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Assessing the Effect of Policy Interventions on Small Arms Demand in Bogotá, Colombia

Katherine Aguirre, Óscar Becerra, Simón Mesa y Jorge A. Restrepo

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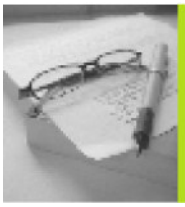
small arms survey



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Assessing the Effect of Policy Interventions on Small Arms Demand in Bogotá, Colombia

Katherine Aguirre, Óscar Becerra, Simón Mesa and Jorge A. Restrepo [*] [**]

Resumen: In this document, we assess the market associated with the criminal use of firearms. This assessment will distinguish demand for firearms along two main axes: the markets in which they can be obtained (legal and illegal markets) and how individuals use them (criminally and non-criminally).

Specifically, we will explore the impact that active anti-gun policies and other security interventions, established in the mid-1990s, had on reducing firearm-related homicides in Bogotá. After reviewing the general context, we will introduce the policies that have been implemented by local administrations during the period in which the homicide rate fell drastically. We then use a variety a statistical methods to assess the impact of gun-carrying and violence reduction interventions on homicide in Bogotá. The last section concludes.

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1. STUDY OBJECTIVES

In Bogotá, some 50,000 people died in firearm-related events between 1979 and 2009. This constitutes roughly 8% of the total number of deaths, by natural or external causes, registered in the Colombian capital. While the impact of firearms in Bogotá is smaller than in Colombia as a whole, where approximately 11% of deaths have been attributed to firearms, Bogotá contributed 10% of all firearms deaths in Colombia over the period 1979 to 2009. In Bogotá as in the rest of Colombia, homicides are the primary event through which firearms deaths occur (more than 90% of cases).

In 2009, there were over 15,000 homicides registered in Colombia. Despite an impressive reduction since 2002 (26.8%), and this figure being the lowest in more than 20 years, the homicide rate in Colombia continues to rank as one of the highest in the world, if not the highest. Improvements in the city of Bogotá have contributed substantially to the overall reduction in homicides. The city has experienced an impressive reduction of homicide violence since its peak in 1993, when the number of homicides rose from 3,000 in 1992 to almost 4,500, a 33% increase. According to the National Police, the figure of 2009 of Bogotá was 1,327 a reduction of around 70% with respect to the 1993 level. The current homicide rate of 18 per 100,000 inhabitants is still quite high, but contrasts with the rate of 1993 of 80 per 100.000. The contribution of Bogotá to the total number of homicides of the country has not declined at the same speed as the level of homicides. For the 2007, the Ministry of Defence says that the capital contribute with 32.7 per cent in the decrease of the homicides in the whole country (Bogotá.gov.co, 2006).

Violence in Colombia is a result of two interconnected complex social phenomena. The first is the prevalence of entrenched criminal organisations, mainly involved in the production and transport of illegal narcotics. The second is the three-sided armed conflict between the government, guerrilla groups and paramilitary groups (Aguirre et, al., 2006; p2). The situation in Bogotá is influenced more by common urban delinquency by conflict dynamics.

In this document, we assess the market associated with the criminal use of firearms. Recent academic studies highlighted demand for firearms for violent use (Brauer and Muggah, 2005). This assessment will distinguish demand for firearms along two main axes: the markets in which they can be obtained (legal and illegal markets) and how individuals use them (criminally and non-criminally).

Specifically, we will explore the impact that active anti-gun policies and other security interventions, established in the mid-1990s, had on reducing firearm-related homicides in Bogotá. After reviewing the general context, we will introduce the policies that have been implemented by local administrations during the period in which the homicide rate fell drastically. We then use a variety a statistical methods to assess the impact of gun-carrying and violence reduction interventions on homicide in Bogotá. The last section concludes.

2. Context

2.1 The Small Arms Demand Model

The subject of demand for small arms has been relatively neglected in the academic literature. Brauer and Muggah (2005) note that policy emphasis has been on the "supply-side of the small arms market," such as export-control regimes, weapon registries, and arms and ammunition marking and tracing. Nonetheless, many acknowledge supply-side policies have limited effectiveness due to the nature of small arms and the political economy of production and distribution. Brauer (2004) argues that small arms are "harder to reign in from the supply-side since, by definition, they are relatively easy to produce, transport, hide and smuggle, they are durable and long-lasting, and, moreover, control regimes require a sophistication of internal and global coordination beyond the capacity of many states to implement" (Brauer, 2004).

Recently, however, the demand for small arms has received increasing attention in both research and policy arenas. The demand model of the Small Arms Survey (hereafter, SAS) posits that demand can be explained by the confluence of individual's preferences, their resources, and small arms prices**.** Brauer and Muggah (2005) elegantly articulate the concept thusly:

> "The ultimate expression of demand for small arms acquisition is governed by the interplay of motivations and means. In the extreme, a surfeit of means will not result in arms acquisition if accompanied by an utter lack of motive; conversely, the highest degree of motivation will not result in acquisition if the means – as broadly defined as we propose – are lacking. Both aspects must join for a choice to be made, for demand to be expressed, and for acquisition to take place."

According to the proposed model, resources may be monetary or non-monetary. Non-monetary resources include innate talent, education, strength, convictions, personal attributes, and personal or institutional resources as connections with other individuals. Prices are not only firearm prices, but relative prices of substitute and complementary goods. Brauer asserts that substitute goods are often expensive relative to complementary goods. For example, the cost of moving into a safer neighbourhood may be substantially greater than that of purchasing a firearm, since this includes not only time and money spent moving, but also the likelihood that property in the safer neighbourhood is more costly.

Brauer and Muggah (2005) note that complementary goods prices, such as bullets and explosives, tend to be less expensive than substitute goods, and prove to be as effective as firearms. Brauer argues that analysis of small arms demand must consider an individual's preferences in conjunction with his or her resources and the prices of alternate goods.

Albeit consistent with economic theory, it is necessary to recognise that this model will need to take into account the differential circumstances of the demand of firearms with criminal intent. For a common criminal or a member of a criminal organisation, the firearm is a capital good required in order to engage in predatory activities. In an environment of high crime such as that in Colombia, common criminals seek guns with the intent of defending themselves from authorities and generating the sufficient threat in order to commit crimes. In a criminal organisation, guns appear as the tool for violence generation and for gaining control over areas of operations. In both cases, preferences are clearly biased towards demanding a gun to use it, much more in the case of organised crime. In the case of organised crime, resources are not a hampering influence for crime acquisition.

As we will argue in the following sections, the fact that most of the violence in Colombia is generated by organised criminal groups and groups in conflict with the state requires the demand model to account for these particularities in order to fully understand the limited impact that gun control might have in the use of firearms.

2.2 Preferences and Small Arms Demand Realization

While the demand model espoused by the SAS is consistent with economic theory, its measurement poses certain challenges. In our analysis of firearms demand in Bogotá, we make a distinction between legal and illegal markets as well as between criminal and non-criminal use.

In Colombia, two markets for small arms demand can be recognized. The first market, legal and narrowly-regulated, is completely controlled by the state through a commercial organization known as the Military Industry (Indumil). At the same time, an illegal market of unknown size thrives, characterised by the availability of cheap firearms which are unavailable through legal channels and stimulated by criminal organisations and armed groups that have been operating for more than four decades in the country.

Additionally, we propose that firearms can be used with two types of intentions: non-criminal and criminal. All firearms sought with non-criminal intention are considered legal, while

those sought with criminal intention may be legal or illegal[1]. In Colombia, the legal use of firearms is subject to the holding or carrying permit with which they are issued (Chart 1).

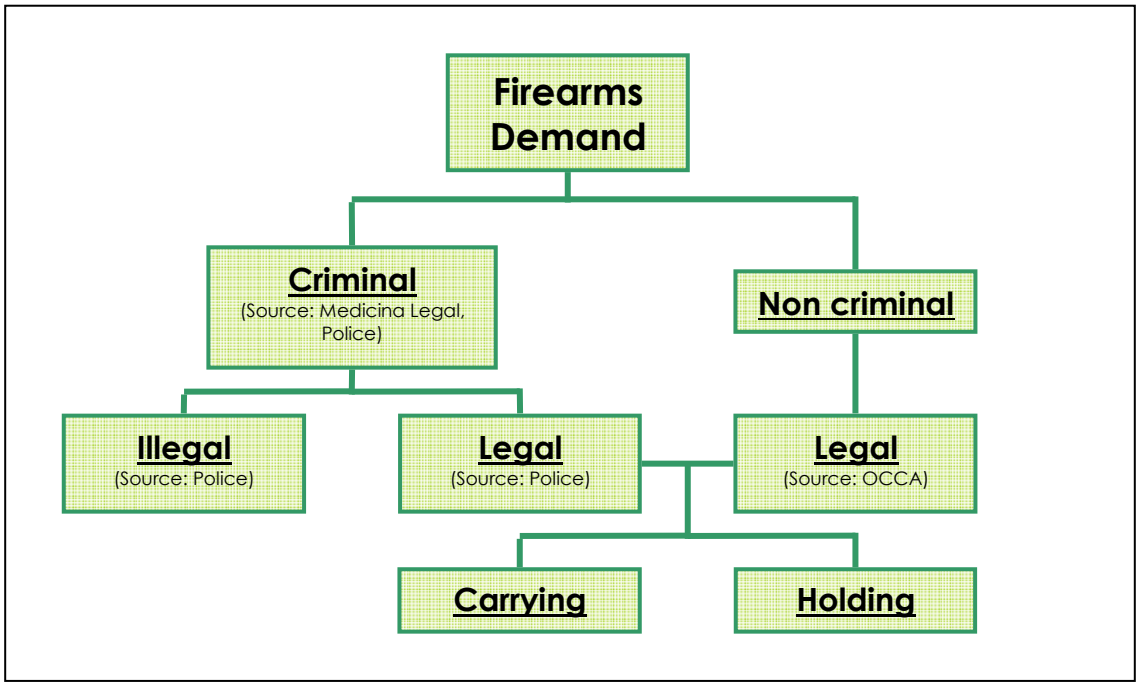
In the case of non-criminal demand, it is plausible to argue that the initial motivation for demand could be protection, status or even fetishism. In each of these cases, the SAS demand model would be an appropriate explanatory model of demand.

In the case of criminal use, however, firearms demand follows a different choice procedure. In this case, the alternatives that preferences must order, viability must finance and prices will determine are different from the simple decision of whether or not to buy a gun for its eventual use or for the feeling of safety that it might convey. In the case of criminal demand for use, the decision process and the application of rational analysis does not appear to be so challenging, as in this case there is a much smaller distance between the demand for possession and the demand for use. Criminal behaviour, in fact, requires the use of violence, and in this case, small arms can be closely interpreted like a capital investment in the production of criminal control. Furthermore, the substitutes for firearms for criminal purposes are rather different than the substitutes for firearms for "legitimate" or legal ownership.

In order to assess legal demand for firearms, we examine acquisition statistics from the Office for Firearm Control and Trade of the Ministry of Defence (OCCA) since 1994 and until 2005 (August). Data on illegal demand, however, is considerably difficult to obtain as it cannot be directly measured. In order to assess illegal demand, we analyze Police data on firearms confiscation, and legality of firearms involved in criminal events, and the types of crime which involve them. General firearms demand may be gauged through assessing demand for homicidal use of the weapon. Since more than 90% of the total deaths by firearms in Bogotá are homicides, demand for homicidal use of a firearm is a good proxy for criminal use of firearms and thus for the robustness of the illegal market. For this purpose, we make use of data from the National Institute of Legal Medicine and Forensic Sciences (IMLCF) on homicides in Bogotá, and from the National Department of Statistics (DANE) and Police (CIC) (Chart 2). This is based on the strong assumption that most homicide weapons are illegal. Still, as we do not have complete time series for the type of weapons used in homicides according to their legality, we use this as the best proxy available.

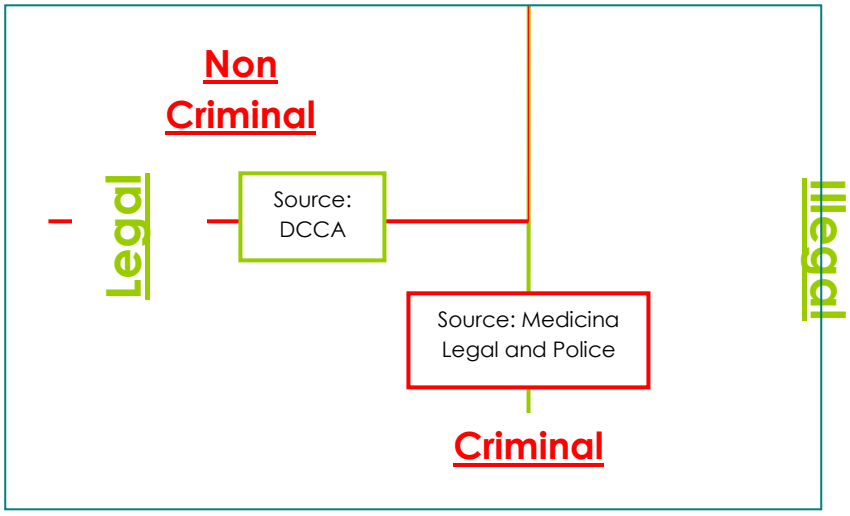
[1] The acquisition of an illegal firearm is in itself a crime punished by law, hence, there are no illegal arms for non-criminal use.

Chart 1. *Small arms demand: the legal and illegal market, and criminal and non-criminal demand.*



Source: CERAC

Chart 2. *Datasets used to assess the Small Arms Demand in Bogotá*



Source: CERAC

2.3 Firearms and Prices[2]

As mentioned above, we distinguish between two main markets for small arms: legal and illegal. Price formation in either of these markets depends on the specific features of each one. In this section, we briefly describe the prices that characterize each of these markets.

Moreover, in Colombia, "legal costs" play an important role in the demand for firearms. These are the costs incurred in order to legally hold a registered firearm, or, inversely, the cost that agents may be subject to pay if captured with an unregistered firearm. The costs of obtaining a firearm in the legal market vary depending on the type of weapon and the type of permit sought. To start, there is a monetary cost for the weapon acquired and the legal restrictions associated with certain firearms. For example, Colombian firearms regulations (see Box 1) stipulate that civilians may not receive authorization for pistols and revolvers with a calibre greater than 0.38 inches (Ministerio de Defensa, nd)[3]. Hence for assault rifles and all other automatic weapons, the calibre is not relevant to the present analysis as these types of weapons are outside the legal reach of civilians. Table 1 shows the prices in 2006 which the military industry sells to civilians and to companies.

According to Indumil the price of a "legal firearm" (handguns, carbines and shotguns) ranges between (USD) $143 and $65,000[4], while the price to obtain a permit is $51.74 (Table 2). The relevant price to consider in terms of the SAS demand model, and for inter-country comparative purposes, is the one for weapons for which the access to civilians is permitted: the price ranges from $136 to $1,447 as shown in Table 1. Notice that a civilian earning the minimum wage will need to devote more than one months of work income in order to be able to afford a revolver and its permit. In addition, the procedure for obtaining a holding or carrying permit may take considerable time and is subject to certain prerequisites. The individual must pass a medical test, a battery of psychological tests, and a training course in order to obtain the permit.

There is some circumstantial evidence that on the illegal market, weapon prices are lower, however additional risks are usually entailed. Although enforcement is not tight, under the current regulation, the penalty for criminal use of a firearm may include a prison term of up to 15 years[5]. In some cases, this includes possessing the firearm without a license (a cost that the person acquiring it legally must consider).

The illegal market offers buyers the possibility of obtaining forbidden firearms (unavailable through the legal market) at low cost. While a machine gun such as the M-60 (cal. 7.62) costs some $19,757 legally, the price is around $10,000 on the illegal market. Pistols and revolvers can be found since US$260. A new strategy of criminal users to avoid prosecution and enforcement of gun restrictions is the renting of firearms: there are several media reports sourced on the police that point to the existence of places where criminal organisations rent (and thus control property and use) of pistols for US$86 a day (El Tiempo, 2006a). In certain cases, the price of a weapon may be as little as 10% of the legal price[6].

Finally, the prices of substitute and complementary goods vary. In the legal market, the price of a cartridge oscillates between $0.10 (for a Seller & Bellot 22L) and $5.00 (for a cartridge calibre 0.5), while the price of a grenade (IM-26) is around $30 (Indumil, 2006). Explosives have a special peculiarity in that firms can buy them legally for industrial use, after review and permit approval from the military industry and the military regulatory offices.[7]

Knifes and machetes, which appear frequently as weapons both in criminal and conflict actions, are cheap and widely available.

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[2] For a more detailed exposition, see the Small Arms Survey Colombia study (Aguirre et. Al, 2006).

[3] All of them are reserved to the Colombian Military Forces.

[4] To put this in context, Colombian per capita GDP was USD$3,019 in 2005.

[5] The penal code established that human rights violations with firearms shall be punished with a prison sentence of up to 15 years. Production, distribution, and use can be punished with prison sentences ranging from 1 to 4 years. Prison sentences for carrying a weapon without a permit range from 3 to 10 years, and for using it in a homicide, from 2 to 6 years.

[6] In Colombia, the price of an Ingram machine gun made in illegal workshops (popular arms workshops) is around USD$140, while the price of an original Ingram is around USD$1,400 (Graduate Institute of International Studies, 2004; 24). According to SEMANA Magazine (Edition N° 887) the price difference between Indumil and Black market prices is 56%, being the Indumil guns much higher than even the quoted black market. (OXFAM, 2003)

[7] The relation between firearms and explosives is complex -- they may act as complementary or supplementary goods depending on the situation. In a terrorist attack, for example, the ratio of firearms to explosives used is different than in other types of attacks.

Table 1. *Firearms Prices by Type, 2006*

Category of Firearm	Firearm Make	COL$	USD$	Relative Price to Revólver	Relative to price to daily minimum wage (USD$ 5,9)*
Handguns	Pistol Llama Cal. 22	315,000	136.96	0.29	23.21
	Pistol Jericho 9T Mod Cal 9mm	2,667,000	1,159.57	2.48	196.54
	Revolver Llama Cal .38mm	1,205,000	523.91	1.12	88.80
	Revolver Llama Scorpio Cal 32	1,075,000	467.39	1.00	79.22
Carabines and Shotguns	Remington Cal .22 Mod 572	1,943,000	844.78	1.81	143.18
	Sig/Sauer Carabine Cal 308 I5T	3,329,000	1,447.39	3.10	245.32
	Remington Cal .12 Mod 87	266,700	115.96	0.25	19.65
	Mossberg Cal .12	2,100,000	913.04	1.95	154.75

Source: Industria Militar. Processed: CERAC

* The montlhy minumun wage to 2006 is USD$178

Table 2. *Prices of gun permits, 2006*

Type of Permit	COL$	USD$
Holding or Carrying Permit	119,000	51.74
Permit Renewal or copy	30,000	13.04
Permit for Second Firearm	30,000	13.04
Permit Renewal following suspension	593,000	257.83
Explosives and ammunition Permit	890,000	386.96
Social Tax	40,800	17.74

Source: Industria Militar

2.4 Resources

Colombia is a middle-income economy where most members of the population can afford to purchase a weapon if they so choose. This is evidenced by the sizeable number of weapons in the hands of civilians (currently more than 700.000 according to the information provided by the OCCA) despite the relatively large costs involved. Thus, while legal weapons are not cheap and the paperwork required for their acquisition is cumbersome (see Table 1), people have nonetheless endeavoured to legally obtain hundreds of thousands of firearms. Unfortunately, the available data did not allow us to see how demand has evolved over time making it impossible to see if there is some income or price effect on demand for weapons. Nor is there any means of correlating the level of income or wealth of people with the number of arms legally obtained.

As mentioned above, resources do not constitute an impediment for firearms demand for criminal or conflict use in the case of Colombia. There have been several documented cases of massive illegal arms deals in which criminal organisations, guerrilla and paramilitary groups have been involved. The main barriers to firearm acquisition are the complex logistics involved in illegal deals and enforcement.

Box 1. Firearms Regulation in Colombia

Despite having a dismal human security record directly linked to firearms, the regulatory framework for firearms in Colombia is well-designed and rather restrictive. This owes in part to the rise in criminal use of firearms during the eighties and early nineties, which sparked the development and implementation of a whole new regime of firearm control.

Arms control legislation has a long history in Colombia. Regulation was implemented as early as 1947. Much later, in 1991, the new political Constitution created the institutional space to design, issue and implement a new regulatory framework. The new Constitution brought an avalanche of new regulations in all realms of the policy agenda, which overwhelmed the lobbying capabilities of interest groups and allowed the implementation of ambitious reformist initiatives. Among these, National Government Decree Number 2535 of 1993 regulated the production and trade of arms, munitions and explosives, as well as carrying and holding permits for a small group of firearms.

The main pillar of the current regulatory framework is state ownership of all firearms and limited civilian access, in order to effectively ration and control demand for possession. Only the State is authorized to produce, import, and sell firearms. Decree 2535 established arms carrying to be a license given by the State rather than a right. It identified three types of firearms: those limited to use by the armed forces (uso privativo), restricted-use guns (uso restringido) and civilian guns (self-defense, sports or collection). The Ministry of Defense went even further, asserting that "the license of holding or carrying a firearm can be given, suspended or removed whenever the competent authority deems necessary" (Pardo, 1995). Consequently, civilians and firms may request the issuance of a permit, but must also demonstrate the need for the license. The Ministry of Defense Office for Control and Trade of Arms (OCCA) grants licenses subject to the justification provided in the request.

Previous firearms legislation was similar in that the state provided a safe-conduct for the possession and carrying; however, the system of registry and tracking was very poor. Decree 2535 improved the control of civilian possession and control of arms, and encouraged civilian registration through a special amnesty whereby people were unconditionally granted a temporary holding permit regardless of their current legal status. The Ministry of Defense reports that around 190,000 holding permits were issued (see Table 3). The amnesty allowed people to relinquish their firearms to the State and even receive a monetary compensation for doing so. All safe-conducts issued before 1994 had to be changed to the updated holding and carrying licenses (Bulla, 1995).

Decree 2535 stipulates that a holding permit authorizes its owner to hold a weapon in a declared building that may be his or her residence, place of work, or any other place of possible danger. Only two holding licenses can be authorized for a civilian, and their validity expires after ten years. The permit for carrying a firearm has some distinct characteristics. For example, the individual must justify his or her particular security reasons for carrying a gun, and no more than two carrying permits are authorized per person. A restricted-use gun license can be given if the individual justifies a risk of death. Article 4 specifically states that, although the state is the sole owner of the firearm, the licensee is fully responsible for its use.

The regulatory framework also enables the political-administrative authorities, under an agreement with the military and police authorities, to temporarily restrict or even ban the carrying of firearms in order to control urban crime (Bulla, 1995; Pardo, 1995). This has been one of the main forms of arms control in the city of Bogotá.

The Colombian Congress, with the support of the National Government in 2006 passed legislation that, although it has some provisions that strengthen the control and modernizes the Department of Arms Control and Trade, will lead to a greater supply of guns on the streets. The law also increases the permissiveness in behavior and goes against local security initiatives, popular and even led to greater state control and regulation of firearms (Comunidad Segura, 2009).

3. FIREARMS DEMAND IN BOGOTÁ

The assessment of small arms demand in Bogotá is somewhat imperfect in that we cannot take into account certain factors which affect individuals' preferences for the demand for the *use* of small arms, such as psychological behaviour. As shown in section 2, we assess firearms demand by separately taking into consideration two markets: legal (Section 3.1) and illegal (Section 3.2).

We assess legal demand using official information from the Ministry of Defence Office for Control and Trade of Arms (OCCA) on the sale of arms in Colombia and Bogotá for the period before and after 1994. Criminal demand is calculated indirectly through analysis of vital statistics data from DANE and National Police Centre for Criminological Research (CIC), which contains information on the legal status of weapons used in common crimes. To improve our understanding of the criminal market, we incorporate data on firearms use (IMLCF) which helps to clarify the demand for use in homicides of firearms in Bogotá and highlights patterns in the criminal use of such weapons since we consider that all illegal firearms are used in criminal activities.

3.1 Legal Demand

In this section, we investigate patterns of firearms permit acquisition in Bogotá relative to Colombia as a whole. Permit acquisition is indicative of the preferences of those agents that choose to purchase weapons directly from the State. Data from OCCA allows us to identify who is seeking arms, the type of permit they are seeking, and the type of firearm they wish to acquire. The dataset contains information on 38 arms selling depots, of which 35 are different from those of Bogotá and are distributed around the country. The degree of demand for legal firearms in Bogotá will be assessed using data on the types of arms sought, the people seeking them, and the type of permit issued for each weapon. In each of these cases, we will examine any similarities in the contribution of demand in Bogotá to the national total. The comparison becomes even more interesting when we review differences in the acquisition of different firearm brands in relation to the permit acquired in Bogotá and in Colombia.

Unfortunately, the dataset does not include information regarding the date on which the permit was requested. The only temporal information has to do with the information about weapons already in the hands of civilians before and after 1994 and is only available at the national level.[8]

The OCCAE had issued a total of 706,210 firearm permits to civilians by mid-2005. This figure includes the 235,696 registered firearms issued in the 1994 firearm amnesty, when the new regulation entered into force. The 2005 figure indicates a ratio of 1.53 legal arms per 100 civilians. But while the number of legally registered firearms is lower than those of its neighbours, it appears that Colombian civilians are arming themselves in greater numbers (Aguirre, et. Al, 2006; p. 5)

The rate of legal firearms per 100 inhabitants in Bogotá is 2.61, one point over the rate of Colombia. This could be related with the big proportion of firearms bought by the security companies and the people that do not lived in the city but buy in the capital.

At the national level, both before and after 1994, the firearm with the highest license participation was the revolver (55% before 1994 and 62% after), however pistols gained in popularity after 1994, increasing from 14% to 19% to become the second most prevalent firearm (Table 3). Shotguns were displaced from second place by pistols. This could be due to the fact that the amnesty might have been more effective in urban than rural areas, leading to a higher number of pistols to be registered for the first time and less shotguns legalised (Shotguns are less 'movable' weapons and are usually stored in the houses and hamlets of rural areas, and are thus less prone to be checked by authorities).

[8] The fact that this is the cut-off year is explained for the new regulation of firearms holdings that took place in that year and included an amnesty.

Table 3. *Arms acquisition by type before and after 1994*

Category of Firearm	Quantity Before 1994	Participation (%) Before 1994	Quantity 1994-2005	Participation (%) 1994-2005	Monthy Average 1994-2005	Total Licensed
Revolver	130,736	55.5%	293,674	62.4%	2,144	424,410
Shotgun	54,578	23.2%	68,454	14.5%	500	123,032
Pistol	32,168	13.6%	90,482	19.2%	660	122,650
Carabine	11,298	4.8%	9,755	2.1%	71	21,053
Undetermined	2,902	1.2%	419	0.1%	3	3,321
Assault rifle	2,531	1.1%	3,315	0.7%	24	5,846
Submachine Gun	1,452	0.6%	4,379	0.9%	32	5,831
Machine Gun	31	0.0%	36	0.0%	0	67
Total	235,696	100.0%	470,514	100.0%	3,434	706,210

Source: OCCA
Processed by CERAC

As Table 4 shows, more than 80% of the total permits given in the period of amnesty were holding permits, pointing to the fact that the amnesty allowed a proper regulation of demand for private protection of property (the arm needs to be stored *at* the property) rather than demand for private protection of the person (which requires carrying it in particular at urban centres).

Table 4. *Permits issued before amnesty*

Type of permit	Existent firearms before 1994	%
Carrying	45,719	19%
Holding	189,977	81%
Total	235,696	

Source: OCCA
Processed: CERAC

Regarding the legal demand for firearms in Bogotá, Table 3 shows arms acquisition behaviour since the 1994 amnesty through the beginning of 2005. Demand patterns by type of firearm are very similar between Bogotá and the rest of the nation. Around 60% of the demand is for revolvers while 15-20% is for pistols and shotguns. While the shotgun is the second firearm demanded in the whole country, in Bogotá is the pistol, with an important participation of 20 per cent.

One quarter of the legal Colombian demand for firearms originates in Bogotá. This proportion varies little among different types of weapons, such as revolvers, shotguns, pistols and carbines, except for machine guns, submachine guns, and assault rifles, where the proportion of this guns is higher in Bogotá (see Table 4), although most of these permits are given for carrying which allow for the arm to be moved along the whole of the Colombian territory.

Table 3. *Type of firearms demanded, Colombia and Bogotá*

Colombia		
Type of firearm	**Quantity**	**Participation (total)**
Revolver	424,410	60.1%
Shotgun	123,032	17.4%
Pistol	122,650	17.4%
Carbine	21,053	3.0%
Assault rifle	5,846	0.8%
Submachine gun	5,831	0.8%
Undetermined	3,321	0.5%
Machine Gun	67	0.0%
Total	706,210	100.0%
Bogotá		
Type of firearm	**Quantity**	**Participation (total)**
Revolver	106,538	58.2%
Pistol	37,909	20.7%
Shotgun	26,857	14.7%
Carbine	4,718	2.6%
Submachine gun	3,575	2.0%
Assault rifle	3,218	1.8%
Undetermined	308	0.2%
Machine Gun	34	0.0%
Total	183,157	100.0%

Source: OCCA
Processed by CERAC

Table 4. *Distribution of firearms registered in Bogotá in the total since 1994*

Type of firearm	Colombia	Bogotá	Participation
Submachine gun	5,831	3,575	61.3%
Rifle	5,846	3,218	55.0%
Machine Gun	67	34	50.7%
Pistol	122,650	37,909	30.9%
Revolver	424,410	106,538	25.1%
Carbine	21,053	4,718	22.4%
Shotgun	123,032	26,857	21.8%
Undetermined	3,321	308	9.3%
Total	706,210	183,157	25.9%

Source: OCCA
Processed: CERAC

In terms of the acquirers and types of permits registered, however, we observe a more divergent pattern between Bogotá and Colombia as a whole (Table 5). While in the capital city roughly 65% of the permits are for carrying a firearm, in Colombia as a whole the figure is 57%. This suggests that in Bogotá, people and firms demand an arm overwhelmingly to carry it, while in the rest of the country (including the countryside) guns are sought to be "stored" at home or on the farm. This phenomenon can be related with the security of politicians, diplomatic, merchants and people with a high profile, who are concentrated in the capital. Furthermore, this pattern prevails across all consumer profiles and types of arms. For example, ordinary citizens in Bogotá have a carrying permit for 75% of firearms, while the national figure is 61%. Firms in Bogotá hold carrying permits for 45% of their weapons, while this figure is 39% for the country as a whole. This is consistent with the experience revealed to us by the National Police: there are proportionally very few households that hold guns in the city, which have lead to very few cases in which, for example, an armed robbery of a household leads to a two-way shooting or indeed the stealing of guns. Taking into account that the latest estimated number of households in the city is 1'934,828 according to the Quality of Life Survey (2003), we estimate that there is approximately a stock of 10 legal guns per 100 households in Bogotá, of which only 3 are licensed to be kept at a fixed site. In total, more than 470,000 permits were issued in Colombia after the amnesty enacted by the arms legislation of 1994. This is an average of 39,210 permits issued every year.

Table 5. *Demand for firearms by holder and type of permit, Colombia and Bogotá.*

Colombia					
Type of ID	**Carrying**	**%**	**Holding**	**%**	**Total**
Colombian citizen	348.885	61,1%	222.476	38,9%	571.361
Firms	51.861	38,7%	82.062	61,3%	133.923
Foreigner	365	39,4%	561	60,6%	926
Firearm Total	401.111	56,8%	305.099	43,2%	706.210
Bogotá					
Colombian citizen	90.582	75,0%	30.134	25,0%	120.716
Firms	27.870	44,9%	34.139	55,1%	62.009
Foreigner	186	43,1%	246	56,9%	432
Firearm total	118.638	64,8%	64.519	35,2%	183.157

Source: OCCA
Processed by CERAC

On the other hand, it seems to be a high degree of demand for arms for protection "on the move" which is consistent with a response to a pattern of criminality in which kidnappings and armed attacks against vulnerable targets are frequent. Table 6 shows that more than a half of the total number of carrying permits for firms and foreigners are issued in Bogotá. This is likely due to a higher prevalence of firms that demand firearms (e.g., in order to protect property rights) as well as a larger presence of foreigners (including multinational executives in sectors at a higher risk of kidnapping) that require security. The pattern is also seen in citizens, but with a lower effect.

Table 6. *Distribution of type of permit holders of Bogotá in Colombia.*

Type of ID	**Carrying**	**Holding**
Colombian citizen	25.96%	13.54%
Firms	53.74%	41.60%
Foreigner	50.96%	43.85%
Firearm Total	29.58%	21.15%

Source: OCCA
Processed by CERAC

The demand for all types of firearms in Bogotá by type of acquirer (Table 9) confirms this. Consumers in Bogotá, particularly ordinary citizens, show a stronger preference for revolvers over pistols and shotguns than the rest of the country. Foreigners in Bogotá, on the other hand, show patterns of demand which are consistently different than in the rest of the country, seeking more sophisticated guns, like pistols. Also, it is worth mentioning that outside Bogotá firms show a stronger preference for shotguns, while pistols are more preferred in Bogotá than in the rest of the country. This might be a result of the different nature of the responsibilities which private security companies in Bogotá have in comparison with those operating in rural areas of the country.

Unfortunately, we are not able to differentiate demand for the type of organisation –like some state agencies that are subject of the requirement of registration (the DAS or *Departamento Administrativo de Seguridad,* for example) or even the demand for guns by specific sectors of the population (by age group or occupation, like members of the armed forces). The strong presence in Bogotá of these agencies or companies that have national reach and coverage, means that some of these guns, even if "based" in the city, can and do travel all over the country.

Table 7. *Firearms demand, type and holder. Colombia and Bogotá*

Colombia								
Type of firearm	**Colombian citizen**	**% of total weapons**	**Foreigner**	**% of total weapons**	**Firm**	**% of total weapons**	**Total**	**% of total weapons**
Revolver	346,787	60.7%	326	35.2%	77,297	57.7%	424,410	60.1%
Shotgun	86,130	15.1%	212	22.9%	36,690	27.4%	123,032	17.4%
Pistol	111,390	19.5%	281	30.3%	10,979	8.2%	122,650	17.4%
Carbine	20,030	3.5%	89	9.6%	934	0.7%	21,053	3.0%
Assault rifle	1,709	0.3%	11	1.2%	4,126	3.1%	5,846	0.8%
Submachine gun	2,244	0.4%	6	0.6%	3,581	2.7%	5,831	0.8%
Undetermined	3,004	0.5%	1	0.1%	316	0.2%	3,321	0.5%
Machine gun	67	0.0%		0.0%		0.0%	67	0.0%
Total	571,361		926		133,923		706,210	
Bogotá								
Type of firearm	**Colombian citizen**	**% of total weapons**	**Foreigner**	**% of total weapons**	**Firm**	**% of total weapons**	**Total**	**% of total weapons**
Revolver	69,201	57.3%	119	27.5%	37,218	60.0%	106,538	58.2%
Pistol	30,540	25.3%	155	35.9%	7,214	11.6%	37,909	20.7%
Shotgun	14,378	11.9%	82	19.0%	12,397	20.0%	26,857	14.7%
Carbine	4,414	3.7%	63	14.6%	241	0.4%	4,718	2.6%
Submachine gun	1,143	0.9%	4	0.9%	2,428	3.9%	3,575	2.0%
Assault rifle	727	0.6%	9	2.1%	2,482	4.0%	3,218	1.8%
Undetermined	279	0.2%		0.0%	29	0.0%	308	0.2%
Machine gun	34	0.0%		0.0%		0.0%	34	0.0%
Total	120,716		432		62,009		183,157	

Source: OCCA
Processed by CERAC

Table 8 compares the acquisition patterns of the ten most popular weapons in the country. With the exception of the *Indumil* and *Remington* brands, more than half of firearm permits issued in Bogotá are for carrying. *Llama*[9] (made by *Indumil*) is the most acquired firearm brand in the country, and 26% of those acquired are registered in Bogotá (see Table 9). Some 73% of the *Llama* firearms bought in the country are registered with a carrying permit, while in Bogotá this rate falls to 66%. The opposite pattern occurs with *Smith & Wesson* firearms where in Bogotá, 72% of these are registered with carrying permits while only 55% are in Colombia. Roughly one quarter of *Smith & Wesson* permits were issued in Bogotá, representing 31% of firearm sales in the city (Table 10).

[9] A weapon of either Spanish or Colombian origin, as Indumil has recently starting producing it.

Table 8. *Most acquired firearms brands and type of permit, Colombia and Bogotá*

Colombia

Firearm	Carrying	% Total	Holding	% Total	Total	Overall participation
Llama	142,626	73.2%	52,106	26.8%	194,732	34.0%
Smith & Wesson	99,946	55.0%	81,912	45.0%	181,858	31.7%
Indumil	4,353	11.7%	32,800	88.3%	37,153	6.5%
Colt	12,898	52.0%	11,910	48.0%	24,808	4.3%
Beretta	16,282	69.2%	7,231	30.8%	23,513	4.1%
Carl Walter	16,473	75.8%	5,249	24.2%	21,722	3.8%
Ceska Zbrojovka A.S.	16,830	96.6%	592	3.4%	17,422	3.0%
Browning	13,304	55.4%	10,698	44.6%	24,002	4.2%
Remington	7,285	28.2%	18,535	71.8%	25,820	4.5%
Ruger	16,103	71.9%	6,285	28.1%	22,388	3.9%
Total	346,100	60.4%	227,318	39.6%	573,418	100.0%

Bogotá

Firearm	Carrying	% Total	Holding	% Total	Total	Overall participation
Llama	33,629	66.2%	17,147	33.8%	50,776	34.2%
Smith & Wesson	32,780	71.6%	12,978	28.4%	45,755	30.8%
Indumil	452	5.3%	8,047	94.7%	8,499	5.7%
Colt	4,902	66.1%	2,515	33.9%	7,417	5.0%
Beretta	5,768	80.6%	1,386	19.4%	7,154	4.8%
Carl Walter	5,944	88.9%	742	11.1%	6,686	4.5%
Ceska Zbrojovka A.S.	6,234	98.3%	111	1.7%	6,345	4.3%
Browning	4,340	70.2%	1,843	29.8%	6,183	4.2%
Remington	1,832	34.8%	3,428	65.2%	5,260	3.5%
Ruger	3,673	83.9%	705	16.1%	4,378	2.9%
Total	99,554	67.1%	48,902	32.9%	148,453	100.0%

Source: OCCA
Processed by CERAC

Table 9. *Contribution of Bogotá's firearms to the national total, by type, since 2004.*

	Participation
Ceska Zbrojovka A.S.	36.4%
Carl Walter	30.8%
Beretta	30.4%
Colt	29.9%
Llama	26.1%
Browning	25.8%
Smith & Wesson	25.2%
Indumil	22.9%
Remington	20.4%
Ruger	19.6%
Total	25.9%

Source: OCCA
Processed by CERAC

Table 10. *Firearms acquisition by brand and type of weapon.*

Colombia

Firearm brand	Machine Gun	%	Carbine	%	Shotgun	%	Rifle	%	Undeter mined	%	Pistol	%	Revolver	%	Submac hine gun	%	Total
Beretta		0,0%	28	0,1%	4.810	20,5%	2	0,0%	112	0,5%	18.408	78,3%	64	0,3%	89	0,4%	23.513
Browning	21	0,1%	1.661	6,9%	4.146	17,3%	14	0,1%	181	0,8%	17.789	74,1%	187	0,8%	3	0,0%	24.002
Colt		0,0%	118	0,5%	46	0,2%	322	1,3%	118	0,5%	4.412	17,8%	19.117	77,1%	675	2,7%	24.808
Ceska Zbrojovka A.S.		0,0%	15	0,1%	10	0,1%		0,0%	11	0,1%	17.113	98,2%	3	0,0%	270	1,5%	17.422
Indumil		0,0%	175	0,5%	36.544	98,4%	34	0,1%	53	0,1%	17	0,0%	329	0,9%	1	0,0%	37.153
Llama		0,0%	17	0,0%	71	0,0%	6	0,0%	101	0,1%	2.369	1,2%	192.167	98,7%	1	0,0%	194.732
Remington		0,0%	6.703	26,0%	17.978	69,6%	67	0,3%	172	0,7%	139	0,5%	761	2,9%		0,0%	25.820
Ruger		0,0%	498	2,2%	262	1,2%	95	0,4%	73	0,3%	457	2,0%	21.002	93,8%	1	0,0%	22.388
Smith & Wesson	2	0,0%	57	0,0%	744	0,4%	12	0,0%	404	0,2%	3.845	2,1%	176.787	97,2%	7	0,0%	181.858
Carl Walter	1	0,0%	477	2,2%	50	0,2%	1	0,0%	85	0,4%	21.012	96,7%	87	0,4%	9	0,0%	21.722

Bogotá

Firearm brand	Machine Gun	%	Carbine	%	Shotgun	%	Rifle	%	Undeter mined	%	Pistol	%	Revolver	%	Submac hine gun	%	Total
Beretta		0,0%	5	0,1%	1.049	14,7%		0,0%	4	0,1%	6.080	85,0%	2	0,0%	14	0,2%	7.154
Browning	17	0,3%	358	5,8%	924	14,9%	5	0,1%	8	0,1%	4.867	78,7%	3	0,0%	1	0,0%	6.183
Colt		0,0%	31	0,4%		0,0%	189	2,5%	10	0,1%	1.169	15,8%	5.467	73,7%	551	7,4%	7.417
Ceska Zbrojovka A.S.		0,0%	13	0,2%	2	0,0%		0,0%		0,0%	6.174	97,3%		0,0%	156	2,5%	6.345
Indumil		0,0%	26	0,3%	8.440	99,3%	12	0,1%	1	0,0%	3	0,0%	17	0,2%		0,0%	8.499
Llama		0,0%	1	0,0%	1	0,0%	1	0,0%	2	0,0%	502	1,0%	50.269	99,0%		0,0%	50.776
Remington		0,0%	1.409	26,8%	3.742	71,1%	34	0,6%	12	0,2%	33	0,6%	30	0,6%		0,0%	5.260
Ruger		0,0%	125	2,9%	23	0,5%	42	1,0%	6	0,1%	109	2,5%	4.073	93,0%		0,0%	4.378
Smith & Wesson	1	0,0%	3	0,0%	132	0,3%	6	0,0%	14	0,0%	1.282	2,8%	44.314	96,9%	3	0,0%	45.755
Carl Walter		0,0%	75	1,1%	4	0,1%		0,0%	3	0,0%	6.595	98,6%	3	0,0%	6	0,1%	6.686

Source: OCCA
Processed: CERAC

In short, the legal demand for firearms in Bogotá follows the preferences implied by the need of a high level of protection and the presence of high risk targets. Pistols appear as gaining share in the demand, both for carrying and holding permits, although we do not have access to time series data to confirm this intuition. Comparing with the country as a whole, we do see clearly that pistols are being favoured for carrying rather than for holding. Legal demand in Bogotá also favours short guns over long. There is no substantial difference in the type of weapon bought by brand, although this can be only a reflection of the restricted availability by brand, due to the state monopoly on commercialisation.

3.2 Illegal Demand and compliance with firearms regulations

While illegal demand for arms in Colombia and compliance of the arms regulation regime is more difficult to measure, we attempt to do so by analyzing criminal statistics and data from the National Police on arms confiscations. This assumes that confiscated arms are a good proxy of the near current demand for firearms, and that their confiscation signals violation of the criminal code.

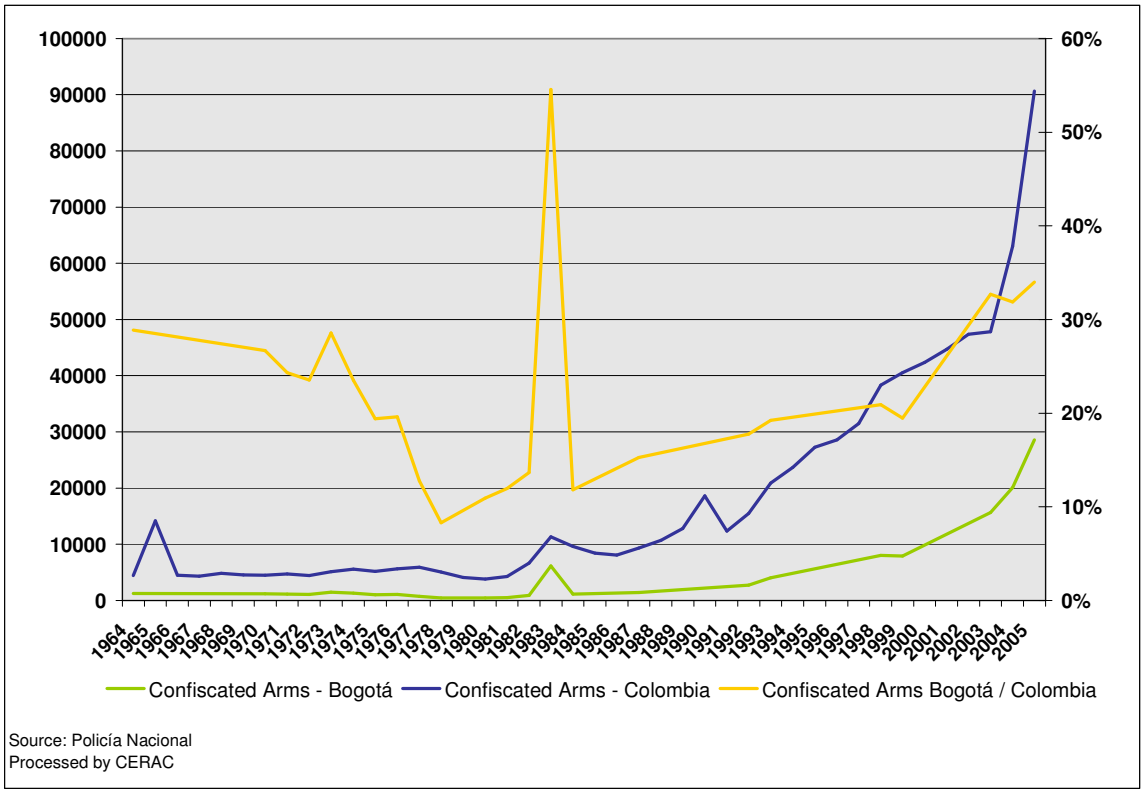
In the case of confiscations it is important to note that confiscation is not necessarily linked with criminal violence or other crimes, but potentially with offences against the regulation of firearms itself or minor misdemeanours. In this way, these figures allow us to gauge the level of compliance with firearms regulations, not only in terms of the number of arms involved in certain crimes, but also the demand for guns for criminal purposes. Furthermore, a confiscated gun may not necessarily be taken out of civil hands permanently; after a judicial procedure, the gun in question might be returned to the licensee if the reason for confiscation was a minor violation of regulation. There are no statistics available of how many of these were returned to the licensees.

Arms confiscations have been increasing both in Colombia and Bogotá since the 1990's; with a noticeable acceleration since 1983 (see Graph 1). In 2004, over 20,000 arms were confiscated in Bogotá, constituting roughly one-third of the total confiscated in Colombia last year (some 63,000 in all). Although we do not have information from other law enforcement agencies (e.g. the military forces, the DAS or the CTI), The National Police has never confiscated as many arms as it did in the year 2005, both in Colombia as well as in its capital. The figure was over 90 thousand for the whole country and 23,571. For the first semester of 2006, the National Police confiscated an even larger number of guns: in Colombia near 40 thousand firearms have been confiscated, while 12 thousand were seized only in the capital.

Table 11 shows firearms confiscated by type of firearm in Bogotá between 1964 and the first semester of 2006, for the years for which information is available, by type of firearm. This one shows how the confiscation has been growing over the years, with the biggest proportion made of self-defence guns.

Table 12 presents firearms confiscated in Bogotá as a proportion of the total confiscated in Colombia, and Table 13 shows the total confiscated in Colombia between 1964 and 2004, Graph 1 shows the time series of these three variables.

Graph 1. *Confiscated arms in Bogotá and Colombia, and contribution of Bogotá to the national total, 1964-2005*



Source: Policía Nacional
Processed by CERAC

Table 11. *Firearms confiscated in Bogotá, 1964- June 2006*

	Type of firearm							
Year	**Revolver**	**Pistol**	**Shotgun**	**Carbine**	**Machine and sub machine gun**	**Rifle**	**Other**	**Total**
1964	1094	164	8	4	0	0	4	1274
1970	994	188	8	2	0	0	4	1196
1971	917	221	13	0	0	0	4	1155
1972	821	186	29	3	1	0	0	1040
1973	1144	285	20	4	0	1	1	1455
1974	1020	280	13	2	0	0	0	1315
1975	766	222	14	3	0	3	0	1008
1976	840	247	11	2	1	0	0	1101
1977	570	169	13	0	0	0	0	752
1978	251	78	17	0	0	0	71	417
1980	345	56	12	2	3	0	0	418
1981	395	80	30	7	0	0	0	512
1982	601	230	72	1	1	1	0	906
1983	4940	1203	16	0	1	0	0	6160
1984	923	157	26	2	27	1	0	1136
1987	985	257	174	1	7	3	0	1427
1992	1986	479	275	0	6	2	0	2748
1993	2860	713	416	3	26	4	0	4022
1998	5088	1857	1022	5	33	7	0	8012
1999	4952	1890	1011	6	33	1	0	7893
2003	9337	4963	1243	8	57	24	12	15644
2004	11902	7143	968	5	75	16	1	20110
2005	14210	8532	715	6	99	7	2	23571
2006	7629	4860	368	9	32	2	1	12901

** Data not available for 1965-1969, 1979, 1985-1986, 1988-1991, 1994-1997, 2000-2002
* Until June de 2006
Source: Policía Nacional.
Processed by CERAC

Table 12. *Firearms confiscated in Bogotá as a proportion of those confiscated in Colombia, 1964-2004*

	Type of Firearm							
Year	Revolver	Pistol	Shotgun	Carbine	Machine and sub machine gun	Assault rifle	Other	Total
1964	32%	28%	5%	6%	0%	0%	2%	29%
1970	29%	27%	5%	9%	0%	0%	4%	27%
1971	26%	28%	5%	0%	0%	0%	3%	24%
1972	26%	24%	7%	9%	50%	0%	0%	24%
1973	30%	29%	7%	12%	0%	10%	7%	29%
1974	26%	22%	4%	5%	0%	0%	0%	23%
1975	22%	19%	4%	7%	0%	10%	0%	19%
1976	21%	21%	3%	6%	33%	0%	0%	20%
1977	14%	13%	4%	0%	0%	0%	0%	13%
1978	8%	6%	3%	0%	0%	0%	36%	8%
1980	14%	7%	3%	3%	43%	0%	0%	11%
1981	13%	11%	6%	16%	0%	0%	0%	12%
1982	13%	16%	13%	4%	6%	5%	0%	14%
1983	58%	61%	3%	0%	2%	0%	0%	55%
1984	18%	5%	3%	1%	25%	1%	0%	12%
1987	16%	19%	14%	1%	1%	6%	0%	15%
1992	19%	20%	12%	0%	5%	2%	0%	18%
1993	20%	22%	13%	2%	18%	5%	0%	19%
1998	21%	25%	16%	4%	21%	6%	0%	21%
1999	20%	23%	14%	5%	19%	1%	0%	19%
2003	33%	42%	19%	6%	34%	6%	2%	33%
2004	32%	43%	12%	5%	33%	3%	0%	32%

** Data not available for 1965-1969, 1979, 1985-1986, 1988-1991, 1994-1997, 2000-2002
Source: Policía Nacional.
Processed by CERAC

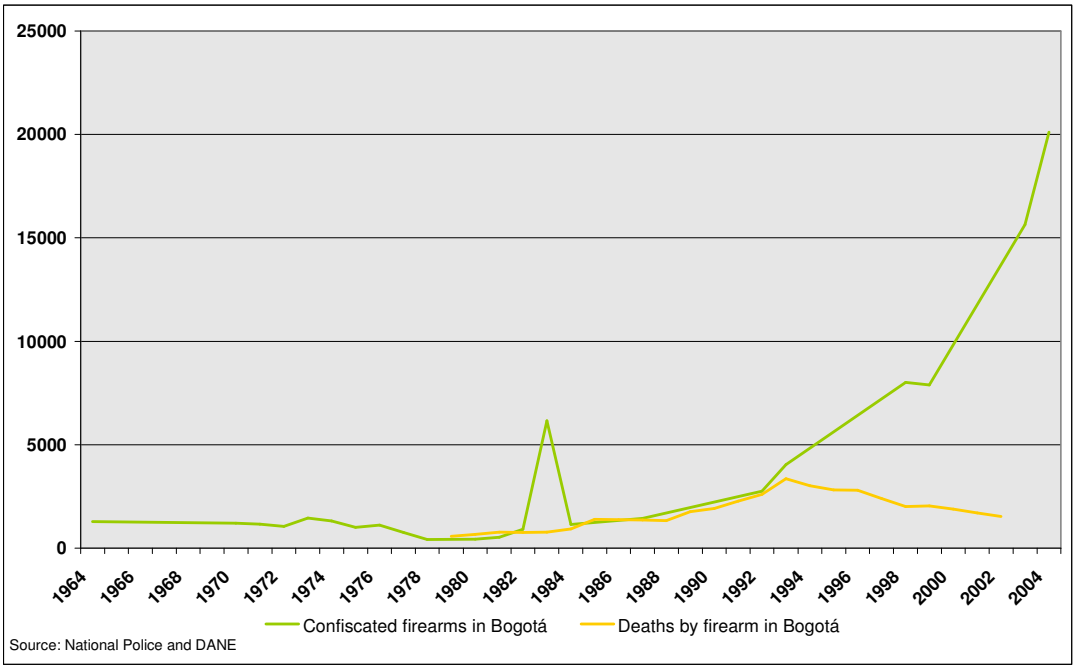
Confiscations in Bogotá have grown consistently since 1985, with a notable acceleration since 2000. Nationally, this acceleration is present since the new regime for arms control entered into force in 1993. By 2005 the number of arms confiscated reached a historical maximum after 12 years of constant growth. All throughout the period, confiscations in Bogotá have constituted an average of 22% of the total confiscated throughout Colombia. Interestingly, the acceleration of arms confiscation seems to be inversely related with the reduction of homicide rates in Bogotá and in the country (see Graph 2). The effort by the National Police to control firearms is evident in Bogotá in terms of firearm control is evident from the rising proportion of arms confiscated in the city with respect to confiscation nationwide, rising from a paltry 8% in 1978 to 33% in 2003, while there is no reason to suggest that the number of firearms in circulation in Bogotá has risen in such a large proportion during the same period. Revolvers and pistols constitute roughly 94% of confiscated arms in Bogotá, while in Colombia this proportion is closer to 86% (see Graph 3 and Graph 4), confirming the preference for short weapons in the city. In Bogotá and in Colombia, revolvers have been the most confiscated weapon; however, their prevalence has been falling in the last two decades as demand for pistols has increased (see Graph 5).

Table 13: *Firearms confiscated in Colombia, 1962-2004*

	Type of firearm						
Año	**Revolver**	**Pistol**	**Shotgun**	**Carbine**	**Machine and sub machine gun**	**Assault rifle**	**Total**
1962	2223	448	390	68	0	53	3182
1963	2449	450	362	74	0	30	3365
1964	3389	580	344	67	0	34	4414
1965	10582	2059	1140	256	0	156	14193
1966	3494	616	293	48	8	27	4486
1967	3150	648	427	58	11	28	4322
1968	3524	778	451	53	0	24	4830
1969	3439	720	332	20	0	14	4525
1970	3484	702	256	22	11	10	4485
1971	3536	795	362	38	8	10	4749
1972	3142	780	438	35	11	17	4423
1973	3777	980	277	34	15	10	5093
1974	3919	1285	331	41	10	11	5597
1975	3545	1158	389	41	36	30	5199
1976	3945	1204	397	36	19	11	5612
1977	4151	1301	331	66	34	19	5902
1978	3018	1232	538	31	202	4	5025
1979	2713	851	437	54	26	18	4099
1980	2533	747	452	61	7	22	3822
1981	2997	731	483	43	17	8	4279
1982	4599	1436	535	24	17	22	6633
1983	8647	1982	626	121	63	29	11288
1984	5150	3194	942	169	106	6	9628
1985	5124	1359	1608	86	121	127	8425
1986	5842	1174	849	91	64	59	8079
1987	6006	1343	1213	85	633	54	9334
1988	7094	1854	1518	79	109	65	10719
1989	9241	1601	1701	124	64	48	12779
1990	15058	1672	1481	144	133	118	18606
1991	7151	2292	1949	222	144	589	12347
1992	10363	2455	2295	103	130	128	15474
1993	14145	3224	3158	158	145	88	20918
1994	15560	3962	3677	224	144	95	23662
1995	17761	4359	4732	138	126	128	27244
1996	18121	4626	5475	134	130	118	28604
1997	19995	5515	5505	94	148	214	31471
1998	24012	7527	6359	135	156	127	38316
1999	24750	8052	7242	113	177	193	40527
2000	25789	8577	7431	100	170	288	42355
2001	26927	9589	7508	146	207	279	44656
2002							47353
2003	28293	11695	6920	124	418	387	47837
2004	37123	16441	8409	97	414	553	63037
Total	409761	121994	89563	3857	4234	4251	680894

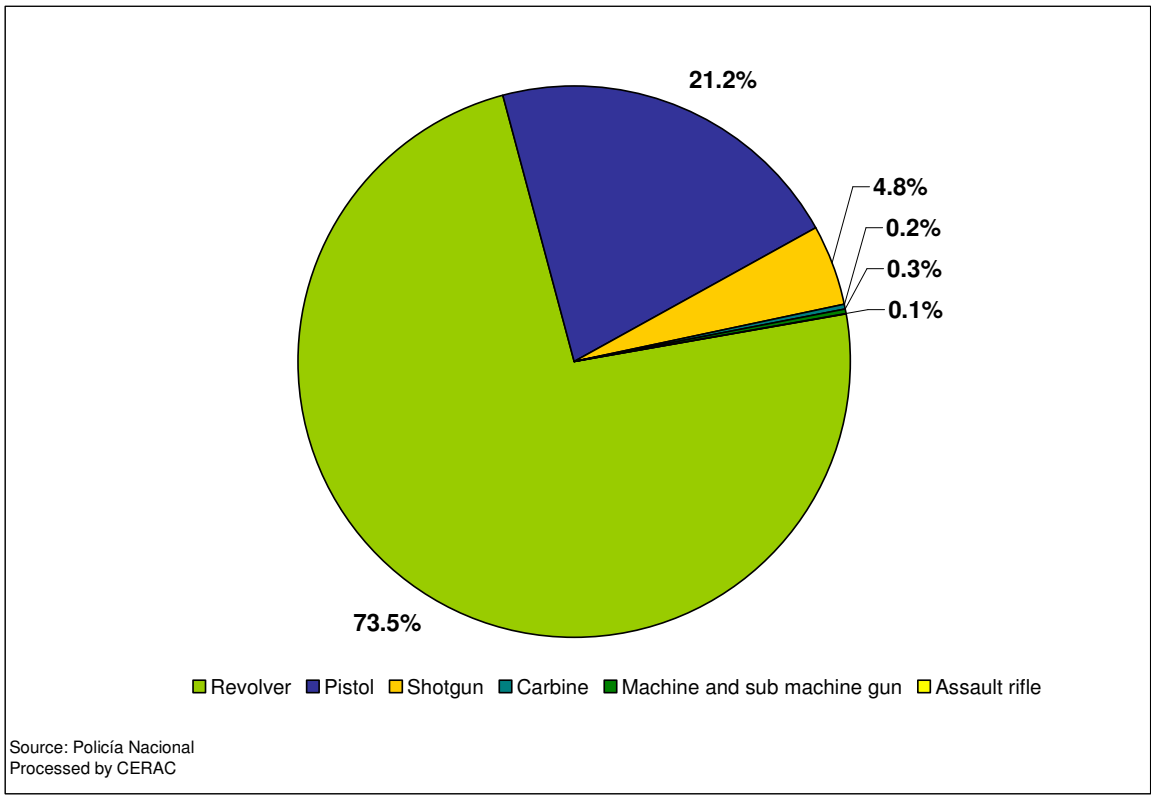
Source: Policía Nacional
Processed by CERAC

Graph 2. *Confiscated firearms and deaths by firearm in Bogotá*



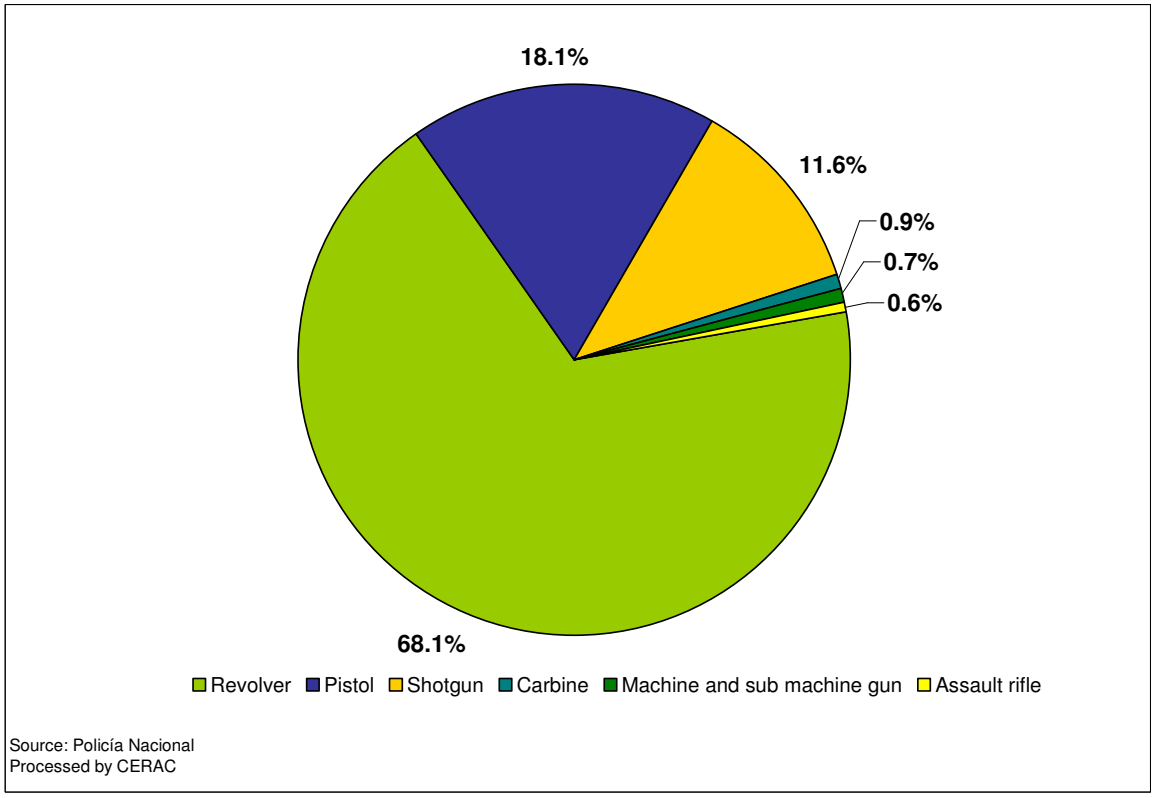
Source: National Police and DANE

Graph 3: *Distribution of confiscated arms in Bogotá by type, 1964-2005.*



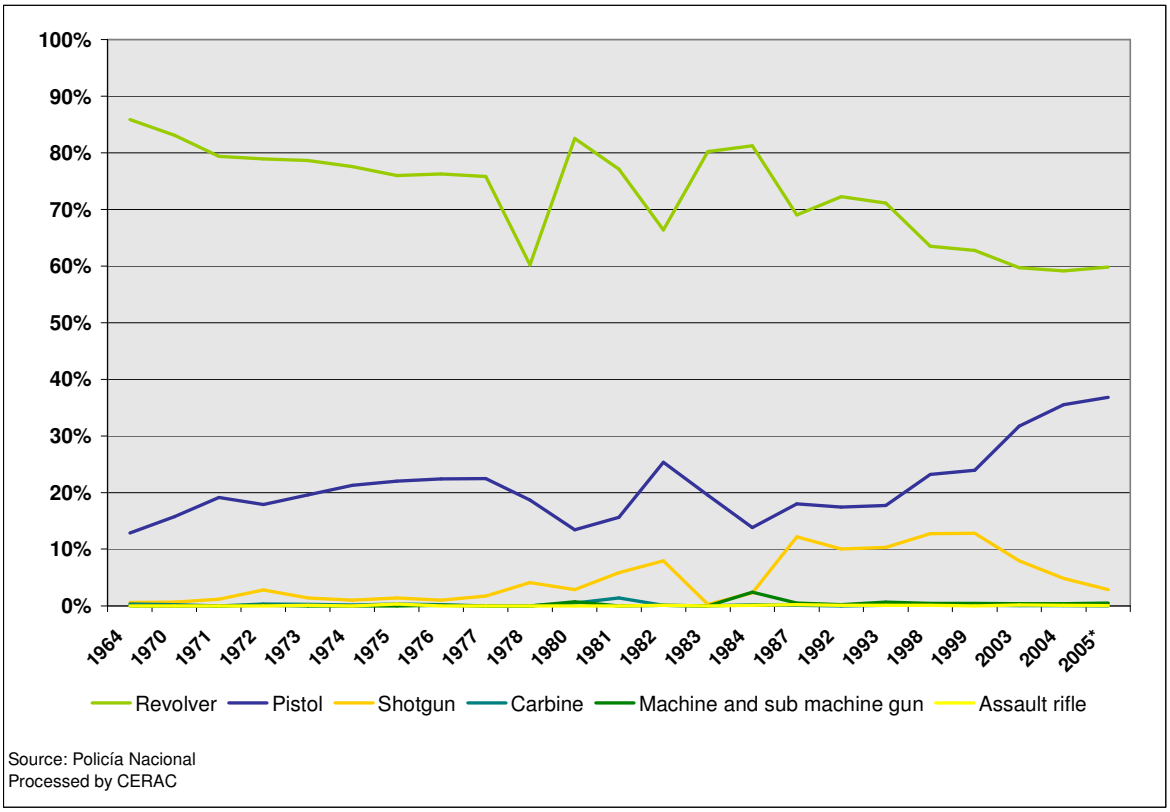
Source: Policía Nacional
Processed by CERAC

Graph 4. *Distribution of confiscated arms in Colombia, by type, 1964-2005.*



Source: Policía Nacional
Processed by CERAC

Graph 5. *Evolution of the distribution of confiscated arms in Bogotá by type, 1964-2005*



Source: Policía Nacional
Processed by CERAC

For the last two and a half years, the National Police's Center for Criminological Studies has been registering with increasing detail all cases in which a gun is confiscated. This information was made available to us only for the city of Bogotá.

By June 2006, the National Police has confiscated in Bogotá and Colombia more that the double the number of guns that were confiscated in 2005, which was in turn a record year until then. It is likely that this record will be broken again in 2006. Tables 16 and 17 show firearms confiscated in Colombia and Bogotá in the period 2003-June 2006 with respect to the type of permit held. Both in Colombia and Bogotá the biggest proportion of firearms confiscated are guns without permit and carrying permit. Given that it is unlikely that such an explosion of selling has occurred during the period, we venture to point to an increase in gun-control police activity that lead to this large increase.

The quantity of firearms confiscated with carrying permits in Bogotá is much larger than in the whole country; while in Bogotá this proportion is 84.4% in Colombia is 56.4% (Table 18).*Carrying* permit holders, on the other hand, are prone to fall short of regulation leading to a large number of confiscations. The confiscation of a weapon may not be connected with criminal offences but may be associated with minor offences, including carrying of the weapon by someone different than the permit holder, carrying the weapon under the influence of alcohol, etc.

Table 16. *Confiscated arms in Colombia by type and permit status. 2003- June 2006*

Permit	Type of firearm	2003	2004	2005	2006*
Carrying	Revolver	13,861	18,433	24,477	14,955
	Pistol	7,504	11,082	14,270	9,474
	Shotgun	455	497	586	488
	Sub Machine Gun	58	89	120	54
	Carbine	2	10	11	7
	Rifle	3	13	8	2
	Machine Gun	1	4	7	6
	Others**			4	3
	Total	21,884	30,128	39,483	24,989
Holding	Revolver	121	229	376	369
	Pistol	31	91	153	174
	Shotgun	67	65	105	118
	Sub Machine Gun	1		1	4
	Carbine		1	2	1
	Rifle		2		1
	Others**				1
	Machine Gun				1
	Total	220	388	637	669
Without permission	Revolver	13,233	15,539	16,609	7,773
	Shotgun	5,744	6,934	7,573	3,936
	Pistol	4,056	4,674	4,868	2,253
	Rifle	229	285	277	138
	Carbine	119	81	116	49
	Sub Machine Gun	92	103	67	49
	Others**	59	84	80	48
	Machine Gun	11	11	15	7
	Total	23,543	27,711	29,605	14,253
	Total	45,647	58,227	69,725	39,911

* Until June 2006
** Includes grenade launcher, mortar, rocket and others
Source: Policía Nacional
Processed by CERAC

Table 17. *Confiscated arms in Bogotá by type and permit status. 2003- June 2006*

Permit	Type of firearm	2003	2004	2005	2006*
Carriyng	Revolver	6,772	8,875	12,322	6,710
	Pistol	4,317	6,415	8,108	4,621
	Shotgun	225	191	219	185
	Sub Machine Gun	41	60	83	21
	Rifle	2	9	4	
	Carbine	1	3	3	6
	Machine Gun	1	2	3	5
	Total	11,359	15,555	20,742	11,548
Holding	Revolver	11	13	53	27
	Pistol	5	7	20	13
	Shotgun	14	1	13	12
	Total	30	21	86	52
Without permission	Revolver	2,041	2,000	1,835	892
	Shotgun	944	758	483	171
	Pistol	480	459	404	226
	Sub Machine Gun	11	12	11	6
	Carbine	8	2	3	3
	Rifle	8	2	3	2
	Others**	8	3	2	1
	Machine Gun	2		2	
	Total	3,502	3,236	2,743	1,301
	Total	14,891	18,812	23,571	12,901

* Until June 2006
** Includes grenade launcher, mortar, rocket and others
Source: Policía Nacional
Processed by CERAC

Table 18. *Proportion of confiscated firearms by type and permit status with respect of the Total. Colombia and Bogotá, 2003- June 2006*

Permit	Type of firearm	Colombia	Bogotá
Carrying	Carbine	7.5%	44.8%
	Machine Gun	28.6%	73.3%
	Others**	2.5%	0.0%
	Pistol	72.2%	93.6%
	Revolver	56.9%	83.5%
	Rifle	2.7%	50.0%
	Shotgun	7.6%	25.5%
	Sub Machine Gun	50.3%	83.7%
	Total	54.6%	84.4%
Holding	Carbine	1.0%	0.0%
	Machine Gun	1.6%	0.0%
	Others**	0.4%	0.0%
	Pistol	0.8%	0.4%
	Revolver	0.9%	0.1%
	Rifle	0.3%	0.0%
	Shotgun	1.3%	1.2%
	Sub Machine Gun	0.9%	0.0%
	Total	0.9%	0.3%
Without permission	Carbine	91.5%	55.2%
	Machine Gun	69.8%	26.7%
	Others**	97.1%	100.0%
	Pistol	27.0%	6.3%
	Revolver	42.2%	16.3%
	Rifle	97.0%	50.0%
	Shotgun	91.0%	73.3%
	Sub Machine Gun	48.7%	16.3%
	Total	44.5%	15.4%

* Until June 2006
** Includes grenade launcher, mortar, rocket and others
Source: Policía Nacional
Processed by CERAC

Additionally, there are significant differences between types of firearm. Both in Colombia and Bogotá the biggest proportion of pistols, revolvers and submachine guns confiscated were granted carrying permits, a large part of confiscated shotguns did not, as is shown in Table 18. Thus, the granting of carrying permits involves a much higher probability of falling foul of the regulations than in those cases a holding permit is issued. It also shows that there is, at least in the city of Bogotá, a high degree of enforcement of the regulation for firearms: a 5% of guns issued with a carrying permit were confiscated in the city. The proportion of guns without permit that were confiscated has been falling; in 2003, arms without permit confiscated were 23%, 16% in 2004 and only 9% until August 2005.

In general, long guns are held in Bogotá without any type of permit, while short weapons do have permits but are confiscated for a series of reasons. Still, the number of long weapons which are detected by the authorities are much lower than short weapons. Revolvers (both legal and illegal) are the most commonly confiscated firearms, representing approximately 64% of the total. They are followed by pistols

(21%) and shotguns (14%). Roughly 22% of all seized firearms were of the Indumil-made *Llama* brand, of which 72% lacked carrying permits (or at least the holding permit was not being carried with the gun). Approximately 19.5% of the confiscated weapons were *Smith & Wesson*, 78.3% illegal, followed by home-made revolvers (Table 19).

Table 19. *Confiscated firearm brand by type and permit, January-May 2005*

Type	Brand	With permit	Without permit	Percentage
Revolver				
	Llama	28.0%	72.0%	21.2%
	Smith & Wesson	21.7%	78.3%	19.5%
	Colt		100.0%	5.1%
	Ruger	20.0%	80.0%	4.2%
	Home Made Weapon		100.0%	5.9%
	Not reported		100.0%	7.6%
Total Revolver		17.3%	82.7%	**63.6%**
Pistol				
	Prieto Beretta	28.6%	71.4%	5.9%
	Browning	25.0%	75.0%	3.4%
	Smith & Wesson		100.0%	1.7%
	Ceska		100.0%	0.8%
	Colt		100.0%	0.8%
	CZ83		100.0%	0.8%
	FN	100.0%		0.8%
	Glock	100.0%		0.8%
	Llama		100.0%	0.8%
	Mauser		100.0%	0.8%
	Parabellum		100.0%	0.8%
	Sig Sauer		100.0%	0.8%
	Taurus		100.0%	0.8%
	Walther		100.0%	0.8%
	Not reported		100.0%	0.8%
Total Pistol		20%	80%	**21.2%**
Shotgun				
	Home Made Weapon		100%	5.1%
	Remington	50%	50%	1.7%
	Indumil	100%		0.8%
	Mossberg		100%	0.8%
	Ruger		100%	0.8%
	Not reported			5.1%
Total Shotgun		12%	88%	**14.4%**
Other firearms	Not reported		100%	0.8%
Total		16.9%	83.1%	100.0%

Source: Policía Nacional
Processed by CERAC

Also, newly available data show the type of manufacturing of the gun if it is: industrially made or if it is a home-made weapon. Tables 20 and 21 display the figures for Colombia and Bogotá, 2003 and the first semester of 2006. These show that the majority of confiscated weapons in Colombia and Bogotá are original, being the higher proportion in Bogotá: 95% and of 72%. In the whole of the country, on the other hand a 12% of confiscated firearms are home-made weapons.

Table 20. *Confiscated firearms by type of fabrication. Colombia, 2003-June 2006*

	Type of firearm	2003	2004	2005	2006*
ORIGINAL	Revolver	26,217	32,768	39,453	27,517
	Pistol	13,353	18,757	22,063	16,051
	Shotgun	1,519	1,523	1,505	1,593
	Sub Machine Gun	151	190	229	111
	Rifle	131	153	158	135
	Carbine	80	54	50	48
	Others**	14	12	10	16
	Machine Gun	7	8	12	19
	Total	41,472	53,465	63,480	45,490
HOME MADE WEAPON	Shotgun	4,067	4,353	4,305	3,261
	Revolver	3,045	3,748	4,165	3,044
	Pistol	688	954	947	630
	Others**	5	27	39	33
	Sub Machine Gun	14	24	14	13
	Carbine	17	10	19	17
	Rifle	3	3	2	7
	Machine Gun		3	5	
	Total	7,839	9,122	9,496	7,005
NO REPORTED	Revolver	6,776	8,573	12,051	164
	Pistol	2,352	3,017	4,813	80
	Shotgun	1,863	2,570	3,169	56
	Rifle	108	155	132	1
	Others**	48	48	37	5
	Sub Machine Gun	38	50	39	10
	Carbine	33	33	66	1
	Machine Gun	8	6	10	
	Total	11,226	14,452	20,317	317
	Total	60,537	77,039	93,293	52,812

* Until June 2006
** Includes grenade launcher, mortar, rocket and others
Source: Policía Nacional
Processed by CERAC

Table 21. *Confiscated firearms by type of fabrication. Bogotá, 2003-June 2006*

Permit	Type of firearm	2003	2004	2005	2006*
ORIGINAL	Revolver	8,445	10,504	13,699	7,476
	Pistol	4,756	6,809	8,357	4,830
	Shotgun	385	314	325	243
	Sub Machine Gun	49	67	92	24
	Rifle	9	10	7	2
	Carbine	6	5	4	8
	Machine Gun	3	2	3	5
	Others**	5	1		1
	Total	13,658	17,712	22,487	12,589
HOME MADE WEAPON	Shotgun	789	628	358	124
	Revolver	351	372	300	146
	Pistol	36	59	33	30
	Sub Machine Gun	2	3	1	
	Carbine	2			1
	Others**		1		
	Total	1,180	1,063	692	301
NO REPORTED	Revolver	28	12	210	7
	Pistol	10	13	142	
	Shotgun	9	8	32	1
	Sub Machine Gun	1	2	1	3
	Others**	3	1	2	
	Carbine	1		2	
	Machine Gun			2	
	Rifle	1	1		
	Total	53	37	391	11
	Total	14,891	18,812	23,570	12,901

* Until June 2006
** Includes grenade launcher, mortar, rocket and others
Source: Policía Nacional
Processed by CERAC

Table 22. *Distribution of confiscated firearms by type of crime and permit status, January-May 2005*

Crime associated	Percentage	With permit	Without permit
Producing, Trafficking, illegal firearm or ammunition handling	47%	0%	100%
Theft*	24%	24%	76%
Personal injuries	12%	50%	50%
Homicide	10%	25%	75%
Crime association	4%	60%	40%
Damagge to goods	1%	0%	100%
Money laundering	1%	0%	100%
Authority impersonation	1%	0%	100%
Total		17%	83%

* Includes theft of vehicles, petrol, banks, to people and houses
Processed by CERAC

A more useful measure pure criminal demand is the association of different types of criminal events with the firearm involved in a crime, although the necessary is only available from 2005 onwards[10]. Table 22 shows the type of crime associated with a confiscated firearm for Bogotá, indicating that 83% of the firearms used in crimes did not have a permit. Roughly 47% of the guns confiscated during the period were for offences against the regulation of firearms (i.e., production, trafficking, and carrying of firearms or munitions without a license. Theft[11] ranks second in terms of firearm confiscations (24%), and only one quarter of these were registered. Personal injuries were associated with roughly 12% of firearms confiscations, of which 50% were covered by a license. Approximately 10% of seized weapons were associated with homicides, and, of those, 75% were illegal. Table 23 presents the brands of firearms associated with different crimes.

Several conclusions can be extracted from these figures. First, arms confiscation efforts by the National Police have been growing year on year. It is possible that an increase in the number of guns flowing into the city has led to this increase in confiscation with the same level of effort by the authorities. In our opinion, this is not the case. It is more likely that the National Police and the Metropolitan Police (the section of National Police concerned with the security in the city) has identified this as a good practice and a police activity that offers a measurable indicator that also has an impact on crime levels. We conclude that this is the case based on interview held with Metropolitan Police officers. In a highly insecure environment, the enforcement of firearms regulation is a policy of choice for the police. At the same time, we do not identify a relaxation of border controls or anti-arms trafficking activities that would have lead to an increase in the supply of firearms.

[10] This information corresponds only to the confiscated firearms that have a record of the crime associated with it. This is less that 1% of the total confiscations in Bogotá for 2005, hence the significance of the assertions that are made here must consider this.

[11] Theft includes here theft of vehicles, petrol, banks, armed robbery and armed robbery in households.

Table 23. *Confiscated firearms by associated crime and weapon brand, January-May 2005*

	Crime								
Brand of the firearm	Crime association	Damagge to goods	Producing, Trafficking, illegal firearm or ammunition handling	Homicide	Theft*	Money laundering	Injuries	Authority impersonation	Total
Llama			18%	33%	33%		21%	100%	22%
Smith & Wessc	20%		22%	8%	8%		21%		21%
Not reported		100%	18%	8%	8%		21%		14%
Hechiza			18%				7%		11%
Colt			4%	17%	17%				6%
Prieto Beretta	40%		2%	17%	17%		7%		6%
Ruger			7%						5%
Browning			2%	8%	8%		7%		3%
Remington	20%		2%						2%
Ceska			2%						1%
CZ83									1%
FN							7%		1%
Glock	20%								1%
Indumil							7%		1%
Mauser			2%						1%
Mossberg			2%						1%
Parabellum				8%	8%				1%
Sig Sauer						100%			1%
Taurus									1%
Walther			2%						1%
Percentage	4%	1%	47%	10%	10%	1%	12%	1%	100%

Source: Policía Nacional
Processed by CERAC
* Includes theft of vehicles, petrol, banks, to people and houses

Additionally, we conclude that the increase in the demand for pistols is a trend that is prevalent. Furthermore, legal firearms have a high likelihood of becoming potentially criminal firearms, but not in most cases as firearms regulation is relatively tightly controlled. Demand for the use of firearms in violent crimes (including homicide) is satisfied overwhelmingly by the illegal gun market. Finally, as a very low proportion of violent crimes is successfully prosecuted (see Restrepo, 2004) we find that violations of firearms regulation is used as a proxy to process individuals linked with criminal activity. In Colombia, the police and justice system face a formidable challenge in terms of violent crime, and in many occasions, the only offence that is detectable and punishable is the confiscation of a firearm and the subsidiary process of carrying a gun without permit.

3.3 Demand for Use: Firearms Deaths in Bogotá

In this section, we assess criminal demand for firearms based on the analysis of *DANE's* data, Colombia's National Department of Statistics on firearm deaths in Bogotá and Colombia between 1979 and 2003 and National Police for 2003-2007. Unfortunately, we have not yet been able to get information on the use of guns in other forms of violence against persons (as thefts, threats, kidnappings, etc.). We nonetheless argue that the use of lethal violence indicators is not only appropriate but particularly justified in that they are the most serious of all forms of violence against people.

Some 45,000 people have died in firearm related events in Bogotá between 1979 and 2005, constituting roughly 8% of the deaths in the capital caused by natural and external causes. Since the mid-1980s, 40% deaths due to external causes can be attributed to firearms. Deaths by firearm show a clear inverted (V) pattern, climbing throughout the 1979-1993 period when they reached a peak of 3,358 people killed (see Table 24, Table 25 and Graph 6). From then on, firearms deaths have declined continuously reaching the 1,273 figure by end-2003, the lowest since 1988. Recall that a new firearms regulatory framework was issued in 1993-94: we find a plausible association of this new, more restrictive regulation and the

reduction in firearms deaths that took place in Bogotá afterwards.

Also Table 25 shows how between 1979 and 1993 the deaths by external causes and by firearm increase rapidly, and that during the period 1993-2003 had a rapid and large reduction, especially in Bogotá.

Bogotá has been a net contributor to the reduction of homicidal violence in the whole country. Its share in the total number of deaths by external causes in Colombia has fallen from a peak of 15% in 1993 to a low of 8 % in 2003. Moreover, the share in the total number of firearms deaths fell from 13% of the total in the country to just 4% by the end of 2004 (Graph 7).

Still, historically, the impact of firearms in Bogotá has been smaller than the one in the country as a whole: the share of firearm deaths in total deaths between 1979 and 2003 reached 11% for the nation and only 7% in Bogotá. While firearm deaths in Bogotá showed an increase of 125% between 1979 and 2003 (from 565 to 1,273 deaths), in the whole country over the same period there was a staggering fivefold increase (3,617 to 23,073). The proportions of deaths by firearm in Bogotá and Colombia between 1979 and 2003 are in Graph 7.

Using estimates of population we use rates per 100.000 inhabitants to account for the risk exposure of the population . In Bogotá, the all-cause mortality rate has been relatively stable while the rate of external deaths and by firearms show the influence of homicides, first increasing until 1993 (the rate of deaths by firearm was 63 per 100,000 inhabitants) and then decreasing continuously until 2003 (see Graph 8), when it fell well below the historical minimum. Our projection shows that we will be reaching even lower rates for 2006, rates around 16 per each 100,000 inhabitants. By 2003, the rate of deaths by firearm in Bogotá was 19 per 100,000; in Colombia, the rate was 52 per 100,000 (see Table 26).

Table 24. *Percentage of total deaths attributable to external causes, firearms, and percentage of external cause deaths attributable to firearms, Colombia and Bogotá. 1979-2003*

	Colombia			Bogotá		
Year	Firearm deaths/Total	External Causes/Total	Firearm deaths/external causes	Firearm deaths/Total	External Causes/Total	Firearm deaths/external causes
1979	3%	14%	23%	3%	16%	20%
1980	4%	15%	26%	4%	16%	24%
1981	5%	16%	30%	4%	15%	26%
1982	5%	16%	31%	4%	17%	27%
1983	5%	17%	31%	5%	17%	27%
1984	6%	18%	34%	5%	16%	31%
1985	7%	19%	39%	6%	17%	36%
1986	9%	21%	45%	7%	16%	42%
1987	10%	21%	46%	7%	17%	38%
1988	11%	23%	50%	7%	17%	40%
1989	12%	23%	52%	8%	19%	41%
1990	13%	24%	54%	8%	19%	43%
1991	15%	27%	58%	9%	21%	45%
1992	15%	26%	57%	10%	22%	45%
1993	15%	26%	55%	12%	24%	50%
1994	14%	26%	53%	11%	22%	49%
1995	13%	24%	51%	10%	21%	46%
1996	13%	24%	55%	10%	20%	47%
1997	13%	24%	54%	8%	18%	46%
1998	13%	24%	51%	8%	18%	42%
1999	13%	24%	53%	7%	17%	43%
2000	14%	25%	57%	7%	16%	41%
2001	14%	25%	59%	6%	15%	40%
2002	15%	25%	60%	5%	14%	38%
2003	12%	22%	50%	4%	11%	36%
Average 1979-2003	11%	22%	47%	7%	18%	39%

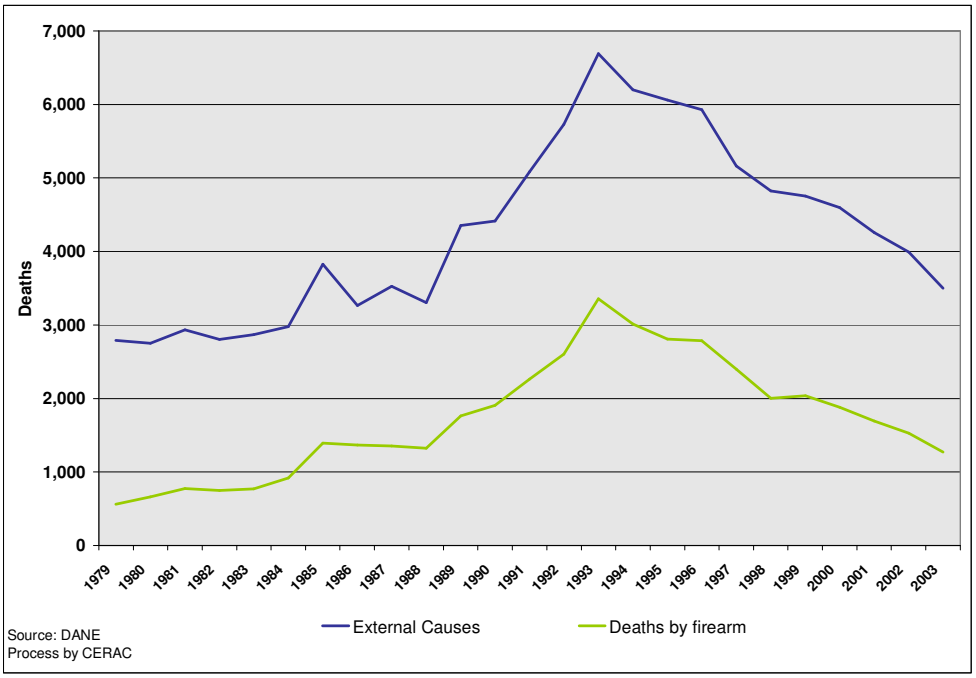
Source: DANE
Processed by CERAC

Table 25. *Total Deaths, deaths by external causes, and deaths by firearm, Colombia and Bogotá, 1979-2003*

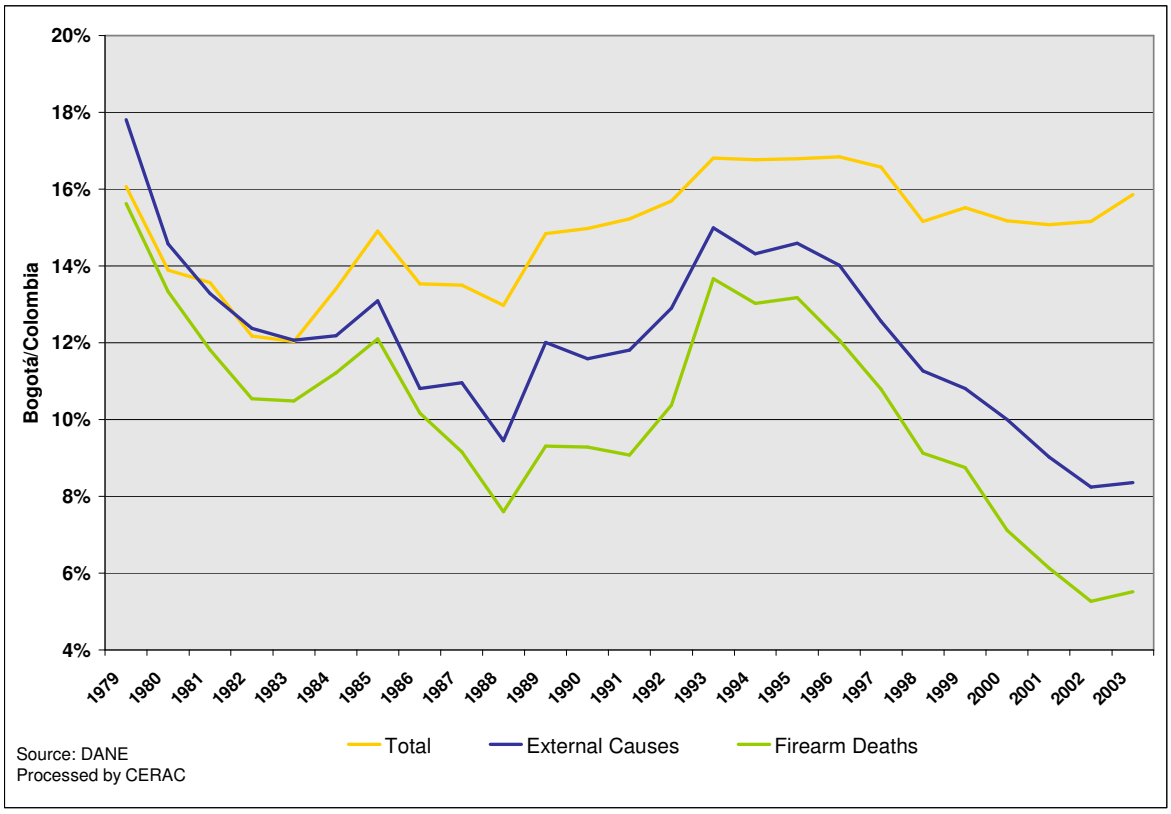
	Colombia			Bogotá		
Año	Total	External Causes	Firearms Deaths	Total	External Causes	Firearms Deaths
1979	110,400	15,680	3,617	17,737	2,792	565
1980	125,573	18,898	4,980	17,439	2,754	664
1981	139,505	22,084	6,552	18,931	2,933	774
1982	137,678	22,685	7,127	16,764	2,807	751
1983	140,292	23,767	7,343	16,882	2,868	770
1984	137,189	24,455	8,211	18,399	2,978	921
1985	153,947	29,218	11,505	22,955	3,825	1,392
1986	146,345	30,210	13,472	19,812	3,265	1,369
1987	151,957	32,179	14,780	20,512	3,526	1,354
1988	153,065	34,995	17,447	19,857	3,307	1,325
1989	154,694	36,228	18,947	22,966	4,351	1,764
1990	156,314	38,107	20,569	23,407	4,416	1,909
1991	162,063	43,066	24,941	24,672	5,084	2,263
1992	167,743	44,395	25,084	26,328	5,727	2,602
1993	168,647	44,621	24,572	28,342	6,691	3,358
1994	168,568	43,287	23,118	28,267	6,198	3,011
1995	169,896	41,532	21,313	28,534	6,060	2,809
1996	173,506	42,307	23,062	29,228	5,929	2,784
1997	170,753	41,087	22,222	28,308	5,161	2,398
1998	175,363	42,823	21,950	26,579	4,824	2,002
1999	183,553	43,959	23,320	28,487	4,753	2,040
2000	187,432	46,031	26,465	28,440	4,600	1,884
2001	191,513	47,175	27,618	28,864	4,258	1,693
2002	192,262	48,438	28,989	29,137	3,993	1,527
2003	192,124	41,864	23,073	30,475	3,499	1,273
Total 1979-2003	4,010,382	899,091	450,277	601,322	106,599	43,202
Δ 1979-1993	52.8%	184.6%	579.3%	59.8%	139.6%	494.3%
Δ 1979-2002	13.9%	-6.2%	-6.1%	7.5%	-47.7%	-62.1%
Δ 1979-2003	**74.0%**	**167.0%**	**537.9%**	**71.8%**	**25.3%**	**125.3%**

Source: DANE
Processed by CERAC

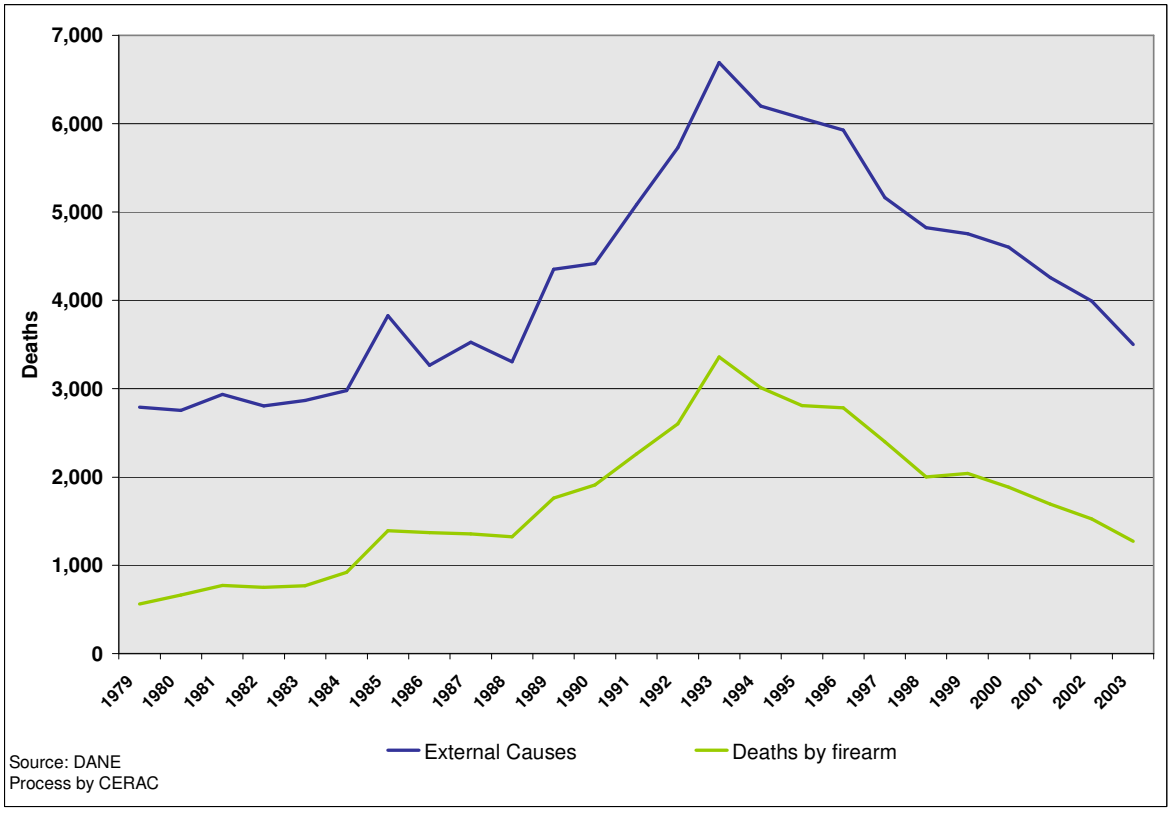
Graph 6. *Evolution of deaths by external cause and firearm, Bogotá, 1979-2003*



Graph 7. *Contribution of deaths in Bogotá to deaths in Colombia, by type, 1979-2003*



Graph 8. *Proportion of total deaths by firearm, Bogotá and Colombia, 1979-2003*



Graph 9. *Death rates per 100,000 inhabitants by external cause, firearm, and total, Bogotá, 1985-2003*

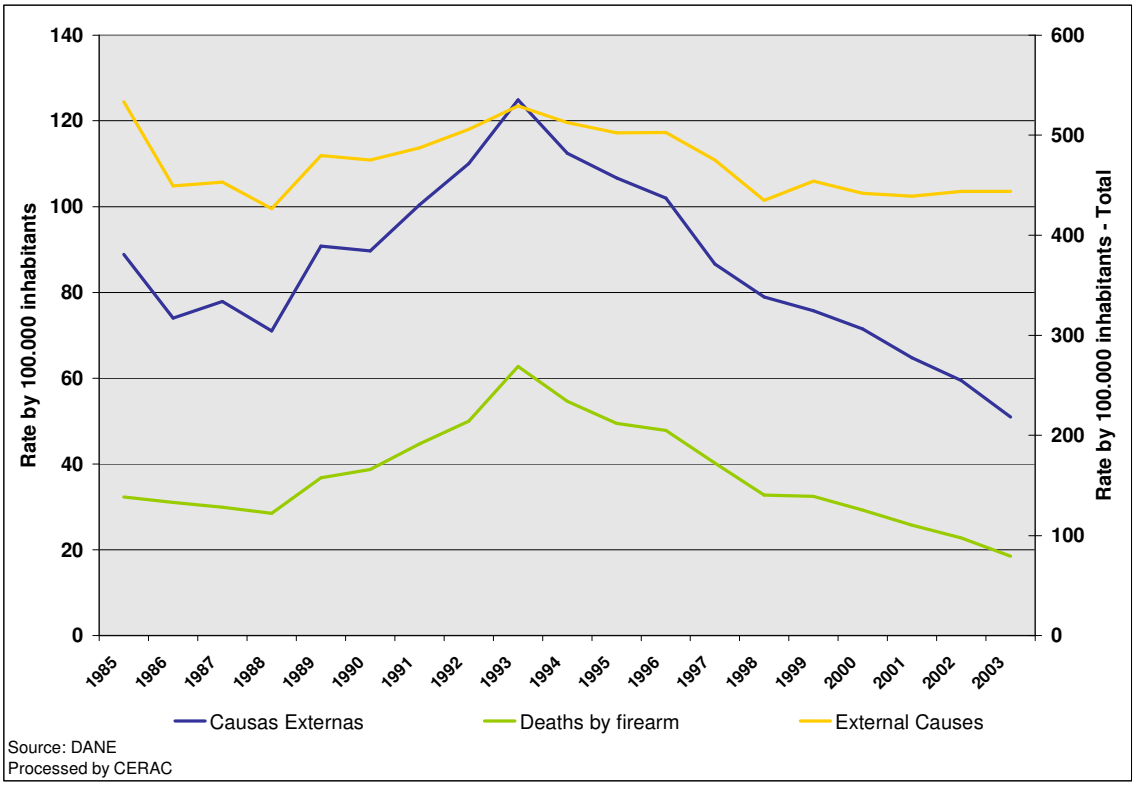


Table 26. *Death rates per 100,000 inhabitants by external cause, firearm, and total, Colombia and Bogotá, 1985-2003*

	Colombia			Bogotá		
Año	Total	External Causes	Firearms Deaths	Total	External Causes	Firearms Deaths
1985	486	92	36	533	89	32
1986	453	94	42	449	74	31
1987	461	98	45	453	78	30
1988	455	104	52	427	71	28
1989	451	106	55	479	91	37
1990	447	109	59	475	90	39
1991	454	121	70	487	100	45
1992	461	122	69	506	110	50
1993	454	120	66	529	125	63
1994	445	114	61	513	112	55
1995	441	108	55	503	107	49
1996	442	108	59	503	102	48
1997	426	103	55	475	87	40
1998	430	105	54	435	79	33
1999	441	106	56	454	76	33
2000	443	109	63	442	71	29
2001	445	110	64	439	65	26
2002	439	111	66	434	59	23
2003	431	94	52	444	51	19
Δ 1979-2003	-11%	2%	42%	-17%	-43%	-43%
Average 1985-2003	449	108	57	474	88	38

Source: DANE
Processed by CERAC

Deaths (violent or otherwise) show an annual positive growth over the whole period of 1979–2003 (see Table 27). Two distinct trends can be identified during the period: first, between 1979 and 1993, when total deaths, deaths due to external causes, and firearm deaths show a growth of 60%, 140% and 494%, respectively; second, between 1994 and 2003, when the level of violent deaths recedes, with growth rates of 7%, -48% and -62% (as seen in Table 25), respectively . In the second period, almost all annual growth rates are negative (see Graph 10).From 1993 onward, deaths decrease consistently, an observation which lends support to the hypothesis that legislation introduced in 1993 has had a positive effect on reducing firearm violence. This is confirmed by trends in the annual homicide rate, which declines by 15% over the period 1994 to 2003.

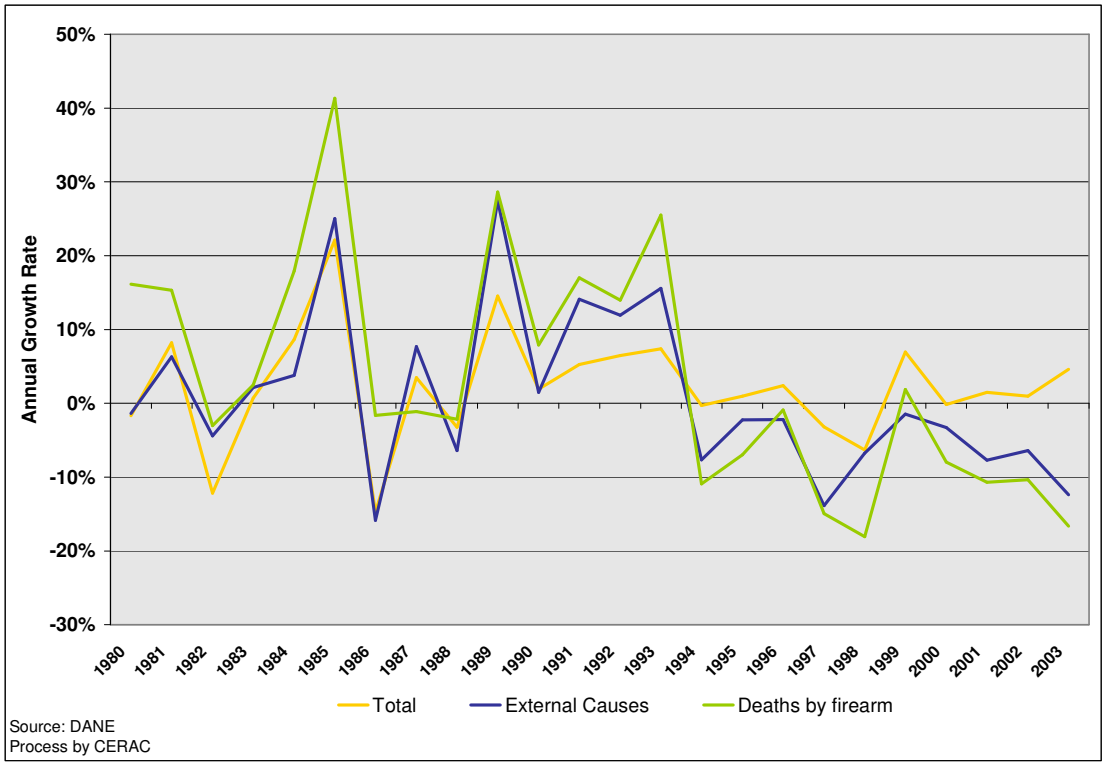
Table 27. *Annual growth rate of deaths, deaths by external cause, and deaths by firearm, Bogotá, 1980-2003*

Year	Total	External Causes	Deaths by firearm
1980	-1.7%	-1.4%	16.1%
1981	8.2%	6.3%	15.3%
1982	-12.2%	-4.4%	-3.0%
1983	0.7%	2.1%	2.5%
1984	8.6%	3.8%	17.9%
1985	22.1%	25.0%	41.3%
1986	-14.7%	-15.8%	-1.7%
1987	3.5%	7.7%	-1.1%
1988	-3.2%	-6.4%	-2.2%
1989	14.5%	27.4%	28.6%
1990	1.9%	1.5%	7.9%
1991	5.3%	14.1%	17.0%
1992	6.5%	11.9%	14.0%
1993	7.4%	15.6%	25.5%
1994	-0.3%	-7.7%	-10.9%
1995	0.9%	-2.3%	-6.9%
1996	2.4%	-2.2%	-0.9%
1997	-3.2%	-13.9%	-14.9%
1998	-6.3%	-6.8%	-18.0%
1999	6.9%	-1.5%	1.9%
2000	-0.2%	-3.3%	-8.0%
2001	1.5%	-7.7%	-10.7%
2002	0.9%	-6.4%	-10.3%
2003	4.6%	-12.4%	-16.6%
Average	2.2%	1.6%	4.3%

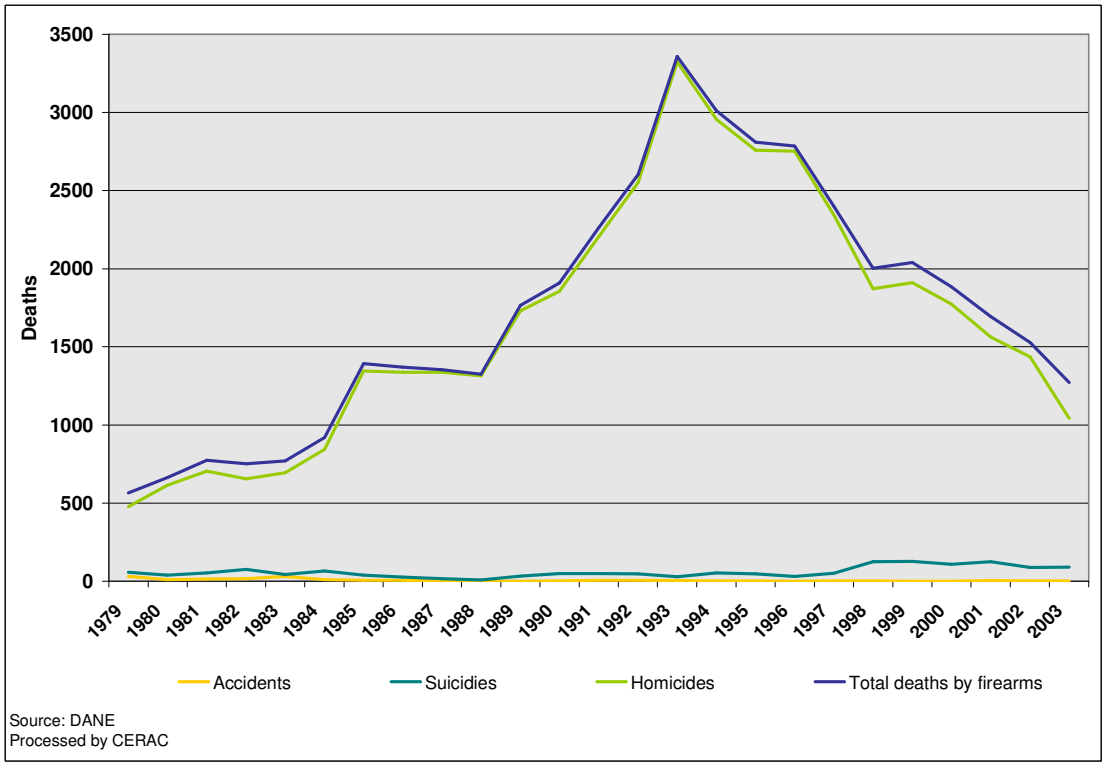
Source: DANE
Process by CERAC

Deaths by firearm may occur in a variety of events, including accidents, suicides, homicides, events with undetermined intention, and police/military interventions. In Bogotá and elsewhere in Colombia, homicides are the most common events in which firearm deaths occur, with over 90% of all firearm deaths (see Graph 10). The intensity of the growth in the number of homicides before 1993 and the rapid decrease during the following years after this peak, explain most of the variation in the level of deaths by external causes and in deaths by firearms in Bogotá. Next section provides a brief description of recent homicide patterns in Bogotá and Colombia, based on analysis of alternative National Police information.

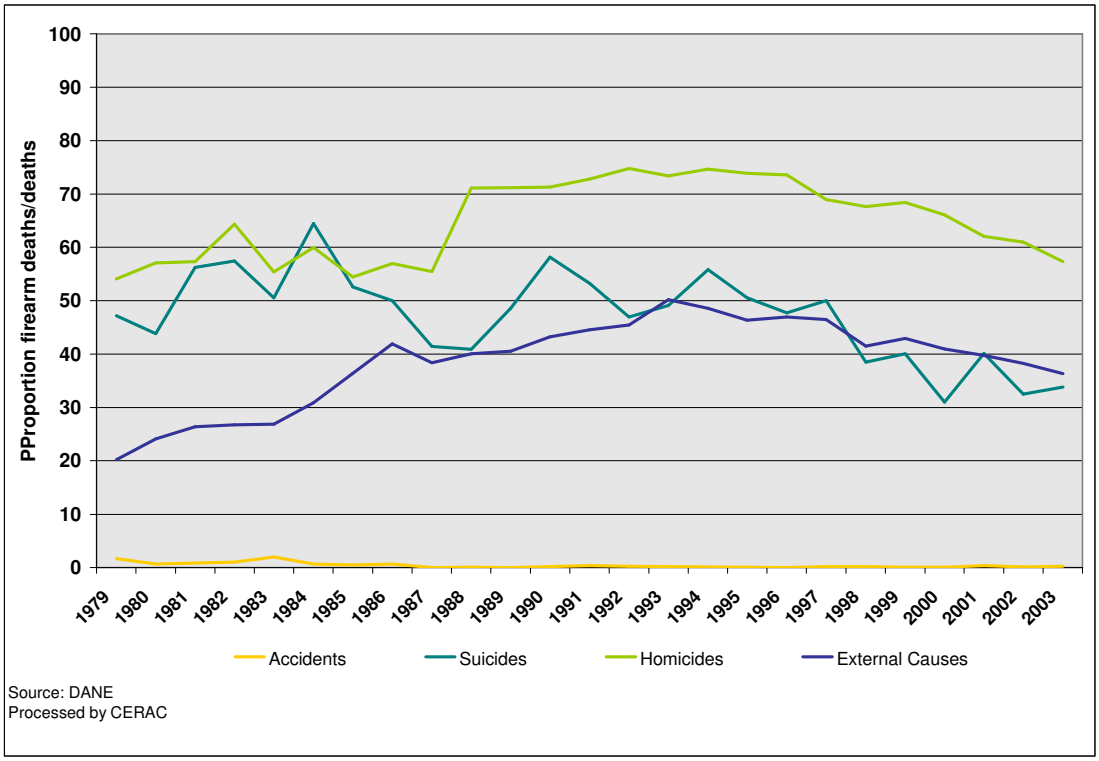
Graph 10. *Evolution of growth rates of total deaths, deaths by external cause, and deaths by firearm, Bogotá, 1979-2003*



Graph 11. *Firearms deaths by type, Bogotá, 1979-2003*

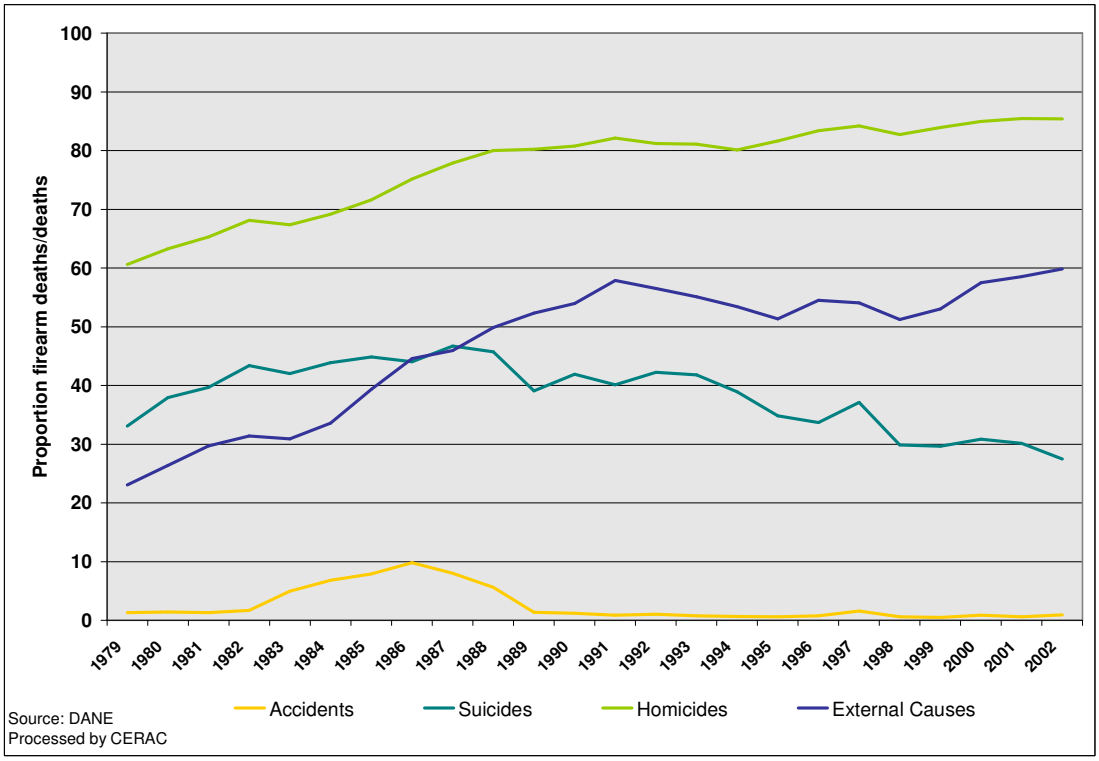


Graph 12. *Firearms related deaths participation by external cause, Bogotá, 1979-2003*



Source: DANE
Processed by CERAC

Graph 13. *Firearms related deaths participation by external cause, Colombia, 1979-2002*



Source: DANE
Processed by CERAC

Most homicides are carried out with firearms, both in Bogotá and in Colombia more generally. Specifically, about 67% of all homicides in Bogotá were carried out with a firearm. This percentage has a different dynamic in Bogotá than in the rest of Colombia, as shown in Graph 11 and Graph 13[12]. While in the capital there is a continuous fall in the proportion of homicides committed with a firearm since 1995, this variable has actually grown continuously during the whole period of study for the whole country. While the level of homicidal violence has fallen in Bogotá, demand for weapons has decreased among its residents. In the rest of the country, the contrary happened: a pattern of more homicidal violence with more guns has been prevalent. The rates per 100,000 inhabitants for deaths by firearm, and type of external cause in Bogotá appear in table 28.

Table 28. *Firearm death rates per 100,000 habitants, by type, Bogotá, 1979-2003*

Year	Accidents	Suicides	Homicides	Deaths by firearm
1985	0.1	0.9	31.3	32.3
1986	0.1	0.6	30.3	31.1
1987	0.0	0.4	29.5	29.9
1988	0.0	0.2	28.3	28.5
1989	0.0	0.7	36.1	36.8
1990	0.1	1.0	37.7	38.8
1991	0.2	1.0	43.6	44.7
1992	0.1	0.9	49.0	50.0
1993	0.1	0.5	62.1	62.7
1994	0.1	1.0	53.6	54.6
1995	0.0	0.8	48.6	49.5
1996	0.0	0.6	47.3	47.9
1997	0.1	0.9	39.3	40.3
1998	0.0	2.1	30.6	32.8
1999	0.0	2.0	30.5	32.5
2000	0.0	1.7	27.5	29.3
2001	0.1	1.9	23.8	25.8
2002	0.0	1.3	21.4	22.7
2003	0.0	1.3	17.2	18.5

Source: DANE
Process by CERAC

Patterns of death by firearm, gender, and age in Bogotá resemble those of Colombia as a whole. Throughout the entire period, men constitute 93% of firearm victims both in Bogotá and Colombia, while the proportion of total deaths is around 50% (both in Bogotá as well the rest of Colombia). In Colombia, 17% of men die as a result of firearms while in Bogotá this proportion is only 12%. Both in Colombia and in Bogotá, less than 2% of women die in firearm-related incidents. The numbers of firearm deaths by gender in Bogotá and Colombia are shown in Table 29.

On the other side, the temporal trend in firearm deaths among men in Bogotá as well as in Colombia shows a close correlation with deaths due to homicides over the period, increasing between 1979 and 1993, and then decreasing from 1993 onward. For women, this rate is relatively constant between 1979 and 1993, as shown in Table 30 and Graph 14. In Bogotá as well as in Colombia, the rate of firearm deaths for men is tenfold that for women. In 2002, the rate for men in Bogotá was 43 per 100,000 and 4 per 100,000 for women.

Table 29. *Deaths by firearm and gender in Colombia and Bogotá, 1979-2002*

Year	Colombia		Bogotá	
	Men	Women	Men	Women
1979	3339	281	502	63
1980	4641	338	615	49
1981	6100	444	718	56
1982	6621	501	687	64
1983	6874	471	708	62
1984	7692	519	857	64
1985	10772	733	1277	115
1986	12664	812	1266	103
1987	13879	908	1265	89
1988	16313	1151	1237	88
1989	17704	1254	1634	130
1990	19102	1471	1779	130
1991	23227	1726	2114	149
1992	23258	1835	2396	206
1993	22844	1763	3131	227
1994	21523	1614	2800	211
1995	19820	1486	2641	168
1996	21433	1617	2590	194
1997	20692	1558	2213	185
1998	20296	1522	1868	134
1999	21676	1573	1892	148
2000	24598	1763	1751	133
2001	25477	2043	1557	136
2002	26789	2110	1396	131

Source: DANE
Processed by CERAC

[12] From the total of deaths in Bogotá involving the use of weapons during the period 1979-2003, firearms are responsible for 75%, knives for 24%, and explosives for 1% of deaths. This pattern is similar in homicides. Only other external causes of death (e.g., suicides and accidents) are associated with different instruments and methods.

Table 30. *Death rates by firearm and gender in Colombia and Bogotá, 1985-2002*

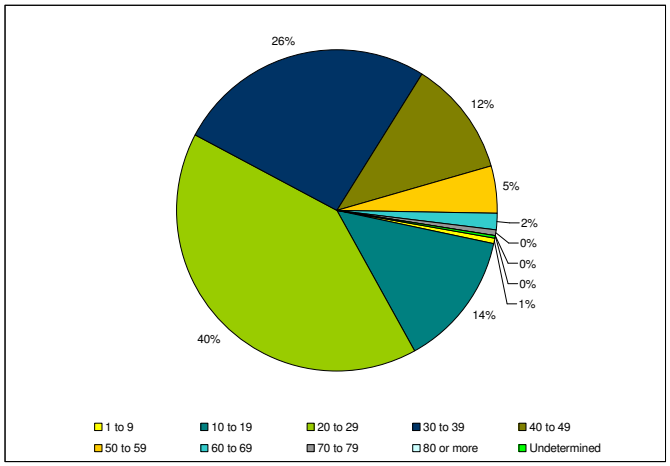
Year	Colombia		Bogotá	
	Men	Women	Men	Women
1985	68	5	63	5
1986	79	5	61	4
1987	85	5	59	4
1988	98	7	56	4
1989	104	7	72	5
1990	110	8	76	5
1991	131	10	88	6
1992	129	10	97	8
1993	124	9	123	8
1994	115	8	107	7
1995	104	8	98	6
1996	110	8	93	6
1997	105	8	78	6
1998	101	7	64	4
1999	105	7	63	5
2000	118	8	57	4
2001	120	9	49	4
2002	124	10	43	4

Source: DANE
Processed by CERAC

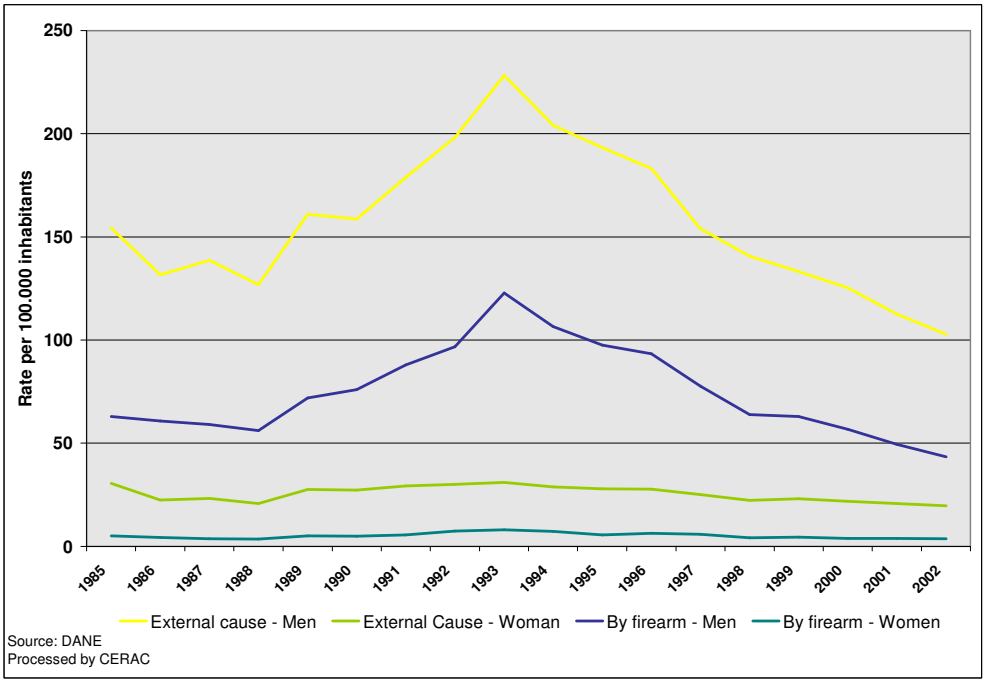
The age structure of deaths is similar in Bogotá and Colombia. Deaths by external causes and deaths by firearm are both concentrated among individuals aged 20 to 29 years (40% of the total), followed by individuals aged 30 to 39 (26%), and 10 to 19 (14%), as shown in Graph 14.

Graph 16 and Graph 16 show that up to age 14 and after age 40, deaths are largely attributable to natural causes, both in Bogotá and in the rest of Colombia. Deaths occurring to individuals aged 15 to 40 are due in large part to external causes, particularly firearms, with the highest concentration between 24 and 29.

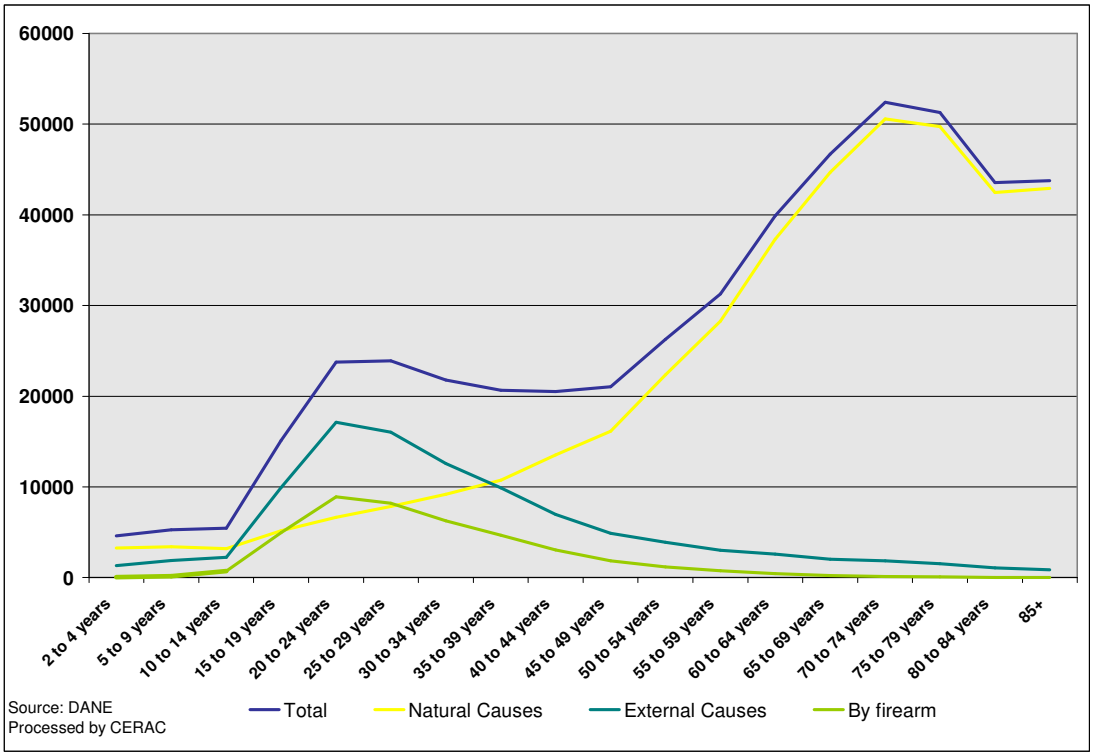
Graph 14. *Decomposition of deaths by age groups, Bogotá, 1979-2002.*



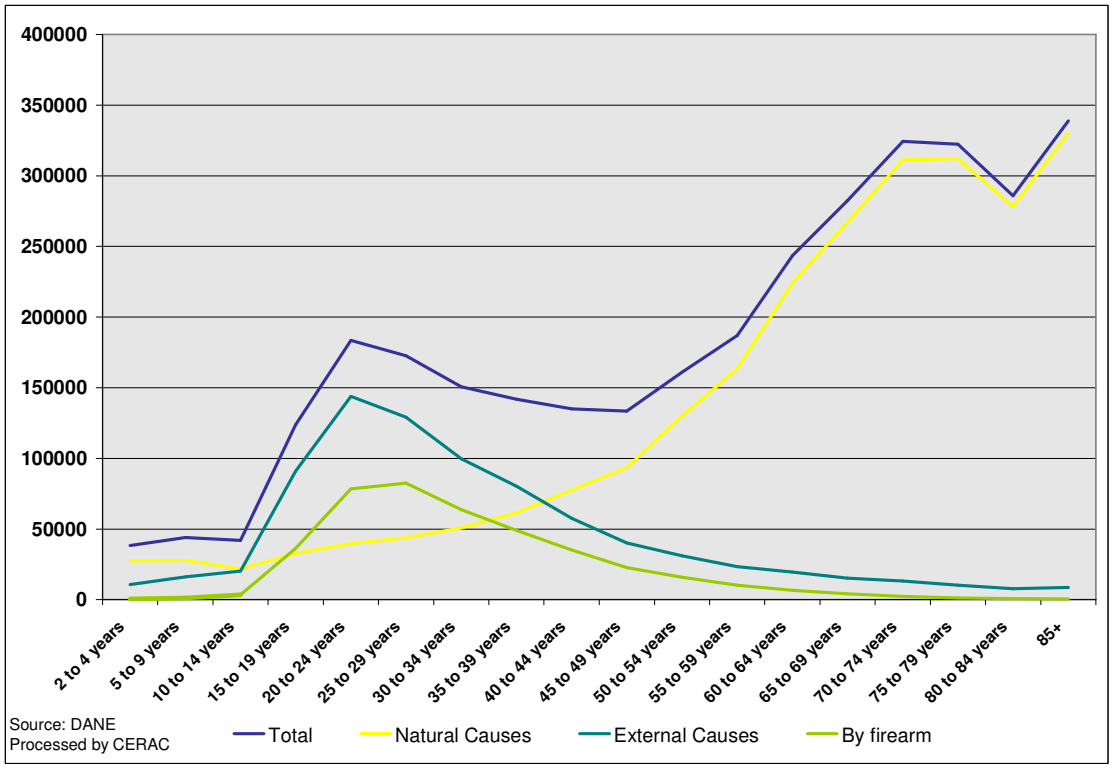
Graph 15. *Death rates by external cause, firearm, and gender, Bogotá, 1985-2002*



Graph 16. *Total deaths, deaths by natural causes, deaths by external causes, and deaths by firearms, Bogotá, 1979-2002*



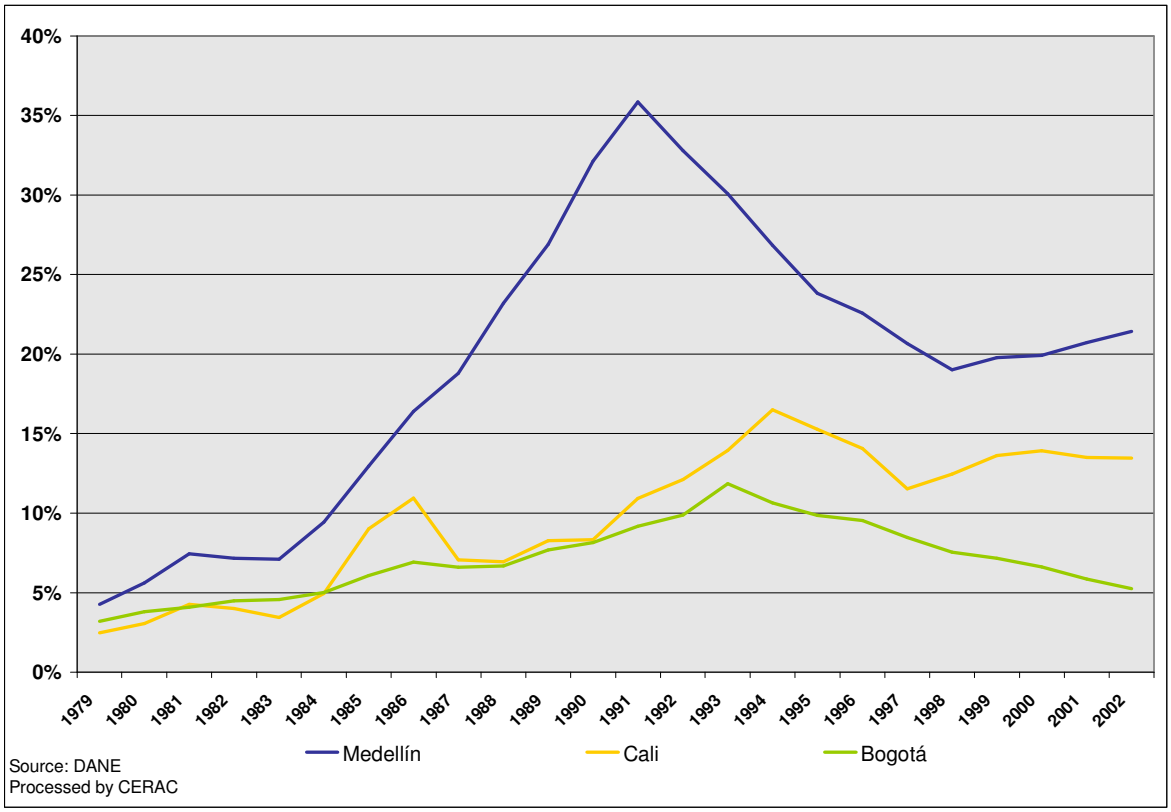
Graph 16. *Total deaths, deaths by natural causes, deaths by external causes, and deaths by firearms, Colombia, 1979-2002*



In spite of the substantial reduction in firearm deaths in Bogotá, the rate is still quite high by international standards. In Mexico City, for example, the proportion of firearm deaths to total deaths peaks in 1987 at 2.3% while Bogotá reaches a peak of 12% in 1993. In 2002, that proportion in Mexico City was 1.2% while for Bogotá, continues been higher: 5%. As in Bogotá (and the rest of Colombia), the majority of deaths due to firearms in México occur by homicide (roughly 80%). The rate of deaths by firearm per 100,000 inhabitants in 2002 in Mexico City was 8.15; in Bogotá that same year, the rate was almost three times as great (23 per 100,000).

Nonetheless, Bogotá has been more fortunate than other large Colombian cities such as Cali and Medellín. As shown in Graph 17 and Table 31 Bogotá has a lower proportion of deaths by firearm than these other cities. For the whole period (1979-2002), Medellín had three times the proportion of Bogotá (21%) and Cali one and a half times the proportion (11%). Furthermore, firearm death rates in Cali and Medellín have been higher than in Bogotá between 1979 and 2002 (See Table 31).

Graph 17. *Deaths by firearm with respect to total deaths, Medellín, Cali, and Bogotá, 1979-2002*



In conclusion, firearms demand for criminal intentions in Bogotá has two well defined periods. The first is the period from 1979 to 1993, when firearms deaths show a high growth rate and contribute substantially to the number of total deaths in the city. The second period, characterized by rapid violence reduction, starts in 1993 and coincides with new firearms regulation and new policy interventions. During the whole period, firearms homicides are the main explanatory phenomena that explain the deterioration and improvement of human security in the city. At the same time, it is clear that there is a dynamic demand for guns for homicidal use. Then, the manner in which different policies have had an impact on this particular demand will be analyzed in this document.

Table 31. *Deaths by firearm with respect to total deaths, Medellín, Cali, and Bogotá, 1979-2000*

Año	Medellín	Cali	Bogotá
1979	4.3%	2.5%	3.2%
1980	5.6%	3.1%	3.8%
1981	7.5%	4.3%	4.1%
1982	7.2%	4.0%	4.5%
1983	7.1%	3.4%	4.6%
1984	9.4%	4.9%	5.0%
1985	13.0%	9.0%	6.1%
1986	16.4%	11.0%	6.9%
1987	18.8%	7.1%	6.6%
1988	23.2%	6.9%	6.7%
1989	26.9%	8.3%	7.7%
1990	32.1%	8.3%	8.2%
1991	35.9%	10.9%	9.2%
1992	32.8%	12.1%	9.9%
1993	30.1%	13.9%	11.8%
1994	26.8%	16.5%	10.7%
1995	23.8%	15.3%	9.8%
1996	22.6%	14.1%	9.5%
1997	20.7%	11.5%	8.5%
1998	19.0%	12.4%	7.5%
1999	19.8%	13.6%	7.2%
2000	19.9%	13.9%	6.6%
2001	20.7%	13.5%	5.9%
2002	21.4%	13.5%	5.2%
Total 1979-2002	21.0%	10.7%	7.3%

Table 32. *Deaths by firearm per 100,000 inhabitants, Medellín, Cali, and Bogotá, 1995-2002*

Año	Medellín	Cali	Bogotá
1995	211	101	49
1996	195	95	48
1997	172	71	40
1998	146	79	33
1999	158	91	33
2000	151	89	29
2001	164	89	26
2002	170	86	23

3.3.1 Recent patterns in homicide in the Colombian cities: National Police Data

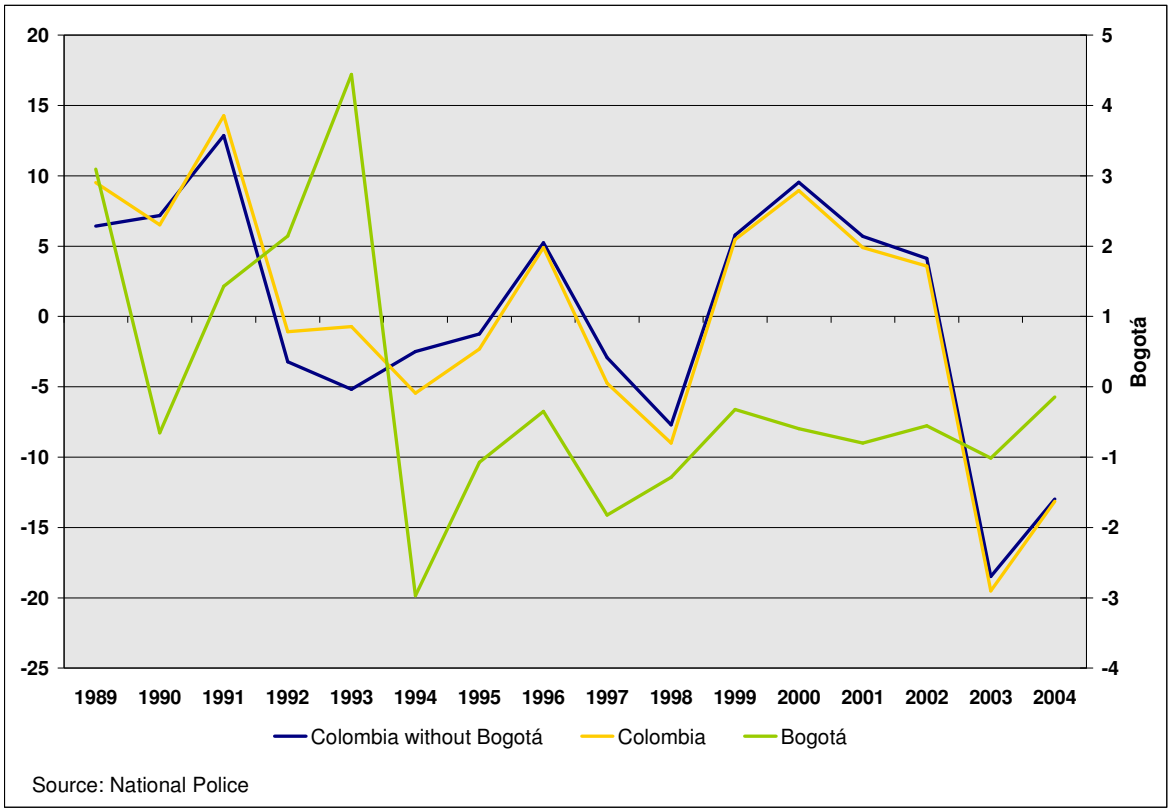
The level of homicide violence is a good proxy of the level of firearm violence in Colombia, insofar as a large proportion of homicides are perpetrated with firearms.

In each of the three largest Colombian cities (Bogotá, Medellín and Cali), an upward trend in homicides occurs until the year 1994, at which point violence begins to diminish until 2002 (Graph 19). Medellín remarkably reduced its contribution to the total number of homicides in 1991 and also in 2002.

The annual variation in homicides in Colombia over the last two decades can be explained by the annual variation in rates of municipalities other than Bogotá. Nonetheless, the annual variation of homicides in Bogotá has strongly influenced the annual variation of national homicides in the years 1989, 1993-1994, and 1997. It is also worth noticing that the trend of homicides in Bogotá moves in the opposite direction to that of Colombia during the period 1989–1993 (see Graph 21).

Graph 19. *Evolution of homicide level in Bogotá, Medellín, Cali, 1988-2009*

Graph 31. *National annual homicide change rate in Bogotá and in the rest of municipalities with respect to the Colombian total, 1989-2004*



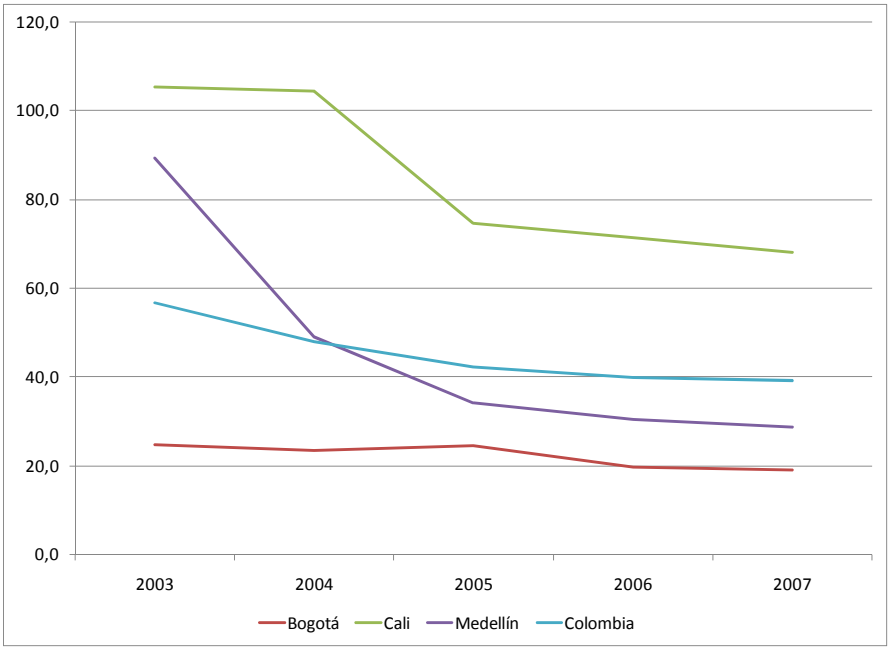
Source: National Police

According to the World Health Organisation (WHO, 2003), in 2000 only four countries have homicides rates over 40 per 100,000 inhabitants: Honduras (40.87), Lesotho (47.56), Colombia (60.01) and South Africa (62.80). In comparison to other international cities, the homicide rate in Bogotá (23 per 100,000) falls somewhere in the middle of the scale. Bogotá has a homicide rate below Washington's (42.9), Sao Paulo (55) and Brasilia (38); a rate similar to Lima (22) and Mexico City (18); and a rate higher than Santiago de Chile (6), Buenos Aires (5), London (2.6), Berlin (2.3), Stockholm (2.8), New York (8.7) and San Francisco (8.1).

In relation with the main Colombian cities, Bogota has a lowest homicide rate for the last five years, with 19 homicides by 100,000 inhabitants for 2007 as shown in graph 32.

For 2003-2007, the composition of the homicides by type of firearms is very different for Colombia and Bogota: as shown in Graph 33 Bogota has a lower participation that the country (66% vs. 82%) with a bigger share of knifes for the capital city. Detailed figures of homicides by weapon can be seen in table 33.

***Graph 32**. Homicide rate. Colombia and main cities. 2003-2007*



***Graph 33**. Proportion of homicides by type of weapon. Colombia and Bogota, 2003.2007*

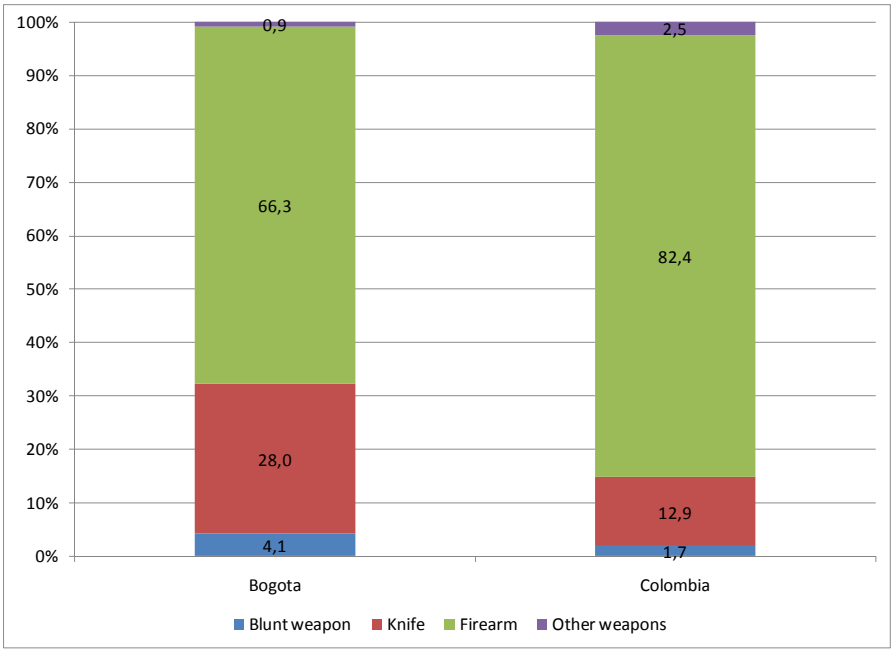


Table 33. Homicide by type of weapon. Colombia and Bogota, 2003-2007

Type of weapon	2003	2004	2005	2006	2007	2003-2007
Bogotá						
Blunt weapon	79	68	58	52	57	314
Knife	404	449	441	397	429	2.120
Firearm	1.073	1.039	1.161	902	854	5.029
Other weapons	13	15	14	19	11	72
Total	1.615	1.571	1.674	1.370	1.351	7.535
Colombia						
Blunt weapon	312	313	325	361	364	1.675
Knife	2.336	2.371	2.544	2.595	2.611	12.457
Firearm	20.036	16.979	14.762	13.760	13.818	79.355
Other weapons	390	547	480	561	405	2.383
Total	23.074	20.210	18.111	17.277	17.198	95.870

In table 34 is possible to see how the impact of the firearms in Colombia and for the main cities. For all the cases, the level and the changes of the homicide figures are related with the dynamics of the homicides by firearm. Also, the risk of the homicides is explained with the homicides by firearm too. For these cities and for the country, the homicides by firearm are contributed to the decrease of the homicides.

As an important fact, the proportion of homicides by firearm in the capital city is considerably lower than the other two main cities. This can be associated for the long term disarmament plan in this city. Since 2005, Bogota has experience a reduction of the homicides by firearms in relation with the total homicides, followed with an important increase of the proportion of knifes.

Table 34. Homicide by firearms in the biggest cities in Colombia, Main facts. 2003-2007

	2003	2004	2005	2006	2007	2008	2009
Número de homicidios							
Bogotá	1.605	1.571	1.674	1.370	1.351	1.341	1.327
Cali	2.129	2.163	1.583	1.533	1.484	1.384	1.615
Medellín	1.938	1.074	755	685	654	871	1.432
Colombia	23.015	20.174	18.111	17.277	17.198	16.140	15.817
Número de homicidios por armas de fuego							
Bogotá	1.064	1.039	1.161	902	854	858	838
Cali	1.887	1.925	1.348	1.316	1.255	1.132	1.385
Medellín	1.788	890	536	513	505	613	1.286
Colombia	19.624	16.951	14.762	13.760	13.818	12.896	12.808
Proporción de homicidios por arma de fuego entre el total de homicidios							
Bogotá	66%	66%	69%	65%	63%	64%	63%
Cali	89%	89%	85%	85%	84%	81%	86%
Medellín	92%	82%	71%	74%	77%	77%	90%
Colombia	85%	84%	81%	79%	80%	79%	81%
Tasa de homicidios							
Bogotá	24,77	23,60	24,47	19,73	19,16	18,74	18,28
Cali	104,54	104,10	74,67	71,47	68,39	63,06	72,76
Medellín	92,10	49,75	34,09	30,60	28,88	38,02	61,81
Colombia	56,20	48,15	42,23	39,80	39,16	36,31	35,17
Tasa de homicidios por armas de fuego							
Bogotá	16,42	15,61	16,97	12,99	12,11	11,99	11,54
Cali	92,66	92,65	63,59	61,35	57,84	51,58	62,40
Medellín	84,97	41,23	24,20	22,92	22,30	26,76	55,51
Colombia	47,92	40,46	34,42	31,70	31,46	29,02	28,48

4. INTERVENTIONS

4.1 Mayoral Administrations

From mid-nineties, Bogotá's local administration developed innovative security policies with two pillars for intervention. The first one was the so-called "citizen's culture" focusing on changing individual preferences through educational programmes and projects. The second simultaneous one favoured the strengthening of the police and law enforcement actions. (*Medicina Legal*, 2003).

Since the mid-1990's, each mayoral administration has made efforts to reduce violence through a variety of different measures. In this section, we present a brief description of the security program for each mayor since 1992.

Jaime Castro's administration (1992-1994) main legacy was the reorganization of Bogotá's public finances. His administration strongly embraced the new regulation for firearms control and implemented the collection under the general gun amnesty included in the new regulation. Antanas Mockus (1995-1997) and Paul Bromberg[13] developed a security program based in his aim to change the culture of the city. The priority of Mockus's first administration was to strengthen the capacity of individual self-regulation through changes in perceptions and preferences. Citizen's culture project was understood as the set of traditions, unwritten rules and actions that facilitate coexistence in the city (see DAPD, 1995 for a detailed description). As major Mockus wrote: "The use of guns, and in general, the use of force and coercion, it is a path to be walked only by those chosen and prepared for the society to do so. Our society need to must recognise that *life is sacred and the guns are owned by the State"* (Alcaldía Mayor de Bogotá, 2004; p. 21, our translation)

In doing so they strengthened the institutional capacity to control crime, tried to increase the likelihood of sanctions to criminal behaviour with the support of police and judicial institutions, developed programs to prevent domestic violence, and promoted alternative forms of conflict resolution (Llorente and Rivas, 2004). This Administration emphasized campaigns in schools and the media as part of an effort to reduce the consumption of liquor, to control the use of firearms, and to increase crime reporting, among others.

Enrique Peñalosa (1998-2000) believed that deteriorated public spaces fostered criminality; as a result, his administration made investments in urban infrastructure in order to recuperate about one million square meters of public space illegally occupied by parked cars, street vendors, etc. (Llorente and Rivas, 2004). At the same time, investment in police infrastructure and equipment reached its peak during this period. Antanas Mockus took office for the second time between 2001 and 2003. He continued security policies instituted during his previous Mayorship as well as certain policies of Peñalosa, and advanced giant infrastructure projects such as Transmilenio. Mockus argued that the problem of crime could not be addressed through punishment alone, but rather through a combination of punishment and cultural change. His so-called citizen's culture (*cultura ciudadana*) program was instrumental in changing civilian attitudes toward the authorities, security, and even arms ownership.

The promotion of civilian participation was important in Mockus' program, particularly in the security field. "Local Security Fronts" were created with the objective of increasing people's crime reporting and to involve them with their own security, whereby people in the same neighbourhood were networked in order to establish a sense of common property and to build a "social fabric that hinders criminal activity[14] (Formisano, 2002). Mockus also initiated the creation of a new Police Code in 2003, which renovated the minimum rules of coexistence or *convivencia* in the city.

Sánchez et al (2003) arrange the more recent administration's policies into three categories: *stick* measures, *broken window policing* and *carrot-sticks* policies. The first set of security policies consists of measures destined to punish the individual due to wrong behaviours. Most of these policies took the form of strengthening the Police Department and the punitive justice system. The second set (designed by Peñalosa's administration) dealt with the recovery of public space. Finally, the *carrot-sticks* measures dealt with measures destined to transform *cultura ciudadana* and in the strengthening of new conflict resolution units so the step for resolving issues between citizens would not be with violence but with a more civilized manner.

Two institutional factors have been very important in the good results in terms of crime reduction in the city. The first one has to do with the continuity in the head of the Metropolitan Police Department. During the last 18 years, the department has had only a handful of directors. A second innovation was the creation of the *Fondo de Vigilancia y Seguridad* or Security and Vigilance Fund, through which the local

[13] Bromberg replaced Mockus when he decided to end short his term in order to launch his failed presidential bid.

[14] Important self-disarmament campaigns were put in place during Mockus' administration. Until 2001, 6,500 firearms were given up in Bogotá (Llorente y Rivas, 2004). Some of these weapons were later melted.

administration has contributed to the paltry budget of the local police force. This has lead to a very interesting relationship between the mayor and the local police chief, in which the availability of funds have given some leverage to the local administration to influence in the implementation and orientation of policies. Unfortunately, the quality of the institutional outcomes still depends on the quality of the relationship between the police chief, the major and its administration.

4.2 Police Enforcement

Mockus and Peñalosa paid special attention to improving the efficiency of the police response to criminal acts and to the apprehension and trial of criminals. Investment in the police department tripled over the last decade, with its peak occurring during the Peñalosa administration. Operational goals were developed to incentive the prompt attainment of results. For example, police departments were evaluated in terms of a primary objective of a ten percent reduction in crimes of high social impact, the recovery of stolen vehicles, the confiscation of firearms[15], and the capture of wanted criminals (Llorente and Rivas, 2004). The fact that firearms were made a target of police action meant that the police reinforced an already existent culture of gun control in the authorities and for the citizenship to know that one of the aims of the police was gun reduction. The roadblock checks in major and minor roads of the city became a common sight, in which citizens expect to be randomly checked for alcohol (especially the driver) and to be subject to a close search for guns, drugs, etc.

In order to more systematically monitor urban criminal activity, institutional changes were made and the SUIVD (*Sistema Unificado de Información de Violencia y Delincuencia),* or Unified System for Violence and Delinquency Information) was created in 2000. This provided more detailed and reliable data on criminal events and enabled the Mayor's office to continuously assess urban security issues and policies (Llorente and Rivas, 2004). Approximately 86% of the investment on the police department was allocated to the renewal of automotive equipment, police stations, systems of call and patrol dispatch. The remainder was used to acquire intelligence and criminal research equipment. "Between 1994 and 2000, captured individuals increased from 13,253 to 50,438, corresponding to a growth of approximately 280% in only six years" (Formisano, 2002). All these measures significantly increased the efficiency of police forces in the city. More significant in the context of this document, arms confiscated was defined as one of the lead operational indicators used to judge the performance of local police chiefs. As mentioned, this had a particularly positive effect on the mindset of police officers and the whole constabulary in terms of arms control as an objective.

4.3 Arms and Alcohol Interventions

Observing that half of the victims of automobile accidents had high levels of alcohol in their blood, that a third of deaths by firearms registered alcohol consumption, and that an overwhelming majority of homicides were carried out with firearms (Mockus, 2001), the Mockus administration implemented a comprehensive policy to control violence which targeted alcohol and firearms abuse.

Curfew restrictions

Hora Zanahoria[16], which was implemented in 1995, was the name of the restriction of alcohol sales in bars and other establishments after 1 a.m. It was believed that, by limiting the number of hours in which people could have access to alcoholic beverages, the probability of violence and firearm killings would diminish. A number of academic studies have concluded that, combined with enforcement, it was indeed responsible for a decrease in the level of homicides, although Llorente et al (2000) asserts that only 8% of the reduction in homicides in the nineties can be explained by this measure (Formisano, 2002). The first attempt at this type of restriction was during Castro's administration, during which teenagers were prohibited from going out (both in the streets as well as in private bars) after midnight (Llorente and Rivas, 2004).

Although Peñalosa's administration maintained *Hora Zanahoria* as part of the city's security initiatives, a steady decrease in the homicide level lead to calls to be lifted. In early

[15] Since 1993, firearm confiscation has rapidly grown (see Table 11). In 1992 (year when Castro took office), 2,748 arms were confiscated. In 1999, confiscations augmented to 7,893 firearms. In 2004, a total of 20,110 firearms were confiscated. Between 1992 and 2004, the firearms participation of Bogotá in Colombia rose from 18% to 32% (see Table 12).

[16] *Hora Zanahoria* can be translated as 'Carrot Hour'. This does not makes reference to the carrot and the stick, but to the common idea in Colombia that a 'carrot' person usually goes to bed early, drinks little and behaves conservatively even when partying. Mayor's Decree 836, 1995, since December the first, 1995, public bars can be open only from 6 a.m. to 1 a.m. of the next day, and that in general, the sale of alcohol is only permitted between these hours. The person that breaks this law goes to jail for 24 hours.

1998, the Mayor advanced the curfew from 1 a.m. to 2 a.m.[17], however a sudden rise in the level of homicides brought about the reversal of this decision after only two months.

In light of the general improvement in the security situation, Mockus' second administration concluded that significant positive change in the *cultura ciudadana* had occurred and less restrictive measures should be explored. On August 6th, 2002, the *Hora Optimista*[18] was implemented; allowing private bars and establishments to sell liquor until 3 a.m. Mockus insists that calling upon people's senses of shame and guilt can be more effective than fines (Pastrana, 2003). After a successful six-month trial, the measure was fully implemented.

It is clear that, within the framework of the SAS demand model, *cultura ciudadana* is a measure designed to influence demand by affecting preferences. In the parlance of the program, the idea was to change traditional attitudes in order to reduce the likelihood of resorting to violence to resolve conflict.

Firearms restrictions

The restriction on carrying firearms was an important intervention with respect to the observed reduction in homicidal violence. This decision has been supported in general by the media and political commentators. Moreover, it was perfectly adjusted to the common checkups and search for arms that the authorities and security guards routinely perform in bars and clubs.

Firearm restrictions, as a policy, were first started in 1996 by the issuance of Decree 757 of 1996 that established the 'Navidad Zanahoria' or "Carrot Christmas". This decree restricted the carrying of legally acquired firearms between the 17 of December 1996 and 7th of January 1997, the main holiday and vacation season in the country. The decree also ordered – the enforcement component- the local police authority to seize arms during this period. Targets were set for police precincts and the search for guns was established as a practice in police roadblocks and routine inspection of bars and restaurants. Decree 1070 of 1997 implemented this measure during the next holiday season.

The Peñalosa administration continued this intervention, given the perceived success of Mockus' Decrees 877 and 1040 (1997) in reducing homicides by 5% and robbery by 15% when compared with the same period in 1996 (Decree 021 de 1998). It was ordered (by Mayor's Decree) that the measure continue until June 15th, 1998[19]. During this whole period Mockus and Peñalosa continuously received the support of the police chiefs but strong public opposition from the Military Forces and in particular from the different Military Chiefs of the region.

It was during this Mayorship that an important controversy erupted. Both Mockus and Peñalosa administrations had to face the local brigade commander who blocked the issuance of a restriction decree arguing that "good willing people" will be defenceless (Acero y Mockus, sf; p.10). The prohibition was later deemed against the law by the highest administrative court in mid-1998. (Concept 1.113 from *Consejo de Estado*) seriously hampering future arms control initiatives by local administrations.

In 1999 the presidential directive No. 6 insisted on the importance of implementing these types of restrictions for 59 municipalities (including Bogotá) from Fridays at 9 p.m. to Mondays at 4 a.m, leading to several cities to follow the example of Bogotá and other cities. That presidential directive, although not compulsory, made the local military chiefs to accept in most cases the restrictions. Since then, weekends and holiday restriction has been in place (in the case of Bogotá this was firmly established by a Resolución 002 of 2002 from the *Jefatura del Estado Mayor* of the Military Authority in the city.[20].

Civilian Disarmament

Under the policy of 'Civic Culture', implemented by Mayor Mockus in his first administration, the voluntary disarmament had taken place as a specific target to reduce the risk of death to others in moments of anger or neglect, and identify and control, with the commitment of its own citizens, what the epidemiologists call "risk factors" (Mockus, 2001, p.17)

The first voluntary disarmament plan, held in December 1996 was an initiative from Monsignor Pedro Rubiano, archbishop of Bogota and had the slogan "Let arms rest in peace in Christmas." These disarmament campaigns have been supported by the mass media, for citizens to voluntarily hand

[17] See Mayor's Decree 207, 1998. Since February the 13th, 1998 the restriction hours are between 2 a.m. and 6 a.m. This Decree only held two months.

[18] Which can be translated as 'Optimistic Hour'. Mayor's Decree 345, 2002, argues that people have become more responsible and aware of the importance of life. Bars and establishments can now operate from 10 a.m. to 3 a.m.

[19] Decree 547 of 1998 once again extended the term of the previous year to July 5, 1998.

[20] From Fridays, 9 pm, Until Mondays. If Monday is a holiday to the prohibition runs Until Tuesday, 6:00 a.m.

over weapons and ammunition they possessed and had significant support from the international community and private enterprise.

Disarmament campaigns consider exchange of weapons, ammunition and explosives for gifts and vouchers. Some people did not ask for anything in exchange for the surrender of weapons, ammunition or explosives (Mockus, 2001, p.17). These programmes are coordinated by the "Sacred Life" from the Mayor of Bogota, head priest of the Church of the central Veracruz, priest Alirio Lopez.

In October 1997, received 2538 arms, 2001 had been delivered about 6,500 weapons which were eventually melted down and cast into symbolic elements such as spoons, hands and doves and bars with the message 'ARMA FUI' elements delivered to the people who deliver the weapons.

Box 2: Other Interventions in Bogotá and Cali

During his second term, Mockus implemented in 2001, 2002, and 2003 a pedagogical intervention intended to let women and men appropriate their city. In March 2001, the first *Night for Women* (when only women were allowed to go out on the streets), *Night for Men* (when only men can go out on the streets) and a *Reunion Night* (both genders can go out) took place (on Fridays). The 'sanctions' imposed to individuals 'defying' the measure was 'didactic'.

Table shows total deaths attributable to firearms in Bogotá by gender during these days. On average, deaths on Friday in Bogotá are 4.56, with the average for males being 4.22 and for females, 0.34. Interestingly during two out of three years (2002 and 2003) the *Night for Women* was accompanied by a number of firearms-related homicides much lower than the average, and the record during the *Night for Men* was even lower, which could be a fluke.

Table 38. *Effect of pedagogical interventions in Bogotá*

Date	Event	Total Number of Deaths	Female deaths	Male deaths
09-Mar-01	Women's day	9	1	8
08-Mar-02	Women's day	1	0	1
07-Mar-03	Women's day	3	0	3
16-Mar-01	Men's day	1	0	1
23-Mar-01	Reunion day	4	2	2

Source: IMLCF
Processed: CERAC

The city of Cali has been highlighted on several times as a pioneer regarding arms control interventions. In 1993, the mayor of Cali, Rodrigo Guerrero, introduced in the city the epidemiological approach to violence, in which it is considered that this is a public health problem and that it is preventable. In this analytical framework, the Program for Development, Security and Peace - DESEPAZ, which considered as a fundamental part in reducing levels of violence, reduce the number of weapons circulating in the city. The initiatives taken in Cali where a national example and then where implemented in the city of Bogotá.

Under the security plan were carried out several programs led to reduced circulation and use of firearms. On the one hand, with "Friends of Peace Child," about 22 thousand children turned in their toy weapons in exchange for passes for public entertainment and recreation parks. An unexpected product of this effort was the emergence of a group of teenagers who gave real weapons and gave rise to a special program within the work with young gang members (Guerrero, 2003)

5. Intervention Effects

This section will deal with the impact of arms and alcohol interventions on the level of homicides in Bogotá. We will review the effect that arms interventions had on the attitudes towards arms and the authorities, and the statistical effect of these bans on homicide in the city.

5.1 Perception Surveys: Subjective Indicators

The indicators of public perception of safety in Bogotá provide evidence of how a mayoral administration's security policies affect Bogotá's quality of life. Three important surveys have been conducted to investigate popular perceptions of safety and the need to carry a firearm to feel secure. In this section, we review the noteworthy results of this research.

Cultura Ciudadana Surveys

The Secretary of Culture carried out two surveys in order to measure changes in citizens' attitudes broadly understood as *cultura ciudadana*. According to the first survey of 2002, approximately 25% of those interviewed considered that it was important to protect oneself with a firearm. This, to our knowledge, would be the only survey-based assessment of legal firearm demand in Bogotá. After the implementation of Mockus's Disarmament Plan, in a second survey (2003) that response fell to a 10%. Interestingly, amongst lower-income respondents (particularly young males), carrying a firearm for self-protection was more accepted (Observatorio de Cultura Urbana en Bogotá, Comisión de Cultura Ciudadana, 2002). A new survey is being carried out now, and will include questions related to arms demand.

Quality of Life Survey

In 2003, the Quality of Life Survey[21] investigated the extent to which security measures in Bogotá had affected community perceptions of security (see Table 39). Strikingly, people revealed that disarmament campaigns were one of the measures that made them feel the safest: approximately 66% of respondents asserted that disarmament campaigns increased their perception of security, only below *hora zanahoria* and the restriction of fireworks. Some 49% believed that their safety increased due to a stronger police presence and the recovery and construction of police stations, and around 29% felt that the new "Permanent Justice Units", intended to promote the peaceful resolution of conflict, made their homes safer.

Table 40 shows the effect in terms of perception in improvement of security in the localities of Bogotá associated to the disarmament campaigns, and table 41 shows perceived improvement as a result of *Hora Zanahoria* and alcohol control.

Bogotá Insecurity Thermometer

Finally, Bogotá's Chamber of Commerce regularly issues a security bulletin known as the "Bogotá Insecurity Thermometer." The publication consists of surveys designed to measure victimization and public perception of safety. Table 42 shows the results for the question "Which of the following alternatives lends you a greater feeling of safety?" Between the years 2001 and 2005, the percentage of respondents indicating that they had considered carrying a firearm for protection was around 5%, with no significant variation. This figure is much lower than the finding of the official survey reported above, but in strict sense the question is different. Perceptions of safety inspired by increased police presence rose continuously between 2001 and 2003, when approximately half of respondents considered that the police were most responsible for making them feel safe. Unfortunately, this percentage decreased by almost half during 2004. The survey of the Observatory of Urban Culture in 1998 reported that 67% of Bogota agreed that disarmament was possible, as opposed to a 1994 survey where only 10% of citizens considered viable measure. These surveys show that more and more people believe that it is possible to live in the city without the need to arm themselves and, therefore, the less the risk of attacking or being attacked with firearms (Acero, sf, p. 20)

[21] A survey conducted by DANE, the Colombian Statistical Department, performed using the best statistical techniques available. We used the raw data and proper expansion factors in order to obtain estimates from it.

Table 39. *Quality of Life Survey, 2003.*

In the past five years, have the actions and measures improved th safety in your home? Bogotá, ECV 2003.

	Yes	No
Restriction to the use of fireworks	88.4%	11.6%
Hora Zanahoria and alcohol control	77.7%	22.3%
Disarmament campaigns	66.2%	33.8%
Private security presence	62.0%	38.0%
Safe zones' operations	61.3%	38.7%
New transit police codebook	58.7%	41.3%
Improvement of attention line number 112	53.4%	46.6%
Improvements and construction of police stations	48.5%	51.5%
Local security fronts organization	44.8%	55.2%
Creation and strengthening of family stations	42.6%	57.4%
Improvements in police efficiency	41.9%	58.1%
Creation and strengthening of mediation and conciliation Units	36.2%	63.8%
Permanent Justice Units	28.6%	71.4%

Source: ECV 2003
Processed by CERAC

Table 40. *Perceived improvement in safety in the localities of Bogotá, ECV, 2003. Disarmament campaigns*

Localities	Yes	No
Usme	76%	24%
Barrios Unidos	75%	25%
Rafael Uribe	75%	25%
San Cristóbal	72%	28%
Suba	71%	29%
Chapinero	70%	30%
Engativá	69%	31%
Antonio Nariño	67%	33%
Teusaquillo	67%	33%
Tunjuelito	66%	34%
Fontibón	66%	34%
Puente Aranda	65%	35%
Santa Fe	65%	35%
Los Mártires	64%	36%
Bosa	63%	37%
Kennedy	61%	39%
Usaquén	60%	40%
La Candelaria	57%	43%
Ciudad Bolívar	52%	48%
Total	66%	34%

Source: ECV 2003
Processed by CERAC

Table 41. *Perception about the improvement in safety in the localities of Bogotá. ECV 2003. Hora Zanahoria and alcohol control*

Localities	Yes	No
Tunjuelito	86%	14%
Puente Aranda	85%	15%
Suba	84%	16%
Antonio Nariño	82%	18%
Usaquén	81%	19%
Chapinero	80%	20%
Usme	79%	21%
Ciudad Bolívar	79%	21%
Engativá	79%	21%
Bosa	77%	23%
Barrios Unidos	76%	24%
Fontibón	75%	25%
Teusaquillo	75%	25%
La Candelaria	75%	25%
Santa Fe	75%	25%
Kennedy	74%	26%
Los Mártires	73%	27%
Rafael Uribe	70%	30%
San Cristobal	70%	30%
Total	78%	22%

Source: ECV 2003
Processed by CERAC

Table 42. *Bogotá's Chamber of Commerce Perception Survey*

Safety perception	Jun-Dec 2001	Jan-Jun 2002	Jun-Dec 2002	2003	2004
None	4%	5%	3%	3.8%	8.8%
Carrying a weapon	5%	5%	4%	4.8%	
Private security	11%	11%	8%	13.7%	14.2%
Closed t.v. circuits			14%	4.9%	2.9%
Neighbourhood crime watch	14%	37%	34%	23.0%	18.2%
Police presence	37%	42%	37%	49.9%	28.3%

Source: Cámara de Comercio de Bogotá
Processed by CERAC

5.2 Impact of Firearm control on the Homicide Level in Bogotá

Bans on carrying firearms are usually applied to particular dates, mainly weekends and special dates in weekdays, and are typically announced through the media. Since February of 2002, a ban has been in effect on weekends. We proceed then to study the difference in the distribution of homicides caused by firearms, comparing periods in which the restriction was or was not in effect, at the city and locality level. A second major policy shift after 2002 was the implementation of the *Hora Optimista*. When it was launched, it was accompanied of a major publicity campaign to maintain lower levels of violence and to improve social behaviour. In this section, we assess how institutional decisions affect individual preferences with respect to use of firearms in a criminal act, and consequently, the extent to which regulation affects people's actions. However, individual's preferences can change according to their geographical and temporal conditions. Identification of these patterns is another one of the aims of this section. Data for this analysis comes from the IMLCF and includes daily information on the number of homicides (more specifically, homicides carried out with firearms) for the different localities (geographical sub-divisions) of Bogotá, over the period 1997 to 2004. We use two-way contingency tables to compare the probability distribution of two categorical variables and statistically determine whether or not the distribution of one of these two variables depends on the other[22]. Contingency tables do not provide a measure of causality but simply of association. As a result, we implement other complementary tests to compare specific measures in the distribution of homicides that might indicate the direction of the effect. These tests are related with central tendency measures in the distribution of homicides and measures of dispersion amongst others[23]. For this purpose, we organized a dataset that included daily records by locality of the number of homicides resulting from firearms, and whether or not an intervention was in effect (*Hora Optimista* or a firearm-carrying restriction). Different spatial aggregations were used (the entire city versus localities) and time groups of the year (by the day of the week in which a restriction was on, weekdays or weekends (including Fridays and Mondays that were holidays), paydays and weekends that followed a payday, payday bonuses in the middle and at the end of the year, holidays, end of year holidays, Christmas, mother's day, father's day, elections days, etc. To see the precise time interval controls used, see table 43[24].

[22] For a discussion of Contingency Tables and test, see Agresti, A (2002).

[23] These include tests of equality of means (standard *t* test), variances (*F* test), medians and distributions tests (Mann-Whitney test). These results are available upon request.

[24] Graphs and contingency tables results for Bogotá are shown in Annex 2.

Table 43. *Temporal intervention controls*

Time intervals name	Specific dates
Day control	Monday, Tuesday, Wednesday, Thursday, Friday, Saturday or Sunday
Weekend control	Weekday or weekend (included Fridays and holiday Mondays)
Prima control	Prima at the middle or at he end of the year
Holiday control	Holiday
Holidays end of year control	Between december 16 and december 25
Mother's weekend control	Second weekend of may
Father's day control	Second weekend of june
En of the year control	Between december 7th and january 6th
Elections day	Presidential elections: last Sunday of May and in the event of a second turn, the Sunday three weeks after every 4 years (1998, 2002) Senate: second Sunday of March every 4 years (1998, 2002) Department governors and local mayors: last Sunday of October every 3 years (1997, 2000, 2003)
Payday control	Every 15 and last day of month. If this days falls on a weekend or holiday, previous Friday is taken (1997, 2000, 2003)
Weekend after payday control	Weekend that follows a payday

Source: CERAC

The general finding is that both measures of arms control and the *Hora Optimista* are associated with reductions on homicides. However, arms control works only during some days and in some localities. Arms control measures during selected periods of the week tend to cause a shift in the probability of occurrence of homicides. For example, the overall result of the arms control on homicides is that controls are related with an increase in the average number of homicides the overall result of the arms control on homicides is that controls are related with an increase in the average number of homicides; but when we look at the behaviour on weekdays, these increments are related specifically with some days (Wednesdays and Thursdays). Moreover, reductions in homicides are related with arms control during weekends, principally on Saturdays and Sundays, days of relatively high homicide violence. This is coherent with the fact that bans on carrying firearms mostly fall on weekends. The *Hora Optimista* is associated with reductions in the average number of homicides on a given day when the restriction is in place. This, most likely, is associated with the highest enforcement (road blocks, searches, etc.) imposed during those days.

Table 44 shows the χ^2 tests and the associated *p*-values, showing the level of statistical significance of the test of differences between the daily distribution of homicides with and without the intervention. Additionally, there are notes indicating the "direction" of the effect in homicides' averages. In general all applications confirm the results that the contingency tables and/or central tendency tests showed.

We find that there is a significant association of firearm control with a variation of homicides. The effect shows a significance level with a *p*-value of 0.011[25] Nevertheless, as mentioned above, the different effects between the days of the week call for conservativeness in the conclusions derived from the analysis. The other policy change (the implementation of the *hora optimista*) shows a stronger significant positive effect in the reduction of homicides in the majority of levels of analysis. As mentioned, a likely reason behind these differences probably has to do with the fact that arms control is only enforced partially in the city as it depends on the institutional and police presence and the use of scarce police resources, while closing hours are much easier to enforce for the police and hence has "blanket" coverage of the city.

We proceed to test these changes in homicides by different aggregation orders (by localities) and specific dates in which criminal activity is relatively high. The histograms from Annex 1 onwards will help us to understand this analysis. A histogram which is biased to the left (towards 0) will indicate a concentration of days that have seen a lower level of homicides. The comparison of the green and blue histograms serves then as a graphical tool to see the effect of interventions.

Arms control appeared to have a differential association by day of the week. During weekends it appear to work overall, especially in Saturdays and Sundays (recall that the control and the holiday weekend starts on Friday, then the effect is somehow captured by the early hours of Saturday and Sunday). During weekdays there is a significant association of arms control. Other important and positive association of arms control and homicide reductions is the restriction during the end-of-year period, a longer period in which the main festivities are held in the entire country.

When a similar test is performed taking into account the age of homicide victims, we find that there is a significant association between the arms control, the age of victims and increases in the homicides. Especially for the lower age groups (below 24 years old), which, as we shown above, are the main age groups at risk in the city (Table 45). However, it is worth

[25] This significance level can be understood as if in 11 out of 1000 cases we would be able to reject our favoured hypothesis as being false.

noting that this result might be caused by the effects during weekdays, like in the case of the total effect of arms control. The *hora optimista*, as expected, significantly affects all age groups. Similarly, doing the analysis by gender, we find that males, the main gender group at risk, exhibit a significant effect during arm control regime periods (Table 46).

Table 44. *Two-way χ^2 Contingency Tables Results for Bogotá (p values above of the coefficient)*

	Categories	Firearms restriction Bogotá	Effect on the average of homicides	*Hora Optimista* Bogotá	Effect on the average of homicides
1	**Total**	38.6158	Increase	243.6449	Reduction
		0.0110		0.0000	
2	**Days**				
	Sunday	49.1475	Reduction	61.8768	Reduction
		0.0000		0.0000	
	Monday	18.0530	None	39.8014	Reduction
		0.2600		0.0000	
	Tuesday	9.1151	None	39.4670	Reduction
		0.7640		0.0000	
	Wednesday	32.1311	Increase	31.2555	Reduction
		0.0010		0.0020	
	Thursday	42.7204	Increase	46.1980	Reduction
		0.0000		0.0000	
	Friday	17.1545	None	57.0931	Reduction
		0.4440		0.0000	
	Saturday	42.5995	Reduction	67.0973	Reduction
		0.0010		0.0000	
3	**Week**				
	Weekdays	47.7493	Increase	118.3116	Reduction
		0.0000		0.0000	
	Weekends	35.3268	Reduction	158.5576	Reduction
		0.0180		0.0000	
4	**Bonus**	16.4721	None	10.9251	None
		0.1710		0.5350	
5	**Holidays**	27.0782	None	25.7054	Increase
		0.0410		0.0580	
6	**Christmas**	21.0425	None	29.8888	Reduction
		0.1350		0.0120	
7	**Mother's day**	10.1333	None	12.4444	None
		0.1810		0.0870	
8	**Father's day**	6.8000	None	6.6667	None
		0.3400		0.3530	
9	**End of year**	29.6976	Reduction	32.4694	Reduction
		0.0400		0.0190	
11	**Elections**	0.8392	None	4.9524	None
		0.9740		0.4220	
12	**Payday**	4.9824	None	13.9570	None
		0.9760		0.3770	
13	**Weekend after payday**	14.6721	Reduction	63.5591	Reduction
		0.7430		0.0000	

Source: CERAC
Processed by: CERAC

Table 45: *Two-way χ^2 Contingency Tables Results for Bogotá by age (p values in parenthesis).*

age	Firearms Control	Effect on the average of homicides	Hora optimista	Effect on the average of homicides
less than 15	9.466	None	18.175	Reduction
	(0.050)		(0.001)	
15 a 19	29.367	Increase	133.525	Reduction
	(0.001)		(0.000)	
20 a 24	25.797	Increase	203.504	Reduction
	(0.007)		(0.000)	
25 a 29	13.880	None	175.298	Reduction
	(0.179)		(0.000)	
30 a 34	4.827	None	239.903	Reduction
	(0.776)		(0.000)	
35 a 39	9.704	None	157.076	Reduction
	(0.206)		(0.000)	
40 a 44	3.052	None	88.329	Reduction
	(0.692)		(0.000)	
45 or more	114.505	Increase	306.918	Increase
	(0.000)		(0.000)	

Source: CERAC
Processed by: CERAC

Table 46: *Two-way χ^2 Contingency Tables Results for Bogotá by Genre (p values in parenthesis).*

genre	Firearms Control	Effect on the average of homicides	Hora optimista	Effect on the average of homicides
Female	2.533	None	23.061	Reduction
	(0.639)		(0.000)	
Male	41.756	Increase	232.366	Reduction
	(0.002)		(0.000)	

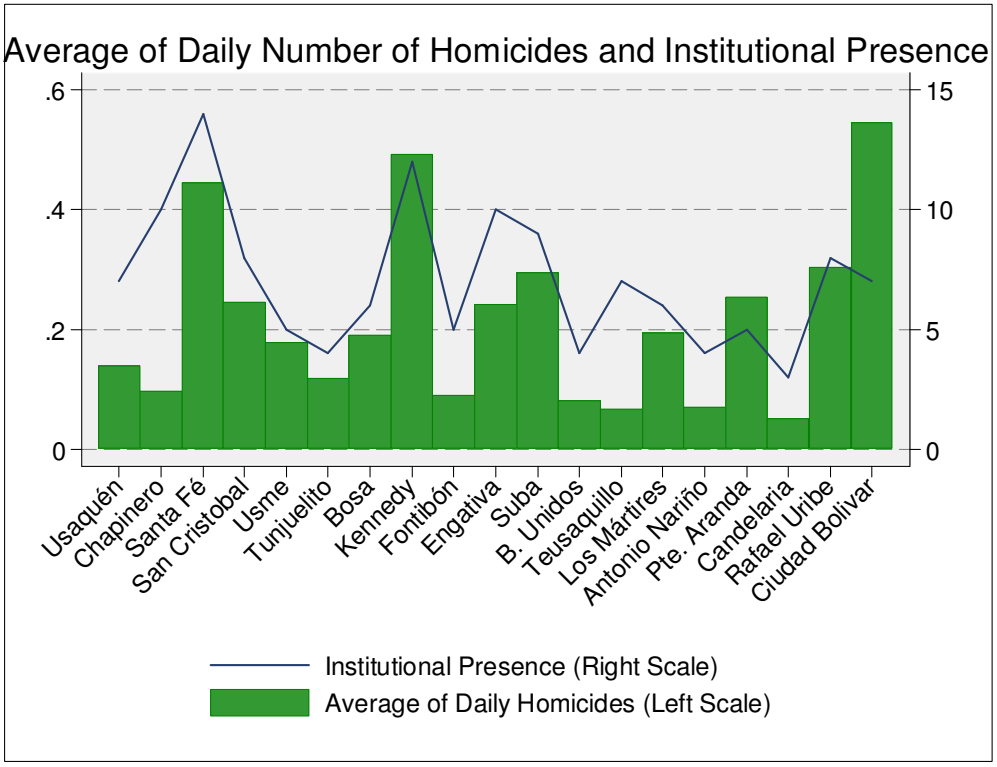
Source: CERAC
Processed by: CERAC

We also find that the new regime for closing hours is associated with a generalised effect on the city, while the arms control regime is associated with a rather localised effect, consistent with our enforcement argument above. The effect of the *Hora Optimista* is associated in 15 out of 19 localities with a descent in the pattern of homicides compared to the regime under *Hora Zanahoria*. Again, firearms carrying restriction appears as associated with increments in 4 localities (See Maps in Annex 2). These results might indicate a possible "substitution effect" between the homicide violence in weekdays and weekends, events of criminal violence are "relocated" to days in which the enforcement is low. If this insight is true, additional efforts are necessary to reduce the homicides in these days.

Santa Fe, one locality in which all forms of violent crime are more prevalent, was the locality that experienced the largest and more significant association with the interventions. Santa Fe is located in the city centre, and is characterised by the presence of hotspots of drug dealing and consumption, prostitution, and all sorts of organised crime. Santa Fe has a very high level of institutional police presence (Graph 34)[26]. Los Mártires, another violent locality according with crime statistics shows, on the contrary, a very low crime reduction associated with interventions. Nevertheless, it is important to mention that Los Mártires has a much lower institutional presence and enforcement. During weekdays, the arms restriction did show a significant association with homicide rates in six localities, some of which are the most violent: Santa Fe, San Cristóbal, Tunjuelito, Kennedy, Teusaquillo and Puente Aranda.

[26] This variable is measured by the number of fixed police post, police stations, etc.

Graph 34



We conclude from this that only in those cases in which a restriction or policy intervention is accompanied from strong regulation and enforcement do we find a positive result of the intervention on the reduction of homicidal violence by firearms. This also explains, in our view, the differential effect by locality. Those violent localities that have a stronger institutional presence find the restriction working better than those with lower levels of institutional presence. The differences during weekdays and weekends most likely has to do with substitution effects in the criminal violence, while in terms of age groups we find results that point about the existence of effects on the groups at risk.

6. CONCLUSIONS

The case of Bogotá since the mid-nineties is seen as a model for the application of innovative and effective security policies in an environment of high human insecurity and weak institutional presence.

The aim of this report is to identify the effectiveness of policies that are involved in the demand for firearms. According to our point of view, and conditional on the available data, there are two sources of firearms for this market: a legal narrowed regulated market, which works with the economic rationale of the SAS demand model (Brauer and Muggah, 2005), and the illegal market, which is dominated by lower prices and legal transaction costs, and unrestricted access of a wide range of firearms enhanced by the Colombian internal conflict.

On the other hand, we consider that firearms can follow two motivations: criminal and non-criminal. The first one is related with both sources of firearms, and it poses great risks to human security. As we found, 75% of the total homicides in Bogotá in 2005 were carried out with an illegal. The non-criminal motivations are only associates with legal weapons, since the simple fact of possessing a non-registered firearm is a crime. Motivation in this group is related with sports and protection of individuals and firms.

In general, we find a positive and significant, but qualified, effect on homicidal violence by the main form of firearms intervention applied in Bogotá, namely, ban on carrying firearms and restrictions on closing hours for liquor selling and public establishments in general (*Hora Optimista*). The restriction on carrying firearms takes place during certain periods of the year and weekends. This restriction seems to work for high-risk age and gender groups and in those areas of the city where there is more institutional presence and enforcement. This result is consistent with a longer trend of reduction of homicides in the city, accompanied with a consistent increase in the number of firearms confiscated.

We also document in this report what appears to be a significant effect of arms control and violence reduction campaigns on the revealed preference for the acquisition of firearms. Indeed, after some of these interventions took place, people revealed in soundly conducted surveys a lowered perception of firearms as providing protection and security. Moreover, people do reveal that arms control interventions are perceived as "providing security" and not insecurity. On a longer trend we also find a demand reduction effect after the establishment of a rather restrictive control regime (in 1994) and a positive reduction effect in the homicidal violence after its introduction.

Finally, we were able to document the level of legally acquired demand, although we were not able to study the evolution of demand over time. We find that there is an increase in the demand and criminal use of pistols over revolvers, while there is a rather marked preference for short over long weapons. This demand is consistent with the risk situation in the city and the lower level of violent events directly related with the internal conflict affecting the country.

7. REFERENCES

Acero, H (sf). "Seguridad y convivencia en Bogotá: logros y retos 1995-2001". Bogotá D.C.

Acero, H y Mockus A. (sf). "Criminalidad y violencia en América Latina: logros esperanzadores en Bogotá". Tomado de la http://www.iigov.org/ss/article.drt?edi=66201&art=67148 el día 16 de agosto de 2006.

Aguirre, et. Al. "Colombia's Hydra: the many faces of gun violence". In: Small Arms Survey 2006 ed.Oxford : Oxford University Press, 2006

Alcaldía Mayor de Bogotá (1998). "Formar Ciudad 1995-1997". Bogotá D.C

Alcaldía Mayor de Bogotá (2004). "Bogotá para vivir 2001-2003". Bogotá D.C

Agresti, A. (2002). Categorical Data Analysis, 2nd edition, Wiley. New York.

Beltrán, I. Fernández, I. Llorente, M. and Salcedo, E (2003) Homicidio e intención letal: un estudio exploratorio de heridas mortales a partir de los protocolos de necropsia en Bogotá. Borradores de Método # 04. Grupo Transdisciplinario de Investigación en Ciencias Sociales, Bogotá, Colombia

Brauer, J. (2004) The economic theory of demand as it relate to small arms. Keynote lecture for Workshop for Small Arms Survey and Quaker UN Office. Retrieved on July 28th, 2005, from http://www.aug.edu/~sbajmb/paper-Geneva.pdf.

Brauer, J. and Muggah, R. (2005). Completing the circle: building a theory of small arms demand. Retrieved: 2005, August 16th, from: http://www.aug.edu/~sbajmb/paper-Small-Arms-Evidence.pdf. Forthcoming in Contemporary Security Policy.

Bulla, P (1995). Control de armas y seguridad ciudadana. En: Tokiatlán, J. and Ramírez, J., Violencia de las armas en Colombia. Fundación Alejandro Ángel Escobar. Bogotá, Colombia.

Comunidad Segura, 27 de abril de 2007. Una ley inconveniente. Consultado el 21 de marzo de 2010. Disponible en http://www.comunidadesegura.org.br/es/node/33012

Departamento Administrativo de Planeación Distrital (1995). "FORMAR CIUDAD: Plan de Desarrollo Económico, Social y de Obras Públicas para Santafé de Bogotá D.C. 1995-1998".

Indumil (2006). Lista de precios 2006. Retrieved: October 11, 2006. From http://www.indumil.gov.co/indumil/admin/files/Ane-Noticia_182200612546.xls

El Tiempo (2006a). "Conseguir un arma de fuego en Bogotá cuesta entre 300 mil y 3,5 millones de pesos". Marzo 6.

El Tiempo (2006b). "Adiós a 216 armas en Bogotá: el fin de semana fueron canjeadas por bonos de comida, ropa y libro". Julio 17.

Formisano, M. (2002) Econometría espacial: características de la violencia homicida en Bogotá. Universidad de los Andes, Documento CEDE 2002-10. Bogotá, Colombia

Guerrero, R (2003). "Violencia y exclusión: las experiencias de Cali y Bogota, Colombia". Banco Mundial.

Graduate Institute of International Studies (2004). Small Arms Survey 2004. Geneva (Switzerland)

Llorente, M., Núñez, J. and Rubio, M. (2000) Efecto de los Controles al Consumo de Alcohol y al Porte de Armas de Fuego sobre los Homicidios en Bogotá. Investigación "Caracterización de la Violencia Homicida en Bogotá", Documento de Trabajo No. 6. Bogotá: Paz Pública-CEDE-UNIANDES y Alcaldía de Bogotá.

Llorente, M. and Rivas, Á. (2004). La caída del crimen en Bogotá: una década de políticas de seguridad ciudadana. Retrieved on August 17th, 2005, from http://www.urbalvalparaiso.cl/p4_urbalred14/site/artic/20031119/asocfile/LLORENTEYRIVAS.pdf

Medicina Legal (2003). "Reflexiones sobre las medidas de intervención de violencia e inseguridad en Bogotá". Boletín 'Centro de Referencia Nacional Sobre Violencia'. Volumen 8, No. 10. Octubre 10.

Mockus, A. (2001). "Cultura ciudadana, programa contra la violencia en Santa Fe de Bogotá,Colombia, 1995-1997". Banco Interamericano de Desarrollo. Nueva York.

Ministerio de Defensa Nacional (n.d) Trámites Salvocolductos. Control Comercio de Armas Retrieved on September 1st , 2005, from http://www.mindefensa.gov.co/nuevoweb/MecaParticipacion/ociu_tram_salvoconducto.html"

Observatorio de Cultura Urbana en Bogotá, Comisión de cultura ciudadana (2002). La Cultura Ciudadana en Bogotá. Retrieved on August 17th , 2005, from http://univerciudad.redbogota.com/bajar-pdf/013/investiga-culturaciudadana.pdf.

OXFAM (2003). The impact of small arms on health, human rights and development in Medellín. A case study.

Pardo, R (1995). 'Preface' Violencia de las armas en Colombia, In Tokiatlán, J. and Ramírez, J., Violencia de las armas en Colombia (pp. xv-xxvi). Fundación Alejandro Ángel Escobar. Bogotá, Colombia.

Pastrana, D. (2003). Antanas Mockus, alcalde mayor de la ciudad. "Entendemos mejor por las buenas". Retrieved on August 30th, 2005, from http://www.jornada.unam.mx/2003/10/26/mas-pastrana.html

Restrepo, Elvira María (2004) "Impunidad Penal: mitos y realidades" Documento CEDE No 24, Junio 2004

Sánchez, F., Espinosa, S. and Rivas, A. (2003). ¿Garrote o Zanahoria? Factores asociados a la disminución de la violencia homicida y el crimen en Bogotá, 1993-2002. Documento CEDE 2003 – 27, Bogotá, Colombia. Retrieved October 29th, 2005, from http://economia.uniandes.edu.co/~economia/archivos/temporal/d2003-27.pdf.

Semana (1999). "Muerte al menudeo". Marzo 31

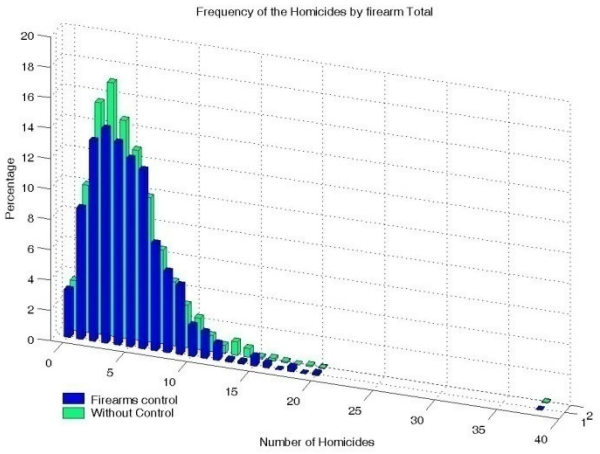
Villaveces, A et. al (2000). Effect of a Ban on Carrying Firearms on Homicide rates in two Colombian Cities. Journal of American Association, March 1, 2000. Vol. 283, No. 9.

8. ANNEX 1

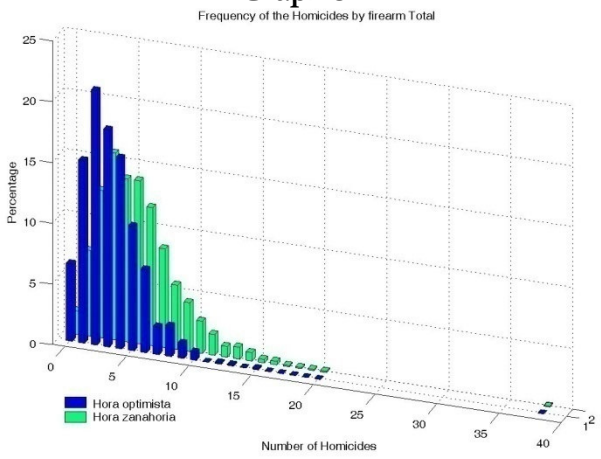
Table 1A. *Variable description by locality*.

	Observations	Mean	Standard Deviation	Min	Max
Bogotá	2922	4.456	2.981	0	38
Ciudad Bolívar	2922	0.546	0.835	0	6
Kennedy	2922	0.493	0.760	0	6
Santa Fé	2922	0.445	0.730	0	7
Rafael Uribe	2922	0.304	0.645	0	10
Suba	2922	0.295	0.577	0	5
Puente Aranda	2922	0.255	0.750	0	19
San Cristóbal	2922	0.246	0.540	0	4
Engativá	2922	0.243	0.527	0	4
Los Mártires	2922	0.195	0.477	0	4
Bosa	2922	0.190	0.477	0	6
Usme	2922	0.179	0.461	0	4
Usaquén	2922	0.140	0.422	0	5
Tunjuelito	2922	0.119	0.362	0	4
Chapinero	2922	0.097	0.341	0	5
Fontibón	2922	0.090	0.322	0	4
Barrios Unidos	2922	0.081	0.296	0	3
Antonio Nariño	2922	0.071	0.361	0	11
Teusaquillo	2922	0.068	0.278	0	3
Candelaria	2922	0.051	0.234	0	3

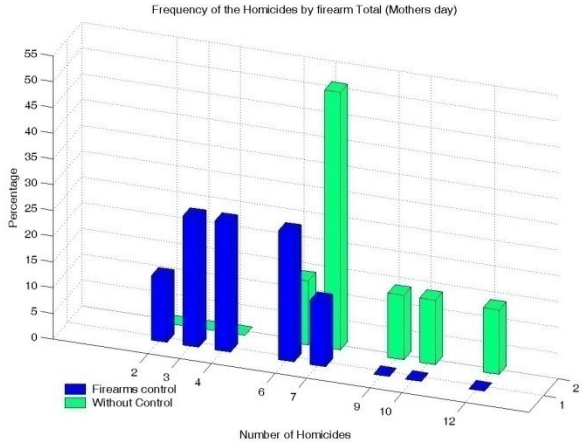
Graph 2A



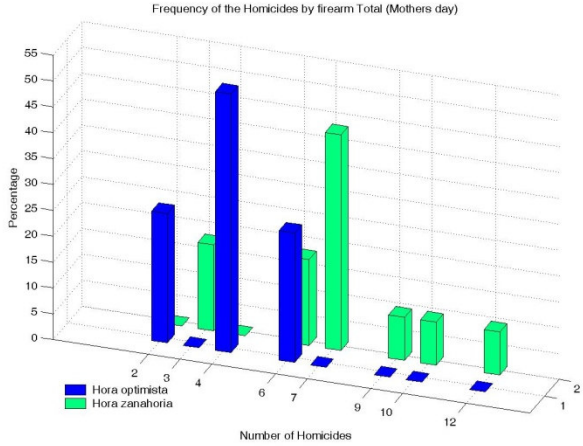
Graph 3A



Graph 4A



Graph 5A



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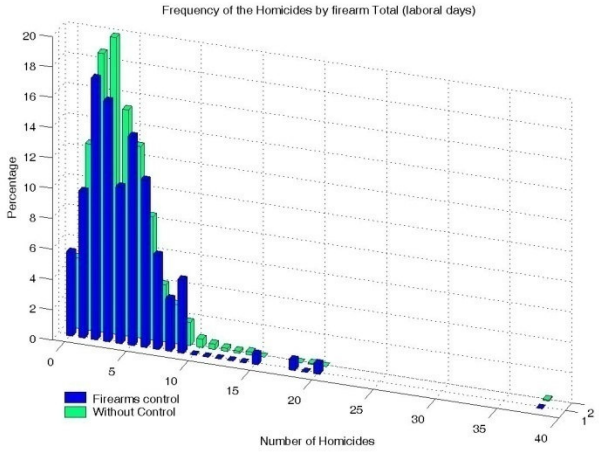
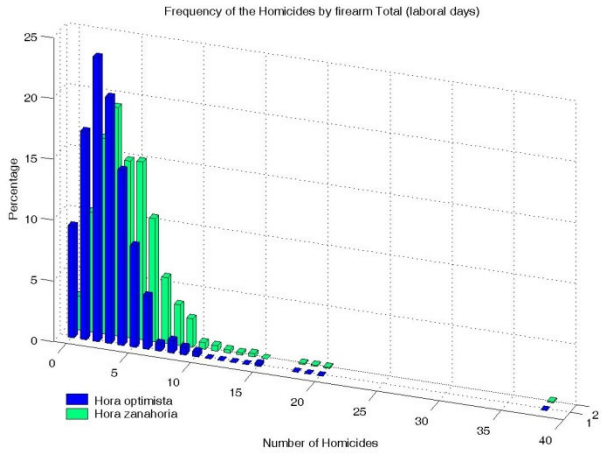
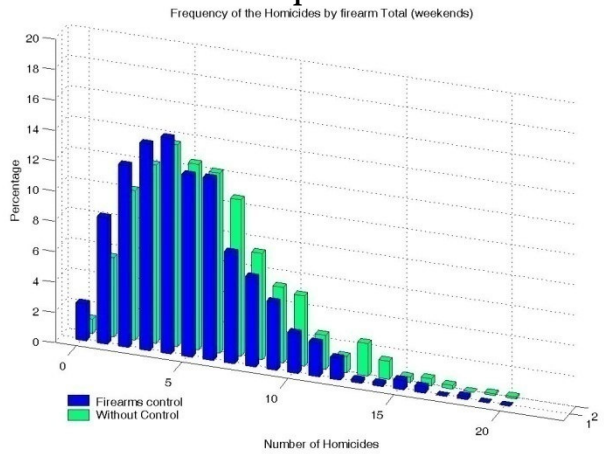


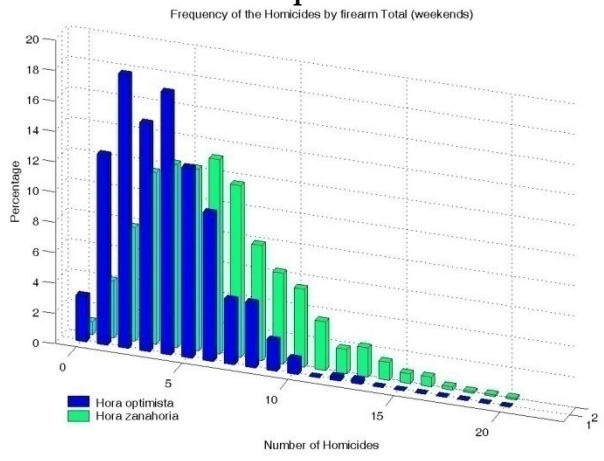
Graph 7A



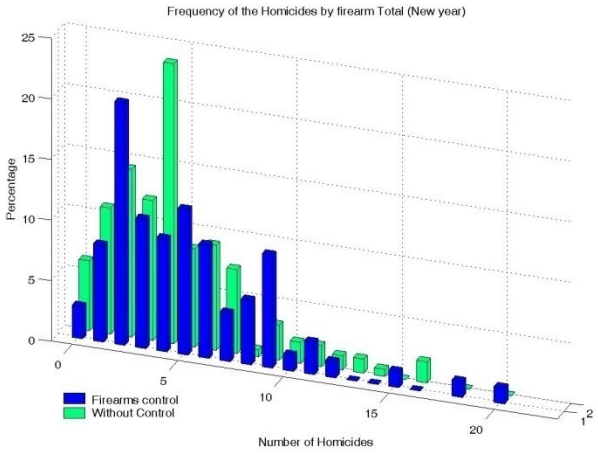
Graph 8A



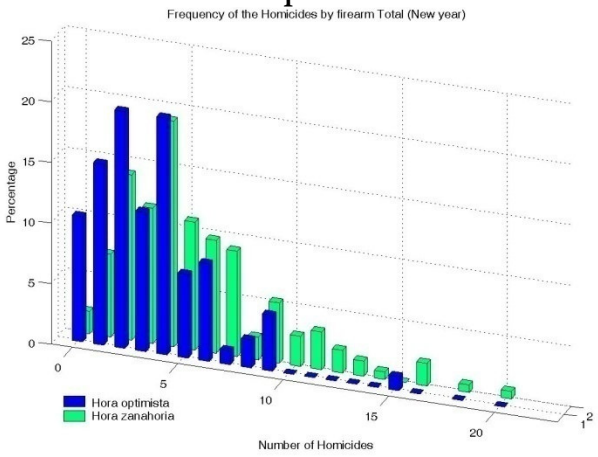
Graph 9A



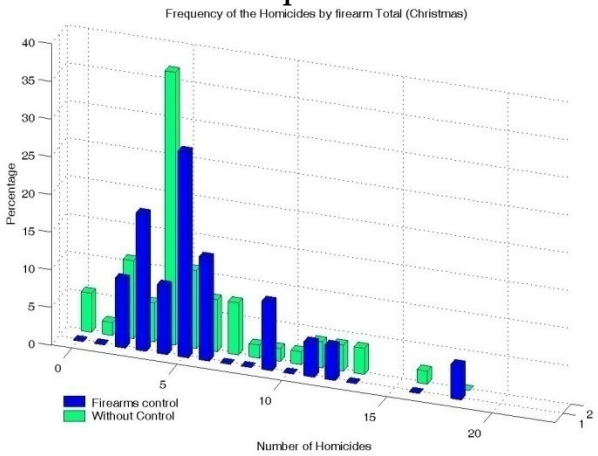
Graph 10A



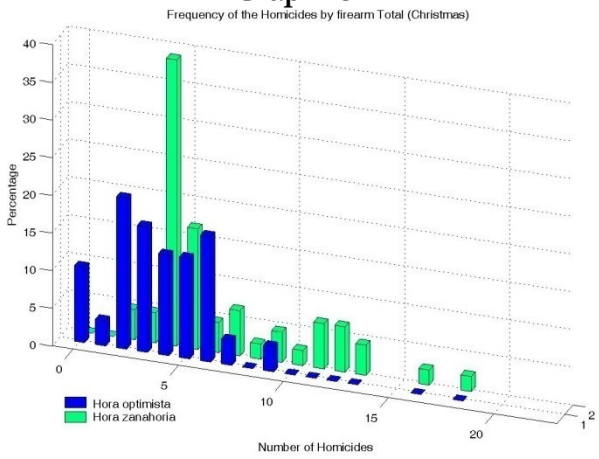
Graph 11A



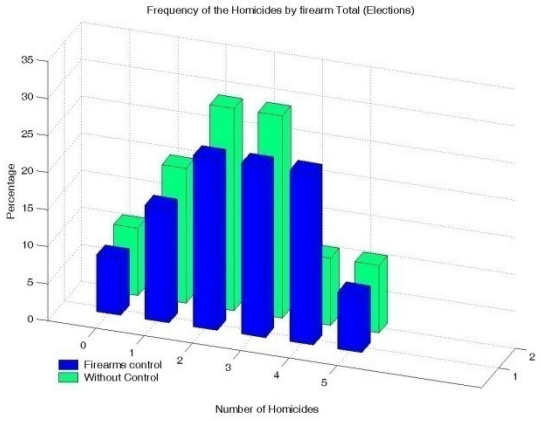
Graph 12A



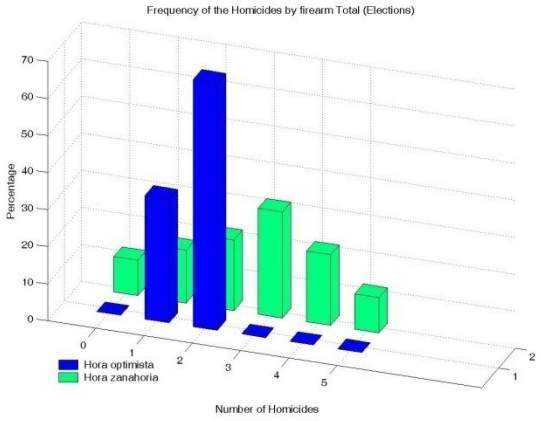
Graph 13A



Graph 14A



Graph 15A



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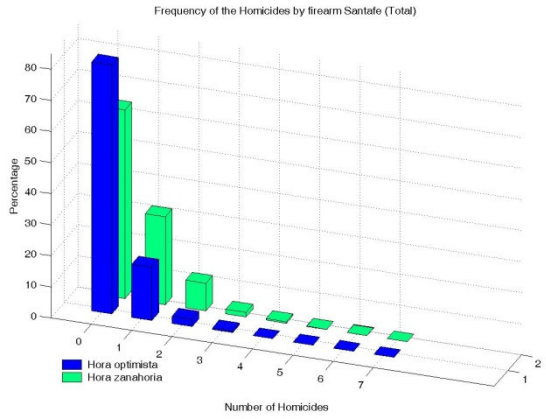
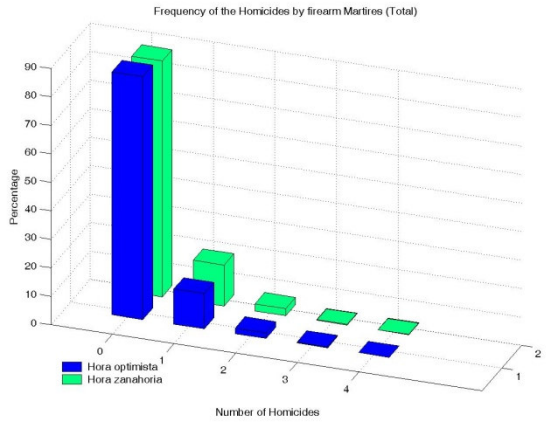


Graph 17A



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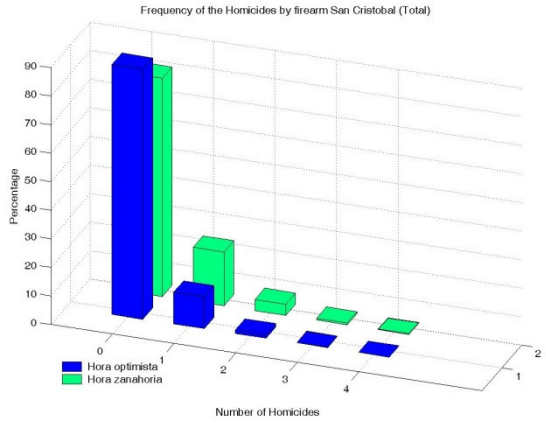
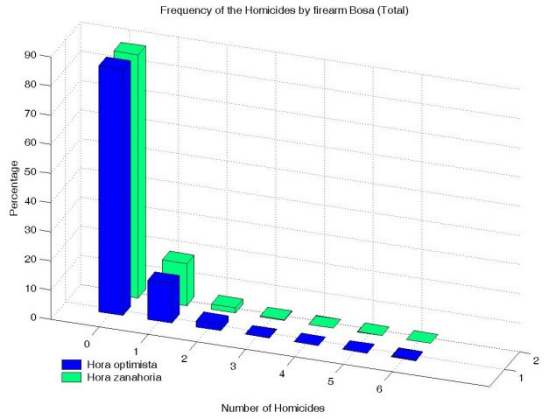
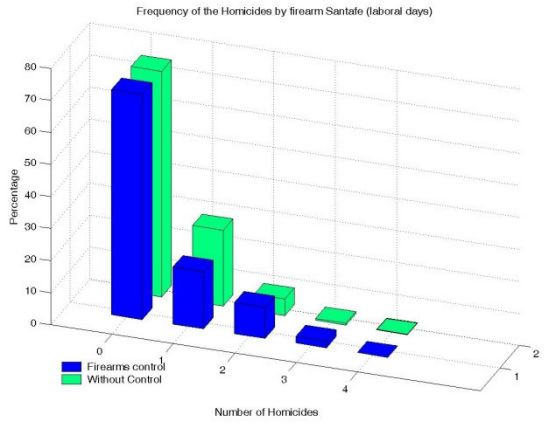


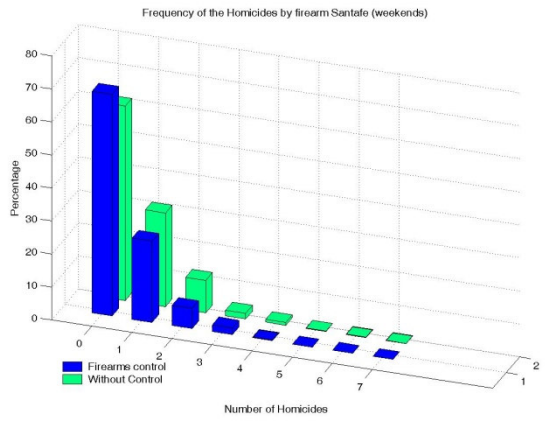
Graph 19A



Graph 20A

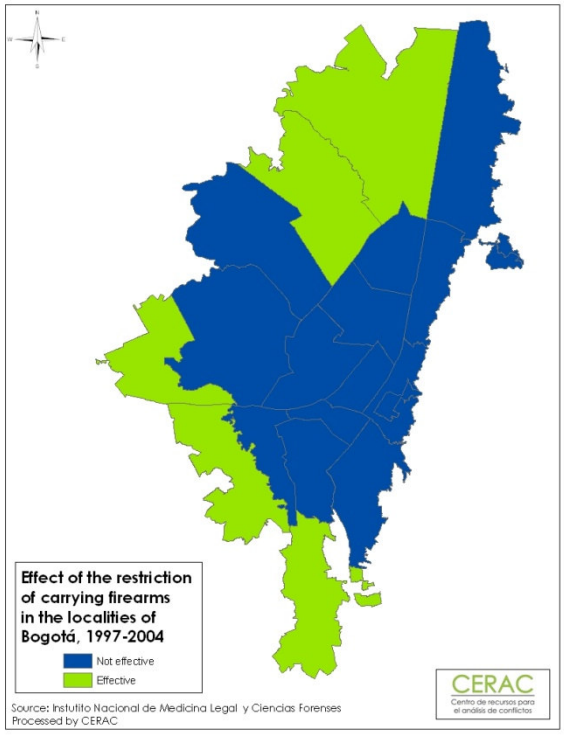


Graph 21A

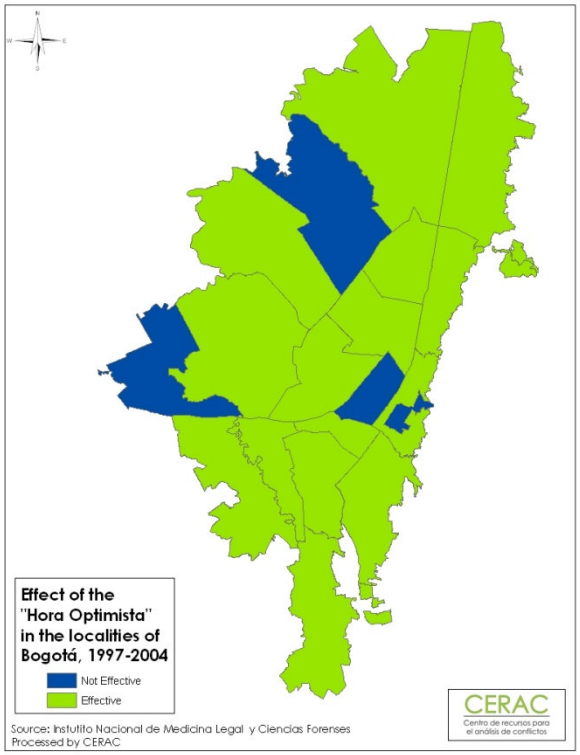


9. ANNEX 2

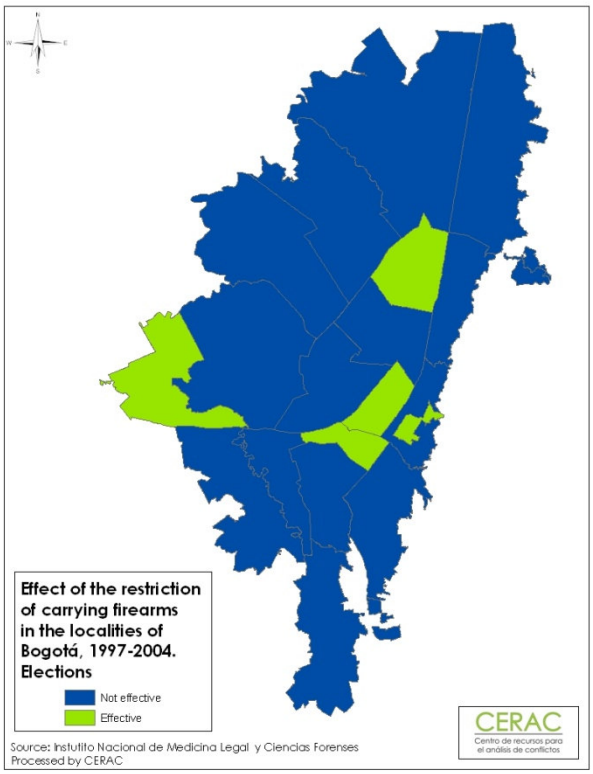
Map 1:



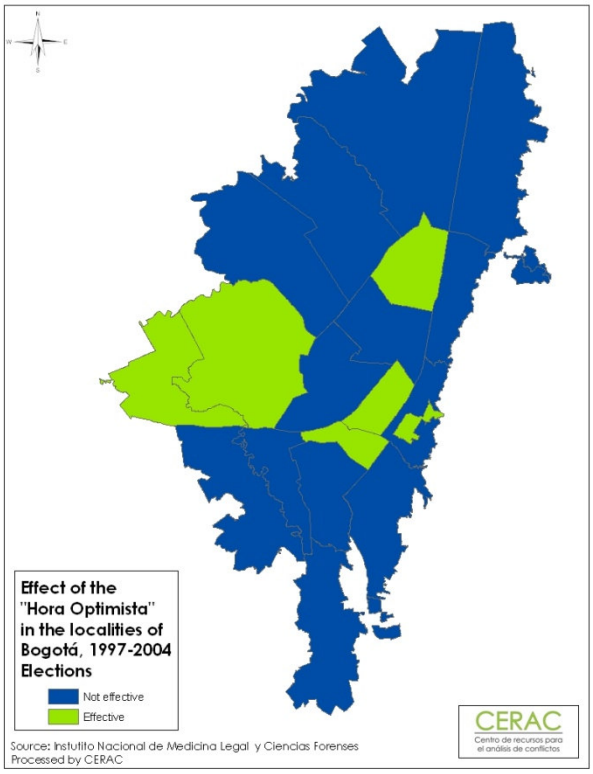
Map 2:



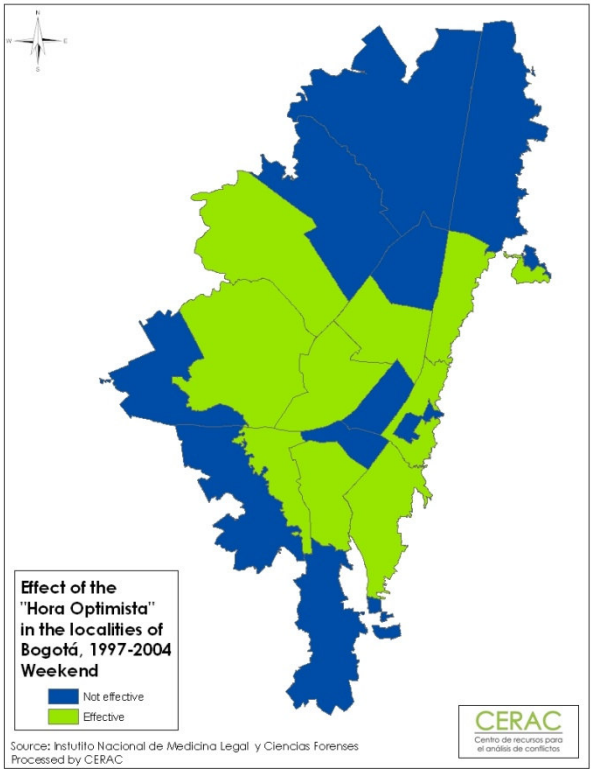
Map 3:



Map 4:



Map 5:



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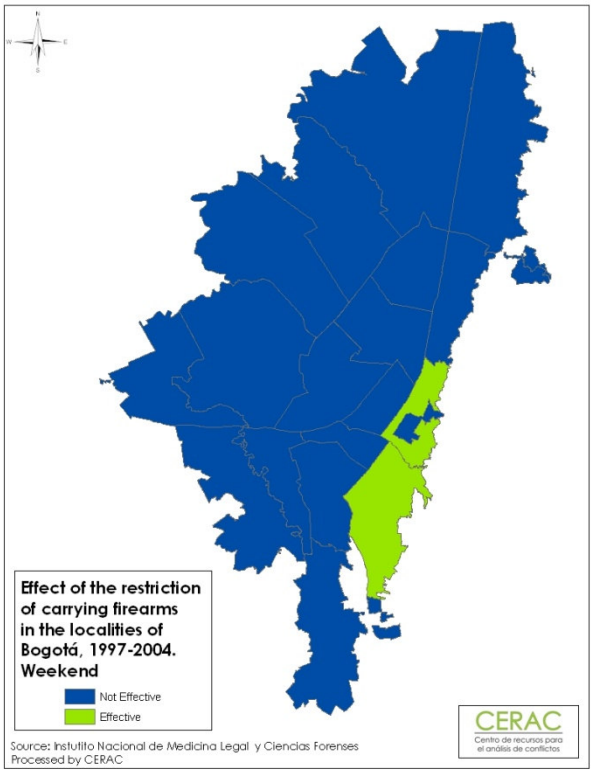

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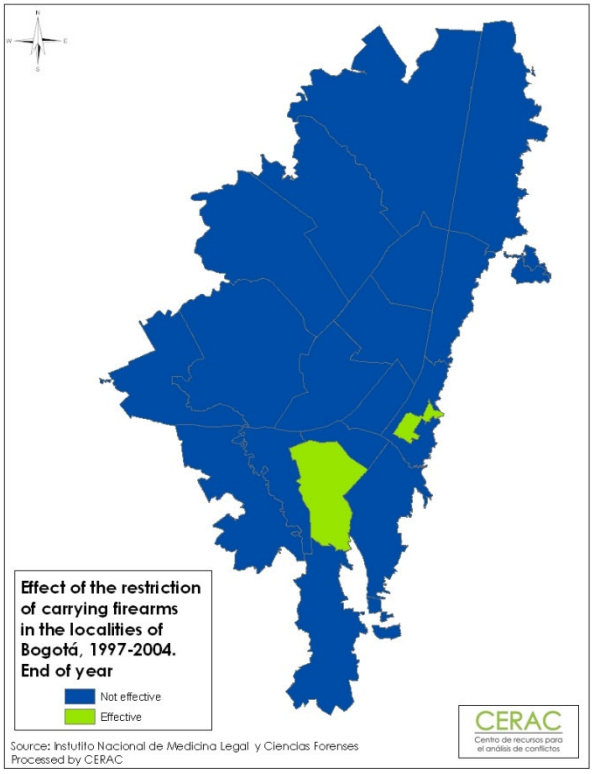

Map 8: