into an electronic database such that duplicate entries existed for each study; when the two entries did not match, consensus was reached through discussion.

### Data Items & Summary Measures

The primary outcome of interest for this review was to identify reported associations between drug law enforcement and violence. Given the heterogeneity of the literature on drug law enforcement, in some instances proxy measures were used for both drug law enforcement (e.g., numbers of drug arrests, police officers) and violence (e.g., numbers of homicides, shootings).

### Data Synthesis

To ensure scientific rigour, the Preferred Reporting of Systematic Reviews and Meta-Analyses (PRISMA) guidelines were used for systematic data synthesis.<sup>22</sup> These guidelines are widely recognized as the gold standard in transparent reporting of systematic evaluations of scientific research questions.

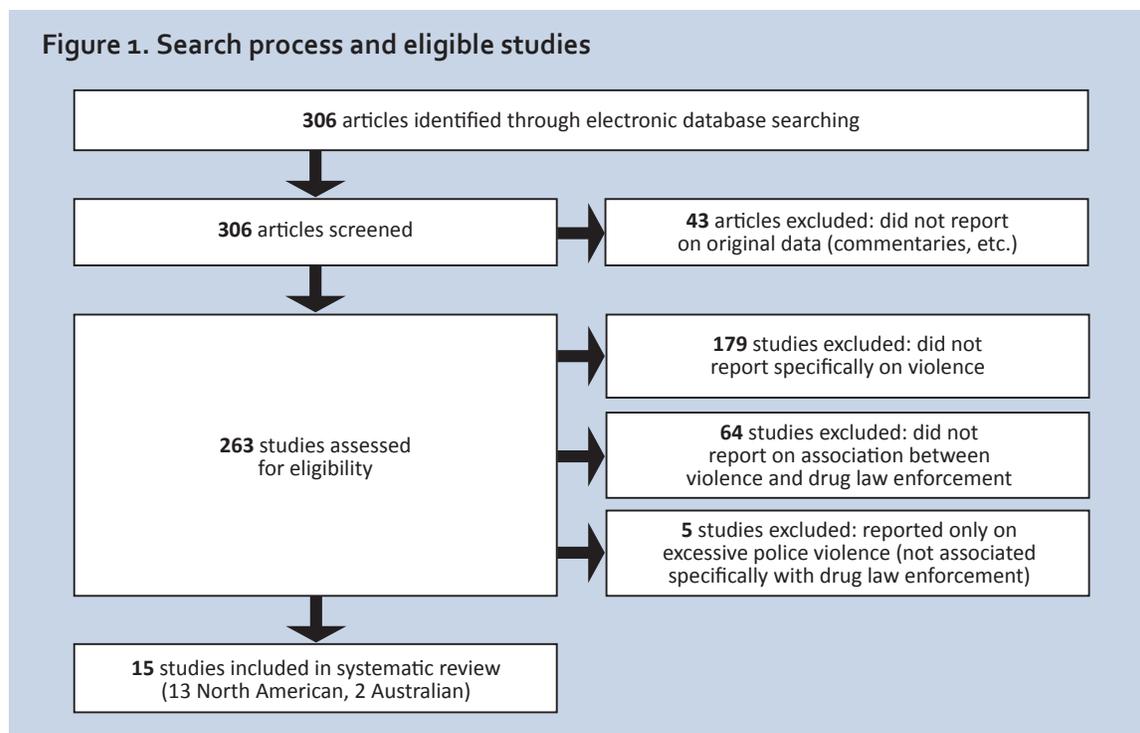
Because studies included in this systematic review varied extensively regarding methodologies and outcomes, findings were summarized on a per-study basis, and statistical data were entered into a standardized form. When reporting results from individual studies, the measures of association and *p* values reported in the studies were cited.

## RESULTS

### Study Selection & Study Characteristics

In the initial search, 306 potential articles were identified for inclusion in the review. Of these, 43 (14.1%) were excluded because they did not present new data (e.g., editorials). As a result, 263 (86.0%) articles were retrieved for detailed examination after initial searching of keywords and abstracts. Of these, 248 (94.3%) were deemed non-relevant to the current review for the following

reasons: 179 (68%) were excluded based on a lack of explicit mention of violence in the analysis; 64 (24%) were excluded based on a lack of reporting of violence related to drug law enforcement; and 5 (2%) were excluded because they reported on police violence rather than violence associated with drug law enforcement. In the end, 15 (6%) studies were eligible for inclusion in the systematic review. The full extraction process is summarized in Figure 1.



“Many, especially the young, are not dissuaded by the bullets that fly so freely in disputes between competing drug dealers—bullets that fly only because dealing drugs is illegal. Al Capone epitomizes our earlier attempt at Prohibition; the Crips and Bloods epitomize this one.”

Milton Friedman  
Economist & Nobel Laureate

Overall, the 15 studies deemed relevant to the systematic review included 13 (87%) studies from North America<sup>6, 13, 23-33</sup> and 2 (13%) studies from Australia.<sup>34, 35</sup> Further, 13 (87%) used quantitative study designs and 2 (13%) used qualitative study designs. One study used a mixed method (i.e., quantitative and qualitative techniques) design. Of the 13 studies that employed quantitative techniques, 11 (85%) conducted regression analyses of real world data, and 2 (15%) presented theoretical models of drug market dynamics. The individual studies are described in Table 1.

### Results of Individual Studies

The 11 studies that conducted longitudinal analyses of real world data included violence, violent crime, or homicide as a primary independent variable of interest, and used measures of drug law enforcement as dependent variables of interest. These studies used a variety of 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. Contrary to our original hypothesis, in 9 (82%) of the studies that employed regression analysis of longitudinal data, a significant positive association was observed between drug

law enforcement increases and increased levels of violence.<sup>13, 23-25, 27, 30, 31, 33, 36</sup> Only one study (9%) reported no significant association (i.e., no beneficial or negative impact) between drug law enforcement and violence.<sup>32</sup> The two theoretical models of drug market dynamics, which used hypothetical data to model the potential impact of law enforcement, reached divergent conclusions: one concluded that increased law enforcement would decrease violence,<sup>28</sup> while the other concluded that increased law enforcement would increase violence.<sup>26</sup>

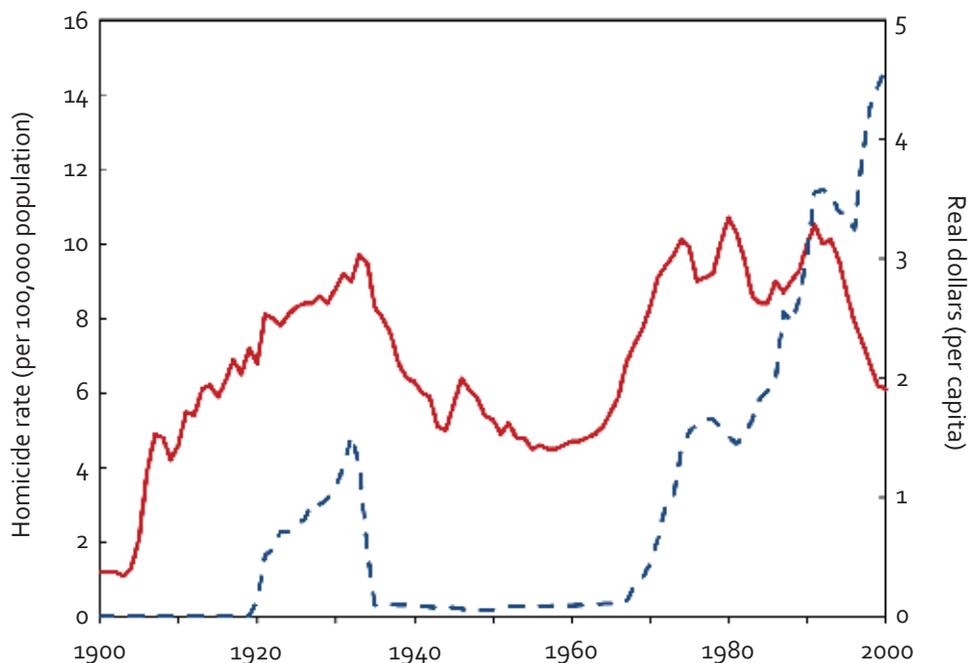
The two qualitative studies included in this systematic review both reported on health harms among illicit drug users in the open air illicit drug market in Sydney, Australia.<sup>34, 35</sup> In these studies, the authors observed that, as dealers exited the illicit drug market, those willing to work in a high-risk environment entered, and street dealing thereby became more volatile.<sup>34</sup> Further, the authors noted that the increased volatility associated with street dealing resulted in a higher number of violent disputes, which have contributed to an increase in murders and non-fatal shootings among individuals involved in the illicit drug trade.<sup>35</sup>

Table 1. Eligible studies on violence and prohibition

Author Year	Location	Total N	Study Design	Study Period	Main Findings
Goldstein 1989	New York City	414 homicide events	Longitudinal observational study	Mar 1, 1988 to Oct 31, 1988	39% of all homicide events were 'systemic' (i.e., a result of prohibition/enforcement effects).
Rasmussen 1993	Florida	67 Florida counties	Longitudinal observational study	1989	The model presented suggests that increased drug enforcement will increase the size of a drug market in an adjoining jurisdiction, resulting in a higher violent crime rate.
Brumm 1995	USA	57 US cities	Longitudinal observational study	1985	No significant association between drug arrests and violence was observed.
Benson 1998	Florida	67 Florida counties	Longitudinal observational study	1983 to 1987	Measures of drug law enforcement were significantly and positively associated with Index I crime (violent and property crime) in Florida, despite adjustment for confounders. Drug arrests were associated with an almost fivefold risk of violent and property crime (drug arrest relative risk = 4.6259, $p < 0.05$ ).
Riley 1998	6 US cities	Not reported	Longitudinal observational study, qualitative	1995	Increased enforcement efforts against crack markets were associated with increased homicide rates in 4 cities and decreased homicide rates in 2 cities.
Burrus 1999	NA	NA	Predictive model	NA	Theoretical model implies that law enforcement decreases territorial returns and the marginal benefit of violence decreases, and violence decreases.
Maher 1999	Sydney, Australia	143	Qualitative	Feb 1995 to Feb 1997	As dealers leave the market, those willing to work in a high-risk environment move in. Street dealing becomes more volatile and violent.
Miron 1999	USA	NA	Longitudinal observational study	1900 to 1995	Enforcement variables account for more than half of the variation in the homicide rate over the study period ( $R^2: 0.53$ ).
Levitt 2000	Chicago	Not reported	Longitudinal observational study	4-year period in the 1990s (anonymized for confidentiality)	Lack of formal dispute resolution mechanisms in illicit drug trade and drug law enforcement pressure caused a high level of violence among drug gang studied; as a result, violent conflict made up approximately 25% of gang activities during study period.

Author Year	Location	Total N	Study Design	Study Period	Main Findings
Resignato 2000	USA	24 US cities	Longitudinal observational study	Oct 1992 to Sept 1993	In 4 regression analyses, the drug enforcement proxy variable (ratio of drug arrests to total arrests), was positively and significantly associated with violence.
Benson 2001	Florida	67 Florida counties	Longitudinal observational study	1994 to 1997	Increases in the rate of drug arrests were associated with a twofold risk of violent and property crime across counties (adjusted relative risk for change in drug arrests = 2.20, $p < 0.01$ ).
Maher 2001	Sydney, Australia	Not reported	Qualitative	1995 to 2001	Violent disputes associated with the drug market contributed to a number of murders and the substantial rise in non-fatal shootings with handguns in NSW in 1995–2000.
Miron 2001	USA	Not reported	Longitudinal observational study	1993 to 1996	In a regression analysis of the homicide rate, and using nine different drug seizure rates (prohibition proxy variables), 6 drug seizure rates were significantly and positively related to the homicide rate.
Shepard 2005	New York State	62 counties	Longitudinal observational study	1996 to 2000	In regression analyses, drug arrests were not significantly negatively associated with crime (i.e., do not decrease crime). Increases in total per capita drug arrests are accompanied by higher rates of crime. Additionally, arrests for manufacture and sale of hard drugs is associated with higher levels of all crimes, including assault (relative risk for assault by hard drug arrest = 0.353, $p < 0.05$ ).
Caulkins 2006	NA	NA	Predictive model	NA	Theoretical model implies that increasing the severity of penalties associated with dealing drugs raises the stakes for all dealers, especially for the marginal dealers, who are the most likely to be apprehended. The remaining dealers command a higher market price. If favourable positions are secured by use of violence, violence may increase.

Figure 2. Homicide rate (solid red line) and estimated expenditure for enforcement of alcohol and drug prohibition (dashed blue line) in the United States, 1900–2000



Sources: *Vital Statistics of the United States* (US Census Bureau, 1975), *Statistical Abstracts of the United States* (US Census Bureau, various issues), Eckberg (1995), and *Annual Budget of the United States*, as described in Miron (1999)

Figure 2, from a study by Miron, shows a close association between the amount of money spent on enforcement of prohibition (against first alcohol and later drugs) and the national homicide rate

in the United States. This study adjusted for other possible causes of homicide and found that drug law enforcement expenditures remained a strong independent predictor of the homicide rate.

## DISCUSSION

### Summary of Evidence

In this systematic review, all available English language studies that evaluated the association between drug law enforcement and violence were reviewed. Though limited in number, they employed a diverse array of methodologies, including longitudinal analyses involving up to six years of prospective follow-up, multilevel regression analyses, qualitative analyses, and mathematical predictive models. Contrary to our primary hypothesis, among studies that employed statistical analyses of real world data, 82% found a significant positive association between drug law enforcement and violence.

### Discussion

The present systematic review suggests that drug law enforcement interventions are unlikely to reduce drug-related violence. Instead, and contrary to the conventional wisdom that increasing drug law enforcement will reduce violence, the existing scientific evidence strongly suggests that drug prohibition likely contributes to drug market violence and higher homicide rates. On the basis of these findings, it is reasonable to infer that increasingly sophisticated methods of disrupting

drug distribution networks may increase levels of drug-related violence.

The association between increased drug law enforcement funding and drug market violence may seem counter-intuitive. However, in many of the studies reviewed here, experts delineated certain causative mechanisms that may explain this association. Specifically, research has shown that by removing key players from the lucrative illegal drug market, drug law enforcement may have the perverse effect of creating significant financial incentives for other individuals to fill this vacuum by entering the market.<sup>33,34</sup>

These findings are consistent with historical examples such as the steep increases in gun-related homicides that emerged under alcohol prohibition in the United States<sup>37</sup> and after the removal of Columbia's Cali and Medellin cartels in the 1990s. In this second instance, the destruction of the cartels' cocaine duopoly was followed by the emergence of a fractured network of smaller cocaine-trafficking cartels that increasingly used violence to protect and increase their market share.<sup>37</sup> Violence may be a natural consequence of drug prohibition when groups compete for massive profits without recourse to formal,

**“Prohibition creates violence because it drives the drug market underground. This means buyers and sellers cannot resolve their disputes with lawsuits, arbitration or advertising, so they resort to violence instead.”**

Jeffrey Miron  
Harvard Economist

non-violent negotiation and dispute resolution mechanisms.<sup>24, 25</sup>

While not a central focus of this review, prior reviews have concluded that, in addition to violence, drug prohibition has produced several other unintended consequences. One key concern

driving the introduction of new players into the illicit drug market is the existence of a massive illicit market that has resulted in response to the prohibition of illicit drugs, estimated by the United Nations to be worth as much as US\$320 billion annually.<sup>38</sup> These enormous drug profits are

**“[Illicit drug] profits have destabilized entire countries, such as Colombia, Mexico, and Afghanistan.”**



An Afghan police officer stands guard in poppy fields during a poppy eradication campaign in the Rhodat district of Nangarhar province, east of Kabul, Afghanistan, on April 11, 2007. Afghanistan produced dramatically more opium in 2006, increasing its yield by roughly 49% from a year earlier and pushing global opium production to a new record high, according to a UN report. (AP photo / Musadeq Sadeq)

**“Prohibitionist policies based on eradication, interdiction and criminalization of consumption simply haven’t worked. Violence and the organized crime associated with the narcotics trade remain critical problems in our countries. Latin America remains the world’s largest exporter of cocaine and cannabis, and is fast becoming a major supplier of opium and heroin. Today, we are further than ever from the goal of eradicating drugs.”**

**Fernando Henrique Cardoso, Former President of Brazil  
César Gavira, Former President of Colombia  
Ernesto Zedillo, Former President of Mexico**

entirely outside the control of governments and, based on the findings of the present review, likely fuel crime, violence, and corruption in countless urban communities. Further, these profits have destabilized entire countries, such as Colombia, Mexico, and Afghanistan, and have contributed to serious instability in West Africa.<sup>39-42</sup> In North America, profits from the marijuana trade constitute a major source of potential corruption and instability. In British Columbia, Canada, the marijuana market was recently estimated to be worth approximately C\$7 billion annually,<sup>43</sup> and recently a ferocious gang war has been waged over the control of these profits, which are largely derived from exporting the drug to the United States.<sup>12, 44</sup> In the United States, cocaine is used at least annually by approximately 5.8 million people, and control of this market has long been characterized by gang violence.<sup>1, 5, 6, 45</sup> In southeast Asia, a burgeoning illicit methamphetamine trade is intimately tied to regional instability, where the minority Wa and Shan groups fund an insurgency against Burma’s military junta

through manufacture and wholesale distribution of methamphetamine and opium to Thailand, China, and other neighbouring countries.<sup>46</sup> In West Africa, entire countries such as Guinea-Bissau are at risk of becoming “narco-states,” as Colombian cocaine traffickers employ West African trade routes to distribute cocaine into destination markets in Europe, Russia, and the Middle East.<sup>42</sup> Estimates now suggest that 27% of all cocaine destined for Europe is transited through West Africa and is worth more than US\$1.8 billion annually wholesale and as much as ten times that amount at the retail level.<sup>42</sup>

In terms of additional unintended consequences, in the United States, mandatory minimum sentencing policies for drug offenders have resulted in a massive growth in the prison population and place an enormous burden on the US taxpayer.<sup>47, 48</sup> Figure 3 illustrates the dramatic rise in incarceration rates following the implementation of mandatory sentencing policies by many American states beginning in the 1980s. Most notably, the incarceration of drug offenders

in the United States has generated substantial racial disparities in incarceration rates.<sup>49-52</sup> For instance, one in nine African-American males between the ages of 20 and 34 is incarcerated on any given day in the United States.<sup>53</sup>

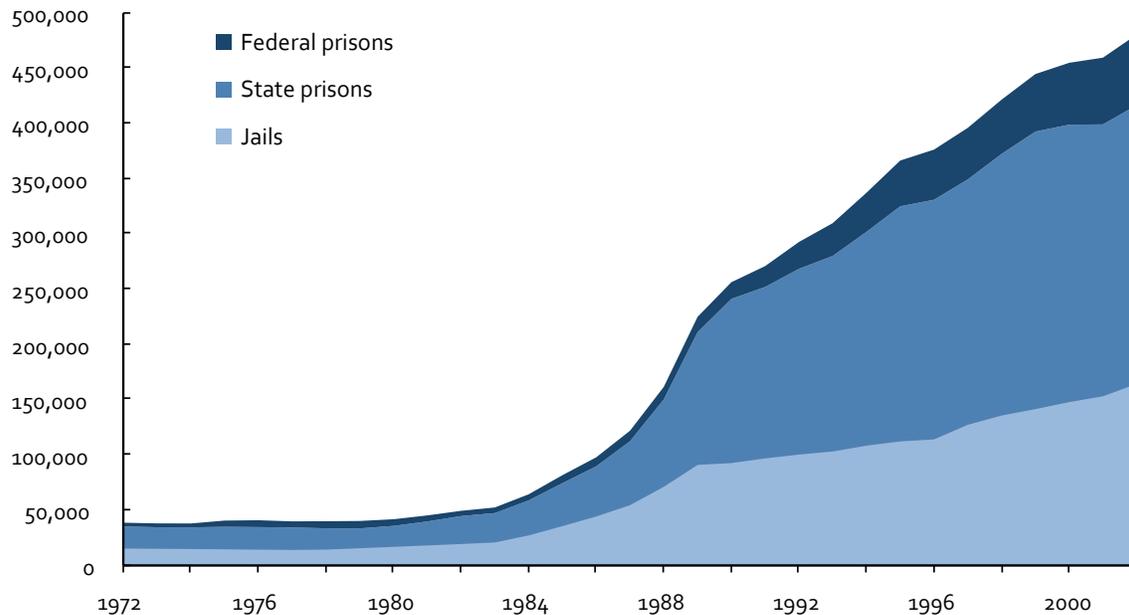
While the unintended consequence of increased drug-related violence might be acceptable to the general public under the scenario whereby drug law enforcement substantially reduces the flow of illegal drugs, prior research suggests that

**“In North America, profits from the marijuana trade constitute a major source of potential corruption and instability.”**



Royal Canadian Mounted Police Sgt. Daniel Quirion of the Integrated Proceeds of Crime unit looks over marijuana plants in the basement of a Moncton house in the Royal Oaks area on July 27, 2004. The RCMP executed search warrants at 14 homes in the greater Moncton, New Brunswick area as part of an organized crime investigation into commercial marijuana grow operations. (CP photo / *Moncton Times & Transcript* – Viktor Pivovarov)

**Figure 3. Estimated number of adults incarcerated for drug law violations in the United States, 1972–2002**



Source: Data were extracted from Beck (1997), Beck & Glaze (2002), Cahalan (1986), Harrison & Karberg (2003), and Pastore & Maguire (2003) as described in Caulkins et al. (2006)

law enforcement efforts have not achieved a meaningful reduction in drug supply or use in settings where demand remains high.<sup>54</sup> In the United States, despite annual federal drug law enforcement budgets of approximately US\$15 billion and higher since the 1990s, illegal drugs—including heroin, cocaine, and cannabis—have become cheaper and drug purity has increased, while rates of use have not markedly changed.<sup>21, 55, 56</sup> Figure 4 shows the startling increase in heroin purity in the US from 1980 to 1999 against the equally startling drop in price over the same period. In Russia, despite a strong emphasis on

drug law enforcement, evidence suggests that illicit drug use is widespread.<sup>45</sup> Specifically, recent United Nations estimates suggest that more than 1.6 million Russians use illicit opiates annually, though experts caution that the true number could be as high as 5 million.<sup>45</sup>

In the face of strong evidence that drug law enforcement has failed to achieve its stated objectives and instead appears to contribute to drug market violence,<sup>24, 25, 56</sup> policy makers must consider alternatives. Indeed, some experts have begun to call for the regulation of illicit drugs. In the United Kingdom, a drug policy think tank which

recognized the link between drug prohibition and violence has recently released a report delineating potential regulatory models for currently illegal drugs.<sup>57</sup> In California, recognition of the linkages between drug demand in the US and violence in Mexico, as well as the recent fiscal deficit, has prompted the State Board of Equalization to prepare estimates of the potential revenue from a regulated marijuana market.<sup>58</sup> The State Board estimated that annual revenues of approximately US\$1.4 billion could result from the imposition of a regulatory framework.<sup>58</sup> Additionally, recent results from an evaluation of Portugal's

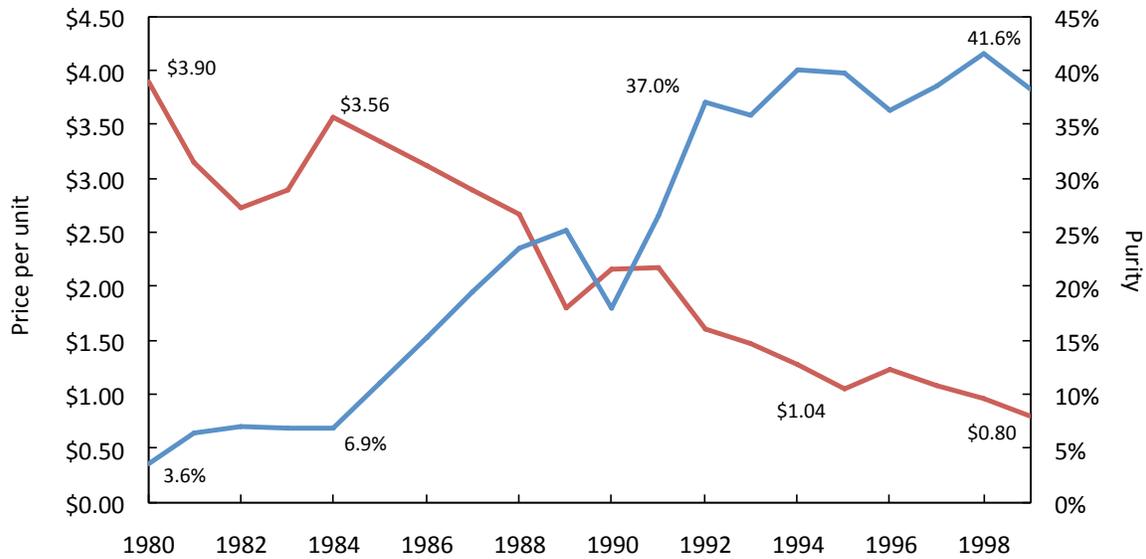
drug decriminalization policy suggests that this approach may reduce both illicit drug use and its related harms.<sup>59</sup>

While it is outside the scope of this report either to support or oppose these proposals, given the apparent link between violence and the existing model of drug prohibition, these alternative regulatory models should be the subject of further study.

**Limitations**

This study has a number of limitations. Most importantly, publication bias may have skewed

**Figure 4: Heroin price (red line) and purity (blue line) in the United States, 1980–1999**



Source: *Briefing Book 2001* (Drug Enforcement Administration, Washington, DC)



Authorities seized weapons and an estimated US\$207 million in a raid on a luxurious Mexico City home in March 2007. At the time, the US government called it “the largest single drug cash seizure the world has ever seen.” (Procuraduria General de la Republica)

the availability of studies investigating the role of violence and drug law enforcement as a result of political sensitivities in organizations funding research on drug policy. Specifically, research sponsors traditionally have been unsympathetic to funding research critical of drug prohibition.<sup>60, 61</sup>

There are also instances, such as the recent outbreak of violence in Mexico, where there is widespread agreement that law enforcement efforts sparked drug market clashes, but this phenomenon does not get reported in the context of a scientific study.

In terms of potentially underestimating violence, the present analysis was restricted to only

those studies investigating the effect of drug law enforcement on drug market violence; studies that reported only on police violence or on violence generated by insurgencies financed by the drug trade were excluded.

For the above reasons, the positive association between drug law enforcement and violence that we identified in the literature is most likely an underestimate.

The findings of this report do not imply that individual police officers are responsible for this violence. Rather, the evidence suggests that front line police officers are given the task of enforcing drug laws that appear to lead to increased violence

“The prestige of government has undoubtedly been lowered considerably by the Prohibition law. For nothing is more destructive of respect for the government and the law of the land than passing laws which cannot be enforced. It is an open secret that the dangerous increase of crime in this country is closely connected with this.”

Albert Einstein  
*My First Impression of the USA, 1921*

by unintentionally driving up the enormous black market profits attributable to the illegal drug trade.

### Conclusions

Based on the available English language scientific evidence, the results of this systematic review suggest that an increase in drug law enforcement interventions to disrupt drug markets is unlikely to reduce violence attributable to drug gangs. Instead, from an evidence-based public policy perspective and based on several decades

of available data, the existing evidence strongly suggests that drug law enforcement contributes to gun violence and high homicide rates and that increasingly sophisticated methods of disrupting organizations involved in drug distribution could unintentionally increase violence. In this context, and since drug prohibition has not achieved its stated goal of reducing drug supply, alternative models for drug control may need to be considered if drug-related violence is to be meaningfully reduced.

## REPORT WORKING GROUP

**Dan Werb, MSc** is a senior research assistant with the Urban Health Research Initiative of the British Columbia Centre for Excellence in HIV/AIDS and a graduate student in the School of Population and Public Health at the University of British Columbia.

**Greg Rowell, BSc, MSc, MSt** is Head of Woodward Library and the Hospital Branch Libraries with the University of British Columbia Library, and teaches graduate studies in health librarianship at the School of Library, Archival and Information Studies (SLAIS).

**Gordon Guyatt, MD, MSc, FRCPC** is a member of the ICSDP and a professor in the Departments of Medicine and Clinical Epidemiology & Biostatistics at McMaster University. Dr. Guyatt is recognized as a world leader in the area of evidence-based medicine and has made numerous contributions in the area of systematic reviews and meta-analysis techniques.

**Thomas Kerr, PhD** is a member of the ICSDP and co-director of the Urban Health Research Initiative. Dr. Kerr is also a senior scientist with the British Columbia Centre for Excellence in HIV/AIDS and an assistant professor in the Department of Medicine at the University of British Columbia (Division of AIDS).

**Julio Montaner, MD, FRCPC, FCCP** is a member of the ICSDP and holds the Chair of AIDS Research at the University of British Columbia. Dr. Montaner is also director of the BC Centre for Excellence in HIV/AIDS, president of the International AIDS Society, and co-director of the Canadian HIV Trials Network.

**Evan Wood, MD, PhD** is the chair of the working group for this study. Dr. Wood is also co-director of the Urban Health Research Initiative, a senior scientist with the British Columbia Centre for Excellence in HIV/AIDS, and a clinical associate professor in the Department of Medicine at the University of British Columbia (Division of AIDS).

*Dr. Wood may be reached at [info@icsdp.org](mailto:info@icsdp.org) or +1 604 806 9142.*

## ACKNOWLEDGEMENTS

For their external reviews of this report, the authors wish to thank:

- Stephen T. Easton, Professor of Economics and Acting Director, School for International Studies, Simon Fraser University; Senior Fellow, Fraser Institute, Vancouver, Canada
- Jeffrey Miron, Senior Lecturer and Director of Undergraduate Studies, Department of Economics, Harvard University
- Alex Wodak, Director, Alcohol and Drug Service, St. Vincent's Hospital, Sydney, Australia

Thanks also to Brandon Marshall for data analysis and interpretation, and Deborah Graham for report preparation.

## REFERENCES

1. Johnson BD, Golub A, Dunlap E. The rise and decline of hard drugs, drug markets, and violence in inner-city New York. In Blumstein A & Wallman J (eds.), *The crime drop in America*. Cambridge University Press. 2000: 164.
2. Martin I, Palepu A, Wood E, Li K, Montaner J, Kerr T. Violence among street-involved youth: the role of methamphetamine. *European Addiction Research*. 2009; 15: 32.
3. Romero-Daza N, Weeks M, Singer M. "Nobody gives a damn if I live or die": violence, drugs, and street-level prostitution in inner-city Hartford, Connecticut. *Medical Anthropology*. 2003; 22: 233.
4. Ousey GC, Lee MR. Investigating the connections between race, illicit drug markets, and lethal violence, 1984-1997. *Journal of Research in Crime and Delinquency*. 2004; 41: 352.
5. Blumstein A. Youth violence, guns, and the illicit-drug industry. *Journal of Criminal Law & Criminology*. 1995; 86: 10.
6. Goldstein PJ, Brownstein HH, Ryan PJ, Bellucci PA. Crack and homicide in New York City, 1988: a conceptually based event analysis. *Contemporary Drug Problems*. 1989; 16: 36.
7. Brownstein HH, Crimmins SM, Spunt BJ. A conceptual framework for operationalizing the relationship between violence and drug market stability. *Contemporary Drug Problems*. 2000; 27: 867.
8. Guerrero R. Epidemiology of violence in the Americas: the case of Colombia. In Burki SJ, Aiyer S, Hommes R (eds.), *Poverty & inequality: annual World Bank conference on development in Latin America and the Caribbean 1996 proceedings*. World Bank Publications. 1998: 95.
9. Donohue III JJ, Levitt SD. Guns, violence, and the efficiency of illegal markets. *American Economic Review*. 1998: 463.
10. Decker SH. *Policing gangs and youth violence*. Wadsworth Publishing. 2003.
11. Hutson HR, Anglin D, Kyriacou D, Hart J, Spears K. The epidemic of gang-related homicides in Los Angeles County from 1979 through 1994. *Journal of the American Medical Association*. 1995; 274: 6.
12. Castle A. *Statistical overview of homicides in British Columbia, 1997-2007: 2009 update*. Vancouver: Royal Canadian Mounted Police; 2009.
13. Levitt SD, Venkatesh SA. An economic analysis of a drug-selling gang's finances. *Quarterly Journal of Economics*. 2000: 35.
14. Levitt S, Rubio M. Understanding crime in Colombia and what can be done about it. In Alesina A (ed.), *Institutional reforms: the case of Colombia*. MIT Press. 2005: 131.
15. Elsworth C. Mexicans send in troops for drug war. *Telegraph*. December 13, 2006.
16. Associated Press. Mexico: 1,000 killed in drug violence so far in '09. *USA Today*. February 26, 2009.
17. Lange J. From spas to banks, Mexico economy rides on drugs. *Reuters*. January 22, 2010.
18. Government of Canada. *National Anti-Drug Strategy*. Ottawa: Government of Canada; 2008.
19. Elovich R, Drucker E. On drug treatment and social control: Russian narcology's great leap backwards. *Harm Reduction Journal*. 2008; 5: 23.
20. Roberts M, Trace M, Klein A. *Thailand's 'War on Drugs'*. London: Beckley Foundation; 2004.
21. ONDCP. *FY2010 budget summary*. Washington, DC: Office of National Drug Control Policy; 2009.
22. Moher D, Liberati A, Tetzlaff J, Altman DG; PRISMA Group. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *British Medical Journal*. 2009; 339: b2535.
23. Miron JA. Violence, guns, and drugs: a cross-country analysis. *Journal of Law and Economics*. 2001; 44: 615.

24. Resignato AJ. Violent crime: a function of drug use or drug enforcement? *Applied Economics*. 2000; 32: 681.
25. Miron JA. Violence and the US prohibitions of drugs and alcohol. *American Law and Economics Review*. 1999; 1: 78.
26. Caulkins J, Reuter P, Taylor LJ. Can supply restrictions lower price? violence, drug dealing and positional advantage. *Contributions to Economic Analysis & Policy*. 2006; 5: 20.
27. Shepard EM, Blackley PR. Drug enforcement and crime: recent evidence from New York State. *Social Science Quarterly*. 2005; 86: 323.
28. Burrus RT. Do efforts to reduce the supply of illicit drugs increase turf war violence? a theoretical analysis. *Journal of Economics and Finance*. 1999; 23: 226.
29. Riley KJ. Homicide and drugs: a tale of six cities. *Homicide Studies*. 1998; 2: 31.
30. Benson BL, Leburn IS, Rasmussen DW. The impact of drug enforcement on crime: an investigation of the opportunity cost of police resources. *Journal of Drug Issues*. 2001; 31: 989.
31. Benson BL, Rasmussen DW. Deterrence and public policy: trade-offs in the allocation of police resources. *International Review of Law and Economics*. 1998; 18: 24.
32. Brumm HJ, Cloninger DO. The drug war and the homicide rate: a direct correlation? *The Cato Journal*. 1995; 14: 8.
33. Rasmussen DW, Benson BL, Sollars DL. Spatial competition in illicit drug markets: the consequences of increased drug war enforcement. *Review of Regional Studies*. 1993; 123: 219.
34. Maher L, Dixon D. Policing and public health: law enforcement and harm minimization in a street-level drug market. *British Journal of Criminology*. 1999; 39: 488.
35. Maher L, Dixon D. The cost of crackdowns: policing Cabramatta's heroin market. *Current Issues in Criminal Justice*. 2001; 13: 5.
36. Riley D, O'Hare PA. Reducing the harms of drugs and HIV: policies & practices around the world. XII International AIDS Conference. 1998; 12: 667 (abstract no. 33388).
37. Bagley B. Drug trafficking, political violence and US policy in Colombia in the 1990s. Available at: [http://www.mamacoca.org/junio2001/bagley\\_drugs\\_and\\_violence\\_en.htm](http://www.mamacoca.org/junio2001/bagley_drugs_and_violence_en.htm).
38. UNODC. World drug report 2005. Vienna: United Nations Office on Drugs and Crime; 2005.
39. Cornwell S. Rice to Mexico for talks on drugs. Reuters. October 21, 2008.
40. Morris SK. Colombia: prohibition's frontline. *International Journal of Drug Policy*. 2003; 14: 209.
41. Felbab-Brown V. Afghanistan: when counternarcotics undermines counterterrorism. *Washington Quarterly*. 2005; 28: 55.
42. Destrebecq D, Leggett T. Cocaine trafficking in West Africa: the threat to stability and development (with special reference to Guinea-Bissau). Vienna: United Nations Office on Drugs and Crime; 2007.
43. Easton ST. Marijuana growth in British Columbia. *Public Policy Sources* 74. Vancouver, BC: Fraser Institute; 2004.
44. Statistics British Columbia. BC GDP by industry: NAICS aggregations. [http://www.bcstats.gov.bc.ca/data/bus\\_stat/bcea/BCEAchnnd.asp](http://www.bcstats.gov.bc.ca/data/bus_stat/bcea/BCEAchnnd.asp)
45. UNODC. World drug report 2009. Vienna: United Nations Office on Drugs and Crime; 2009.
46. Cornell SE. Narcotics and armed conflict: interaction and implications. *Studies in Conflict & Terrorism*. 2007; 30: 207.
47. Pettit W, Western B. Mass imprisonment and the life course: race and class inequality in U.S. incarceration. *American Sociological Review*. 2004; 69: 151.

48. Shoveling up: the impact of substance abuse on state budgets. New York: National Center on Addiction and Substance Abuse at Columbia University; 2001.
49. Gaskins S. "Women of circumstance"—The effects of mandatory minimum sentencing on women minimally involved in drug crimes. *American Criminal Law Review*. 2004; 41: 1533.
50. Meierhoefer BS. The general effect of mandatory minimum prison terms. Washington, DC: Federal Judicial Centre; 1992.
51. Mascharka C. Mandatory minimum sentences: exemplifying the law of unintended consequences. *Florida State University Law Review*. 2000; 28: 935.
52. Caulkins J, Rydell CP, Schwabe W, Chiesa J. Mandatory minimum drug sentences: throwing away the key or the taxpayers' money? Santa Monica: RAND Corporation; 1997.
53. Warren J, Gelb A, Horowitz J, Riordan J. One in 100: behind bars in America 2008. Washington, DC: Pew Center on the States; 2008.
54. Degenhardt L, Chiu W-T, Sampson N, et al. Toward a global view of alcohol, tobacco, cannabis, and cocaine use: Findings from the WHO World Mental Health Surveys. *PLoS Medicine*. 2008; 5: 1053.
55. Manski CF, Pepper JV, Petrie CV. Informing America's policy on illegal drugs: what we don't know keeps hurting us. Washington, DC: National Research Council, National Academy of Sciences; 2001.
56. UNODC. World Drug Report 2008. Vienna: United Nations Office on Drugs and Crime; 2008.
57. Rolles S. After the War on Drugs: blueprint for regulation. London: Transform Drug Policy Foundation; 2009.
58. Ingenito R. Prepared testimony of Robert Ingenito. Sacramento: California State Board of Equalization; 2009.
59. Greenwald G. Drug decriminalization in Portugal: lessons for creating fair and successful drug policies. Washington, DC: Cato Institute; 2009.
60. Pearson H. A hard habit to break. *Nature*. 2004; 430: 2.
61. Saunders JB. Publication bias in addiction research. *Drug and Alcohol Review*. 2007; 26: 3.