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WASHINGTON, DC

THE INSTITUTE OF BRAZILIAN BUSINESS & PUBLIC  
MANAGEMENT ISSUES  
THE MINERVA PROGRAM

THE COST OF VIOLENCE:  
THE CASE OF RIO DE JANEIRO

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WASHINGTON, DC FALL 2014

To my beloved wife Adriana without her incentive and support I would not have this rich experience

To my adored parents for their unconditional love and incentives for my education

# TABLE OF CONTENTS

|          |   |           |
|----------|---|-----------|
| <b>1</b> | <b>ABSTRACT</b> .....   | <b>4</b>  |
| <b>2</b> | <b>INTRODUCTION:</b> .....                                    | <b>5</b>  |
| 2.1      | THE PAPER'S PROPOSAL.....                                     | 5         |
| 2.2      | PUBLIC GOODS.....   | 6         |
| 2.3      | INDICATORS .....  | 7         |
| <b>3</b> | <b>THE COST OF VIOLENCE</b> .....                             | <b>8</b>  |
| <b>4</b> | <b>RIO DE JANEIRO SECURITY POLICY CASE:</b> .....             | <b>12</b> |
| 4.1      | THE UPP PROGRAM .....   | 12        |
| 4.2      | RIO+SOCIAL .....  | 18        |
| <b>5</b> | <b>THE STATISTICS AND THE BUDGET OF SECURITY POLICY</b> ..... | <b>19</b> |
| 5.1      | HOMICIDES .....   | 19        |
| 5.2      | GRAND THEFT AUTO (GTA).....                                   | 21        |
| 5.3      | SEIZE DRUG.....   | 22        |
| 5.4      | LAW ENFORCEMENT .....   | 23        |
| 5.5      | EXPENDITURES DISTRIBUTION .....                               | 24        |
| 5.6      | SALARIES AND PEOPLE EXPENSES .....                            | 25        |
| 5.7      | INVESTMENT IN SECURITY .....                                  | 26        |
| <b>6</b> | <b>CONCLUSION</b> .....                                       | <b>29</b> |
| <b>7</b> | <b>BIBLIOGRAPHY</b> .....                                     | <b>31</b> |

# 1 ABSTRACT

“Article 3. Everyone has the right to life, liberty and **security of person.**”  
UNIVERSAL DECLARATION OF HUMAN RIGHTS

This paper is a reflection about the cost of violence, analyzing the security policy implemented in the state of Rio de Janeiro. It includes the viewpoint of myself, someone who works for the state’s budget agency (SEPLAG<sup>1</sup>). The successes and mistakes that represent the Pacifying Police Units (UPPs) Policy within the process of ‘pacification’ currently underway in Rio de Janeiro have economic and budgetary impacts and they must be analyzed. The present paper is useful to someone who is trying to answer the question; how to reduce the violence and its impacts. All the information gathered on this paper serves as arguments to be tested on academic research produced on the subject.

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<sup>1</sup> <http://www.rj.gov.br/web/seplag>

<sup>2</sup> [http://www.mapadaviolencia.org.br/pdf2014/Mapa2014\\_JovensBrasil.pdf](http://www.mapadaviolencia.org.br/pdf2014/Mapa2014_JovensBrasil.pdf)

## 2 INTRODUCTION:

*Public safety* is duty of the state; it is established at the Brazilian Constitution's Article 144. It is one of the most important responsibilities of any democratic state, because there is no way to maintain and ensures the democracy without the preservation of public order, safety of persons and properties rights.

### 2.1 The paper's proposal

The matter of the present paper is extremely important to a broad range of people, from taxpayers to policymakers. The cost of violence is extremely high in many countries like Brazil and it is hidden to those who are not specialists in the field.

On the other hand there are a large number of studies conducted focusing on this subject, like the World Bank Report titled *Crime, Violence and Economic Development in Brazil: Elements for Effective Public Policy*, Institute for Economics and Peace (IEP) paper *The Economic Cost of Violence Containment* and Fundação Getúlio Vargas report *The price of violence*.

The difficulty in quantifying this kind of cost is that you might face a subjective matter as to how much in US dollars a person's life is valued? If someone is still living how much would he or she contribute to the country's GDP? If a given neighborhood were safer today than it had been in the past, how many people would like to live there and how much would a house be valued? To answer all these kind of questions, it is necessary to make an enormous amount of assumptions. These suppositions may be easily contested.

Another difficulty faced in this subject is the lack of precise information. Sometimes the same information is distinct in different sources. Violence data are politically sensitive and they are, in many cases, witness against governments, so the record of them depends on the methodology applied during the analyzed period.

The main propose of this paper is to compare the Rio de Janeiro security budget and the security statistics of this state. *It is not to accurately calculate its cost.* This comparison can be the beginning of a public policy evaluation study in the future and also, it can raise a discussion about these kinds of costs that the taxpayer has to bear. In order to make possible all comparisons the cut off date of all information is December 2013 for both budget number and security statistics.

## 2.2 Public goods

Some types of goods have special properties and they are called *public goods*. These public goods are both: nonrival and not excludable. If one person's consumption does not reduce the amount available to other consumers, it means nonrival goods. And it is not excludable when it is not possible or it is too difficult to exclude someone from consuming it.

Public safety is one of these public goods, because it is not possible to charge each individual the right amount that was really used by each one (not excludable). And if one person consumes it, others can still consuming it (nonrival). Varian in his book ("Microeconomic analysis", 3rd edition, page 414) wrote "Goods that are not excludable and are nonrival are called public goods; other examples are police and fire protection..."

Because of those characteristics even when a public good is worth more to people than it costs to produce, private market may fail to provide it. Public goods tend to be underprovided by the market and therefore needs to be publicly funded. Public safety is costly but has to be supported by the taxes and provided by the government. Rights have costs as well highlighted by Stephen Holmes and Cass Sustein in their book (The cost of rights, 2000) and public safety is one of its most obvious examples.

## 2.3 Indicators

The impact of urban violence occurs in all areas of the economy. It is necessary to implement public policies in order to reduce violence and its effects. And this policy must have indicators to be measured and goals to be achieved. In this way it is possible to adjust the policy and become it more effective.

The International Organization for Standardization ([www.iso.org](http://www.iso.org)) developed a document (ISO 37120, 2014) that lists a number of indicators to measure performance management of city services and quality of life. Some of these indicators are about safety issues. ISO recommends that several measures have to be monitored. These are some examples of these statistics: Number of police officers per 100,000 population; Number of Homicides per 100,000 population; Crimes against property per 100,000; Crimes against property per 100,000; Response time for police department from initial call and violent crime rate per 100,000 population. The indicators on the present paper are based on these ISO's indicators list fitting to the available data.

It is important to highlight that only measuring these indicators will not solve the problem of violence. We need to analyze the sources of such violence to plan public policies that address security issues. Several factors stand out in this analysis: social breakdown, the decline of moral values, the low priority given by the citizens to citizenship, the increased use of legal drugs like alcohol and medications, ease of purchase and consumption of illicit drugs, corruption, and principally impunity. Such factors lead to disrespect for the three branches of government, the law, and human rights overall. Few issues of the contemporary world generate as much concern as does violence and the spread of crime. Public safety is the main point of many political discussions currently (Rolim, 2006).

### 3 THE COST OF VIOLENCE

Brazil is a country known for its natural beauty and the joy of its people. In a quick search on the Internet, one could easily prove this affirmation. But, unfortunately, there is another well-known facet of this country: the violence.

The UNESCO's report "*Mapa da violência 2014 – Os jovens do Brasil*"<sup>2</sup> evidences that there were more than 56,000 homicides in 2012, translating to around 154 victims per day. In order to grasp the magnitude of these numbers, in the Vietnam War from 1961 to 1974 the United States had 58,220 soldiers killed<sup>3</sup> (Wikipedia). In other words, the Vietnam War's death toll is experienced each year in Brazil.

Violence, generally, is a source of familial tragedy, but in Brazil it more often surfaces as an obstacle to the economic and social development of the country. Insecurity scares away private investments, strangles businesses, and spurs the growth of the economy. The entrepreneur who is willing to invest needs safety for himself, his employees, and his family, even before considering whether the project is profitable. Based on the theory of Herzberg (The Motivation to Work, New York - 1959) security is a hygienic factor. So its absence discourages the entrepreneur to invest, but its presence is not in itself a motivating element. In the end, the money that would be invested in a project generating income and jobs ends up being applied in other places, like the financial market.

People of all ages, creeds, colors and social classes, are affected by urban violence. But the main victim, according to UNESCO<sup>2</sup>, is young people. Young people are defined as between 15-29 years of age. Homicide rates among young people increased from 19.6 in 1980 to 57.6 in 2012 per 100,000 youth, representing an increase of 194.2%, while the rest of the population, or those outside this range in the

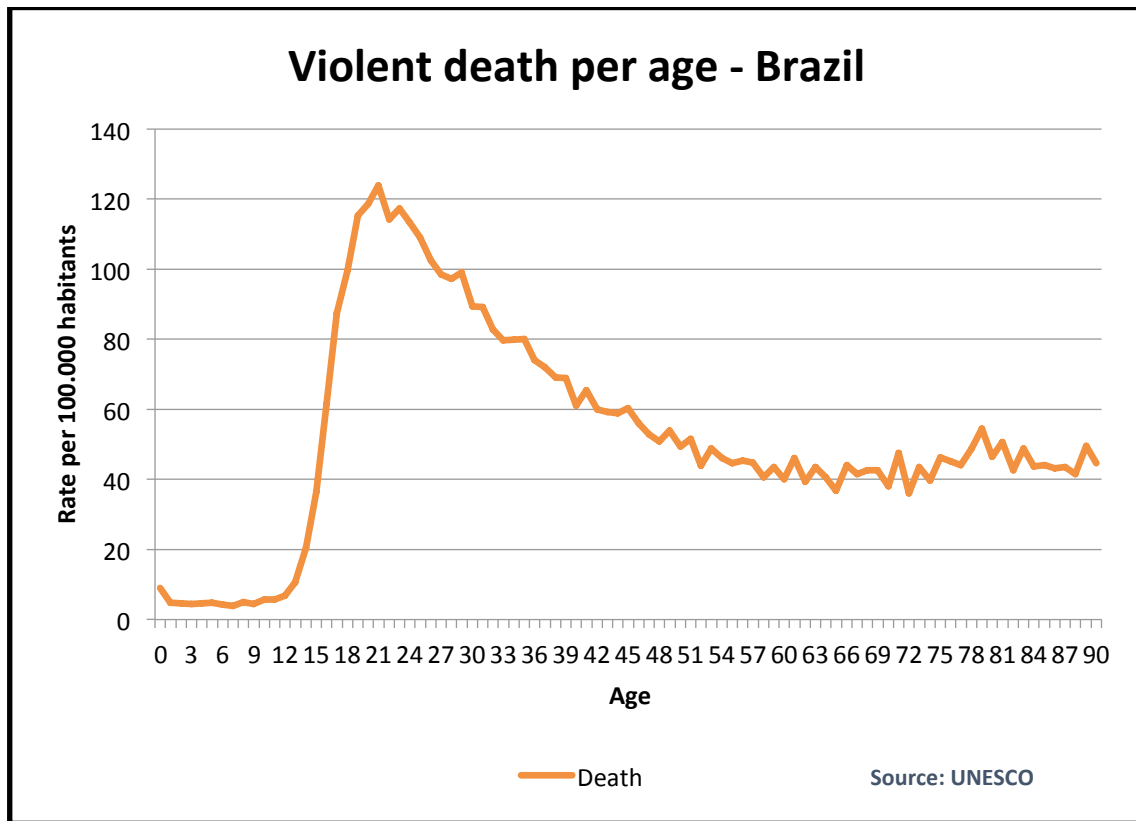
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<sup>2</sup> [http://www.mapadaviolencia.org.br/pdf2014/Mapa2014\\_JovensBrasil.pdf](http://www.mapadaviolencia.org.br/pdf2014/Mapa2014_JovensBrasil.pdf)

<sup>3</sup> [http://en.wikipedia.org/wiki/Vietnam\\_War](http://en.wikipedia.org/wiki/Vietnam_War)



same period increased from 8.5 to 18.5 per 100,000; a growth of 118.9%. This homicide youth increased by 8.5% from 2011 to 2012, and is quite alarming.



The loss of all these young people impacts the labor market in a significant way. But not only those who died reduce the workforce of the country. All people somehow exposed to violence can become intensely traumatized, and feel anxiety, depression, anger, and grief. This posttraumatic stress, according to the Report of the Attorney General's National Task Force on Children Exposed to Violence published in December 2012<sup>4</sup>, can ruin relationships and the family environment. Consequently, the success of young people in education and the workforce is very limited throughout their lives.

<sup>4</sup> <http://www.justice.gov/defendingchildhood/>

“Even after the violence has ended, these child survivors suffer from severe problems with anxiety, depression, anger, grief, and posttraumatic stress that can mar their relationships and family life and limit their success in school or work, not only in childhood but throughout their adult lives. Without services or treatment, even children who appear resilient and seem to recover from exposure to violence still bear emotional scars that may lead them to experience these same problems years or decades later” (Report of the Attorney General's National Task Force on Children Exposed to Violence, page. 81).

The lack of security and future perspectives weakens the values of respecting others, pride of building something and even the worth of his or her own life. This environment makes it attractive for a young person to migrate into a marginalized group. The facilities of the crime are very appealing for low-income youth who are without too much hope in the future.

Some impacts of violence are difficult to measure as the value of both commercial and residential properties shrinks. As people avoid violent areas, it results in a drop of demand on local markets. Entrepreneurs should bear costs of internal security systems and private security firms. This makes the investment in commercial activity and services in these violent areas less attractive. A work in this direction<sup>5</sup> (Paixão, 2009) emphasizes that the cost of violence, reflected in falling house prices and the discouragement of investment in trade and urban services, makes unemployment rise. The construction of new commercial properties, as well as maintaining existing ones, is discouraged, especially in areas with high rates of crime. It is easy to see that the structure of urban spaces is greatly affected by violence.

According to doctoral work awarded by BNDES (Cerqueira, 2014), the cost of violence in Brazil is at least 6.08% of GDP each year. Brazil's GDP in 2013 was US\$2.246 trillion<sup>6</sup>, then the annual loss due to violence would be more than US\$136

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<sup>5</sup> <http://www.revistas.usp.br/ecoa/rt/metadata/1003/0>

<sup>6</sup> <http://data.worldbank.org/country/brazil>

billion. This value is larger than the GDP of 134 countries, including Hungary, Angola and Morocco<sup>7</sup>.

In Brazil, some experts consider social and income inequality as a main generator of violence. Reports of the UN (United Nations) classify Brazil among countries with the worst levels of inequality in the world. The Gini index, which is a statistical measure of income distribution, of Brazil in 2012 was 52.7. This places Brazil among other countries that have income distribution issues, like Colombia, Panama, Guatemala, Paraguay and South Africa.

The researcher Tulio Kahn <sup>8</sup>(Kahn, 2013) in his paper of economic growth and crime describes a relationship between increasing crime and increasing wealth. At first, increasing wealth generates increasing social differences, since wealth is not equally distributed to all. This brings about lust and frustration especially in the poorer regions. Here is a loose translation of his work:”[...] recently Brazilian crime, mainly observed in the North and Northeast of the country in the last decade, is the result not only of poverty, but also the development, or better a certain kind of development, that is quick and unstructured. This kind of development swells up with people in the peripheries of urban centers. This development has brought economic and social improvements - reduction in illiteracy and infant mortality, and an increase in average income. But as a side effect, this process of growth and development coalesced, in the surroundings of major centers, a mass of urban population living with wealth and abundance, benefiting partly from it, but that is not integrated nor has the means to integrate the sophisticated market production and consumption of these pooled developed cities” (KAHN, 2013, p154)

In the next section, this paper will focus on Rio de Janeiro State Public Security Policy.

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<sup>7</sup> <http://data.worldbank.org/>

<sup>8</sup> <http://www.acsmce.com.br/revista-brasileira-de-seguranca-publica-edicao-12/>

## 4 RIO DE JANEIRO SECURITY POLICY CASE:

Political programs that aimed to solve the security issues in Rio were previously established. Among them was the project, “Multirão pela Paz,” in which the police force was in charge of solving local people’s requests by mobilizing local Departments of Labor, Education, Health, Justice, Environment, Sport and Recreation and the Public Defender's Office as well as the participation of civil society represented mainly by the NGO, Viva Rio. Another project was Group Special Areas Policing (GPAE), whose foundations were the principles of a community policing oriented management of the problem. Today the program that is underway is the pacification of the regions most affected by violence, named the Pacifying Police Unit Program (UPP).

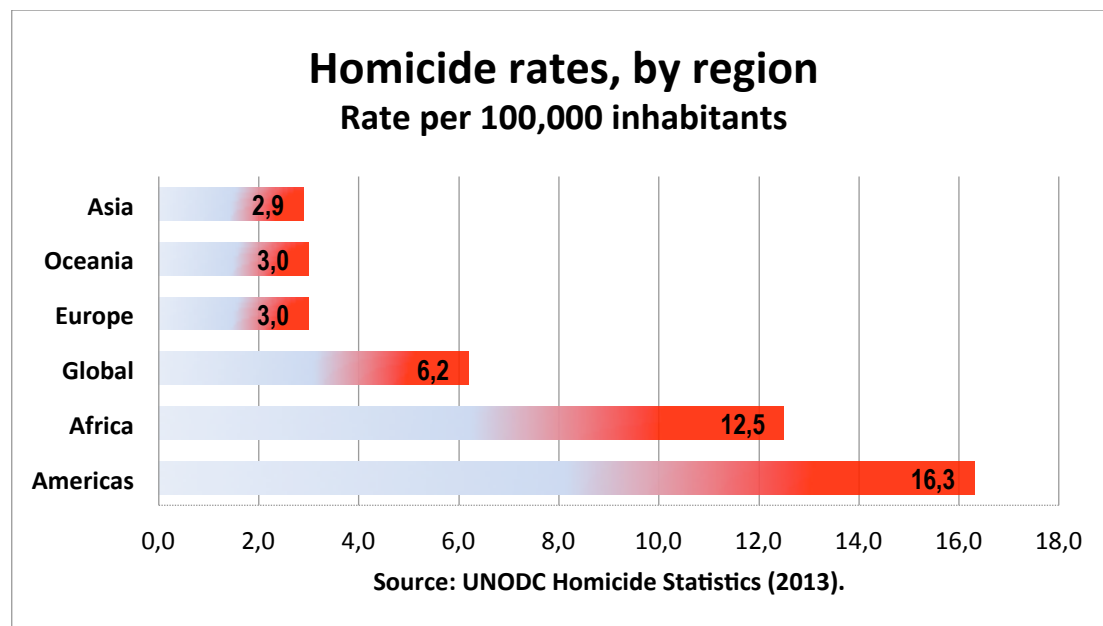
### 4.1 The UPP Program

The Rio de Janeiro state, as many others in Brazil, has been fighting against violence for a long time, more than 30 years. It is a day-by-day war, on the streets and slums between police and drug dealers.

There is no winner of this war. A significant amount of problems arose because of these conflicts. Poverty, low investments, growing violence, a fortified drug economy and increased drug consumption are examples. In its wake came higher murder rates, as well as an increase in police violence and extortion.

The drugs began to enter the city in a systematic way between the 70’s and 80’s. Access did not occur by the poor areas, but through the richest area of the city, the South Zone. Initially, a romantic, naive and mistaken view, consumption was regarded as a mere act of infraction. With that drugs were very well accepted in Rio and became a business that started giving real money. All of this money and drugs went to favelas, a poor area where there was a lack of state and began to offer shelter to criminals.

The violence occurrences in the state had been growing and the entire population became hostage. In 2006 the Mr. Sérgio Cabral was elected the governor of the state. At that time the rate of homicides per 100,000 inhabitants was more than 40. It is a huge number compared with the rest of the world. The global average is 6.2. Even compared with Brazilian average 25.5<sup>9</sup> (OCDE Report).



The governor set as the main issue of his term, public security. To achieve results The Pacifying Police Unit Program (UPP) was developed. In 2008 the UPP program, one of the most important programs of Public Security held in Brazil in recent decades, was launched. It works with some principles of community policing, but its concept goes beyond that, because before an implementation of an UPP unity it is necessary to physically occupy the local area. This program is based on a success public security program of Medellin Colombia.

<sup>9</sup> <http://www.oecdbetterlifeindex.org/topics/safety/> According to the latest OECD data, Brazil's homicide rate is 25.5, about six times the OECD average of 4.1. In Brazil, the homicide rate for men is 48.1 compared with 4.4 for women. Brazil is the most violent country monitored by OECD.

Community policing is a concept that has many definitions and aspects, but in general all these definitions have in common ideas that are contained at the UPP program:

- Decentralization of responsibilities. Officers are able to respond to public needs on time and locally.
- Partnership with other agencies that can manage other demands that are not police responsibilities.
- Community proximity, everyone that lives within that locality is responsible to participate and to give feedback to the police, and;
- New Philosophy that changes the understanding of police work. Under this new mentality the officer is focusing on peace and to be part of the life of the community rather than as reactive law officers – it occurs but only in the final case.

All that the UPP program is based on is a partnership between the public and institutions in the area of public security strategy. It involves, also, the partnerships between governments - local, state and federal - and different entities of civil society. Educational, cultural, sporting, social and professional integration projects, and others focused on improving the infrastructure, are being held in communities through agreements and partnerships signed between different segments of the public sector, private sector and third sector, like Non-governmental organizations (NGOs).

During the process, that is called pacification, there are activities that enhance the dialogue between the government and the community, helping the emergence of community leaders. All of these activities are guided by negotiations and respect to the culture and individualities of each community.

All the tenants of UPP can be summarized in the following way. This new model of public security is based on the need to bring back the state to the poorest regions; this is the return of security, civil, political and social rights and duties to the people. Ultimately, it strives to promote a closer relation between the population and the police, combined with the strengthening of social policy in the communities.

The Rio de Janeiro's Security Secretary, José Mariano Beltrame in his book “Todo dia é segunda-feira” tells that the principal strategy to minimize the Rio’s crime was to take over the drug dealer territories. “If the drug is seized, the bandit buys more. If he goes to jail, in seconds he already has a substitute. On the other hand, he loses his territory that is protected by weapons, he becomes vulnerable” (loose translation). The UPP program is based on this strategy of taking control of the territories otherwise known as the slums. There are four stages of the UPP process: Data and intelligence collected before an operation; Special forces, known as BOPE, enter and occupy the land, driving the drug dealers out; The UPP then installed inside the favela

The first UPP is Santa Marta. It is a community inside the Botafogo neighborhood in Rio de Janeiro. It was inaugurated on December 19, 2008. This first experience did work well and now is taken as the model unit. The hill Santa Marta, which was previously dominated by drug trafficking, became one of the most visited sights of Rio. This first territory taken and police settlement established was the beginning of a successful pacification that reduced the crimes in the state.

An extremely striking fact in the war against drug trafficking in Rio de Janeiro was the invasion of the slums called Complexo do Alemão. It occurred on 28 November 2010. 2,800 officers of the Rio police, army, navy, began the invasion with 37 tanks. It was broadcast live on TV. Reviewing the literature about this episode the amount of money spent in this operation was not found, but empirically it easy to realize that was very expensive. It is considered a successful episode of this war.

If we focus only on the areas that UPP were implemented, the crime numbers are encouraging:

| <b>Only at UPP areas per 100,000 habitants</b> |             |             |          |
|--|-------------|-------------|----------|
| <b>Occurrence</b>                              | <b>2008</b> | <b>2012</b> | <b>%</b> |
| Homicides                                      | 84          | 29          | -65%     |
| Death by police                                | 81          | 8           | -90%     |
| Car theft                                      | 264         | 29          | -89%     |
| Weapons seized                                 | 276         | 71          | -74%     |
| Drugs seized                                   | 354         | 1248        | 253%     |
| Source ISP                                     |             |             |          |

This process brought peace to a large number of poor areas of the Rio de Janeiro. For example nowadays the number of children studying in public schools has dramatically increased as well as the number of new business in these areas.

The statistics of the Rio de Janeiro State from 2007, before UPP implantation, to 2013 are improving, most markedly in the areas with UPP implementation. To highlight this, here are the numbers of the whole state on this period based on occurrence per 100,000 habitants.

| <b>Rio State per 100,000 habitants</b> |             |             |          |
|--|-------------|-------------|----------|
|  | <b>2007</b> | <b>2013</b> | <b>%</b> |
| Homicides                              | 37,96       | 28,79       | -24%     |
| Car theft                              | 197,17      | 169,68      | -14%     |
| Arrestments                            | 88,32       | 180,3       | 104%     |
| Weapons seized                         | 68,48       | 48,79       | -29%     |
| Drugs seized                           | 63          | 109,68      | 74%      |
| Source ISP                             |             |             |          |

It is possible to affirm that since the UPP began to be implemented, the crime rates are falling in the communities in the surrounding neighborhoods and other parts of the city.



The criminals without a territory to use are weakened, in turn simplifying the process of their capture. The continuous police presence has been essential for communities to integrate into the rest of the formal city.

Today, the pacified communities receive private investments; have bank branches, and cable TV for affordable public services that previously were simply unable to reach.<sup>10</sup>

The feeling of security is making the economies of these areas able to run again. A huge number of new micro entrepreneurs and a large amount of loan money are spreading on UPP areas. Rio experiences a wave of real estate valuation and an increase in the supply of products and services in the neighborhoods where the pacified communities begin to be integrated into the city.

But in order to really combat the crime, it is necessary to give to the population new ways to live, not only with guns and police officer patrol, but with opportunities for the citizens. Few people decide to actually break the law; those who do have specific needs to fulfill which takes them down that path of crime.

Sebrae-RJ, a public agency that has the aim to economically develop the state, encouraged the pacified areas to implement a complementary UPP program called “Programa de desenvolvimento do empreendedorismo nas comunidades pacificadas,” that can be loosely translated to: “Entrepreneurship development program in pacified communities.” This program has the goal to support these communities through the promotion of entrepreneurship and strengthening of small businesses, and the socioeconomic development of the areas served by the UPP. It is estimated that 33,000 entrepreneurs dwell in these areas.

Before the UPP Program, each of these economic communities did not exist. It was a big impact on the GDP of Brazil.

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<sup>10</sup> <http://noticias.terra.com.br/brasil/policia/caixa-e-bb-terao-agencias-e-na-rocinha-apos-ocupacao-policial.695c55e5c56fa310VgnCLD200000bbcceb0aRCRD.html>

## 4.2 Rio+Social

The Rio+Social is a multidisciplinary program coordinated by the Instituto Pereira Passos (IPP) in partnership with UN-HABITAT - the United Nations Programme for Human Settlements, to promote improved quality of life for people who live in pacified territories.

The program Rio+Social bases its work on information generated by surveys in order to draw a picture and an overview of each territory. It works to help the provision of public services, and to develop economically through training, advice and assistance to local entrepreneurs, legalization in order to generate income, and employment in communities.

This program includes achievements<sup>11</sup> such as 60 new schools, 9,000 new students, 19 new health clinics, 45,000 new residences and 520 new garbage trucks. But all of these innovations have their costs: The expenditures of Rio de Janeiro city on this program from 2009 until February 2014 was more than R\$1,8 billions. It represents 2% of its GDP or more than 10% of its budget.

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<sup>11</sup> <http://www.riomaissocial.org/>

## 5 THE STATISTICS AND THE BUDGET OF SECURITY POLICY

In this section of the paper, the paper will provide some main security figures before and after UPP's installation.

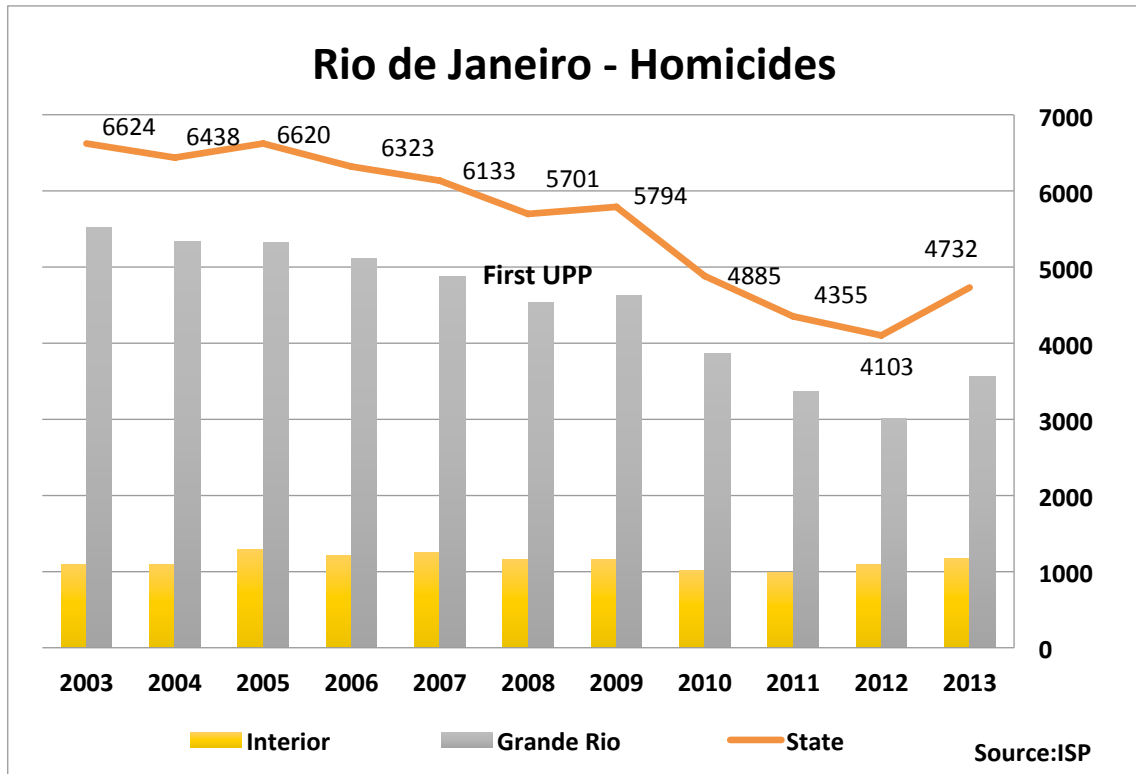
A harsh critique to this program concerns that it focuses only on violent regions of Rio de Janeiro metropolitan area – Grande Rio. One of the factors that may explain this policy focus is the large population of the state concentrated in this area. The metropolitan area is called Grande Rio and it consists of 16 municipalities, including the capital, Rio de Janeiro city. This area contains 12.6 million people and has a GDP greater than 172.5 billions of Reais (US\$ 72 billions). The state's population is estimated to be 16.4 million, so 75% of them live in Grande Rio area.

Another factor is the huge concentration of crimes in this region. In order to get a rough idea, in 2013 4,732 homicides occurred in the state of Rio and 3,558 occurred in Grande Rio. It means more than 75% of this type of crime happened there.

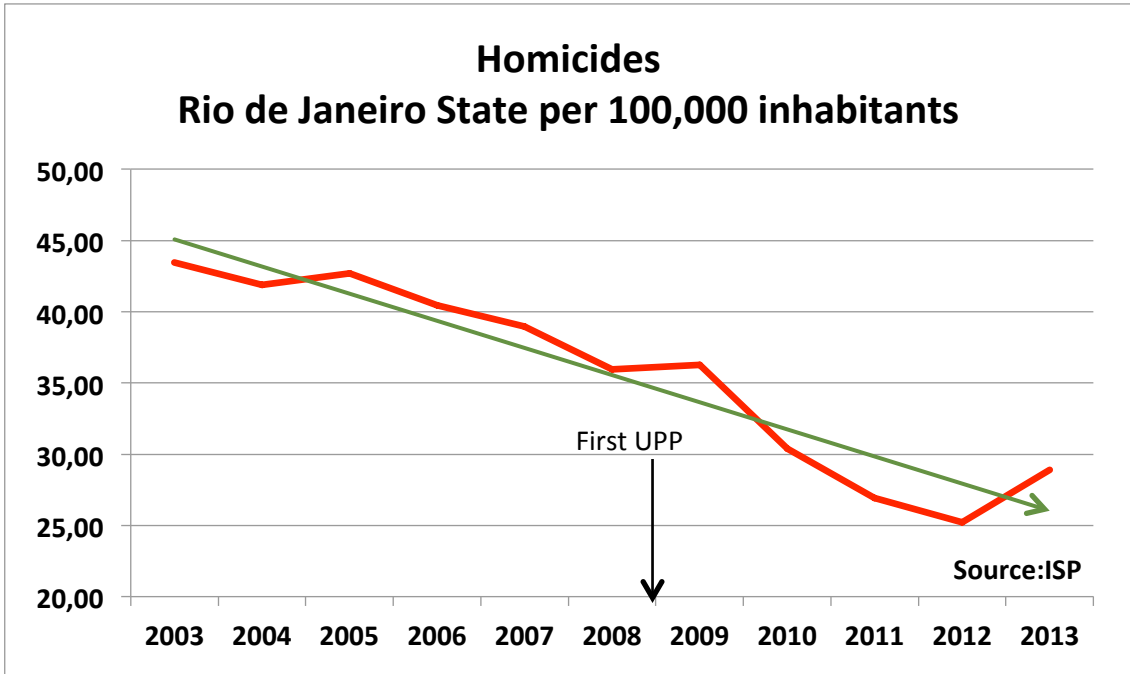
Based on this, some numbers will be shown and separated into: Grande Rio, and Interior (the rest of the state).

### 5.1 Homicides

As we can see on the graphic below, the number of homicides in the state is extremely high but it is decreasing during the past decade. The implementation of the UPP program in 2008 changes the slope of downward numbers. The percentage reduction on the series before UPP (2003 – 2007) is 7% and post UPP (2008 – 2013) is 17%. So, the UPP program is not the only possible solution to the violence in the state but it is a *better* solution than the one before.

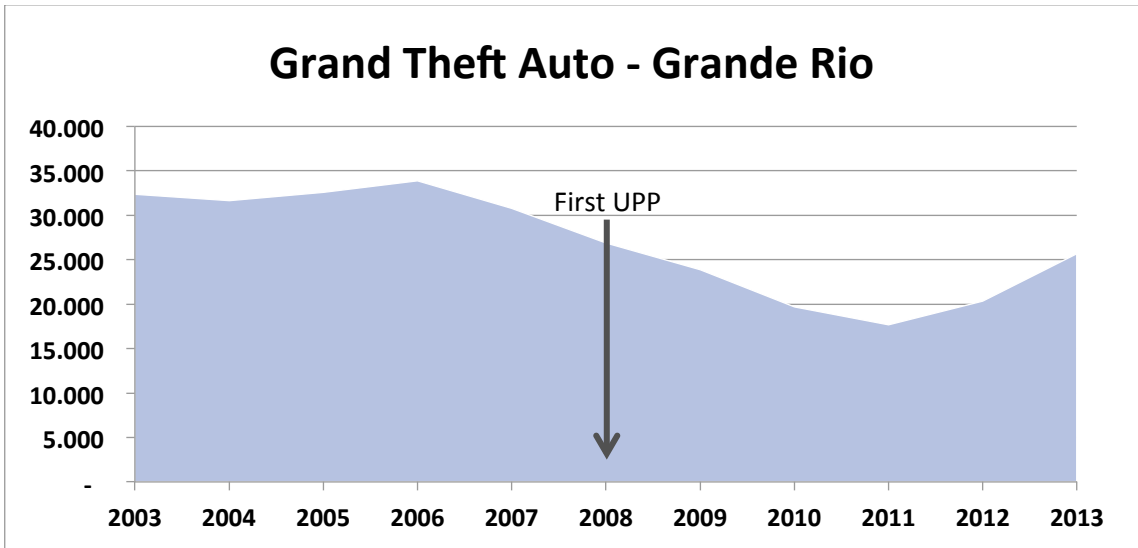


Another way to verify this descendent slope is to extract the population effect and analyze the numbers in the same bases. On the graphic below, the homicide numbers of the state are per 100,000 inhabitants. The green arrow is the trend line of this chart and it is notoriously descending.



5.2 Grand Theft Auto (GTA)

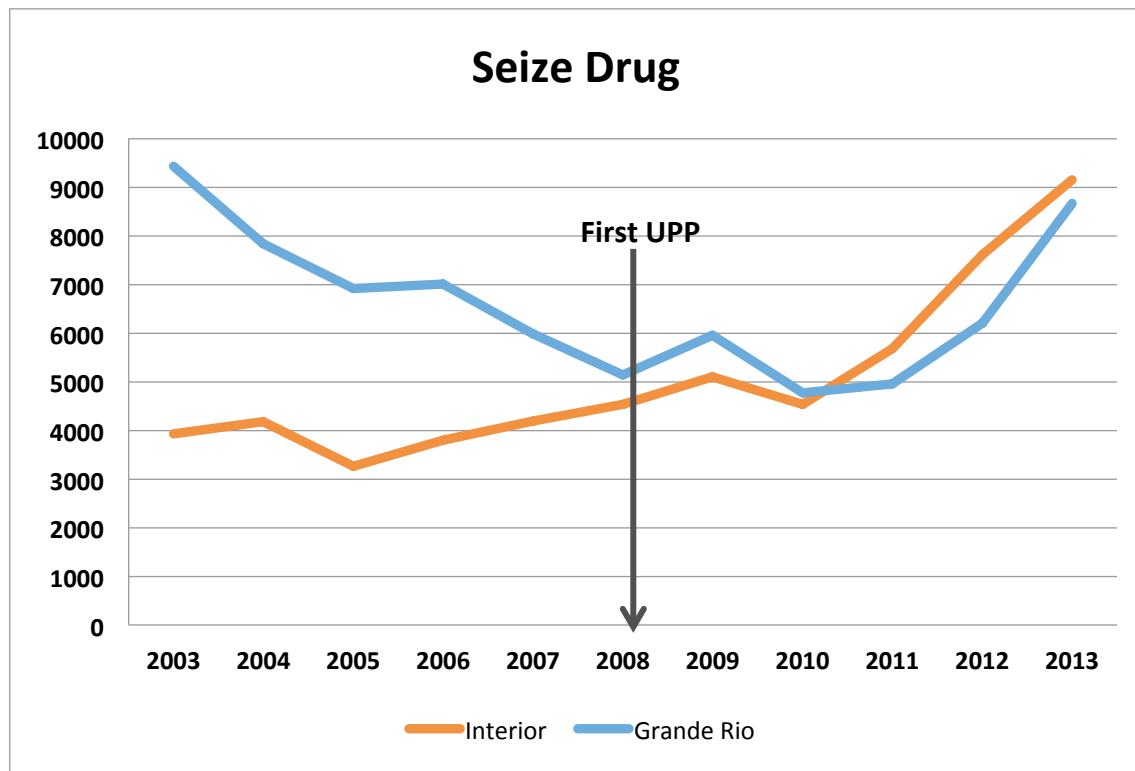
The Grande Rio represents more than 95% of GTA crime on the state, so only these numbers will be analyzed.



In this case, the reduction seems to be a continuation of descent before the UPP movement. There is not an easily noticeable change of slope—it continues to fall. Nevertheless, the main focus of the UPP program is taking control of some areas and integrating them into the city. Although GTA rates are improving, it is merely a collateral effect of the main proposal.

### 5.3 Seize Drug

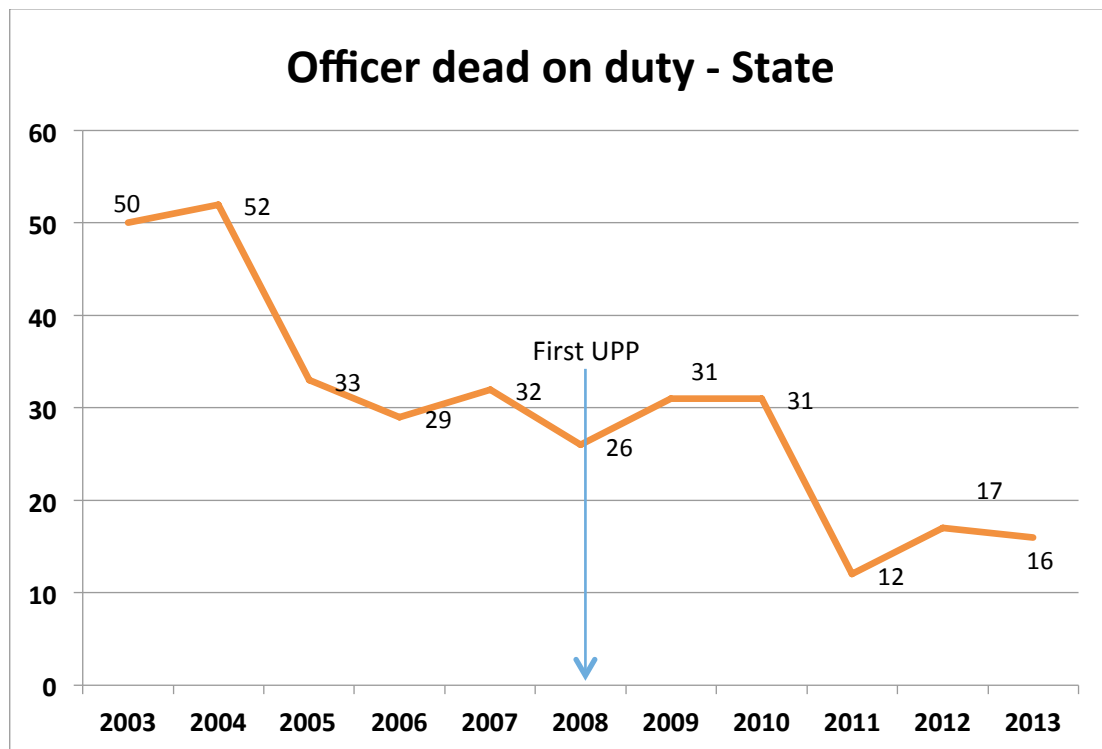
This chart represents the number of seize drug that occurred each year. Something that catches our attention is the increase of this number in the interior of the state. One possible explanation for this phenomenon is the migration of criminals that occurred with the UPP program. Several gangs without territory moved into the state’s interior. This may have increased such numbers. But this assumption has to be demonstrated in a future study.



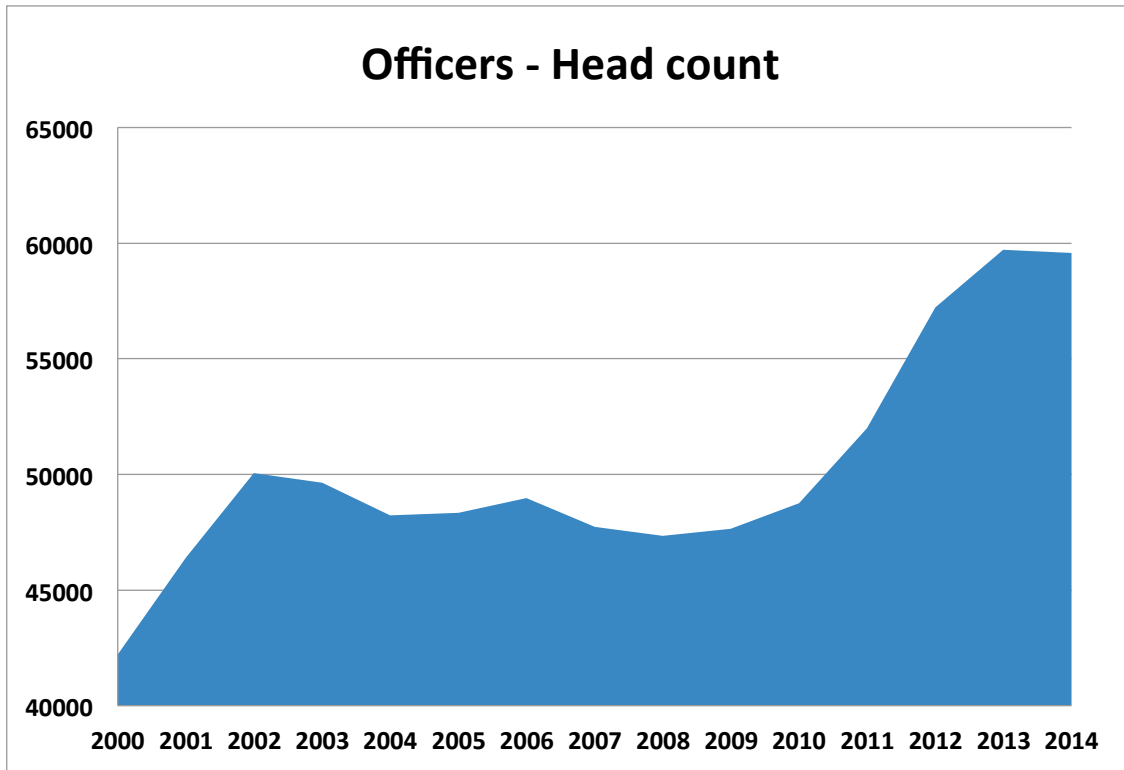
## 5.4 Law enforcement

The Rio de Janeiro state has two main police forces: The Military Police of Rio de Janeiro State and the Civil Police of Rio de Janeiro State. For the purpose of this study, this difference is irrelevant; so all the number of police officers on duty will be presented in an aggregated way. The number of retired officers is excluded.

All wars have their deaths, and the Rio de Janeiro case is not different. The number of police officers killed on duty is decreasing, but it is still extremely high.



In 2000, state police employed approximately 42,200 full-time law enforcement officers, and it increased to 47,700 in 2007 and reached 59,587 in 2013. During the UPP program the increase was more than 25%.



The correlation between the increased number of officers and the decreased crime was not proved. It was tested and refused by several authors, such as Greenwood (1977) and Spelman & Brown (1984). It has an impact but cannot be undoubtedly quantified.

#### 5.5 Expenditures distribution

The main outlays are the salaries and their expenses. In 2013, it represented 88% of all money assigned to security. But it is not too high compared to the average since 2000, when it was 83% of the total budget.



In table below the value of Total Security Expenditure are real (base 2013).

- Salaries – All the Securities Force Payroll;
- Final Consumption – Operational expenditure; the money spend on an ongoing day-to-day basis.
- Investment – Expenditures to acquire or upgrade physical assets such as buildings or equipment.

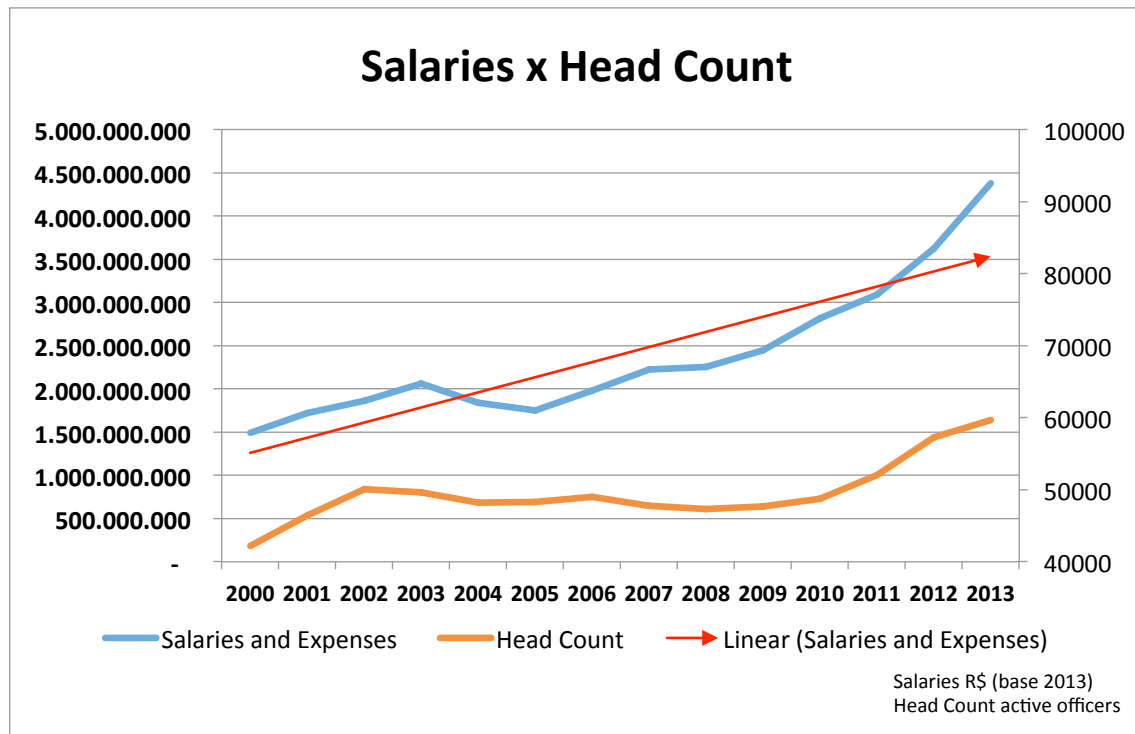
| Year        | Total Security R\$ |          | Final       |            |
|-------------|--------------------|----------|-------------|------------|
|             | 2013               | Salaries | Consumption | Investment |
| <b>2000</b> | 1.737.284.408,22   | 86%      | 9%          | 5%         |
| <b>2001</b> | 2.098.614.398,79   | 82%      | 12%         | 6%         |
| <b>2002</b> | 2.207.860.596,55   | 84%      | 11%         | 4%         |
| <b>2003</b> | 2.432.648.767,94   | 85%      | 13%         | 2%         |
| <b>2004</b> | 2.250.432.688,70   | 82%      | 16%         | 3%         |
| <b>2005</b> | 2.220.765.365,34   | 79%      | 19%         | 2%         |
| <b>2006</b> | 2.421.774.695,71   | 82%      | 18%         | 1%         |
| <b>2007</b> | 2.647.169.618,50   | 84%      | 15%         | 1%         |
| <b>2008</b> | 2.787.077.374,84   | 81%      | 17%         | 3%         |
| <b>2009</b> | 2.929.572.344,55   | 84%      | 13%         | 4%         |
| <b>2010</b> | 3.367.317.795,15   | 84%      | 12%         | 5%         |
| <b>2011</b> | 3.720.738.624,86   | 83%      | 12%         | 4%         |
| <b>2012</b> | 4.260.169.128,84   | 85%      | 12%         | 3%         |
| <b>2013</b> | 5.004.067.253,76   | 88%      | 9%          | 3%         |

The major concern is that the investment is insignificant compared with the total that was applied to security; the investment's average is 3%. In fact, investments made leave the population with a real legacy. Payroll expenses and Final Consumption only serve to keep the machine running

## 5.6 Salaries and people expenses

In aiming to stimulate police officers to work in the UPPs units, the Rio state created a special bonus, which considerably increased the amounts of law enforcement payroll. This is an extra cost to the taxpayer, and its principal goal is to impel the officer to do his or her job.

In the chart below, the payroll cost and the number of active police officers are plotted. The effects of inflation were removed from these numbers and the base year is 2013. A payroll cost trend line is designed too, evidencing the soaring amount of this expenditure.

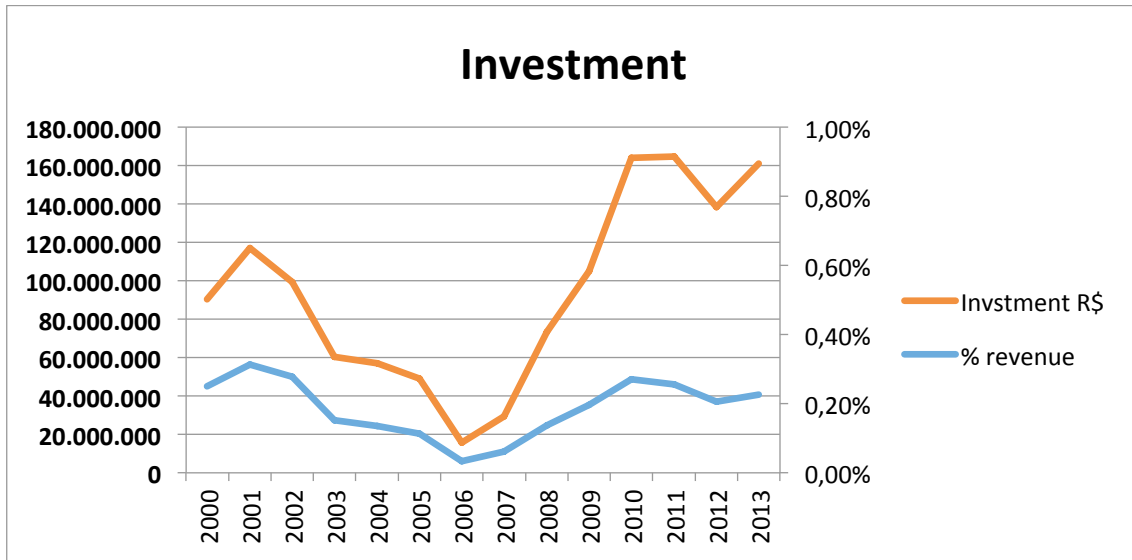


Nowadays, law enforce officer’ salaries represent 6.2% of the total state’s revenue and this percentage has been growing since 2000, from 4.1% to 6.2%, or almost 50% of growth translating into R\$2,8 billions (US\$ 1.2 billions).

### 5.7 Investment in security

The Rio de Janeiro state returned to invest on public security before 2007. The graphic bellow shows this kind of investment in Reais (R\$) based on 2013, and the percentage that amount of money represents is the state’s overall revenue. Comparing these expenditures from 2007 to 2013, it increased 448%. It means more than R\$130 million was assigned to security instead of another public necessity. In graph below

the amount of investment is represented in R\$ base 2013 and the line “% revenue” represents the percentage of investment over the state’s revenue.



Skogan (1976) defined the efficient and effectiveness in big-city police departments as efficient agencies that convert inputs into outputs with less organizational effort, as well as the effectiveness of departments to meet challenges and solve them. In his work, Skogan considered official crime indicators as inputs and total arrests in each category as outputs.

In order to do a similar analysis, this paper shows the amount of money invested by the state to combat crime and the payroll of the police departments as the input, and the number of homicides per 100,000 habitants as the output. The choice of this output was based only on the severity of this type of crime.

The table below shows that the salaries and investments in Millions of Reais, with the base year 2013.

|             | 2003  | 2004  | 2005  | 2006  | 2007  | 2008  | 2009   | 2010   | 2011   | 2012   | 2013   |
|-------------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|
| Homicides   | 43,46 | 41,87 | 42,70 | 40,46 | 38,95 | 35,95 | 36,28  | 30,39  | 26,92  | 25,21  | 28,91  |
| Investments | 60,22 | 56,99 | 48,97 | 15,60 | 29,37 | 73,32 | 105,12 | 164,02 | 164,51 | 138,47 | 161,07 |
| Salaries    | 2.062 | 1.842 | 1.749 | 1.976 | 2.226 | 2.251 | 2.447  | 2.815  | 3.092  | 3.626  | 4.380  |

There is a strong negative correlation between Homicides and Security Investments (-0.88) and between Homicides and Salaries (-0.86). So, based on that, it is possible to conclude that the law enforcement's efficiency improved as the inputs, Salaries and Investment, grew.

## 6 CONCLUSION

The cost of violence to a society like Rio de Janeiro is extremely high. But, in an economic view, there are two ways to pay this bill.

The first one is a monetary way; it is the money that the government or the private sector spends, (i.e., through taxes applied to safety or through hiring private security). Despite the cost being a significant amount of money that could be applied to other needs, such as education or health, it does not prove to be a total waste. Rio de Janeiro's security expenditure was greater than R\$ 5 billion (US\$ 2 billion) in 2013. This is equivalent to 7.03% of all state revenue. Such a value brings a kind of security for citizens and moves the local economy. Part of this money returns to society when a hijacked vehicle or a stolen shipment are recovered. It also returns when, for example, a police officer spends his wages, or when the entrepreneur sells its security products. The economy grows with these kinds of expenditures and it generates good economic results. It could be not the best way to apply the scarce money of taxes but it is not a complete waste.

The second way to pay this cost of violence is in a non-monetary way. It does not give back to the economy. The non-monetary cost is enormous and difficult to be measured. It is paid through things like the life of a person, the loss of productive capacities of a victim of violence, loss of property values, and, in particular, the lack of investment by entrepreneurs. These losses are irreparable, have no return, and they impact the GPD of a country like Brazil tremendously.

There is still much that needs to be done in the area of security, despite 36 UPPs already implemented (until December 2013<sup>12</sup>). During these last six years, the following progress has been made: Several drug dealers were arrested; An arsenal of sophisticated weaponry and tons of various types of drugs were seized; and many leaders of trafficking were removed to maximum security prisons, far from Rio de

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<sup>12</sup> [http://www.upprj.com/index.php/historico\\_us](http://www.upprj.com/index.php/historico_us)

Janeiro. Despite these positive results, it is important to carefully monitor and evaluate such UPP's interventions and the totality of the policy public security.

In order to consolidate all public security achievements, it is necessary to plan a longer-term perspective. This plan needs to find ways to put the public and private initiatives on the same page promoting health, education, social activities, and cultural events. The private sector must be stimulated to invest in these regions, creating jobs and bringing new opportunities. The public sector must invest in sanitation, urbanization, and transportation. This plan, aligned with a strong political will, are essential for the consolidation of new conditions that these communities are living in now. These vital components will ensure that a new situation of peace is sustainable.

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