Police performance and violent crime in Rio de Janeiro between 2007 and 2017

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Abstract

Performance-related pay policies applied to the Police have been implemented in Brazil and Latin America since the 2000s in an attempt to reduce the main violent crime indicators. The Integrated Targets System (Sistema Integrado de Metas – SIM), the Pacifying Police Units (Unidades de Polícia Pacificadora – UPP) and the Additional Service Regime (Regime Adicional de Serviço – RAS), initiated in the state of Rio de Janeiro in 2009, sought to reduce "strategic state crime indicators" whose results are monitored by the civil police report data. In order to understand how these policies have been implemented in the state of Rio de Janeiro between 2007 and 2017, the study adopts a quantitative approach upon criminal analysis and a qualitative one based on interviews and field observation at civil police stations and military police battalions.

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Key words

Performance-related pay policies; Integrated Targets System (SIM); Rio de Janeiro

Resumen

Las políticas salariales relacionadas con la gestión por desempeño aplicadas a la policía se han implementado en Brasil y América Latina desde la década de 2000, en un intento por reducir los principales indicadores de delitos violentos. El Sistema Integrado de Metas (SIM), las Unidades de Policía Pacificadora (UPP) y el Régimen de Servicios Adicionales (RAS), iniciados en el estado de Río de Janeiro en 2009, han buscado reducir los "indicadores estratégicos de crímenes" (IEC), cuyos resultados se monitorean por datos reportados a la Policía Civil. Para comprender cómo se implementaron estas políticas en el estado de Río de Janeiro entre 2007 y 2017, el estudio adopta un enfoque cuantitativo de análisis criminal y uno cualitativo basado en entrevistas y observaciones de campo en comisarías de la Policía Civil y batallones de la Policía Militar.

Palabras clave

Remuneración por desempeño; Sistema Integrado de Metas (SIM); Río de Janeiro

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1. Introduction

Programs focusing on the reduction of violent crimes have been implemented in a progressive scale in Brazil since the beginning of the 21st century. Originated in the states, they were encouraged by multiple actions carried out by the Federal Government, such as the National Public Safety Plan (Observatório de Segurança Pública – OSP – 2000), Project Security for Brazil (Ministério da Justiça 2003), and National Program for Public Safety with Citizenship (Programa Nacional de Segurança Pública com Cidadania – PRONASCI) (Lei n. 11.530, 2007).

State programs such as *Fica Vivo!* (in Minas Gerais state), *Pacto pela Vida* (in Pernambuco state), Pacifying Police Units (Unidades de Polícia Pacificadora – UPP), and Integrated Targets System (Sistema Integrado de Metas – SIM) gained national relevance in Brazil, influencing a number of strategies enforced by the Federal Government in support of state security forces. Some of these policies showcase control mechanisms of police performance, such as the payment of financial bonuses to police officers who meet a predefined performance goal.

This study aims to understand the preliminary results from policies based on financial incentives and predefined targets, implemented in 2009 with the aim to reduce violent crime in the state of Rio de Janeiro.

Programs implemented in Rio in 2009, such as SIM, UPP, and Additional Service Regime (Regime Adicional de Serviço – RAS), believed to be able to decrease "state strategic crime indicators", are analyzed through the lens of the civil police report data (crime/incident reports from the investigatory police), field observation, and interviews with civil and military police officers, as well as public administrators.

The state strategic violent lethality indicator was analyzed in aggregate. Data regarding murder, homicide resulting from police intervention, and missing persons were analyzed individually. The brief analysis covers the period between 2007 and 2017, the years immediately before and after the implementation of the policies, which encompasses the political and financial crisis initiated in 2015 in the state of Rio de Janeiro.

This paper prioritizes the analysis of homicide indicators, homicides resulting from police intervention, missing persons, and arrests (arrest warrants and in the act, also known as *flagrante*). The field work began to be carried out in 2018 and is still ongoing. Only a few of the interviews were used in order to specify the difficulties found with the SIM operation.

Given the small space provided to expose more detailed data, the study showcases indicators of the entire state of Rio de Janeiro per year between 2007–2017. The choice of using absolute figures instead of rates (per 100,000 inhabitants or Bayesian inference) was made to ensure more visibility of the actual dimension of the problem with violent lethality faced in Rio. Going further, population growth in the state averaged at 0.6% per year within the analyzed period, which renders minimized impact over charts analyzed in this paper.

Some limitations of the studied policies become more noticeable in criminal report as of 2013, when there is a greater challenge and crisis of the UPPs program, and in 2015 with

the delay in the payment of the bonuses and salary supplements referring to the SIM and RAS. This paper aims to think critically about the strong elevation in strategic crime indicators in the state's seven Integrated Regions of Public Safety (Regiões Integradas de Segurança Pública – RISP) in the last two years of analysis (2016–2017).

The targets policy and the variable compensation system (with provision of grants, bonuses, and paid overtime for civil and military police forces) enforced in Rio are different to the ones from other states. The observed results do not allow an easy assessment of the impact of said policies, given the difficulty in identifying the pressure put on administrative criminal report data by each of them.

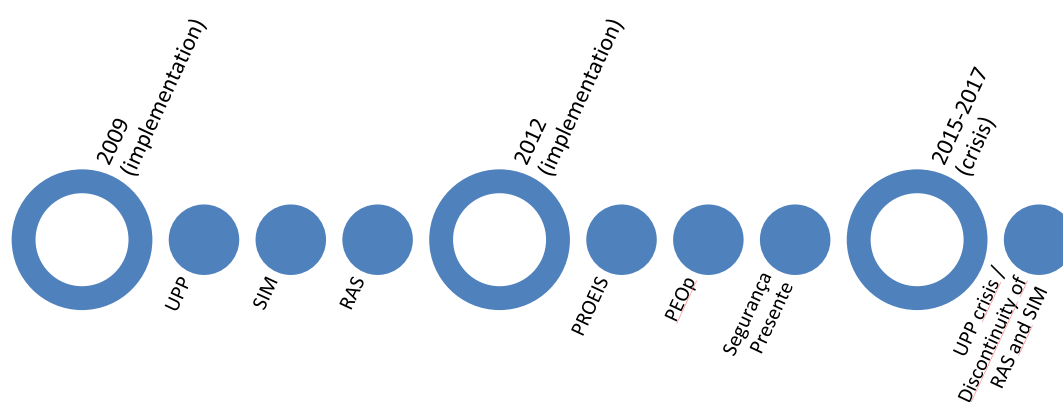## 2. Rio de Janeiro's Police Force: SIM and "variable compensation"

IMAGE 1

Image 1. Timeline of the variable compensation system policies enforced in Rio de Janeiro police forces (2009–2017).

The UPP has been in place in Rio de Janeiro in 2009. The first three communities (Cidade de Deus, Santa Marta, and Batan) were occupied by military police's Special Operations Force Battalion (Batalhão de Operações Policiais Especiais – BOPE) and the Civil Police. These forces were then transitioned to the Community Policing Campaign (Companhia de Policiamento Comunitário), located at the same Military Battalion in those neighborhoods. Community policing stations were built in those areas in late 2008, before the new name created (Cano 2012, Rodrigues *et al.* 2012, Ganem Misse 2013), in January 2009: Pacifying Police Units (Unidades de Polícia Pacificadora – UPP).

However, the strategy has significantly changed since the police occupied the *favelas* Chapéu Mangueira and Babilônia, in June 2009. It is now carried out in four stages: Tactic Intervention, Stabilization, UPP Implementation, and Consolidation (program's follow-up and assessment). In the first stage, the area is occupied by BOPE and, once control is gained, it is then be passed on to the Battalion of Riot Police (Batalhão de Polícia de Choque – BPChoque). After mapping the area, the police determine the UPP location and performs the stabilization of the territory. The UPP is implemented upon the arrival of recently graduated officers from the military police. Such methodological approach was consolidated in Decree no. 42,787 (01/06/2011), which "governs the implantation, structure, duties, and operation of the Pacifying Police Units (UPPs) in the state of Rio

de Janeiro, among other dispositions".[1] The program forecast the implementation of 40–45 UPPs until 2014.[2] However, only 38 units have been set to date, engaging 9,500 police officers. Operations are mainly based in the city of Rio de Janeiro.

In June 2009, the Secretariat of Public Safety (Secretaria de Estado de Segurança – SESEG) proposed the creation of SIM for state police forces through the Decree no. 41,931/2009, that "governs the System of Targets Definition and Management for strategic crime indicators in the state of Rio de Janeiro". SIM is a performance-oriented management model created by SESEG through the Undersecretariat of Operational Planning and Integration (Subsecretaria de Planejamento e Integração Operacional – SSPIO). The program's main goal is to give rise to integrated actions of crime prevention and qualified controls, as well as define target numbers for the reduction of Strategic Crime Indicators (Indicadores Estratégicos de Criminalidade – IEC) (Cesário de Sá 2013). Similar to initiatives in Minas Gerais and Pernambuco, SESEG launched the SIM program to enhance the process of institutional integration between civil and military police forces. The agency monitors results of an IEC-based system that allows for the creation of targets according to a previously chosen set of criminal offenses. Results are analyzed on a monthly basis by RISPs and AISPs (Integrated Regions of Public Safety and Integrated Areas of Public Safety, respectively). Each IEC has a particular weight over final scoring, which is calculated according to its distance to a predefined KPI for each month. Highest scoring RISPs and AISPs earn prizes. To calculate the targets, the percentage of reduction of each IEC monitored by the system is applied over the state's overall performance, as well as each RISP's and AISP's performances, and compared to the same period in the previous year. RISPs and AISPs receive three points for meeting the target, and zero points when they fail to do so. Furthermore, each indicator as a different weight: Violent lethality weighs 3; car theft weighs 2; and street robbery weighs 1. The scores are summed up and results are used to rank RISPs and AISPs. In order to meet the targets and increase productivity of police officers without the need of additional hiring, the state government signed a Decree and launched public announcements for RAS as a means to encourage civil and military police officers to take on additional shifts at police stations or battalions in exchange for additional pay.

Between 2012 and 2015, the government created other incentive programs in an attempt to provide ostensible policing and fight against small offenses. These include the State Program of Safety Integration (Programa Estadual de Integração da Segurança – PROEIS), Segurança Presente Projects (Lapa Presente, Centro Presente, Aterro Presente Méier Presente, etc.) – funded by the Commerce and Industry Federations – and the Operational Incentive Program (Programa de Estímulo Operacional – PEOp). What are

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[1] State Decree no. 45,186 (3/17/2015) performed a methodological review of the program, including classifying UPP operations according to levels of operational risk (identified in red, yellow, and green). In 2017, Law no. 7,799/2017 has authorized the Executive to subordinate UPPs to Military Police Battalions (Batalhões de Polícia Militar – BPM), where present. The measure represented a rupture with the principles of the original policy, devised in 2009.

[2] During public acts and interviews given to several major newspapers between 2011 and 2013, the Rio de Janeiro Governor and his State Secretary of Safety, José Mariano Beltrame, set the target of 40 UPPs. Nonetheless, it is worth noting that PPA 2012–2015 forecast the establishment of "45 units in 165 communities in 2014, which would cater for 860,000 people, as well as the engagement of approximately 12,500 military police officers in the program" (PPA – Law 6,126/2011, p. 446).

the differences between SIM, UPP, RAS, PROEIS, Segurança Presente, and PEOp? Are they all Performance-Related Pay (PRP) policies?

As this paper has illustrated so far, SIM is the only program that could be classified as a PRP[3] in Rio de Janeiro, since it is a result-driven program based on collective targets. SIM's targets have predefined deadlines, indicators, and values, and awards are given out when targets are met. Other incentive policies such as UPP, RAS, PROEIS, Segurança Presente, and PEOp are better understood as methods to provide supplementary pay. The bonus is not associated with meeting predefined targets. They are variable compensation policies determined by incremental workload carried out by military and civil police officers. These programs are not similar to one another, either.

UPP, for example, fosters a different type of policing for some areas at the *favelas* in the city of Rio de Janeiro. Until 2017, UPP was organized through the Coordination of Pacifying Police. Police officers' base salary is complemented through a program grant till this day. The grant varies according to each officer's rank. The Pacification Policy is in line with a national strategy that was fostered by the federal government and maintained with funds from PRONASCI (Ganem Misse 2013).

In their turn, RAS, PROEIS, Segurança Presente, and PEOp share multiple features[4], as they are all bonification programs for additional workload that compensate for a different service schedule. Police officers can enroll voluntarily or be assigned to the programs, provided that their new work regime abide by the service schedule previously determined by their agency. Police officers enrolled in the program shall take on additional 8, 10, or 12-hour shifts. They can enroll voluntarily or be assigned for more than one program, so long as they do not exceed 12 additional shifts (or 96 hours) within 30 days of work.

Despite being in place since 2009, SIM failed to be analyzed in several research studies – except for Cesário de Sá (2013), who performed an analysis in light of the variations found in indicators of other federation units and trends prior to 2009 in Rio de Janeiro. For the author, who served as Undersecretary of Operational Planning and Integration at the Secretariat of Public Safety, strategic indicators begot positive results both in the

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[3] "PRP" is the term used to refer to financial incentive practices at companies to foster higher productivity through bonuses and prizes for employees when the targets defined by a manager are met. The system was popularized by multiple scholars specialized in economy, psychology, administration, and engineering. Herzberg (1968), for instance, created a model based on rules, philosophies (built upon organizational, behavioral, engineering and production theories) and motivational principles taken from the field of psychology. For Levinson (1976), a performance review fulfills three basic functions: (1) To provide proper performance-related feedback to professionals; (2) To serve as foundation for changes in professional behaviors, thus fostering higher efficiency; and (3) To provide managers with data so that they can inform decisions regarding future assignments and compensation. For the author, the concept of performance review is key to effective management. However, he understands that the current performance evaluation systems do not properly serve either of these functions.

[4] It is noteworthy that RAS differs significantly from other programs in one particular aspect. During this research, which is still ongoing, interviews with civil and military police officers, commissioners, and public administrators were carried out in the capital city and in one countryside city in the state of Rio de Janeiro. In the interviews, few were the interviewees who believed SIM to be a relevant tool to reduce the main crime indicators, but they were in favor of the Additional Service Regime as a more efficient way of enhancing police officers' productivity. The interviews are still ongoing, hence their absence in this paper. The qualitative stage and a deeper analysis of quantitative data shall be explored at another paper.

capital city and in different regions of the state, suggesting that SIM could be a factor for this success. However, for Ganem Misse (2013), even though SIM and UPP seem to have certain impact over violent crime rates, especially murders, it is possible to identify that the occurrences were underreported – a situation produced by the targets system itself. Another finding is the increase of other offenses, especially missing persons, while the reduction in "resistance to authority" and murder cases may indicate the practice of "gaming",[5] or a "good" number policy (Mattelly and Mouhanna 2007). Payments related to SIM and RAS were interrupted in 2015 due to the state's financial crisis. In the same period, crime rates (especially violent lethality) started rising again, and pacified *favelas* saw themselves amidst intense territorial disputes among drug traffickers, paramilitary groups (called "milícias"), and police officers.

According to the civil police officer assigned as focal point at the police station where the field work was carried out,[6] many of the problems faced while pursuing SIM targets were caused by the following: Constant reductions of police headcount (mainly due to retirement); demotivation and/or approval for different roles in public service; the fact that SIM is seen more like a role of the military police and carries the function of reprimanding crime through visible policing; salary supplementation provided by RAS was low and was not being paid by the state government; civil police officers were unaware of whether targets were met and some did not even know how to create police records in the computerized system. The agent also mentions that RAS was not employed to ensure targets were met, but rather, for staff to be able to cope with high demands and low availability of workforce at the precincts. Field work in the police station was not able to identify any difference in the work carried out by officers under RAS and those fulfilling their regular duties, such as supporting walk-ins.

Measures such as the introduction of the Targets System helped include the use of criminal statistics in police officers' daily routine and pushed for better working conditions in terms of staff and material resources (Azevedo 2012).

3. The targets system and strategic indicators of violent lethality in the state of Rio de Janeiro between 2007 and 2017

Enacted by Decree no. 41,931 (6/25/2009), the Targets Definitions and Management System for strategic state crime indicators in Rio de Janeiro proposed to integrate civil and military police forces around common goals. Initially, four indicators were chosen to be monitored: murder, car theft, robbery followed by death, and street robbery, the latter split into three categories: Passers-by, public transport, and cell phone.

Initially, there was not an intention to create strategic indicators encompassing a set of crimes to be tackled. Hence, violent lethality and car theft were not defined as strategic indicators until the issuance of Decree no. 42,780 (01/03/2011),[7] when SIM had already

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[5] According to Hood (2006, 516), scholars of target systems have identified at least three major types of gaming and strategic behavior surrounding targets: *ratchet effect*; *threshold effect; and output distortion.* This paper adopts the third definition of "gaming" to understand the output distortion or the manipulation of reported results.

[6] Interview carried out on 07/25/2018.

[7] Following the new Decree, three new strategic indicators were created: violent lethality (including murder, resistance to authority, robbery followed by death, and bodily injured followed by death); car theft; and

been in place for over a year. Crimes known as "resistance to authority" (ultimately redefined as "homicide resulting from opposition to police intervention" by Decree no. 45,567 of 01/28/16) and bodily injury followed by death were not included in SIM for bonification purposes.

Decree no. 41,930 was issued on June 25, 2009 in order to secure the program's management capacity and integrate civil and military police actions. It also established the Integrated Regions of Public Safety (Regiões Integradas de Segurança Pública – RISP), built upon the Integrated Jurisdictions of Public Safety (Circunscrições Integradas de Segurança Pública – CISP), each corresponding to a different police station. In practice, the Decree organized civil police stations under the coordination of seven Area Police Departments (Departamentos de Polícia de Área – DPAs), that coincided with the seven Area Policing Commands (Comandos de Policiamento de Área – CPAs), controlled by the managerial structure of military police battalions.[8]

In order to better monitor results, SIM relies on four different levels of follow-up meetings. Organized by SESEG, Level 1 meetings are strategical and take place every three months within the scope of the state government. The Undersecretary of Operational Planning and Integration is in charge of technical aspects, while the State Secretary of Safety is in charge of political matters. Tactic-level meetings are held monthly and encompass Levels 2 (seven RISPs or DPAs and CPAs) and 3 (police stations and battalions). Level 4 (operational) comprises focal points of police stations and battalions, responsible for following up on strategic crime indicators. They create and verify police reports and devise action plans in order to meet targets. The Civil Police Office of Internal Affairs holds quarterly meetings at police stations in order to control the information gathered.

Field research performed between September 2017 and July 2018 at a police station in Greater Rio de Janeiro allowed to observe how civil police officers handle indicators to reach the targets and how Level 3 and Level 4 meetings are organized.[9] It was noticeable that, overall, officers were unaware of the targets system and of how they should fulfill police records in the computerized system. The service schedule in place was only enough to meet daily demand and there was no additional effort put towards meeting

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street robbery (including robbery of passersby, in public transport, and of cell phones). SESEG's resolution no. 305 (01/13/2010) regulated the Decree and added a Procedural Guide for the Targets System and Results Monitoring.

[8] As a result, the 1st RISP (Capital - South, Central and part of North Side) comprises the 1st CPA and DPA (AISP 1, 2, 3, 4, 5, 6, 13, 16, 17, 19, 22, 23); the 2nd RISP (Capital - West and part of North Side) controls the 2nd CPA and DPA (AISP 9, 14, 18, 27, 31, 39); the 3rd RISP (Baixada Fluminense) encompasses the 3rd CPA and DPA (AISP 15, 20, 21, 24, 34, 40); the 4th RISP (Niterói and Lakes Region) controls the 4th CPA and DPA (AISP 7, 12, 25, 35); the 5th RISP (Fluminense South) comprises the 5th CPA and DPA (AISP 10, 28, 33, 37); the 6th RISP (Fluminense North) controls the 6th CPA and DPA (AISP 8, 29, 32, 36); and the 7th RISP (Mountain Region) controls the 7th CPA and DPA (AISP 11, 26, 30, 38). AISPs were created in 1999 as a means to organize police stations and battalions territorially, promoting further integration of the systems, diminishing the superposition of actions and allowing for the definition of indicators. They are characterized by territorial articulation between state civil and military police at operational/tactic level and contemplate the areas where military police battalions are present, associated with a minimum of 2 (two) and a maximum of 6 (six) jurisdictions (CISPs) of police stations.

[9] I sought to get an authorization from SESEG to attend level-1 and level-2 (strategic) meetings, but my request was denied. The field research will be further developed at another paper that shall be published in the upcoming months.

the targets. One of the officers was assigned as focal point along with the area's battalion in order to try and meet the target of reducing street robbery and car theft in the region. Level 4 meetings are held fortnightly – focal points from both police stations and battalions are expected to attend, and they also touch base through email and telephone calls. Level 3 meetings gather staff from the area's battalion and police stations and are held quarterly. According to the officer assigned as focal point, Level 3 meetings are used by the Secretariat of Public Safety to distribute reprimands. Commissioners and captains from police stations and battalions that did not meet the targets are summoned to attend.

SIM has established criteria to award state's public safety professionals in recognition of their performance every semester. Such payment is called Gratuity of Extraordinary Duties and is given to full-time officials in administrative roles at RISPs, CISPs, and AISPs; specialized units that meet predefined targets and innovate (top 3 initiatives to control crime are granted special awards); full-time officials at the Office of Internal Affairs' Service of Police Routine and Monitoring Analysis (Serviço de Análises de Rotinas Policiais e Monitoramento – SARPM) and at Crime Justice and Public Safety Research Center (Núcleo de Pesquisa em Justiça Criminal e Segurança Pública – NUPESP), part of the State Institute of Public Safety of Rio de Janeiro (ISP/RJ). A ceremony is held every six months, when plaques, diplomas, and gratuities are given to winning professionals.

In 2009, gratuities ranged from R$4,500 to R$9,000 (USD1,100–USD2,200) for the top 3 professionals. Values increased between 2011 and 2013, when they reached R$13,500 (USD3,300) for best ranked professionals and added a *pro rata* bonus for accomplished targets ranging from R$4,500 to R$5,395.50 (USD1,100–USD1,315) for results between 119.9% and 100% of the IDM; R$3,000 (USD732) for results between 99.9% and 95% of IDM; and R$1,500 (USD366) for results between 94.9% and 90% of the IDM.[10] According

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[10] At first, the award consisted of: Biannual ceremony with delivery of plaques and diplomas; and biannual gratuities, delivered individually and non-cumulatively, as follows: R$9,000 (USD2,200) for first place; R$6,000 (USD1,465) for second place; and R$4,500 (USD1,100) for third place.

Upon the enactment of Decrees no. 42,812/11; 43,056/11; and 43,271/11, values changed to R$9,000 (USD2,200) for first place; R$6,000 (USD1,465) for second place; and R$4,500 (USD1,100) for third place. *Pro rata* bonus between R$3,600 (USD879) and R$3,000 (USD732) for results between 120% and 100% of IDM; R$2,000 (USD488) for results between 99.9% and 95% of IDM; and R$1,000 (USD244) for results between 94.9% and 90% of IDM. Upon the enactment of Decree no. 43,989/12, values increased to R$9,000 (USD2,200) for first place; R$6,000 (USD1,465) for second place; and R$4,500 (USD1,100) for third place. *Pro rata* bonus between R$3,600 (USD879) and R$ 3,000 (USD732) for results between 120% and 100% of IDM; R$2,000 (USD488) for results between 99.9% and 95% of IDM; and R$1,000 (USD244) for results between 94.9% and 90% of IDM.

Upon the enactment of Decree no. 44,137/13, values increased to R$13,500 (USD3,33) for first place; R$9,000 (USD2,200) for second place; and R$ 6,750 (USD6,648) for third place. *Pro rata* bonus from R$5,395.50 (USD1,317) to R$4,500 (USD1,100) for results between 119.9% and 100% of IDM; R$3,000 (USD732) for results between 99.9% and 95% of IDM; and R$1,500 (USD366) for results between 94.9% and 90% of IDM. Values were reduced as of 2016 after the enactment of Decree no. 45,549/16 and 45,567/16, when biannual, individual, non-cumulative gratuities reached the following values: R$3,000 (USD732) for first place; R$2,000 (USD488) for second place; and R$1,500 (USD366) for third place. *Pro rata* bonus from R$1,199.00 (USD292) to R$1,000 (USD244) for results between 119.9% and 100% of IDM; R$700 (USD170) for results between 99.9% and 95% of IDM; and R$350 (USD85) for results between 94.9% and 90% of IDM.

to Roberto Alzir,[11] higher bonus values may have led to the manipulation of numbers to prove the targets were met.

> ... The targets system took a heavy blow, especially from 2015 – by then, we could not afford to pay for accomplished targets any longer. At his own discretion, the governor increased gratuities two-fold, reaching values that we did not believe to be adequate. A monetary value of R$13,500 for first places is a significant amount for higher-ranked police officers. We understand that financial incentives can be awarded, but they must be of moderate value so they do not become an objective per se, an end that justifies all means, you know? Sometimes, it can lead to manipulation of numbers. A very attractive bonus may beget higher risk of manipulation. The governor would double the award at every ceremony, but he did not have green light from the Secretariat of Public Safety for that. Due to economic reasons, we needed to roll that back in 2016. (...) We lowered gratuities to a value we deemed more adequate in light of the state's economic reality. (Interview carried out on 5/24/2018)

Even though bonus values were rolled back in January 2016 amidst the financial crisis that hit the state in the previous year,[12] the government stopped paying bonuses and gratuities in relation to the targets system.

4. Violent lethality: Critical thinking

In order to better understand the challenges posed by the targets and financial incentive policies in Rio de Janeiro, I shall now proceed to analyze three charts that illustrate the period between 2007 and 2017. The time series comprises three moments of the studied policies: The stages prior to implementation (2007–2008), during implementation (2009–2014), and during the crisis (2015–2017). It is worth noting that strategic indicators of violent lethality only came to be in 2011, when homicides resulting from police intervention and bodily injuries followed by death were first included and calculated within SIM.

Chart 1 was devised by RISPs and analyzes the strategic indicator of violent lethality in the state.

Chart 2 showcases the following variables: Murder, homicide resulting from opposition to authority, and missing persons. The last variable was used in order to account for potential reports that could have been left out to fabricate results, as well as the dynamic of concealment often perpetrated by militias. As a complement to the information brought about by the two charts, I present the analysis of a table that shows productivity-driven awards for accomplished targets per RISPs in the state of Rio de Janeiro between 2009 and 2016. The objective of this table is to encourage critical thinking around productivity-driven gratuities at RISPs and AISPs throughout the defined period.

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[11] Roberto Alzir was one of SIM creators during his tenure as Chief of Operational Planning at SESEG, in 2008. At the time of the interview, he was Undersecretary of Strategic Affairs at SESEG – the agency has been under military federal intervention since February 17, 2018.

[12] The state was hit by a severe financial crisis caused by the reduction in revenues after the interruption of oil royalties' payment and the fall of economic activity. The government was forced to declare State of Emergency within the scope of state's financial administration (Decree no. 45,692 of 01/17/2016), which was later extended till December 31, 2019.

At last, Chart 3 shows arrests (*in flagrante* and arrest warrants carried out by the police) in order to question the ability of arrest rates to impact strategic indicators of violent lethality and street robbery.
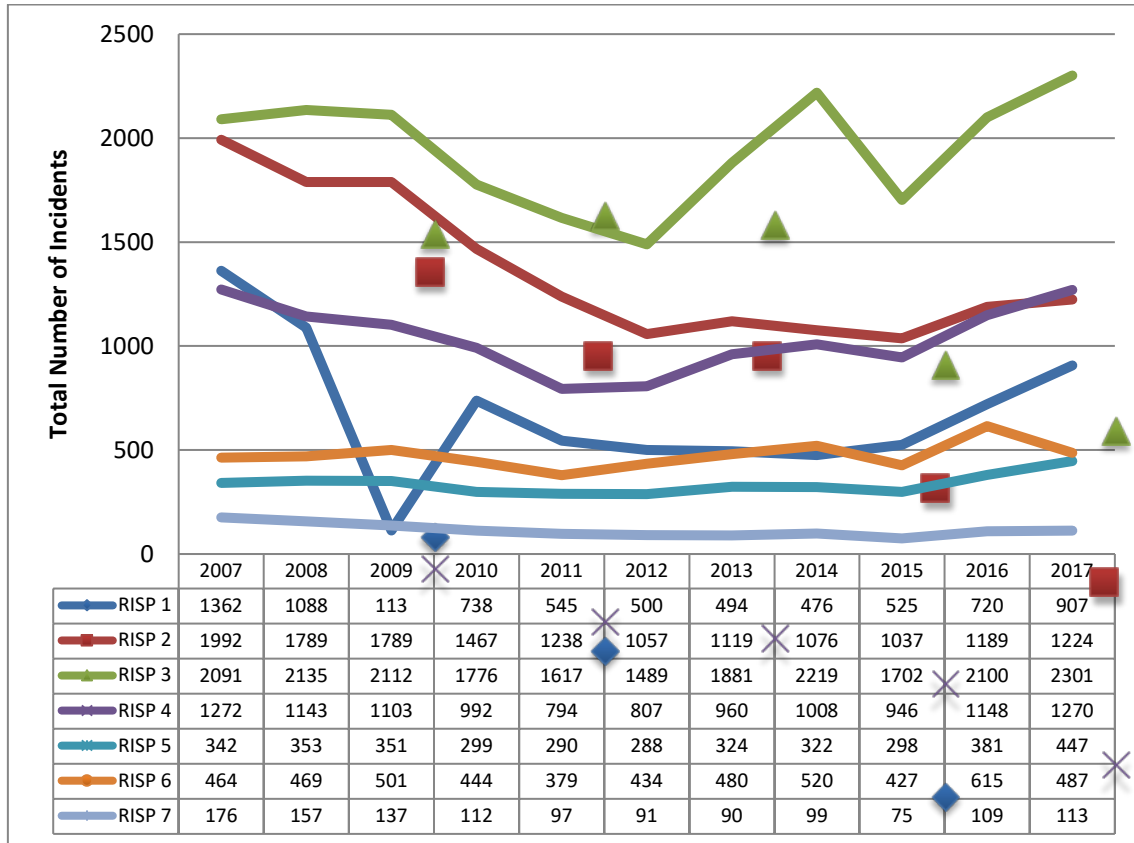
CHART 1

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
RISP 1	1362	1088	113	738	545	500	494	476	525	720	907
RISP 2	1992	1789	1789	1467	1238	1057	1119	1076	1037	1189	1224
RISP 3	2091	2135	2112	1776	1617	1489	1881	2219	1702	2100	2301
RISP 4	1272	1143	1103	992	794	807	960	1008	946	1148	1270
RISP 5	342	353	351	299	290	288	324	322	298	381	447
RISP 6	464	469	501	444	379	434	480	520	427	615	487
RISP 7	176	157	137	112	97	91	90	99	75	109	113

Chart 1. Strategic indicator of violent lethality - RJ (2007–2017).
(Source: Instituto de Segurança Pública (ISP/RJ) – www.isp.rj.gov.br).

Chart 1 shows a steady decline in violent lethality in four of seven regions since the year of 2007, when 7,699 deaths were registered in the whole state of Rio de Janeiro – the highest index within the scope of the analyzed time series. Even before UPPs, SIM, and RAS, reports from RISP 1, 2, 4, and 7 (corresponding to the city of Rio de Janeiro, Greater Niterói/Lakes Region, and Mountain Region) showed a decline in this type of incident. In RISPs 3, 5, and 6 (respectively Baixada Fluminense, Fluminense South/Costa Verde, and Fluminense North), the indicator increased slightly between 2007 and 2009. In 2009, when the first UPPs were implemented in the city of Rio (RISP 1 and 2), the indicators remained somewhat stable. However, in 2010 – when SIM began to be measured biannually –, the indicators dropped significantly in all regions. The phenomenon lingered on till 2011.

Throughout the period analyzed, the lowest violent lethality rate was registered in 2012 (4,666 deaths). The trend is sustained in all regions – except for RISPs 4 and 6, where indexes rose constantly until 2016. In 2013 and 2014, the indexes show more significant increase at Baixada Fluminense (RISP 3): Figures go from 1,489 deaths in 2012 to 2,219 in 2014, a nearly 50% increase in two years. RISPs 1, 2, and 5 (Capital City, Fluminense South/Costa Verde) show more steady numbers throughout the period. RISP 7 (Mountain Region) saw an increase from 90 to 99 deaths throughout the period.

2015 marks the onset of the state's financial crisis. SIM- and RAS-related payments began to be delayed in the year's second half. Police officers, nonetheless, kept enrolling in RAS. Excepted for RISP 1 (capital city's North, South, and Downtown), which is the best served area in terms of UPPs,[13] all other regions have their strategic indicator of violent lethality reduced – particularly RISP 3 (Baixada Fluminense), with a decline of over 20%.

The state crisis worsens in 2016; delays in salaries become a constant, and SIM- and RAS-related payments are discontinued. The government announces changes to UPPs. Police stations and battalions face lack of resources to purchase fuel, maintain police cars, and other infrastructure-related activities. At the same time, the strategic indicator of violent lethality increases in all regions – the trend lingers on through 2017, except for RISP 6, where the index declined.

In order to better understand which values are relevant among those used to calculate the strategic indicator of violent lethality and to infer the impact of underreporting and "gaming" over these data, Chart 2 must be analyzed – it follows the division proposed by Ganem Misse (2013) into indicators of murder (excluding people killed by the police), people killed by police intervention, and missing persons.
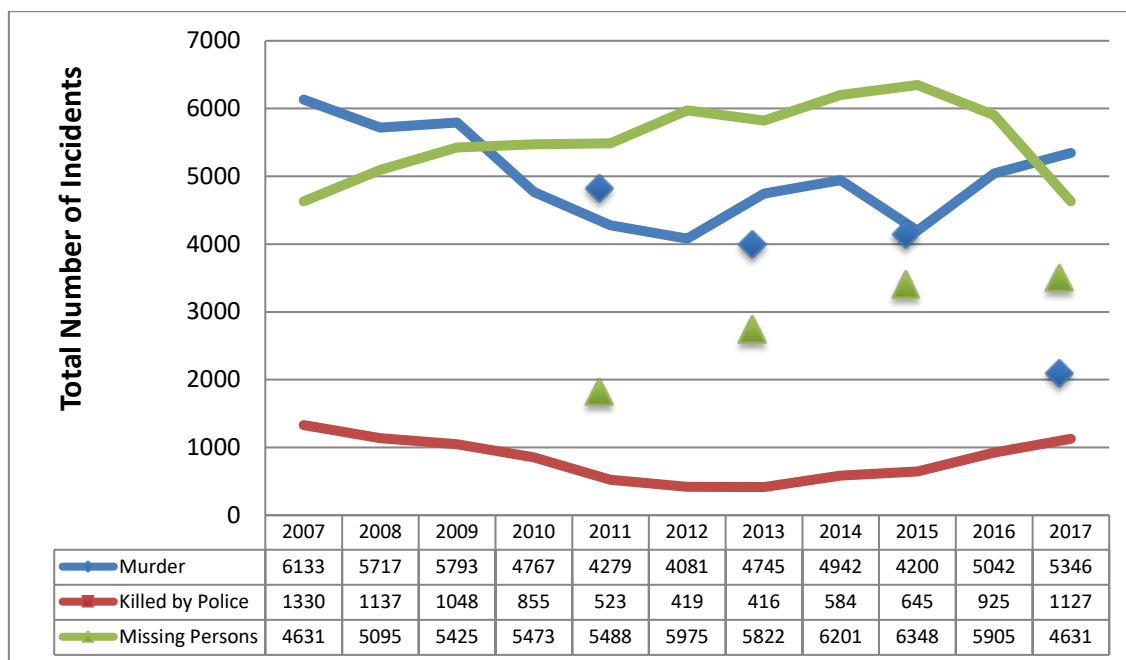
CHART 2

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Murder	6133	5717	5793	4767	4279	4081	4745	4942	4200	5042	5346
Killed by Police	1330	1137	1048	855	523	419	416	584	645	925	1127
Missing Persons	4631	5095	5425	5473	5488	5975	5822	6201	6348	5905	4631

Chart 2. Murder vs. People killed by police vs. Missing persons - RJ (2007–2017).
(Source: Instituto de Segurança Pública (ISP/RJ) - www.isp.rj.gov.br).

By analyzing Chart 2, it is possible to observe that murders and homicides resulting from resistance to authority had been declining in Rio de Janeiro since 2007, whereas missing persons reports were on the increase until 2015. The lowest index of missing persons (in absolute values) was registered in 2007 (4,631) – this was before the implementation of UPP, SIM, and RAS. This was also the year with the highest number of murders and

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[13] The UPP crisis worsens in 2015, leading to an increase in lethality rates. In response to the intensification of violent conflicts in pacified *favelas*, Decree no. 45,186 (3/17/2015) reorganized the program's operations through the use of colors (red, yellow, and blue) to identify levels of "operational risks" and opened the possibility to engage troops under the Coordination of Special Operations (COE) at any time.

homicides resulting from police intervention (6,133 and 1,330, respectively). While the number of missing persons peaked in 2015 (6,348), the lowest number of deaths caused by police action was registered in 2012 (419, less than 1/3 of the deaths in the same category registered in 2007) – the same year when the lowest number of murders were registered (4,081).

There is a steeper decline in reports of murder and homicides resulting from police intervention between 2010 and 2012; an increase in the same as of 2013; a new decline in 2015; and a return to 2010–2012 levels in 2016 and 2017. Values grew constantly from 2014 to 2017 and came close to those reported before the implementation of UPP, SIM, and RAS policies.

Regarding the number of missing persons in Rio de Janeiro, it is worth noting that two studies carried out by the Institute of Public Safety (Ferraz 2009, ISP 2011) analyzed a sample of 10% of those cases and found that, in 70% of them, people ended up returning home. The causes for the disappearance were never identified in 15% of the incidents. In 5% of them, the missing person was eventually found dead (2% were homicides that had not been previously reported). Using the same data set, Soares (2009) reports that people return home in 86% of the cases, as many of the missing persons are youngsters running away from home or elderlies who get lost after leaving their residence and not being able to find their way back. Hence, the percentage of deaths following missing persons cases may represent up to 14% of the cases.

For Cano and Duarte, (2012), there is compounding evidence of homicides perpetrated in low-income communities in Rio de Janeiro, where criminal organizations conceal the bodies, even though the population within the community is aware of the murder. Do families report the cases when they know that the person is actually dead? It is common knowledge that dwellers in these communities fail to report crimes and offenses in police stations. Cano and Duarte (2012) also highlights that the militias have been concealing their victims' bodies to mask murders, especially in the West of Rio de Janeiro and, at a smaller degree, in the North and in Baixada Fluminense. Despite its limitations, the author believes that official records of missing persons seem to confirm the trend of increasing numbers of cases in times and places where the presence of militias is known.

Chart 2 also shows that the curves of deaths resulting from police intervention and missing persons seem to grow opposite ways throughout time. Ganem Misse (2013, 2014) identified that the disappearances were on the rise in both areas controlled by militias and UPPs. The declines in the rates of murder and homicide resulting from police intervention seem to accompany a rise in the number of missing persons cases (although in much smaller proportion). Upon analyzing public safety policies implemented since 2009 in the state of Rio de Janeiro, it seems plausible to think that SIM may have had more relevant influence over police records than UPPs, including the possibility of having caused an increase in underreported cases.

Even disregarding the missing persons variable, Silva (2017) concludes that, since 2010, the number of homicide victims resulting from resistance to authority in the final months of the cycle (June and December) shows a different behavior in comparison to immediately previous and following months. When paying closer attention to the variation of cases of SIM-related offenses throughout 2015, he identifies that registered numbers decreased dramatically in several areas.

In September 22, 2014, the state government launched the Missing Persons Police Department (DDPA – Delegacia de Descobertas de Paradeiro), at Cidade da Polícia. The new unit is responsible for investigating missing persons cases in Rio and relies on a dedicated hot line for anonymous reports. Before DDPA was created, the cases fell under the jurisdiction of the Missing Persons Department (SDP – Seção de Descoberta de Paradeiro).[14] Disappearances in Baixada Fluminense, Niterói, São Gonçalo, and Itaboraí are still investigated by each municipality's Homicide Division. Cases registered in the countryside are also investigated by local authorities.

Table 1 shows productivity awards for accomplished targets by RISP between 2009 and 2016 (the last year whose results can be found in the program's virtual platform – http://www.sistemademetas.seguranca.rj.gov.br).

TABLE 1

YEAR/SEMESTER	RISP	AISP
2009/2	1 (1st place) and 3	13, 33, 23, 04, 06, 07, 14, 15, 17, 31, 34, 35
2010/1	2 (1st place), 1, 3, 4, and 6	15 (1st place), 16 (2nd place), 34 (3rd place), 01, 03, 05, 06, 08, 09, 11, 12, 18, 19, 21, 22, 25, 27, 28, 33, 35, 36, 37
2010/2	1 (1st place), 2, and 3	19 (1st place), 29 (2nd place), 06 (3rd place), 01, 02, 04, 05, 08, 14, 18, 21, 22
2011/1	1 (1st place), 2, 4, 5, and 7	01 (1st place), 06 (2nd place), 29 (3rd place), 40 (4st place), 02, 03, 05, 07, 08, 09, 11, 16, 17, 18 21, 22, 24, 26, 28, 30, 35, 37, 41
2011/2	1 (1st place) and 7	16 (1st place), 38 (2nd place), 06 (3rd place), 03, 04, 11, 17, 23, 27, 29, 37
2012/1	-	02 (1st place), 04 (2nd place), 38 (3rd place), 06, 17, 22, 26, 27, 33
2012/2	5 (1st place)	04 (1st place), 18 (2nd place), 22 (3rd place), 02, 05, 09, 10, 14, 23, 28, 35, 36
2013/1	-	10 (1st place), 40 (2nd place), 23 (3rd place), 14, 26, 36
2013/2	-	26 (1st place), 40 (2nd place), 10 (3rd place)
2014/1	-	37 (1st place), 40 (2nd place), 29 (3rd place)
2014/2	-	02 (1st place), 29 (2nd place), 37 (3rd place), 38 (4th place), 17, 19, 28, 31

[14] Ferreira (2011) carries out thorough ethnographic research about the SDP of the former Rio de Janeiro's Homicide Division (Downtown/Capital City), which preceded DDPA and focused exclusively on missing persons cases.

2015/1	5 (1st place), 6 (2nd place), 7 (3rd place), 3, and 4	07 (1st place), 08 (2nd place), 11 (3rd place), 15 (4th place), 19 (5th place), 21 (6th place), 23 (7th place), 28 (8th place), 30 (1st place), 35 (2nd place), 36 (3rd place), 06, 14, 17, 20, 22, 25, 29, 31, 32
2015/2	6 (1st place)	35 (1st place), 39 (2nd place), 34 (3rd place), 05, 08, 15, 18, 19, 20, 22, 23, 29, 30, 32, 38
2016/1	-	18 (1st place) - Jacarepaguá

Table 1. Productivity Awards for Accomplished Targets by RISP - State of Rio de Janeiro, 2009–2016.
(Source: Rio de Janeiro State Government - http://www.sistemademetas.seguranca.rj.gov.br/).

The seven RISPs comprise 41 military police battalions (or 41 AISPs). Prizes were first given in S2 2009 and awarded 12 AISPs – 10 of which belonged to RISP 1 (capital city's South, Downtown, and North.) This number rises to five out of seven RISPs in S1 2010, when 22 out of 41 AISPs were awarded – 2 RISPs (Rio's West Side) got first place, boasting the largest reduction in strategic indicators. In the second half of the same year, 12 were the AISPs awarded, seven of which belonged to RISP 1 (region of UPP expansion within the period). Two of them belonged to RISP 2 in neighborhoods with stronger presence of *milicianos* (AISP 14 – Bangú, and AISP 18 – Jacarepaguá).

In S1 2011, five out of seven RISPS were awarded – 23 out of 42 AISPs. The number of awarded AISPs declined since S2 2011 until they reached 13; most of those belonged to RISPs 1 and 7. In S1 2012, no RISP received the award; 9 AISPs were awarded. These numbers rose to 12 AISPs in S2 2012, period when RISP 5 was also awarded.

From S1 2013 up to S2 2014, no RISPs were awarded; six AISPs received the prize in S1 2013, three in S2 2013, three in S1 2014, and eight in S2 2014. In this same period, bonus values increased to R$13,500 (USD3,330) for first place; R$9,000 (USD2,200) for second place; and R$6,750 (USD6,648) for third place.

Year 2015 is marked by the onset of the state's financial crisis. In S1 2015, the program goes back to the numbers registered in its first two years: Five out of seven RISPs received the first prize – RISPs 5, 6, and 7; 11 AISPs earn first place prizes and other nine were also awarded. In the second half, RISP 6 was the only one to receive the prize; 15 AISPs earned the bonus. Following the crisis that disabled bonification payments in 2016, the sole winner in the first half of the year was AISP 18 in Jacarepaguá – interestingly enough, this was the neighborhood where militias expanded the most. It is worth noting that, as of 2016, Decrees no. 45,549/16 and 45,567/16 drastically reduced gratuities: First place was then earning a bonus of R$3,000 (USD915).

Chart 3 below shows the expansion of incarceration rates as another plausible variable when thinking critically about possible results of SIM, RAS, and UPPs.

CHART 3

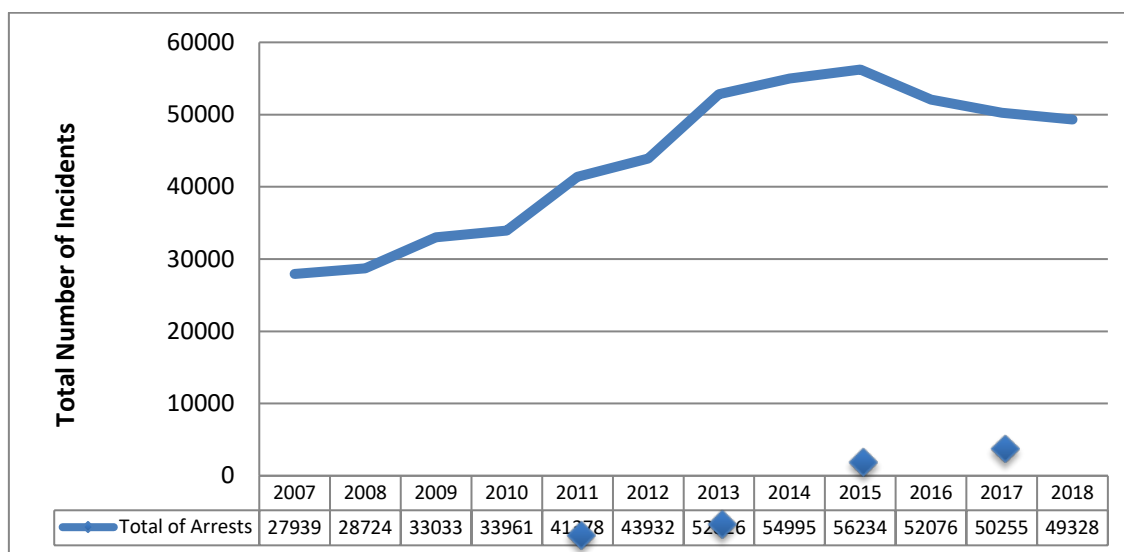|	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total of Arrests	27939	28724	33033	33961	41378	43932	52826	54995	56234	52076	50255	49328

Chart 3. *In flagrante* arrests and fulfilled arrest warrants - Rio de Janeiro (2007–2017). (Source: Instituto de Segurança Pública (ISP/RJ) - www.isp.rj.gov.br).

The number of *in flagrante* arrests and fulfilled arrest warrants (aggregated under the "prison" category) carried out by the police grew more than two-fold between 2007 and 2015. The chart's curve shows a growing trend until 2015, leading to believe that arrest rates bare no relation to violent lethality. However, it is noteworthy that the most significant increase in arrests took place in 2009 (4,309 more arrests, or a 15% increase in comparison to the previous year), 2011 (7,417 more arrests, or a 22% increase in comparison to the previous year), and 2013 (8,894 more arrests, or a 20% increase in comparison to the previous year). The increase is less significant in 2014 and 2015. Numbers fall again in 2016 (4,158 fewer arrests, or a 7% decrease in comparison to the previous year) and 2017 (1,821 fewer arrests, or a 3% decrease in comparison to the previous year.) Incarceration rates in the state's seven RISPs varied little; since 2007, expansion averaged at 10% per year, even before the implementation of SIM, UPP, and RAS, and the practice was intensified as of 2009 due to the expansion of UPPs. Missing persons reports followed on the same footsteps (albeit at smaller proportions) during the same period (2007–2015). Would it be possible that part of the missing persons cases was related to arrests? A brief analysis of data related to disappearances and arrests by RISP does not seem to corroborate this hypothesis: The highest number of incarcerations was registered at RISP 3 (Baixada Fluminense) – 5,193 arrests and 1,226 missing persons in 2007. These numbers jumped to 12,698 arrests and 1,663 missing persons in 2015. In 2014, 1,760 missing persons and 9,912 arrests were registered in the same area. By comparing both years, 2015 registered fewer missing persons than 2014, but more arrests. RISP 2 (West Side of capital city and part of the North Side, areas with strong presence of militias) was top of the list on missing persons cases: 962 cases and 3,639 arrests in 2007, against 1,860 missing persons and 8,325 arrests in 2015. With regards to SIM-related awards, West Side AISPs were only beaten by RISP 1 (capital city's South Side, Downtown, and North Side).

5. Final considerations

The objective of this study was to think critically about police-oriented targets and incentive policies based on the Rio de Janeiro case study during the period of 2007–2017. UPPs, SIM, and RAS were put in place simultaneously, which makes it hard to analyze the impact of each policy individually. This analysis could not leave aside the bonification programs for additional workload, such as PROEIS, Segurança Presente, and PEOp, since it is understood that they are also police-oriented incentive programs.

As demonstrated by this study, these programs aimed at police action were implemented in two stages between 2009 and 2012. In the first, programs were created that sought to guide the action of the police in their functions. In the second, programs were created which mobilized the police force for overt policing activities.

The research, which is still in progress, so far points to some interesting results. Analyzing the research sources, through interviews, field observation and criminal analysis, we arrived at three possibilities regarding the effectiveness of these combined policies, especially the SIM.

As a first possible finding, we identified that gaming practice may have had an influence on the first years of SIM policy. However, in 2013, when bonus payments substantially increased, fewer police battalions reached the goal. This finding weakens the idea that the data was modified to achieve the goals. This hypothesis also strengthens the effectiveness of the SIM.

As a second possible finding, from field observation and interviews, the SIM was not identified as relevant by the police force. The productivity of battalions and police stations follows other criteria, many of them with repercussions on outcome indicators, such as seizures of weapons, drugs, approaches, arrests carried out, reported police inquiries, etc. They follow another type of productivity with the target system, aiming for a reduction in police records. The main focus is to reduce the process indicator. According to this hypothesis, SIM would be irrelevant and the reduction in violent crime in the period would be a mere coincidence.

As a third possible finding, the crime organizations, such as the "milícias", could have exerted influence on SIM. This could have happened with evidence of data manipulation and with the help of the expansion of the "milícias" groups in Rio de Janeiro. This hypothesis problematizes other factors that are difficult to be perceived through interviews and criminal analysis data, as they depend on more qualitative research information. The concentration of the Missing Persons Police Department (DDPA – Delegacia de Descobertas de Paradeiro) inside of the Homicide Division, until 2014, points to a chance of modifying the records of missing persons, to achieve the target. Another factor that is being explored by the research is the expansion of the paramilitary groups in Rio de Janeiro, which could be exerting influence on these same indicators of homicides and missing persons. This hypothesis could lead to a question if the SIM is becoming a paid bonus for the military police battalions located in the "milícia" areas, as in these areas there are fewer registered police lethality.

Upon the creation of DDPA and the political and financial crisis that hit the state in 2015 – when payments related to variable-compensation policies were discontinued, there was a rise in the number of murders and homicides resulting from police intervention,

while the number of missing persons cases decreased. To what extent can the creation of DDPA have influenced the quality of data produced about disappearances in the state?

The investigation of violent lethality indicators used by SIM reveal many challenges in identifying the impact of IECs determined by the targets policy. Notwithstanding the gradual decrease in murders and homicides resulting from police intervention since 2007, the reduction in violent lethality is more noticeable in the first years after the implementation of the policies analyzed in this study.

According to Acselrad (2016), SIM came into force at the same time that a shift is observed in relevant crime indicators across the state, suggesting that the number of police reports could be higher should the targets policy not be in place. However, the rise in analyzed indicators takes place between 2013–2017, when bonification programs for additional workload (PROEIS, PEOp, and Segurança Presente) were also implemented. When carrying out research in public safety, establishing causal relations may lead to the belief that variable compensation policies could somehow disorganize the result-driven system embraced by SIM.

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