CoE Brazil
CENTRE OF EXCELLENCE FOR ILLICIT DRUG SUPPLY REDUCTION

STRATEGIC STUDY

Covid-19 and drug trafficking in Brazil: the adaptation of organized crime and the actions of police forces during the pandemic

UNODC Escritório das Nações Unidas sobre Drogas e Crime
PNUD
SECRETARIA NACIONAL DE POLÍTICAS SOBRE DROGAS
MINISTÉRIO DA JUSTIÇA E SEGURANÇA PÚBLICA
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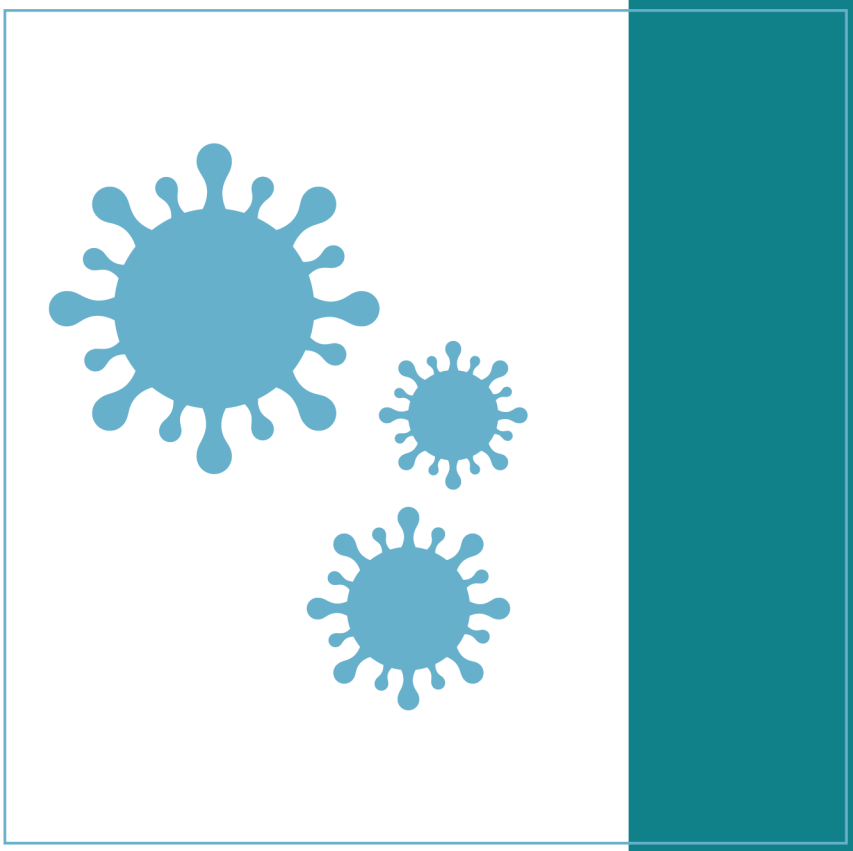
List of Acronyms

BA	Bahia
BNMP	National Bank of Arrest Warrant
BPFron	Border Police Battalion
BPMR	Military Highway Police Battalion
CAPE	Center for Analysis, Planning and Statistics
CdE	Centre of Excellence for Illicit Drug Supply Reduction
CH	Cocaine hydrochloride
CIOF	Integrated Centre for Border Operations
CNJ	National Council of Justice
COBRA	Aquatic Search and Repression Operations Corps
COPE	Special Police Operation Center
CP	Civil Police
CPMS	Civil Police of Mato Grosso do Sul
CPPR	Civil Police of Paraná
CPSP	Civil Police of São Paulo
CV	Comando Vermelho
DEFRON	Specialized Police Department for the Suppression of Border Crimes
DENARC	Civil Police Narcotics Department
DF	Federal District
DOF	Department of Border Operations
FBSP	Brazilian Public Security Forum
FDN	Família do Norte
FHP	Federal Highway Police
FP	Federal Police
FU	Federative Unit
GEOINT	Geospatial Intelligence
GOA	Air Operations Group
IBGE	Brazilian Institute of Geography and Statistics
IC	Institute of Criminalistics
MAPA	Ministry of Agriculture, Livestock, and Food Supply
MDA	3,4-Methylenedioxyamphetamine

ME	Ministry of Economy
MJSP	Ministry of Justice and Public Security
MP	Military Police
MPMS	Military Police of Mato Grosso do Sul
MPPR	Military Police of Paraná
MPSP	Military Police of São Paulo
MS	Mato Grosso do Sul
NEE	Narcotics Testing Centre
NEPOM	Special Maritime Police Center
PCC	Primeiro Comando da Capital
PNAD	Brazil National Household Sample Survey
PPE	Personal protective equipment
PR	Paraná
RAB	Research and Analysis Branch
RFB	Federal Revenue Service of Brazil
RS	Rio Grande do Sul
SC	Santa Catarina
SEJUSP/MS	State Secretariat for Justice and Public Security of Mato Grosso do Sul
SESP/PR	Public Security Secretariat of Paraná
SP	São Paulo
SPTC/SP	Superintendence of the Technical and Scientific Police of São Paulo
THC	Tetrahydrocannabinol
TIGRE	Integrated Tactics of Special Repression Groups
TJSP	Court of the State of São Paulo
UNDP	United Nations Development Programme
UNODC	United Nations Office on Drugs and Crime
VIGIA	National Border Security Program



A study that aims to understand the dynamics of drug trafficking in the context of the covid-19 pandemic.

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1 Introduction

The COVID-19 pandemic has become a major natural intervention in many licit and illicit markets around the world. With travel restrictions and social distancing policies implemented, new dynamics and challenges have emerged in different social spheres and affected the work of institutions linked to the repression and surveillance of drug trafficking, as well as the actions of criminal groups in this market.

In addition, the health crisis has deepened a series of social and economic inequalities, revealing opportunities and challenges linked to drug trafficking and other crimes. The consequences and effects of this anomalous scenario shall be better understood in the coming years, such as: (i) changes in drug production chains with the restrictions and lockdowns; (ii) changes in demand, supply and price dynamics in illicit drug markets; (iii) infiltration of criminal organizations in sectors of the legal economy impacted by the pandemic; (iv) expansion of the role of criminal organizations in money laundering activities; and (v) opportunity for improved control and surveillance by the police in certain territories (UNITED NATIONS OFFICE ON DRUGS AND CRIME, 2021a).

In the context of a global effort to assimilate the changes that have occurred due to the current health crisis, this study seeks to understand the dynamics of drug trafficking that may have arisen, changed or intensified with the COVID-19 pandemic. To this end, the team of the Centre of Excellence for Illicit Drug Supply Reduction (CoE Brazil) collected national and international data, and carried out field research in three Brazilian states: Mato Grosso do Sul (MS), Paraná (PR) and São Paulo (SP), places where different views of institutions operating at the federal and state levels were observed. This study had the technical support from the Research and Trend Analysis Branch (RAB) of the United Nations Office on Drugs and Crime (UNODC), headquartered in Vienna, in the preparation of the methodological design, discussion of qualitative instruments and discussion of the results of quantitative data on illicit drug seizure.

The research also aims to contribute to the knowledge already produced on the subject, such as the analysis published in UNODC's World Drug Report 2021[1]. References of this nature provide a broad perspective on the difficulties faced during the pandemic, as well as on the new dynamics of criminal groups that operate in transnational drug trafficking. However, such global analysis generally does not delve into regional and national specificities.

Therefore, this study seeks to collaborate with the existing field of knowledge on the subject from the analysis of the Brazilian reality with the primary objective of subsidizing and supporting the continuous improvement of institutions that work to fight illicit drug trafficking and public policies in the area.

1 The World Drug Report 2021 includes a booklet devoted entirely to the theme of COVID-19: Booklet 5 - covid-19 and drugs: Impact and outlook.

2 Context and objectives

For decades now, Brazil has been facing the consequences of illicit drug trafficking and related transnational crimes due to its extensive land border, a situation that causes enormous economic and social damage.

From the available data, it is clear that the country occupies two spaces in the international illicit drug market: (i) the logistical operation of cocaine (generally in the form of coca paste/base, or cocaine hydrochloride) coming from some countries of the Andean America (Colombia, Peru and Bolivia), which is transported to different world markets, such as Europe and Africa, by different transportation methods; and (ii) importer of cannabis coming from Paraguay and destined for use in Brazil. With regard to the production of drugs, cannabis is planted in the national territory, in particular in some Northeast states[2]. Eventually, in some Brazilian locations, there is the development of some practices for refining[3] cocaine in clandestine laboratories, even generating other intermediate products that are produced during or after the manufacturing process of cocaine hydrochloride (CH) from coca paste or cocaine base, such as crack.

Namely, the transport of cocaine connects two main points in the dynamics of Brazilian illicit markets: the border regions with Bolivia, Peru and Colombia with Brazil's port regions, in particular Paranaguá (Paraná), Itajaí (Santa Catarina), Salvador (Bahia) and Santos (São Paulo), whose logistical structures are improperly used by organizations linked to the international traffic of cocaine to send the drug to different parts of the world, especially to Europe.

In addition to this, the geographical scenario with its extensive maritime coastline and continental dimensions, as well as the long land[4] border of 16,885.7 km (over land, rivers, lakes and canals), represents obstacles in the fight against transnational crimes. This border extension involves

2 Locally known as the "Polygon for cannabis plantation".

3 Transformation process from the coca paste/base form to cocaine hydrochloride.

4 Law No. 6,634 of May 2, 1979 defines, for purposes of national security, the length of the border, which establishes a width of 150 km parallel to the dividing land borders.

ten countries in the region, with the exception of Ecuador and Chile (Table 1); it comprises 11 Federation Units (FUs), 588 municipalities covering 16.7% of the area of Brazil (IBGE, 2020)[5].

Table 1 – Border of South American countries with Brazil

	Country	Extension
1.	Bolivia	3,423.2 km
2.	Peru	2,995.3 km
3.	Venezuela	2,199.0 km
4.	Colombia	1,644.2 km
5.	Guyana	1,605.8 km
6.	Paraguay	1,365.4 km
7.	Argentina	1,261.3 km
8.	Uruguay	1,068.1 km
9.	French Guiana	730.4 km
10.	Suriname	593.0 km

Source: Itamaraty[6] (2021).

To understand the magnitude of this territorial extension and the challenges of controlling crime at the border, only the Brazilian region neighboring the main cocaine and cannabis producing countries in South America (Colombia, Peru, Bolivia and Paraguay) is approximately three times larger than the land border between the United States (US) and Mexico[7], 3,145 km long. And despite the recognized economic and technological capabilities of the US, Mexico continues to be the main source of origin of heroin and methamphetamine destined for the United States, in addition to being one of the main transit countries for cocaine in South America (it is estimated that approximately 90% of cocaine destined for use in North American crosses the land border with Mexico) (UNITED NATIONS OFFICE ON DRUGS AND CRIME, 2021a).

On the other hand, the maritime border of Brazil has an extension of 7,491 km with 17 FUs, 280 municipalities, 58% of the population, and high population density, being responsible for most of the flow of national products abroad. Brazil also has a logistics structure for transporting cargo and people with nine of the largest airports in Latin America[8], 239 port facilities (AGÊNCIA NACIONAL DE TRANSPORTES AQUAVIÁRIOS, 2020) and an extensive road network[9] of 75,553 km, which connects the transport of goods and people throughout the national territory (IBGE, 2016).

In the country, there is a history of public policies focused on border action and surveillance, which had a diagnosis carried out with a view to federal, state and municipal actions, as well as private security and aspects that involve the border dynamics with all the diversity existing in Brazil (MINISTÉRIO DA JUSTIÇA E CIDADANIA, 2016).

As mentioned above, Brazil is an important transit country for cocaine to markets in Europe, Africa and, to a lesser extent, Asia, integrating a complex national and international network of illicit drug trafficking routes. According to the Global Initiative Against Transnational Organized Crime (MCDERMOTT, et al., 2021), there is a growing perception of Brazil's participation as the main player in the arrival logistics of Latin American cocaine in European countries

5 Available at: https://www.ibge.gov.br/geociencias/organizacao-do-territorio/estrutura-territorial/24073-municipios-da-faixa-de-fronteira.html?=&t=acesso-ao-produto. Accessed on: November 17, 2021.

6 Available at: http://pcdl.itamaraty.gov.br/pt-br/ e http://scdl.itamaraty.gov.br/pt-br/. Accessed on: 18 nov. 2021.

7 INTERNATIONAL BOUNDARY AND WATER COMMISSION. Available at: https://www.ibwc.gov/About_Us/about_us.html. Accessed on: August 31, 2021.

8 In Brazil, Guarulhos/São Paulo, Congonhas/São Paulo, Brasília/DF, Galeão/Rio de Janeiro, Confins/Minas Gerais, Campinas/São Paulo, Santos Dumont/Rio de Janeiro, Porto Alegre/Rio Grande do Sul, and Salvador/Bahia stand out.

9 Available at: https://www.gov.br/infraestrutura/pt-br/assuntos/transporte-terrestre/rodovias-federais/rodovias-federais-informacoes-gerais-sistema-federal-de-viacao. Accessed on August 31, 2021.

and, in particular, of the participation of [criminal organization] Primeiro Comando da Capital (PCC). The next table (Box 1) provides an analysis of transnational drug trafficking in South America, pointing out production sites and main routes in the region.

Box 1 – Routes and destinations of illicit drug trafficking

Illicit drug trafficking routes are generally found along traditional trade routes and are characterized by the fact that they connect production areas with consumer markets; criminal organizations are constantly seeking new transportation methods and paths that facilitate the use of the existing transport networks (land, air, sea and river).

They can also be influenced in scenarios of conflict between different players, criminal organizations, guerrillas or security forces that seek to control the circulation of drugs, either for interdiction or for their own benefit. Routes, in this sense, become a geostrategic object as they are built from the knowledge and analysis of geographic space.

The use and proliferation of routes vary over time, diversifying mainly due to the search for alternatives that provide flexibility to ensure the continuity of the drug trafficking chain to the destination markets.

In order to identify possible changes in drug trafficking routes in Brazil as a consequence of government measures to contain COVID-19, this study used Geospatial Intelligence techniques[10] (GEOINT) and Machine Learning methods to generate a map that highlights, in a geographical context, the main routes and destinations of cannabis and cocaine based on information on seizures carried out in 2019 and 2020, existing surveys, official data and open sources, as shown in the table below:

10 GEOINT is characterized by its ability to identify, collect, store and manipulate data to create geospatial knowledge through critical thinking, geospatial reasoning, and analytical techniques; data can be structured (information about locations and forms of geographic features, such as geographic coordinates, satellite images) and unstructured data (geographic information that is not organized by default, such as text with geographic information about an activity). It describes and interprets the human impact of a given event, allowing knowledge to be ethically presented for decision-making (PENNSYLVANIA STATE UNIVERSITY, 2020). It differs from other sources of intelligence gathering because it is inherently integrated and it is enriched by multiple sources of information in a space-time context (CLARK, 2020).

Sources of information used to build the map of international trafficking routes

Source	Use
Federal Police (2021)	Identification of cannabis production areas.
Federal Highway Police (2021)	Georeferenced data on cocaine and cannabis seizures for 2019 and 2020.
United Nations Office on Drugs and Crime (2021) World Drug Report 2021	Identification of coca/cocaine production areas. Identification of the main drug trafficking routes in South America to Europe, Africa, the Caribbean, Asia and the USA. Identification of the main transportation methods for drug trafficking in South America.
Global Initiative Against Transnational Organized Crime (2021) Study: The Cocaine Pipeline to Europe (MCDERMOTT, et al. 2021)	Identification of coca/cocaine production areas. Identification of the main routes and transportation methods for cocaine trafficking in South America to Europe.
INTERPOL, Global Initiative Against Transnational Organized Crime e RHIPTO – Norwegian Center for Global Analyses (2018). Study: World Atlas of Illicit Flow	Identification of the main cocaine trafficking routes in South America to Europe, Africa, the Caribbean, Asia and the USA.
Brazilian Intelligence Agency (2007) Presentation: Transnational Illicit – Perception of Threats to the Brazilian State	Identification of the main drug trafficking routes and destinations in Brazil and South America.
AMERIPOL. Comunidad de Policías de América (2013) Study: Análisis Situacional del Narcotráfico, una perspectiva policial.	Identification of the main drug trafficking routes and destinations in Brazil and South America.
COPOLAD. Programa de cooperación entre América Latina y la Unión Europea em Políticas sobre Drogas (2013). Estudio de las Rutas marítimas en el tráfico de cocaína hacia Europa.	Identification of the main maritime cocaine trafficking routes in Latin America to Europe, Africa and the Caribbean.
National Secretariat of Public Security (2014) Study: Illicit drug trafficking and territory: the case of Brazil (MACHADO, 2014)	Identification of the main drug trafficking routes in Brazil. Identification of the main export platforms.

National Waterway Transport Agency (2021)	Identification and georeferencing of the main active ports in the national territory.
IBGE Brazilian Institute of Geography and Statistics – IBGE (2021)	Cartographic data (vectors) of the territorial structure of the country.
Ordinances No. 213/2016 and 1,080/2019	Identification of twin cities in the national territory.
Open pages on the internet:	Identification of cannabis trafficking routes in Brazil.

Steps for the construction of the map - method:

1- The national territory thematic map was built from vector data from IBGE plus a cartographic representation of the main national ports, twin cities, the border area and the distinction between the North, Central and South border arcs.

2- Unsupervised Machine Learning methods, specifically the HDBSCAN[11] (Hierarchical Density-Based Spatial Clustering of Applications With Noise) algorithm, were used to generate clusters[12] and identify patterns from the georeferenced data of the seizures by the FHP during the years 2019 and 2020.

3- Geospatial Intelligence techniques were applied to represent, through a thematic map, different elements and evidence of the current dynamics of the main routes and destinations of drug trafficking in the national territory.

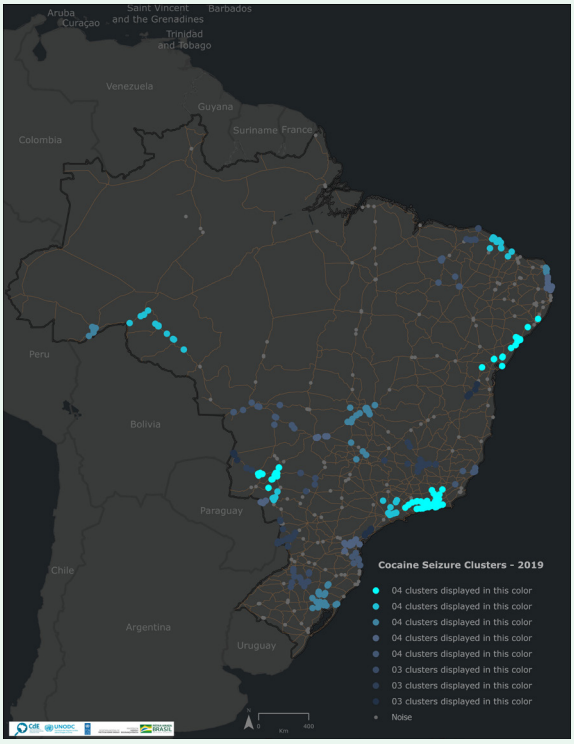
Maps 1 and 2 were generated to represent the cocaine seizure clusters for 2019 and 2020, respectively, and maps 3 and 4 to represent the cannabis seizure clusters for 2019 and 2020. This technique finds clusters of entities based on their spatial distribution. It uses unsupervised machine learning clustering algorithms that automatically detect patterns based only on spatial location and distance to a specified number of neighbors. In this sense, since the data have a series of different observations with different geographic locations in each evaluated period, the number of clusters represented will be different for each year.

Through a manual process of vector editing, the routes and geographic patterns identified from the generated clusters were traced. This procedure made it possible to obtain a more accurate mapping based on the geographic location of drug seizure clusters.

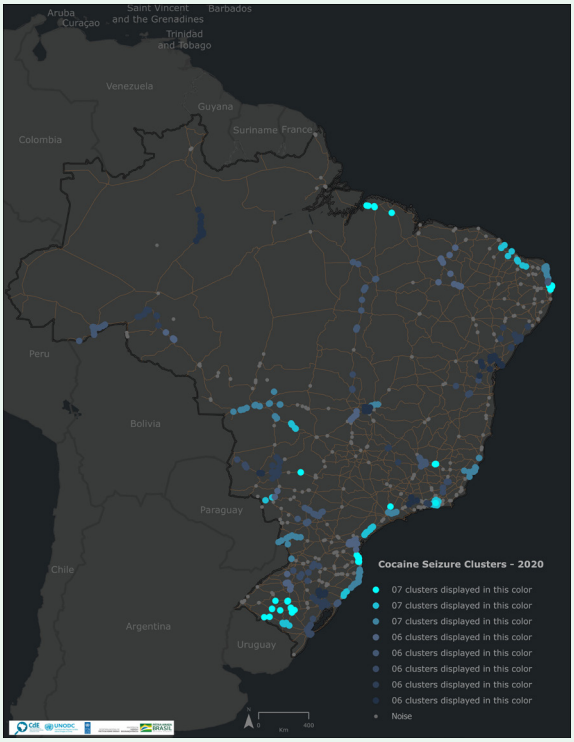
11 HDBSCAN, a hierarchical clustering algorithm, applies incremental distances to divide data into significant clusters while removing noise (CAMPELLO, 2015), it is one of the density-based clustering algorithms. These algorithms consider points to be concentrated in a geographic region (high density), while labeling as noise (low density) those points that do not have neighbors within a close distance (HALKIDI et al. 2001). They are used to carry out spatial clustering of point features and better deal with spatial outliers (noise), especially when large amounts of data points are analyzed (GREKOUSIS, 2020).

12 The terms "Cluster" refers to a geographically delimited group of occurrences of sufficient size and concentration to be unlikely to have occurred by chance.

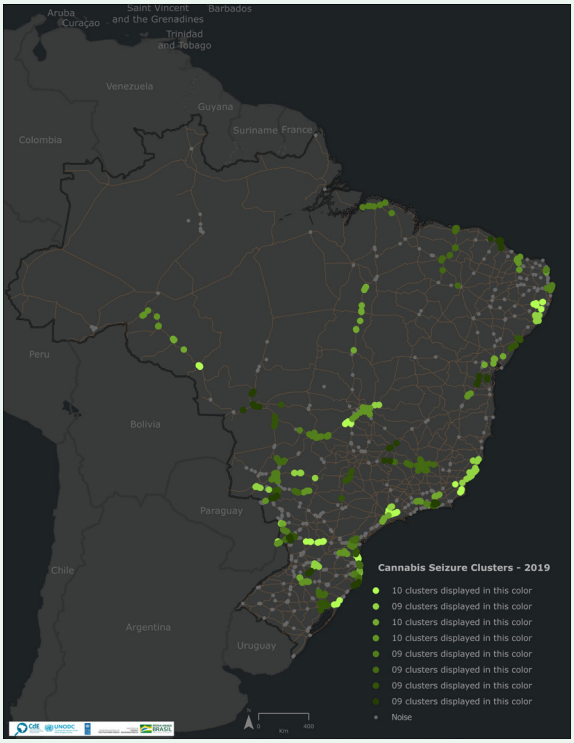
Map 1 – Cocaine seizure cluster in 2019



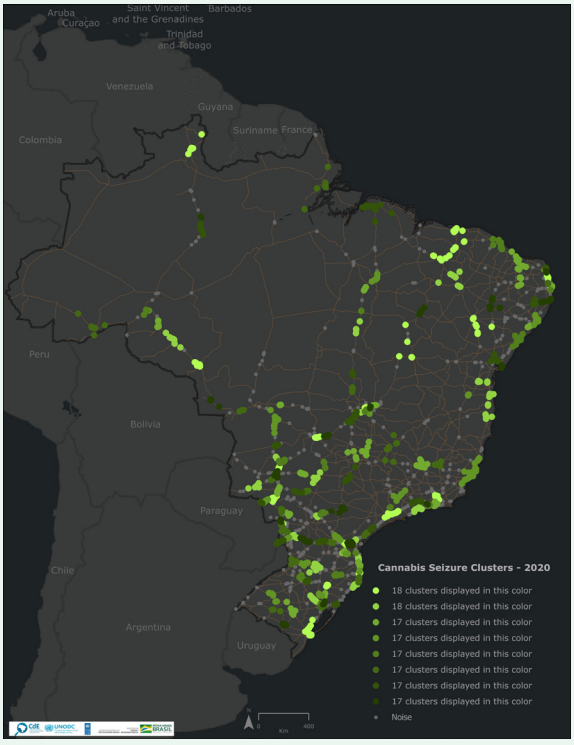
Map 2 – Cocaine seizure cluster in 2020



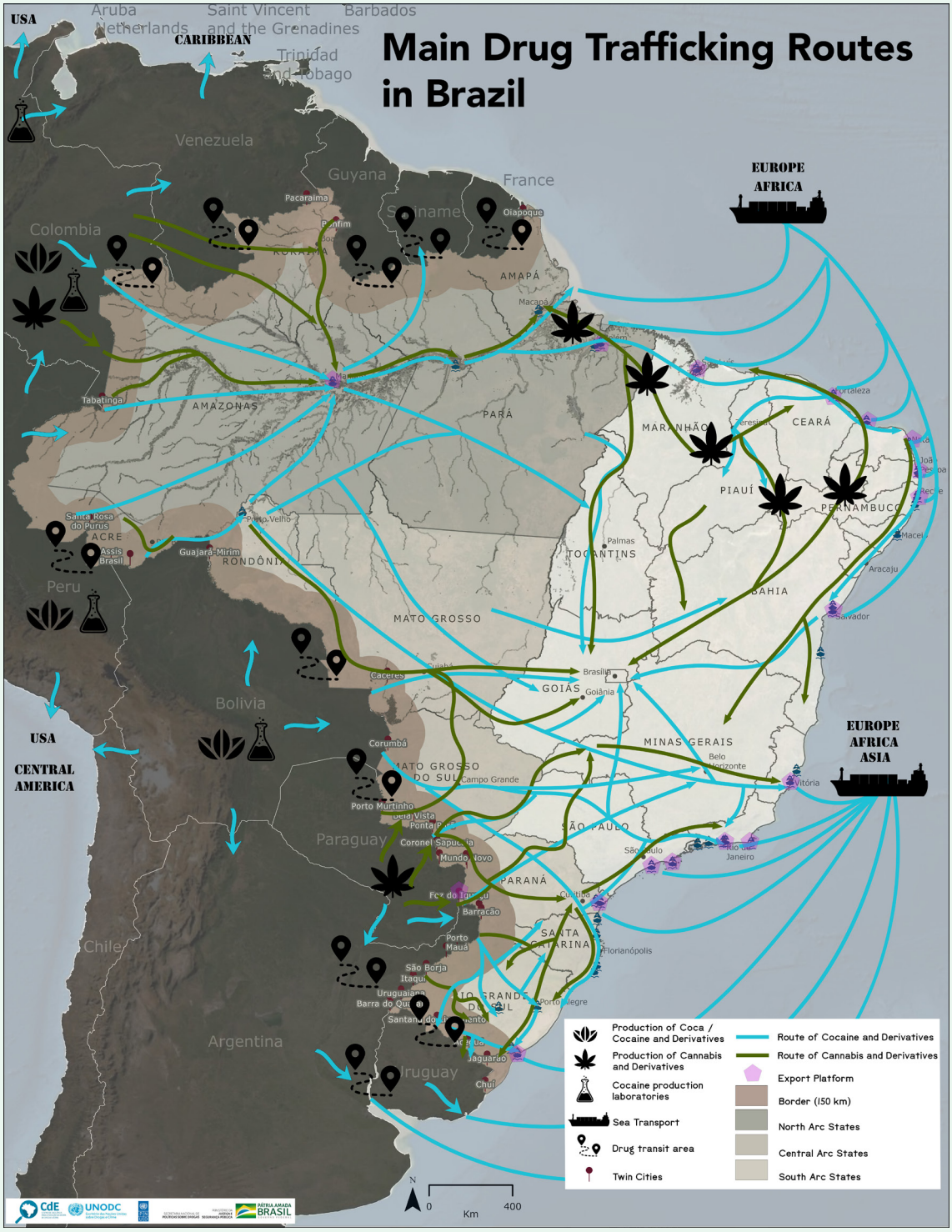
Map 3 – Cannabis seizure cluster in 2019



Map 4 – Cannabis seizure cluster in 2020



Map 5 – Main illicit trafficking routes in Brazil



Findings – what the maps show:

- Map 5 shows the main points of origin of cannabis and cocaine, many of them in twin cities (Bonfim, Pacaraima, Tabatinga, Santa Rosa do Purus, Assis Brasil, Guajará-Mirim, Corumbá, Cáceres, Coronel Sapucaia, Mundo Novo, Ponta Porã, Foz do Iguaçu, Barracão, Porto Mauá); and the points of destination, in the interior of the country, in the metropolitan area of the Federal District and Manaus, and on the maritime border (Fortaleza, Recife, Salvador, Vitória, Rio de Janeiro, Santos and Paranaguá). Large seizures of cocaine were recorded in these locations. It is necessary to clarify that the main revelations of these relationships are around the transit points, which are visible in the concentrations of cocaine and cannabis seizure cluster, both for 2019 and 2020 (Maps, 1, 2, 3, 4).

- The relationship between the routes and the areas of cocaine and cannabis production, the main transportation methods, the territories with high drug use and the export platforms stand out.

- The importance of border regions that, in addition to belonging to areas close to the main producing countries, play a central role in the distribution as they are, at the same time, the destination and origin of international transit with regard to the trafficking of cocaine to the national territory, Europe, Africa and Asia.

- Cocaine seizures are concentrated in the border areas, mainly in the cities of Rio Branco, Porto Velho, Cáceres, Corumbá, Ponta Porã, Dourados and Foz do Iguaçu.

- The clusters' spatial behavior suggests that, as efforts to interdict traditional routes increased, drug dealers may have sought alternatives and diversified routes to the south of the country in 2020, during the COVID-19 pandemic.

- Higher concentrations of cocaine seizures were identified in the cities of Santana do Livramento and Aceguá in 2020. It is likely that, due to interdiction efforts, these cities have geostrategic utilities as alternative routes for drug trafficking, showing a possible adaptation of criminal organizations.

- In Map 5, the trafficking routes to ports located on the maritime border are used as export platforms and correspond to cocaine shipments (blue lines) to Europe, Africa and Asia.

- Brazil remains a strategic region for the transit of cocaine without major changes in the routes traditionally established pre-COVID-19 pandemic. There is a strong resilience on the part of drug trafficking organizations with great capacity to adapt and diversify routes, a discussion broadly addressed in this study.

- In relation to the cannabis trafficking routes, a small-scale trend was identified that points to the cities of Pacaraima and Boa Vista as entry points probably for cannabis from Colombia, which reaches the national territory through the hydrographic networks between the southern region of Venezuela and the state of Roraima. In this particular case, through the analysis of open sources, the existence of a possible route linked to Primeiro Comando da Capital (PCC) was identified, which uses the river networks of the Colombian border cities of La Pedrera and Leticia to Manaus.

- Concentration of cannabis seizure clusters in the states part of the Polygon for cannabis plantation, reflecting a strong trend towards the Northeast of the country.

- In the cannabis trade, there is a strong connection between the cities of Guaíra and Foz do Iguaçu, whose routes cross the city of Cascavel and then continue to Curitiba, where the continuity for distribution to the markets in the Southeast and South of the country is observed.

- In 2020, the state of Rio Grande do Sul presented new clusters that were not present in 2019. The data show a trend of progressive shift towards the south of the country. It is possible to infer the existence of a new route for the cocaine and cannabis trafficking connecting the state of Rio Grande do Sul with the neighboring country, Uruguay. The presence of this new route, or the increase in its use, can be attributed to the easy access to land transport networks between the two countries and the proximity of seaports, as an alternative to avoid interdiction efforts in the main Brazil Northeast and Southeast ports, historically identified by security forces as high-risk facilities for drug trafficking. Such behaviour can be observed, for example, on map 1, where there is a defined pattern, concentrated in the northeast and southeast of the maritime coast, while on map 2 this pattern diversifies and is concentrated in the south of the country.

- The GEOINT analysis suggests that, although the restrictions arising from COVID-19 have reduced the possibilities of drug trafficking by air, seizures on the main land access routes in the national territory have not decreased, and the impact of the pandemic has also not extended to modalities that use maritime transportation methods. On the contrary, there has been an increase in seizure concentrations along the entire country's coastline, which may suggest that criminal organizations have intensified efforts to use the ports infrastructures and continue their illicit activities aimed at international drug trafficking.

Organizations dedicated to drug trafficking have been characterized by their great mutability and resilience during the pandemic, with a rapid capacity to adapt to the experienced contexts. In some localities, a new *modus operandi* and the acceleration of pre-existing dynamics were observed, such as route modification and increased production. Evidence of the resilience of these organizations during the most restrictive period of the COVID-19 pandemic is the fact that production, trafficking and use of cannabis increased (UNITED NATIONS OFFICE ON DRUGS AND CRIME, 2021a). With regard to cocaine trafficking, an increase in the use of small aircraft and maritime transport was noted. In addition, the availability of illicit

drugs in Europe was maintained (EUROPEAN MONITORING CENTRE FOR DRUGS AND DRUG ADDICTION, 2021).

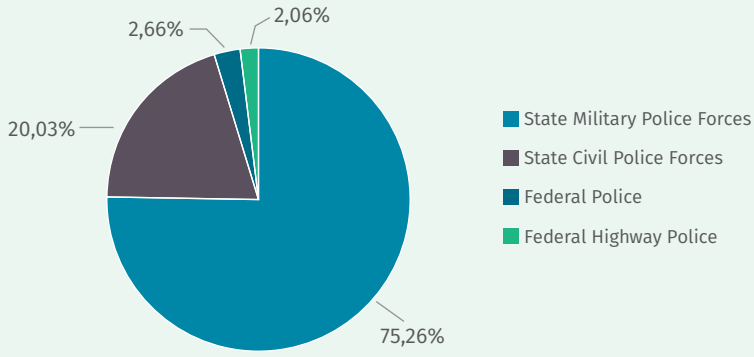
Given this conjuncture, the main objective of this study was to *investigate possible changes in the pattern of drug trafficking (mainly cannabis and cocaine) during the COVID-19 pandemic in Brazil and to identify future trends and scenarios.* To this end, the research was structured in a quantitative stage, in which data were collected from drug seizures from federal and state institutions of three FUs (PR, MS and SP), and a qualitative stage, in which interviews and focus groups were conducted with the objective of understanding the perceptions of professionals working in the surveillance and repression of drug trafficking.

Brazil has a complex organizational arrangement in the context of public security, with police forces linked to the federal government or to state governments, and with different tasks. The following table seeks to briefly describe the main police institutions in the country.

Public security institutions in Brazil

The Brazilian constitution defines public security in its Article 144, which lists the police forces and delegates their main tasks. The following chart shows the proportion of Brazil's main police forces, with more than 500,000 professionals throughout the country.

Figure 1 – Proportion of the number of main police forces in Brazil



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: Profile Research Panel of the Ministry of Justice and Public Security and Ministry of Planning, Development and Management (2017).

Brazil is made up of 27 FUs, and each of them has a civil police and a military police, thus totaling 54 security forces. In addition, in the structure of the Ministry of Justice and Public Security (MJSP), at federal level, there are two more police forces: the Federal Police (FP) and the Federal Highway Police (FHP). In the case of state police, the command is defined by the governments of each FU. In turn, the direction of the federal police forces is a decision of the MJSP, subordinate to the Presidency of the Republic. In addition, according to IBGE, over 1,000 Brazilian municipalities have a City Guard (INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA, 2015), which acts in heritage preservation and eventually performs an ostentatious function.

In 2018, the law establishing the creation of the Unified Public Security System (SUSP) was approved and creates mechanisms to stimulate integration between public security forces at the municipal, state and federal levels.

In addition to the repression work carried out by the police forces, other surveillance agents that play an important role in combating drug trafficking stand out, such as the Ministry of Agriculture, Livestock, and Food Supply (MAPA), which operates in the inspection of food cargo, and the Federal Revenue Service of Brazil (RFB), linked to the Ministry of Economy, responsible for controlling the flows of consumer goods that pass through the country.

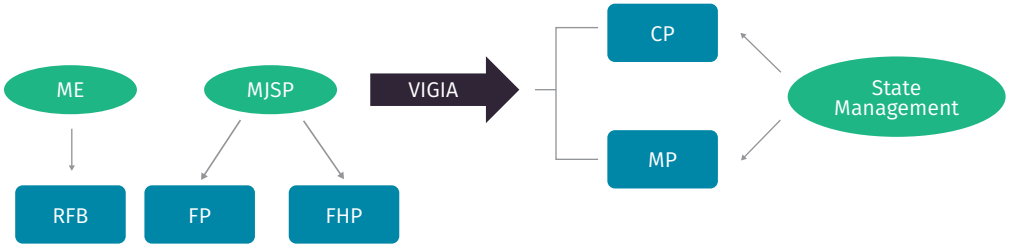
Considering the theme of the study, special attention was given to a public policy prepared by the MJSP that aims to induce and support policing in border areas, the National Border and Border Security Program (VIGIA[13]). This public policy gains special importance in this analysis, considering that one of its main operations, *Horus*, began a few months before the pandemic, boosting police cooperation work in the period analyzed, in border regions and focusing on the repression of drug trafficking. Therefore, analyzing the possible influences of COVID-19 on drug trafficking requires understanding the broader context and considering, among other aspects, the VIGIA program.

The qualitative stage showed that the pandemic had a relevant effect on the work and life of public security professionals and drug trafficking surveillance professionals, since these activities were not interrupted because they were considered essential for society. Some aspects of these difficulties will also be addressed as an important part on understanding the dynamics of the activity of the repression agencies.

National and state institutions (MS, PR and SP) contributed to the preparation of this study. Among which, some stand out, as shown in the figure below:

13 More detailed information about this policy can be found in box 2.

Figure 2 – Representative institutions of this study



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.

In the analysis, data and information from the following federal institutions were included:

- Federal Revenue Service of Brazil (RFB): part of the Ministry of Economy, administers the country's tax and customs, standing out in the surveillance of cargo in ports and airports and fulfilling an important role in the repression of drug trafficking.

- Federal Police (FP): responsible for investigating criminal offenses of interest to the Union, among several other complex activities, among which it is worth highlighting the work to combat transnational drug trafficking.[14]

- Federal Highway Police (FHP): currently responsible for road safety and the prevention and qualified repression of crime. It operates in more than 71 thousand kilometers of federal highways and roads in all Brazilian states and in areas of interest to the Union.[15]

At the state level, public security is the responsibility of the Civil and Military polices, with each federation unit having its representatives:

- Civil Police (CP): exercises the role of state judiciary police, responsible for investigating criminal offenses typified in the penal code, except those under the FP's scope.

- Military Police (MP): acts in the ostentatious policing, ensuring law and order through preventive action.

Many of these institutions provided data on illicit drug seizures, as well as providing professionals to participate in interviews and focus groups. Thus, it was possible to combine different research techniques in order to understand the complex actions of the institutions responsible for the surveillance and combat to drug trafficking, allowing the study to identify relevant aspects of this type of crime during the COVID-19 pandemic.

2.1 Structure and limitations of the study

As a way to guide the reading of the study, the text was divided into two sections: cannabis and cocaine. In each of them, an effort is made to understand the aspects that distinguish the two types of market and the data on seizures carried out by the various institutions involved in the repression of drug trafficking.

It is important to highlight that the amounts of seizures should be read carefully, since often the work of police institutions in Brazil occurs in a fragmented way. Within the Brazilian criminal justice system, the flow of activities can occur in several ways. A seizure can be made by an ostensible police (Military Police or Federal Highway Police) or by an inspection agency (Federal Revenue Service, Ministry of Agriculture, etc.) and forwarded to a judiciary police (Civil Police or Federal Police), which will continue with the investigation and/or procedures to file a complaint with the Public

14 For more details, this police force's website has an organization chart. Visit: https://www.gov.br/pf/pt-br/acesso-a-informacao/institucional/estrutura/view. Accessed on August 25, 2021.

15 For more details, this police force's website has an organization chart. Visit: https://www.gov.br/prf/pt-br/acesso-a-informacao/institucional/organograma-prf-3.pdf. Accessed on August 25, 2021.

Prosecutor's Office. Another possible scenario is that a judiciary police carry out the arrest and, based on that, proceed with the investigative procedures that will subsidize the criminal justice system. Due to these flows' complexity, it is not feasible, for example, to add up the seizures made by different institutions.

Another difficulty to be taken into account is the relationship between seizures of illicit drugs and their impact on the activities of criminal organizations. A bigger or smaller number of seizures does not necessarily indicate a bigger or smaller drugs flow passing through the national territory or, furthermore, an increase or decrease in the activities of criminal groups. The work of combating drug trafficking — and organized crime itself — is complex and involves many dimensions and factors. Seizure data can help to understand some trends, which should be evaluated as pieces of information from an articulated and complex scenario, since the actions of criminal organizations necessarily occur in a clandestine manner.

In order to guarantee the technical character of the study, the sources of information and the methodological procedures will be described in the next section. Then, an analysis of the context of public security institutions and the effects of the pandemic on these police organizations will be carried out to then discuss the data on illicit drug seizures (mainly cannabis and cocaine) and present aspects of the effects of COVID-19 in drug trafficking.

3 Methodological Strategies

As a methodological strategy, this study used data triangulation, a concept that favors the use of different research techniques. In the quantitative stage, the articulation with the representatives was performed to obtain data, at the most disaggregated level possible, regarding seizures of illicit drugs, in addition to an identification of work dynamics and changes that occurred in the period. In this way, it was possible to understand part of the possible changes in the police response to drug trafficking and, indirectly, in the actions of criminal organizations.

In the quantitative stage, the compiled data files transferred by the FP, FHP and Public Security Secretariats were used.

The data shared by the FP bring information about seizures of various types of drugs over a given time interval, as well as seizures made at airports and ports. Next table informs the period of the database, in addition to the variables contained, limitations and how the information was used.

FP Data

Database	Period studied	Variables contained	How it was used
Seizures	2014 to May 2021	Year, month, Federative Units (FU), type of drug, quantity of drug seized, unit of seizure.	An analysis of changepoints and moving average was made with the time series for the types of drugs. It was also analyzed the quantity seized taking into consideration the FUs.
Airports	2009 to April 2021	Year, city/airport, type of drug, number of prisoners, nationality, age group, amount of drug seized, seizure unit.	A moving average analysis was performed with the time series for cocaine and cannabis. The amount seized was also studied taking into account the FUs. The nationalities of the prisoners were also studied.
Ports	2014 to May 2021	Year, month, port location, country of destination, quantity of drugs seized.	A moving average analysis was performed with the time series for the amount of cocaine seized. It was also verified which were the ports with the highest amount seized per year and the most frequent destination countries each year. A flow map was created to visualize the intended destination of cocaine seizures made in the main Brazilian ports.

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The FHP data refer to drug seizures carried out on federal highways in the period between January 2019 and March 2021, with only those with georeferenced information available being used for this study. They bring information about individual occurrences, allowing the study of the number of occurrences regarding trafficking for each day, month and year, and are separated by type of drug (cannabis and cocaine). Next table provides more details about this data.

FHP Data

Database	Period studied	Variables contained	How it was used
Seizures	2019 and 2020	Date of occurrence (day/month/year), geographic coordinates, occurrence address (highway, km, municipality, FU), quantity seized, seizure unit.	An analysis of changepoints and moving average was made with the time series for cocaine and cannabis, only with the georeferenced data. Geospatial analyses were also carried out through: choropleth thematic maps to represent quantitative differences in drug seizures in the FUs; maps of proportional symbols; maps of heat signatures; thematic percentage variation and counts of individual seizures by FU maps.

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In turn, data from the Federal Revenue inform on cocaine seizures at ports and airports in Brazil, with details presented in the next table.

Federal Revenue Data

Database	Period studied	Variables contained	How it was used
Seizures in Brazilian ports	From 2018 to 2020	Cocaine seizures in Brazilian ports	Understand the dynamics of cocaine seizure in Brazilian ports.
Seizures in SP, SC and PR ports	2019-2021	Ports, date of occurrence, and quantity seized.	The study of cocaine seizures in the Itajaí/Navegantes, Itapoá and Paranaguá ports was carried out over time, and the moving average was also applied to the seizure data.

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Next table provides details about the databases used to analyze the states of Mato Grosso do Sul, Paraná and São Paulo. The first was based on information from the State Secretariat for Justice and Public Security (SEJUSP/MS); the second, data from the Center for Analysis, Planning and Statistics (CAPE) of the Secretariat of Public Security (SESP/PR); and the third, the information of the Narcotics Testing Centre (NEE) of the Institute of Criminalistics (IC) of the Superintendence of the Technical and Scientific Police of São Paulo (SPTC/SP) and the Military Police of São Paulo (MPSP).

Local data from Mato Grosso do Sul, Paraná and São Paulo

Database	Source institution	Period studied	Variables contained	How it was used
Seizures in MS	SEJUSP/MS	2019 and 2020	Year of seizure, quantity seized, type of drug, type of location.	An analysis was made of the amount seized in the capital and in the interior of Mato Grosso do Sul per year, according to the drug type.
Seizures in PR	CAPE/SESP/ PR	January 2017 to August 2021	Date of occurrence (day/month/ year), FU, event address, geographic coordinates, unit of measure, quantity seized.	The study of cocaine and cannabis seizures in Paraná was carried out, and the moving average was also applied.
Seizures in the city of São Paulo	NEE/IC/ SPTC/ SP	January 2019 to December 2020	Year of registration and of origin, unit, nature group, nature of the examination, place of examination, event address, date and time of opening, date and time of execution, date and time of conclusion, date and time of issuing, part, result, net weight, unit of measure.	An analysis was made of the number of positive tests per year, according to the drug type.
Seizures in SP	MPSP	January 2019 to June 2021	Date of occurrence (week, day, month, year and time), event address, geographic coordinates, responsible department, drug type, quantity seized	An analysis of the amount of drugs seized per year was made, according to the municipality, as well as a study between the month of seizure and the day of the week to identify possible trends.

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In addition to descriptive techniques, such as frequency and mean, the most used techniques for the analysis in the quantitative study were: changepoints, moving averages method, Pearson's chi-square test and geospatial analysis.

The analysis of changepoints, consists of identifying change points in a time series, regardless of whether the data has a normal distribution or not. This technique checks the time at which the point estimates change through the parameters of the data distribution,

dividing them into sub-segments and estimating the parameters for each segment. For this study, the binary segmentation was used, which analyses each segment and splits it into two if there is change, creating other segments and analyzing them afterwards, considering the mean as the parameter of the analysis (KILLICK, ECKLEY, 2014; ARIF *et al*, 2017).

The moving averages method, according to Morettin and Toloi (2006), is a time series smoothing technique, which calculates the average of *n* most recent observations, replacing the oldest ones without weighting. The number of observations chosen impacts the method and can be determined subjectively, as well as selecting the one that "provides the 'best prediction' at a step of observations already obtained".

In turn, geospatial analysis is a set of methods, techniques and statistics that integrate concepts such as location, area, distance and interaction to analyze, investigate and explain, in a geographical context, patterns, trends or behaviors between spatially referenced observations of phenomena that manifest themselves in space, allowing better decision-making (GREKOUSIS, 2020). In this sense, the following thematic maps were produced:

- **Choropleth:** thematic statistical maps that represent quantitative differences in the data through shades of different colors in the geographical areas being mapped. The lighter areas represent smaller amounts, and the darker areas represent bigger amounts, allowing the identification of differences and patterns of the mapped phenomena (FIELD, 2018). They are used to obtain a graphical perspective of the spatial distribution of the amounts of a specific variable across the study area. In the maps developed for this study, each polygon was represented from the amount corresponding to the seizures in each state, considering this type of variable as a spatially extensive variable (GREKOUSIS, 2020).

- **Proportional symbols map:** it shows quantitative differences between features mapped through symbols that must be designed, in such a way that different magnitudes of data can be distinguished by varying the size of the symbol (FIELD, 2018).

- **Heat signatures:** it allows you to examine the geographic distribution of crime and identify where levels appear to be the highest, and use spatial clustering techniques such as Kernel Density Estimation (KDE), Moran I local statistic, and Moran I statistic Gi* by Getis-Ord, which indicate how the crime level in each location is spatially associated with the crime in neighboring locations. In this study, heat signatures were identified using the Getis-Ord Gi* statistic, as the technique not only identifies where criminal groups are located, but can also determine what is hot in statistical terms (CHAINEY, 2021).

- **Flow:** it allows to represent linear movements between locations and can show qualitative differences between types of flows or quantitative representations through the magnitude of the lines, which generally change (color and value) in proportion to the quantity being mapped (FIELD, 2018).

- **Themes of counting individual seizures:** facilitate the visualization of the number of individual seizures in each mapped geographical unit.

In the qualitative stage of the study, we sought to conduct semi-structured interviews with professionals at the management level in institutions that work in the surveillance and combat to drug trafficking, in order to gather the perceptions of those who work in the planning and formulation of actions. In a complementary way, focus groups were conducted with professionals at the operational level, in order to understand the realities and difficulties in

the daily lives of people who work directly in fighting drug trafficking.[16]

The semi-structured interview is a traditional research technique of Social Sciences in which open and closed questions are combined, allowing the interviewee to discuss the proposed theme more freely. This technique is similar to an informal conversation and allows the discovery of new themes, in view of the elastic characteristic of the prepared questionnaire, which does not delimit exactly how the interview should be and allows the deepening of complex and delicate themes (BONI; QUARESMA, 2005).

The focus group, on the other hand, is a research technique increasingly used under the qualitative approaches scope, since it seeks to bring together people with common characteristics, considering the research subject matter, who can discuss a subject from their personal experiences.

According to Morgan and Krueger (1993), the research with focus groups allows capturing a multiplicity of meanings, attitudes and reactions that emerge from the interaction between research participants, caused by the context of exchanging information and experiences. To this end, the focus group allows for the collection of information in less time and helps to understand the construction processes of reality and everyday practices, also enabling different perspectives on the same issue.

16 Altogether, 21 interviews and 7 focus groups were conducted.

Figure 3 – Focus group in Paraná

Figure 4 – Interview in Mato Grosso do Sul

Figures 5 and 6 – Technical visit to the port of Santos

The interviews and focus groups brought an important contextualization of the work of institutions that act in the surveillance and combat to drug trafficking, as well as clues to understand the dynamics of criminal organizations. One of the challenges of this study was to build a dialogue between different sources of information, scientific studies and research techniques.

Thus, the next section seeks to provide an overview of the context of police work during the pandemic and then analyze data on cannabis and cocaine seizures, which will make it possible to draw some analyses on drug trafficking in Brazil.

4 Influence of the pandemic on the enforcement against drug trafficking

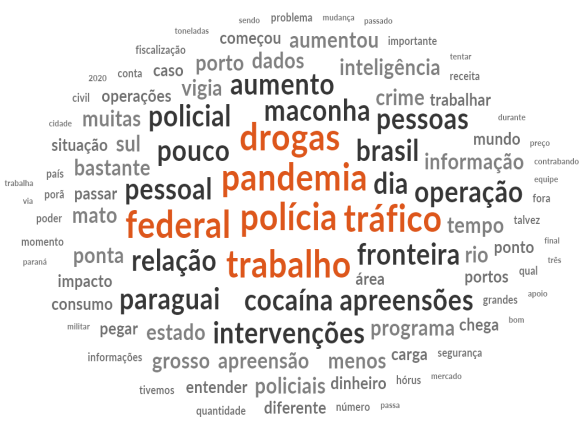
4.1 Activities of surveillance and repression against drug trafficking

It is necessary to take into account that the conclusions of studies on the influence of the pandemic on drug trafficking are under construction to date, since this is a recent crisis, with effects and developments still in progress. With the same care, the data and analyses of this study should be understood as an effort to point out some trends, which naturally have limitations.

Although this study does not aim to provide a complete view of transnational drug trafficking, it offers relevant information that contributes to increase the knowledge on drug policies and on the performance of public security institutions in Brazil.

To better understand the content covered in the interviews and focus groups, a word cloud was prepared. This technique aims to highlight the most frequent words from the transcripts obtained by qualitative approach.

Figure 7 – Word cloud from interviews and focus groups



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Naturally, as the research focuses on identifying the influence of the COVID-19 pandemic on narcotics trafficking, the word "pandemic" appears prominently, as well as "drugs". It is also evident that the words "cannabis" and "cocaine" are highlighted, which will be treated transversally in this study.

The word "federal" stands out, the importance of the work of police forces in this sphere is mentioned. "Paraguay" also appears in the cloud, because, as the states of MS and PR have extensive borders with the country, it is evident that the relationship with the Paraguayan authorities is an important aspect of public security in these states.

The subject "work", usually related to the daily life of institutions, also appears prominently. This was observed in all interviews, occasions in which the representatives described in detail the activities carried out by them. The themes "operation", "borders" and "seizures" were also frequently mentioned in the qualitative stage.

When analyzing the possible effects of the pandemic on drug trafficking in Brazil, it is necessary to consider its consequences in the work of the security forces. To this end, the interviews and focus groups also sought to understand which health strategies were adopted by several institutions during this period, as well as the perception of professionals who work in the so-called "frontline" on their corresponding work.

The terms "frontline" is characterized by the literature on public policies as those professionals who work face to face with citizens. In public security, and in this study, they are civil, military, federal, federal highway police officers, among others who, due to the essential nature of their work, have not had their activities interrupted and have experienced constant exposure to the virus.

In addition to the police officers who work at the frontline, all the representatives of this study, to some extent, reported the influence of the COVID-19 pandemic on their duties performance. There were many reports of professionals who were infected by the virus and had to remain in isolation, reducing their work force. Additionally, some activities could be performed at a distance and others could not, considering that policing and carrying out police operations require the presence of professionals. The data and information collected indicate that, in general, all the institutions surveyed sought to adapt their daily work to health recommendations, especially at the beginning of the pandemic. Among these changes, two contexts were identified.

The first refers to changes in the internal working environment and the protection of professionals in order to manage the risk of contamination. The use of Personal Protective Equipment (PPE), such as mask and alcohol gel, and the observation of social distancing stands out. In some cases, such as professionals who do not work on the "frontline", there was the possibility of flexible work arrangements, such as telework. Still on this topic, it is noteworthy the concern shown by the representatives in a managerial position for the periodic monitoring of police officers contamination indicators, as well as the adoption of plans and measures to contain the virus and adaptations in the number of people in teamwork, through rotations and changes in work schedules.

The second context is related to the main adaptations for the continuity of work in direct contact with the population. In this aspect, all the aforementioned elements remain, in addition to the adjustment of police activities that involve the citizen. For example, many representatives reported a decrease in approaches with lower signs of suspicion in the first weeks of the crisis. According to them, this initial period was necessary to understand health guidelines and reschedule activities, since police action requires, in many moments, police searches, attendance scans in police stations, among others. According

to representatives, with these adaptations, the work of border police officers was also impacted, as approaching people and conducting interviews is an important tool for daily work.

Some tasks of police work could be adapted and carried out remotely, especially some judiciary police activities. According to a federal representative, at the very beginning of the pandemic, it was possible to perform actions at a distance, such as investigation activities, data analysis, among others. However, tasks such as the deflagration of operations were impaired, and activities that required physical presence were impaired due to the COVID-19 pandemic, which affected some investigations and police actions.

A very common practice of the police forces is to carry out approaches. According to some federal and state representatives, this direct contact with people traveling on highways was hampered by the pandemic. Usually, when people are approached, an "interview" is conducted to[17] guide a possible investigation.

In addition, ostentatious policing was often focused on monitoring the compliance of restriction measures on circulation, the operation of commercial establishments, and providing orientation to the population regarding compliance with the defined state decrees. Additionally, arrangements were made to make the service to the public feasible, such as the provision of remote services, in order to protect both the citizen and the police. Another example of these arrangements is, in the case of road safety, the extension of deadlines for the payment of fines.

These adjustments were made in order to ensure the uninterruptibility of police work, since it is an essential public service and therefore "could not stop". As a result, the representatives reported that they felt individually affected and more vulnerable as they became infected and/or needed to adopt restrictions measures in their personal lives due to the work developed, with risk of exposure to the virus. Reports of interaction restrictions with close relatives, such as elderly parents and even children, were presented as impacts that the police function brought to the life quality of individuals.

Research carried out in Brazil by the Brazilian Public Security Forum (FBSP) corroborates these statements, given that, according to the 15th Brazilian Yearbook of Public Security of the FBSP, COVID-19 was the largest external cause of police deaths in Brazil in 2020 (LIMA; BUENO, 2021).

Table 2 – Causes of external deaths in Civil and Military Police – Brazil 2020

MP and CP officers deaths attributed to COVID-19	472
MP and CP officers killed on day off	131
MP and CP officers killed on the job	51
Suicide of active MP and CP officers	50

Source: LIMA; BUENO, 2021.

In addition to the Yearbook, another online study conducted by the institution sought to understand the perception of military and civilian police officers about the impacts of the crisis on their work. It collected 1,540 voluntary responses from public security professionals between April and May 2020. The data revealed that most police officers were "afraid of contracting or having a family member contaminated by the new coronavirus". Regarding the receipt of PPE, such as mask and alcohol gel, to perform the work during

17 A very common technique described by police officers to probe the reaction and coherence of the person approached by the police.

the pandemic, among military and civil police officers in the state of São Paulo, 46% of respondents said they had received adequate PPE for the development of their work. In other Brazilian states, only 32.1% of the responding police officers said the same.

Regarding the perception of Brazilian civil and military police officers regarding the forms of interaction with citizens, more than 80% of the respondents stated that the pandemic caused changes in these relationships and, consequently, in police work, through approaches, attendance, among other activities (LOTTA, *et al.*, 2020), which also corroborates the reports collected in the field.

Based on the above, it is concluded that the work of the Brazilian security forces fighting drug trafficking, as well as individual operators, were directly affected by COVID-19, both in the development of their activities and in their personal life. However, in the second half of 2021, after the expansion of vaccination coverage, the adaptation to protective measures and the stability in the indicators related to the pandemic in Brazil, it is perceived the emergence of other challenges to the work, such as the constant changes in the *modus operandi* of the groups that operate in drug trafficking.

Parallel to the COVID-19 pandemic, police activities in the border area were supported by the VIGIA program. Representatives from MS and PR say that this type of public policy led to a greater police presence in these areas, which was made possible by the program's support in human and material resources and the search for integration between the different security institutions.

One of these supports is the payment of daily fees and the promotion of training aimed at state police. According to the interviewed police officers, this made possible, in the case of Mato Grosso do Sul, a strategy of itinerant policing that consists in the operation of the police officer for a few days in a row in different regions in the border, differing from a policing with a fixed base, in which the professional always returns to the same location and acts within the same area. The benefit of this strategy, as reported, is to promote "unpredictability" and thus a greater possibility of successful illicit drugs surveillance and seizure.

With the incentive to the policing specialized in borders, in the MS, a greater demand to work in these units was reported. In addition, the state management also adopted measures that strengthened this type of work. Thus, with greater staff and support, the simultaneous operation of more teams at the borders was made possible, allowing a greater presence in the areas. The interviewees also highlight that the payment per diems encourages professionals to achieve better results.

In Paraná, in the same way, there was the perception that the stimulus for policing border areas made the presence of the surveillance in this area more conspicuous. Moreover, as in this State the border strip consists predominantly of rivers, there are some specificities in the fight against trafficking. According to representatives, the VIGIA program promoted an approximation between the different police forces, resulting in more efficient work and an increase in seizures.

Material support has also brought benefits to police work in these areas. The acquisition of equipment to support border policing, according to the interviewees, was positive.

An analysis of the influence of the COVID-19 pandemic on drug trafficking and police action should consider the impact of VIGIA, since the program's activities began in mid-2019. Throughout 2019 and 2020, the initiative was continuously implemented in other Brazilian states, strengthening policing in border regions. If the restrictive measures that were imposed during the pandemic resulted in new strategies for criminal organizations, a greater

police presence may also have influenced the dynamics of trafficking.

To this end, it is admitted that one of the possible explanations for the large increase in cannabis seizures is the COVID-19 pandemic, but that the VIGIA program may also be a factor that helps to understand the possible changes in drug trafficking. Therefore, an analysis of the initiative is important for the contextualization of the present study. Box 2 presents the program and provides seizure data resulting from operations and from the work of state policing induced by VIGIA.

Box 2 – VIGIA Program – Strengthening police activity at the borders

VIGIA, implemented by the Secretariat of Integrated Operations (SEOPI) in April 2019 in Guaíra (PR), is part of the strategic projects of the Ministry of Justice and Public Security. With operations in 15 FUs, the program should still be implemented in other states in the Northeast region of Brazil, expanding operations to interstate border areas.

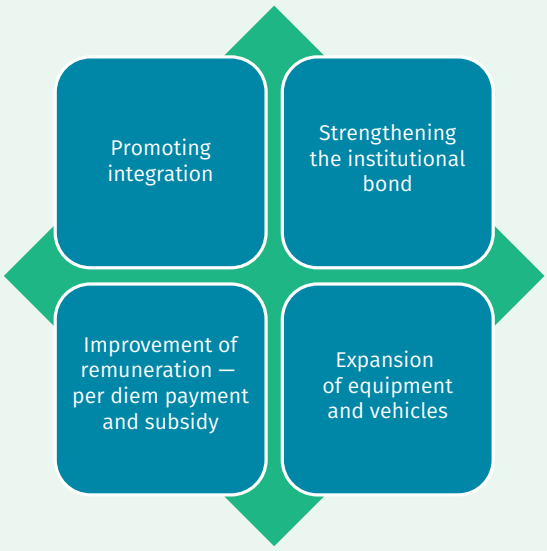
Promoting data-sharing actions, integrated operations between police forces and other structures of federal, state and municipal public security make up the objectives of VIGIA. It is, therefore, a program that aims to establish a permanent strategic operating model and, at the same time, strengthen the integration of different police forces, expanding the exchange of information and enhancing investigations, in order to reduce fragmentation and lack of synchronization in police operations.

VIGIA was structured as a strategy to solve multidimensional problems in the border region: (I) low police force to act in extensive territorial regions, (II) absence of per diem assistance, (III) fragmentation and independence of actions carried out by different police institutions, and (IV) special operations with certain times.

Since the beginning of the implementation of VIGIA, in 2019, in pilot format by Operation Horus, activities have not been interrupted. This fact contributed to the integration of different police forces and expertise, expansion of operational capacity, from the payment of (federal) per diems with funds transferred directly to the participating units, without redistribution through other institutional channels. All these factors are identified as relevant in expanding the engagement interest of local police forces.

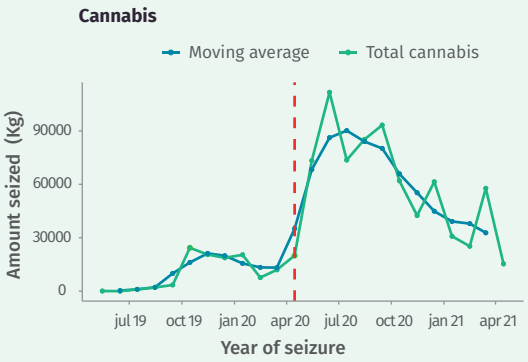
In addition, the implementation model following the bottom up perspective stands out, since the conception of VIGIA was based on actions that came from the “bottom up” — that is, actions organized and mobilized by a group of players that had repercussions, institutionally and through the Ministry of Justice and Public Security, in the construction and subsequent implementation of the program — and is being analyzed from the perspective of the agents who put the actions into practice.

Thus, VIGIA, according to the representatives, promotes the integration between the police forces, enhancing their actions, based on the expertise of each police institution, allied to crime decapitalization actions and strengthening the police technological and logistical equipment. Therefore, there are no specific guidelines towards the operators' actions. In practice, decisions are made broadly by the Command of each Unit, with no parameterization in the actions performed. This criterion promotes a broad discretion to the local administrative and operational structure, observing the needs of each territory, acting in a linear fashion from the following premises:



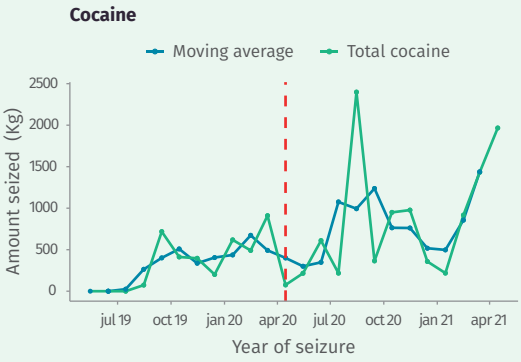
From the beginning of the program until July 2020, there was an increase in the number of occurrences, peaking in April 2021 (with 227 occurrences). Regarding the quantities of drugs seized, it is observed that the amount of cannabis seized during the pandemic was 5.8 times higher compared to the amount for the months of April 2019 to March 2020, jumping from 110,284.7 kg to 752,030.6 kg (partly, this is explained by the increased state membership in the program over the months). The moving average reiterates the discrepancy between the records verified before and in the first months of the pandemic, indicating an upward trend between March and July 2020, with a decrease from July 2020 onward (Figure 8). As for cocaine, the amount seized increased about 180% in the pandemic period, from 3,821.5 kg to 10,700.5 kg, noting that until April 2020 there wasn't a month in which the amount was more than 1,000 kg. On the other hand, in the period between July 2020 and August 2020, about 2,398.5 kg were seized, and since January 2021 this amount has been growing, totaling 1,966.2 kg in April 2021 (Figure 9).

Figure 8: Quantity (kg) of cannabis seized by the VIGIA program per month, Brazil, 2019 – 2021



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: VIGIA Program/Cortex System.

Figure 9: Quantity (kg) of cocaine seized by the VIGIA program per month, Brazil, 2019 – 2021



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: VIGIA program Cortex System.

Considering the border scenario challenges – volatile, uncertain, complex and ambiguous – the extent and diversity of the Brazilian border remain a major challenge for the different police groups. Despite the innovations and the increase in police staff, the implementation of the difficulties of route mapping and surveillance remain.

According to interviewees, with the increase in surveillance as a result of the VIGIA program, criminal organizations had to adapt, one of the main actions being the hiring of more "olheiros" in order to constantly monitor the work of the police. The interviews revealed that there is a monthly payment for the "olheiros" and "mateiros", who pass on the information through WhatsApp groups or phone calls to other people in order to structure an information network that supports the actions of criminal groups.

These and other categories of agents identified in the criminal dynamics are listed in Box 3[18], which offers a glossary of terms associated with drug trafficking.

18 The table is a reference in the context of this study, since these categories are present throughout the text.

Box 3 – Drug trafficking categories

Within the scope of this research, some categories help prepare important clues to understand the dynamics of drug trafficking, as well as the daily difficulties that emerged during the interviews and focus groups, which were listed in the table below.

"Boi de piranha"	Strategy used for the transport of drugs, mainly cannabis and by river, in which a boat (or other transportation method) is sent by criminal groups with a smaller amount of drugs, with the objective of distracting police forces, so that right after vessels with larger quantities of drugs can proceed without being seized.
"Cavalo doido"	Transportation method of illicit drugs, especially cannabis, which means the adaptation of a vehicle to carry a very large volume of drugs having a high chance of being perceived by surveillance initiatives. Therefore, in this modality, the driver moves as fast as possible to avoid being caught.
"Mateiro"	A person who has the same role as the "olheiro". However, in this role, the person is left at a strategic point, usually in the "forest", a place that spends a period of time monitoring and disseminating information about police activities.
"Olheiro"	People who are paid to stay long periods monitoring the actions of the police. They are usually people who live in the region and communicate through WhatsApp groups or phone calls. Illicit drug traffickers end up monitoring police activity trough this information.
Pathfinder	A person who travels in a car to arrive early on drug trafficking routes in order to monitor and disseminate information about police activity.

The terms shown in Box 3 were reported by the representatives of this research, who are public security professionals, and not by sources linked to criminal organizations. Therefore, in this study, the understanding of what happened to such organizations during the COVID-19 pandemic period was built from relevant clues provided by these state agents, either in the data form or through interviews and focus groups.

The information about criminal groups mentioned in this study are in accordance with previous analyses that address the international acting factions and the groups distributed throughout the country, especially the faction of São Paulo known as Primeiro Comando da Capital (PCC). Although less prominently, the faction from Rio de Janeiro's [criminal organization] Comando Vermelho (CV) was also cited as a group that seeks

access to the routes and territories where the São Paulo organization has been acting with great prominence, leading to eventual clashes between them[19] and with other local criminal groups.

Among the various criminal organizations in Brazil, the CV and the PCC extend their activities, each in its own way, to all Brazilian states, creating a complex network of connections with local factions. These organizations also have international links and contribute to supplying some of the main consumer markets of cocaine in the world. For decades, the two criminal organizations acted in relative balance, drastically broken by a declared war that culminated in a dispute for national hegemony between 2014 and 2017, with catastrophic results for the prison system and public security (MANSO; DIAS, 2018).

The country's academic production, as well as journalistic production, traditionally give greater prominence to CV and PCC operations. However, in the Brazilian scenario, it is possible to identify important debates about criminal factions in other regions, such as the group recognized as Família do Norte (FDN), that has claimed the command of illicit activities in the North of the country (SIQUEIRA; PAIVA, 2019). In the South, Rio Grande do Sul has been inserted in the national context of the crime dynamics, as an attractive pole of international drug trafficking, with the performance of recognized groups such as Os Bala na Cara and Os Manos, among others (CHIES, RIVERO, 2019).

A survey made in a publication of the Brazilian Public Security Forum (FBSP) highlights the presence of more than 30 other criminal organizations besides the PCC and CV in Brazil (LIMA; BUENO, 2018). In this scenario, in which it is possible to observe factions with national and even international activities and smaller regionalized groups, there is a complex arrangement with effects that are often unpredictable and that can unfold into episodes of extreme violence. For example, in October 2021, a series of deaths in a short days period turned national attention to the twin cities of Ponta Porã, Mato Grosso do Sul, and Pedro Juan Caballero, on the Paraguayan side.

Thus, a key issue in the daily life of Mato Grosso do Sul, which appeared frequently in the interviews conducted for the present study, was the death of Paraguayan drug trafficker Jorge Rafaat in 2016, an episode that triggered a strong performance of the PCC in the region.[20] After this event, disputes between the different factions became frequent, with the occurrence of many homicides on the border between Brazil and Paraguay. Rafaat's death was of such importance that it also impacted the criminal dynamics of Paraná, a state in which, according to interviews carried out, the PCC is currently active.

The criminal arrangement existing in Brazil, with the presence of dozens of criminal organizations and the actions of individuals not affiliated with factions, creates complex networks of relationships that help to create a better understanding of the trafficking of cannabis and cocaine, the central objective of this study.

In the case of cannabis, a high volume of the drug is planted in Paraguay and distributed for use in all regions of Brazil. It is verified that, traditionally, a significant part of the cannabis

19 For studies regarding the PCC, see DIAS (2011), FRANCA, KRUGER (2018), FELTRAN (2018). Regarding the CV, see LESSING (2008), MISSE (2011) and ZALUAR; BARCELLOS (2013).

20 Jorge Rafaat was killed in an ambush that, according to reports, included more than 30 cars occupied by several mercenaries who fired hundreds of bullets with high calibre weapons at the trafficker. At the time, Rafaat was escorted by dozens of security guards and moved in an armored car.

seizures carried out by Brazilian police forces occur in MS and PR, states that border Paraguay. In the present study, representatives from both States reported high volumes of seizures, most of which were sold "wholesale" and with indications of transport routes to all Brazilian regions.

On the other hand, in cocaine trafficking, the routes seem to occur in a more diversified manner and in smaller volumes. In addition to the high use of this drug in Brazil, a large part is destined for export from Brazilian ports and airports, among other ways of shipping. In this study, it was identified that the PCC has a prominent role in several stages of the drug import logistics chain, transport through the national territory and export.

In addition to the actions of criminal factions and the routes used by drug trafficking, contact with the police authorities in Paraguay was identified as a factor of difficulty. Within the scope of the research, a frequent rotation in the chiefs' positions of the Paraguayan police was reported, which creates a barrier to establish a relationship with a command for a long time, thus making it difficult to create a more lasting link, which ends up influencing the negotiations and actions in the area of public security. In general, the teams from the two countries work independently, but sometimes they come together to carry out specific tasks, as occurred in the case of the October 2021 killings in Ponta Porã. This event had such repercussions that it caused the governments of Brazil and Paraguay to dialogue and establish a task force between the Brazilian Federal Police and the Paraguayan police.

Over the next few sections of the text, aspects of national cannabis and cocaine trafficking and in the three Federative Units covered in this study will be discussed in greater depth.

4.2 Cannabis

The cultivation of cannabis, unlike coca leaf, is found in almost all regions of the world, and most producing countries do not have production monitoring systems (UNITED NATIONS OFFICE ON DRUGS AND CRIME, 2021b). In Brazil, most of the existing information about this drug comes from monitoring the number of seizures and eradications of plantations, a fact that limits the analysis on the substance trafficking.

The analysis presented in this section shows the data of the seizures made by the Federal Police and the Federal Highway Police, plus the additional information obtained in the interviews and focus groups conducted during the study.

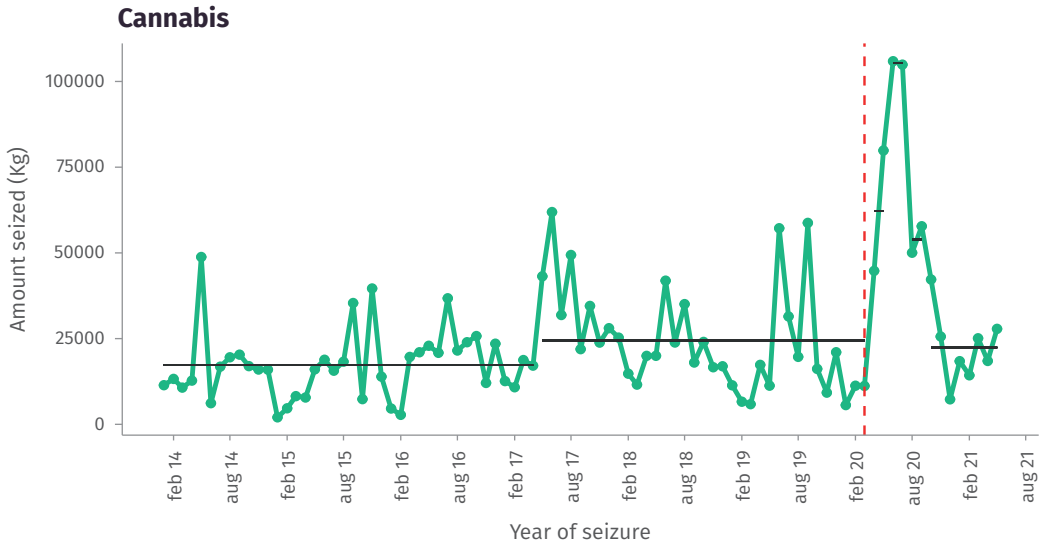
In general, for the institutions interviewed, no changes were observed with regard to the cultivation of cannabis, both in the country and in the states included in the study. Regarding trafficking, there is little consensus among interviewees about its increase during the pandemic. However, especially in Paraná, it was verified the existence of a strong relationship between the seizure of this drug and the seizure of smuggled cigarettes.

Even though the changes in the cultivation of cannabis (mostly carried out in Paraguay) are not the focus of this study, reports were observed that the activities from the cultivation and their respective harvests were not interrupted in the neighboring country during the pandemic and, for this reason, from the point of view of the institutions interviewed, the drug dealers sought alternative ways to drain the drug, as it is a perishable product.

Federal Police data were used to illustrate the amount of cannabis seized nationwide

between 2014 and 2021. For this information, the changepoint analysis was performed, which indicated probable changes observed in the period, under six levels of behaviour change (the black line represents the mean of the segment). The green dots reflect the number of seizures, in kilograms, for each month, and the red dotted line indicates the period in which the mobility restrictions were enacted in Brazil (March 2020), as shown in Figure 10.

Figure 10 – Amount (kg) of cannabis seized by month and year, Brazil, 2014-2021



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FP (Federal Police).
Note: Total quantity of cannabis is the sum of cannabis, hashish and skunk[21].

The results reveal that, despite the variations over the months, the quantity seized before the pandemic presented only two levels of change, with more spaced intervals of time between the segments of the volume of seizures made. In the pandemic period, the changes occurred in a short period of time, highlighting the six months after the delimitation month, in which three levels of changes were presented, with averages of 62,309 kg, 105,403 kg and 53,910 kg, respectively.

In addition, it is observed that there was, in the years of 2017 and 2018, a pattern of behaviour of the quantity of seizures, even though the amount seized in 2018 was lower than in 2017.

Considering twelve months before the pandemic and twelve months after the onset of the crisis, there is approximately double the number of seizures during the pandemic period compared to the amount seized between March 2019 and February 2020 (Table

21 This is a variation of cannabis made by crossing different species, generating a product with a stronger psychoactive concentration.

3), corresponding to an increase of 112.3%. Only in June 2020, the amount of cannabis increased about 85.2% compared to the same month of the previous year, totaling 105,901 kg seized.

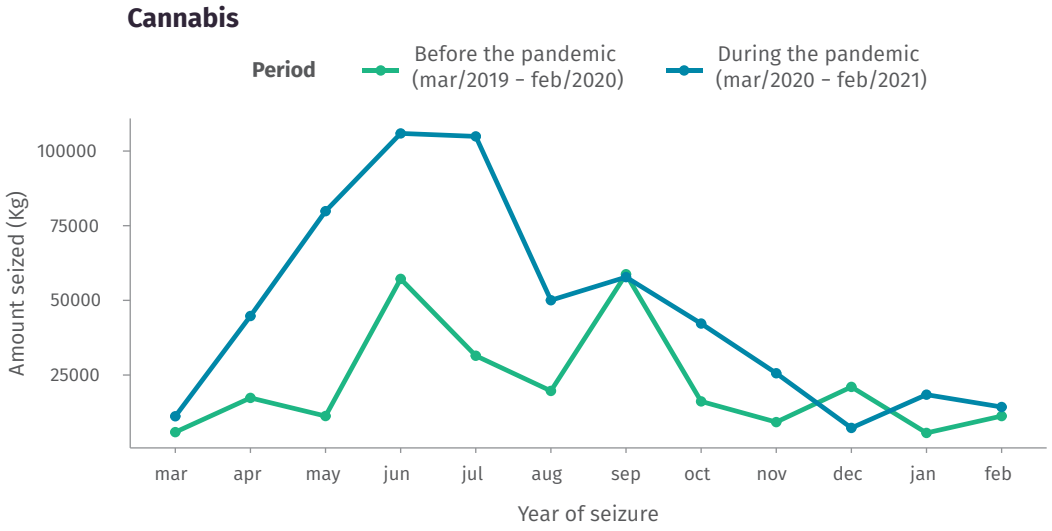
Figure 11 shows that the first four months of the pandemic were those in which the amount of cannabis seized was higher, corresponding to 43% (241,714 kg) of the 562,285.5 kg seized during the pandemic period.

Table 3 – Amount (kg) of cannabis seized by period before and during the pandemic, Brazil, 2019 – 2021

Type of drug	Period	Quantity seized (Kg)
Cannabis[1]	Before the pandemic (Mar/2019 – Feb/2020)	264.889,3
	Pandemic Period (Mar/2020 – Feb/2021)	562.285,5

Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FP (Federal Police).
Note: 1 – Sum of cannabis, hashish and skunk.

Figure 11 – Amount (kg) of cannabis seized by period before and during the pandemic, Brazil, 2019 – 2021



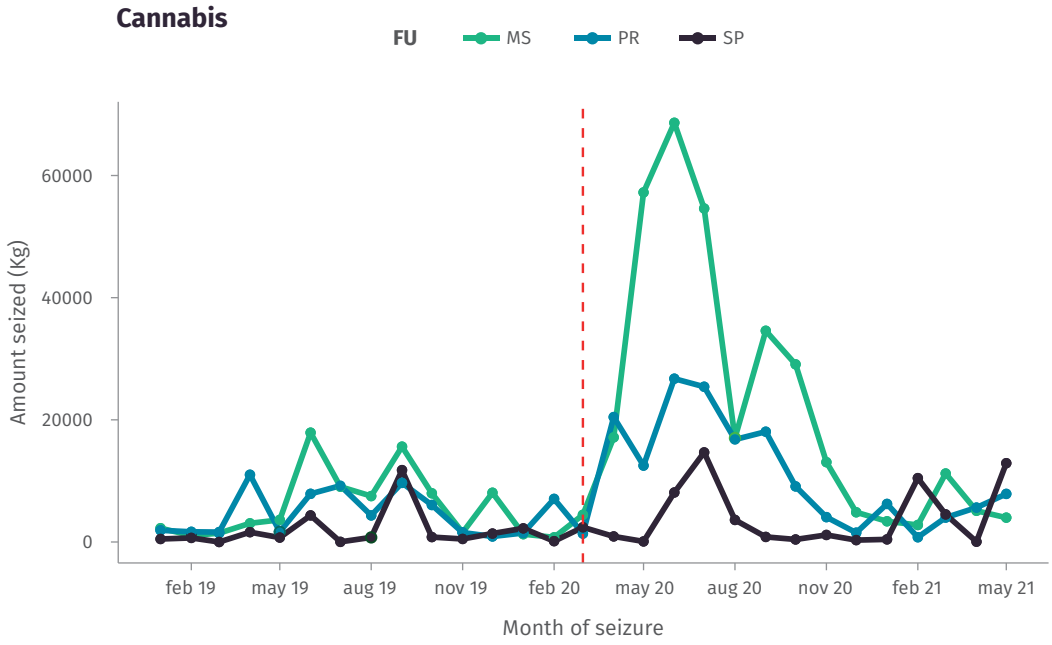
Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FP (Federal Police).
Note: 1 – Sum of cannabis, hashish and skunk.

The high quantity of cannabis registered in June 2020 was influenced by the significant participation of seizures made in Mato Grosso do Sul, Paraná and São Paulo during this period. Together, the three states had a total corresponding to 103,469.7 kg of the 105,901.0 kg seized that month. In addition, the three states combined seized the largest volume of cannabis among all FUs, about 164,587.3 kg seized between March 2019 and February 2020, and 493,251.7 kg between March 2020 and February 2021.

The three states seizures between January 2019 and May 2021, shown in Figure 12, demonstrate that, before the pandemic, no month had the amount of cannabis seized exceeding 20,000 kg, while between January and November 2020, the behaviour was different. About 14,668.1 kg were seized in São Paulo in July 2020, the highest value among all the months analyzed for this State.

The quantity seized in June 2020 in Mato Grosso do Sul was approximately 2.6 times greater than the amount seized in Paraná, and 8.5 times greater than that of São Paulo.

Figure 12 – Amount (kg) seized of cannabis per federative unit (SP, MS and PR) according to the month, Brazil, 2019-2021



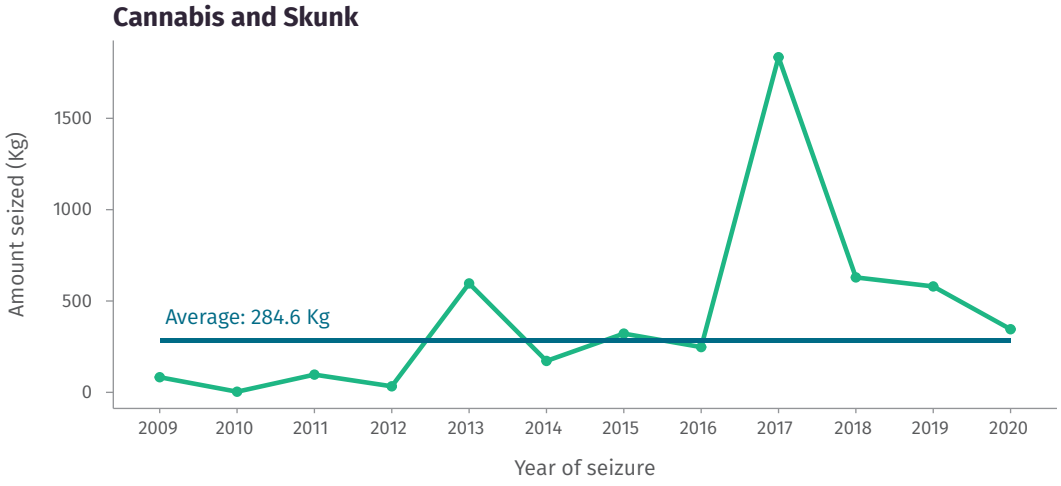
Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FP (Federal Police).
Note: Total quantity of cannabis is the sum of cannabis, hashish and skunk[22].

22 This is a variation of cannabis made by crossing different species, generating a product with a stronger psychoactive concentration.

Regarding the amount of cannabis seized at airports in Brazil, the year of 2017 presents the highest volume of seizure, with 1,834.6 kg of cannabis. This amount corresponds to 0.52% of the total amount seized in Brazil in the period.

In addition to the growing trend seen until 2018, the amount of cannabis seized in 2013, in 2015, and in the period 2017 to 2020 was higher than the median of 284.6 kg, indicating that, despite the decrease seen from 2017, the values seizures remained high, or a new level of seizures was established. Between 2019 and 2020, there was a 40.4% decrease in the number of cannabis seized at Airports in Brazil, which can probably be attributed to the closure of borders due to the pandemic, and the consequent reduction in the use of this transportation method for trafficking due to the reduced number of circulating flights and passengers, increasing the risk of interdiction.

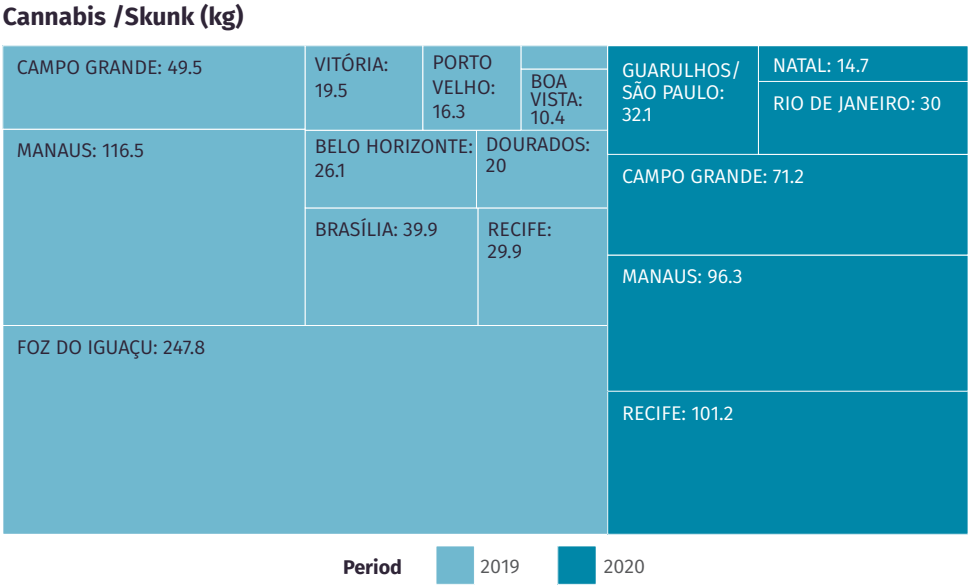
Figure 13 – Amount (kg) of cannabis and skunk seized at airports per year, Brazil, 2009 – 2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FP (Federal Police).

The treemaps were made considering only data from 2019 and 2020. They inform the locations that had higher amounts of drugs seized at airports, according to the size of the geometric shape presented. Thus, Figure 14 shows a similar pattern in some airports in the period, such as foz do Iguaçu airport, which totaled 247.8 kg in 2019 and no cannabis seizures in 2020. At the Manaus airport, there was a decrease of 17.3% in 2020. On the other hand, Recife and Campo Grande had an increase of 238.5% and 43.8% in the same year, respectively, totaling 101.2 kg and 71.2 kg.

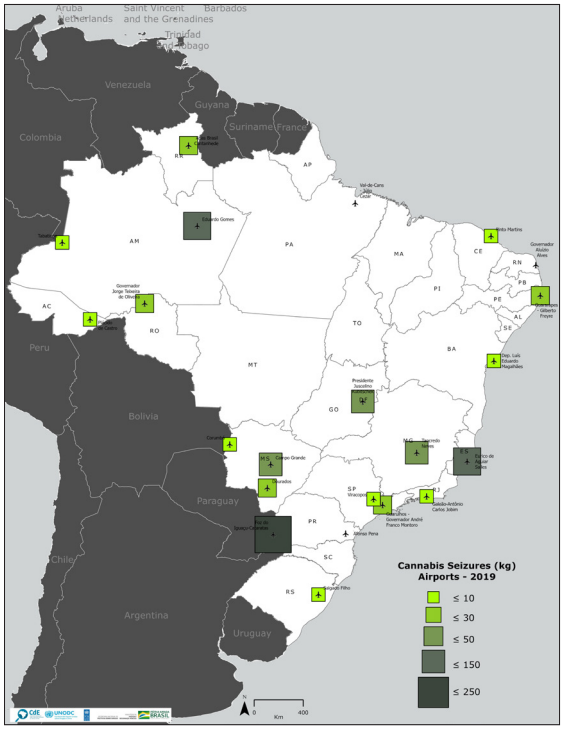
Figure 14 – Treemap of the amount (kg) of cannabis and skunk seized at airports per year, Brazil, 2019 – 2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FP (Federal Police).

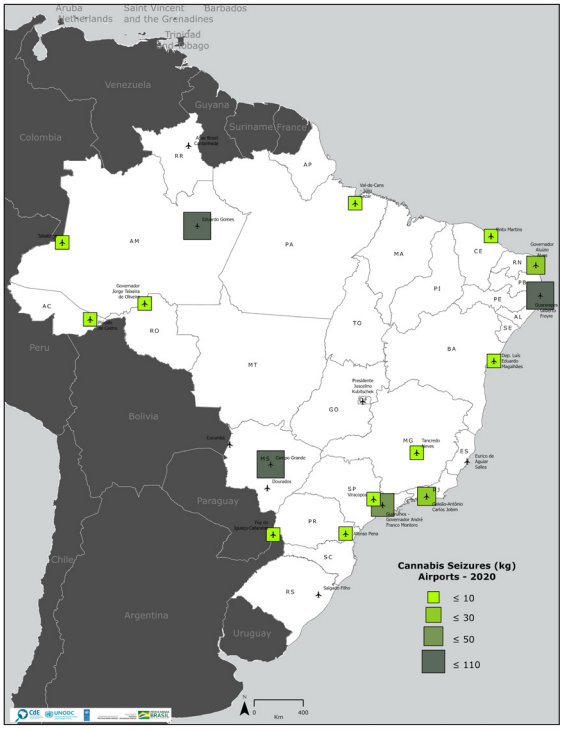
Maps 6 and 7 indicate a reduction in the amount of cannabis seized at the airports in Manaus, Foz do Iguaçu, the Federal District, Belo Horizonte, and Vitória, and a probable search for alternatives, such as the airports Val-de-Cans – Julio Cezar Ribeiro (Belém, Pará), Governador Aluizio Alves (Natal, Rio Grande do Norte) and Afonso Pena (Curitiba, Paraná) between 2019 and 2020. The only airport that maintained expressive values, both in 2019 and 2020, was Eduardo Gomes (Manaus, Amazonas).

Map 6 – Amount of cannabis seized by the FP at airports, Brazil, 2019



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FP (Federal Police).

Map 7 – Amount of cannabis seized by the FP at airports, Brazil, 2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FP (Federal Police).

A fact that draws attention according to the report made by representatives was the identification of a hashish export route from Morocco[23]. This highlights the need to look for different types of cannabis, since there is a wide production of this type of drug in South America, including Brazil. In addition to Moroccan hashish, it was reported that there is a consumer market for more potent cannabis made through different processes and sold at prices far above the price of the most common cannabis, evidencing different niche markets within drug trafficking.

In relation to seizures made by the Federal Highway Police, which occur on federal highways, there was a high amount of cannabis seized during the pandemic period. It is estimated that, on average, about 257.8 kg of cannabis were seized per occurrence in the 449 seizures in June 2020, the month in which 115,761.7 kg of cannabis were seized, a record between the analyzed months of 2019 and 2020. Comparing the months of June 2019 and 2020, there is an increase of 188.6 % in the last year.

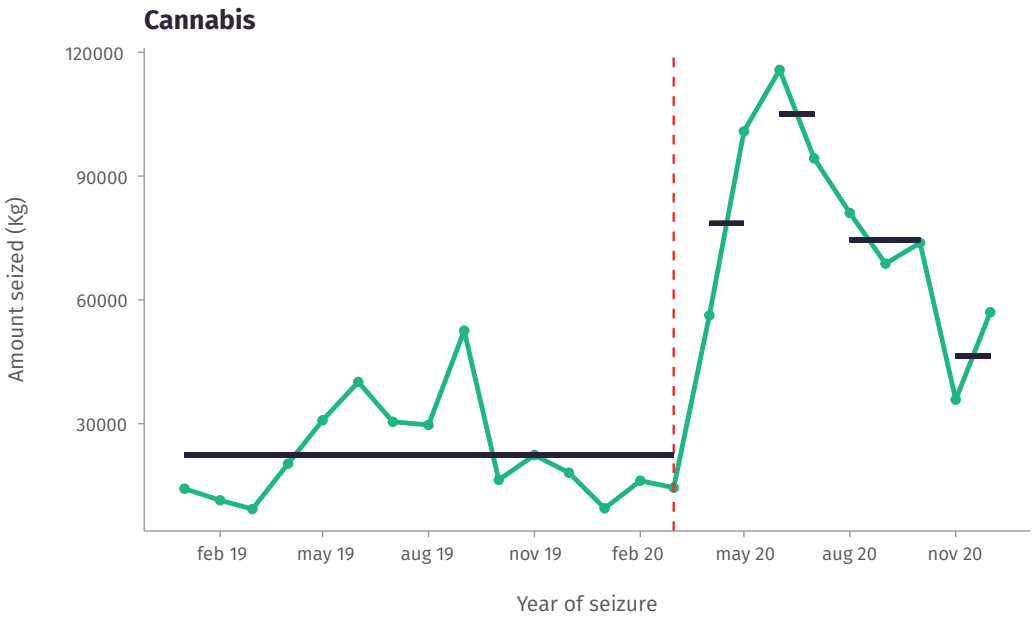
It is also important to highlight that the average volume seized in July 2020 was 211.4 kg in 446 seizures, while the average in January 2021 was 391.8 kg per seizure in only nine occurrences. The period prior to the pandemic indicated September 2019 as the month in which the highest volumes of cannabis seizures were recorded, totaling 52,537.9 kg.

The changepoints analysis shows six changes over the studied period, five of which occurred during the pandemic period. Although there were oscillations in relation to the months,

23 The Federal Police has carried out seizures on sailboats coming from this country.

until March 2020, only one segment was recorded, with an average of 22,384.9 kg seized, increasing to 78,540.4 kg in the segment of the first two months of the pandemic. The data show a similarity in the volume of seizures, concentrating the highest volumes in the period from May to August, both in 2019 and 2020.

Figure 15 – Amount (kg) of cannabis seized by month and year, Brazil, 2019 – 2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police).

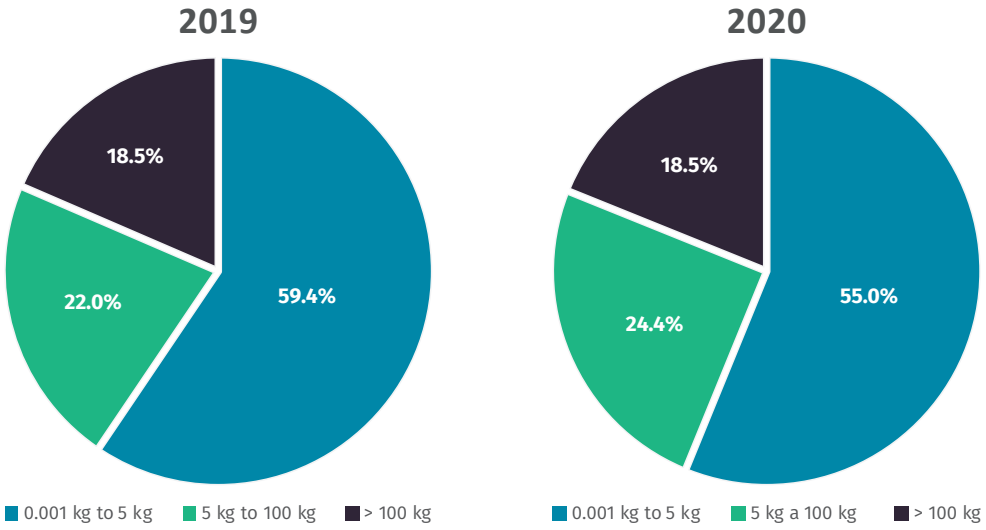
Regarding the relationship between the occurrences and the amount of cannabis seized, it can be observed that, for the year 2019, approximately 59.4% of the occurrences corresponded to seizures of less than 5 kg, while for the year 2020, this seizure volume represented 55% of the total. It is also observed that all categories of quantities seized increased from one year to the other and showed significant differences between the two periods ($p<0.05$).

Table 4 – Relationship between occurrences and quantity of cannabis, Brazil, 2019 – 2020

Cannabis FHP				
	2019		2020	
	Occurrences	%	Occurrences	%
0.001 kg to 5 kg	1,307	59.4 %	2,379	55.0 %
5 kg to 100 kg	486	22 %	1,056	24.4 %
> 100 kg	407	18.5 %	799	18.5 %
Total	2,200		4,324	

Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police).
Note: Chi-Square test had p-value of: 0.022, with 2 degrees of freedom; significance level of 5%.

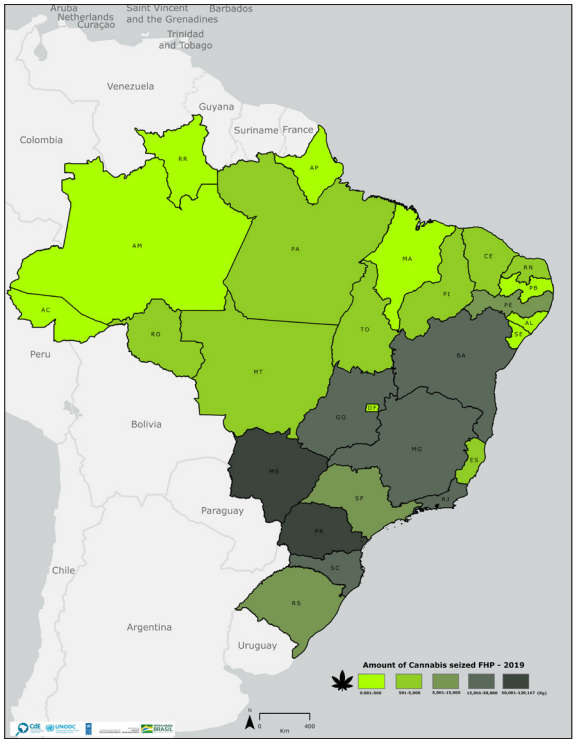
Figure 16 – Range by amount of cannabis seizures by the FHP, Brazil, 2019 – 2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police).

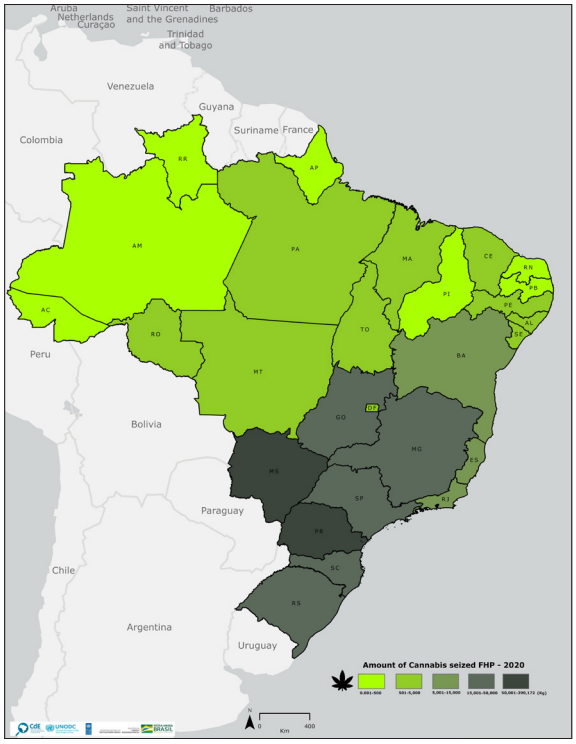
Regarding the geographic pattern of individual cannabis seizures by the FHP in 2019, a spatial behaviour can be observed that concentrates the largest quantities seized in the states of Mato Grosso do Sul and Paraná, followed by Goiás, Minas de Gerais, Rio de Janeiro, Santa Catarina, and Bahia (map 8). For the year 2020, seizures are still concentrated in Mato Grosso do Sul and Paraná, followed by Minas Gerais, Santa Catarina, Rio Grande do Sul, São Paulo and Goiás (map 9). It is also noted that there is a decrease in Bahia, Pernambuco and Piauí, and expansion in Espírito Santo, Rio de Janeiro and Rio Grande do Sul.

Map 8 – Amount of cannabis seized by the FHP in 2019



Prepared by: CoE Brazil – Centre of Excellence
for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police).

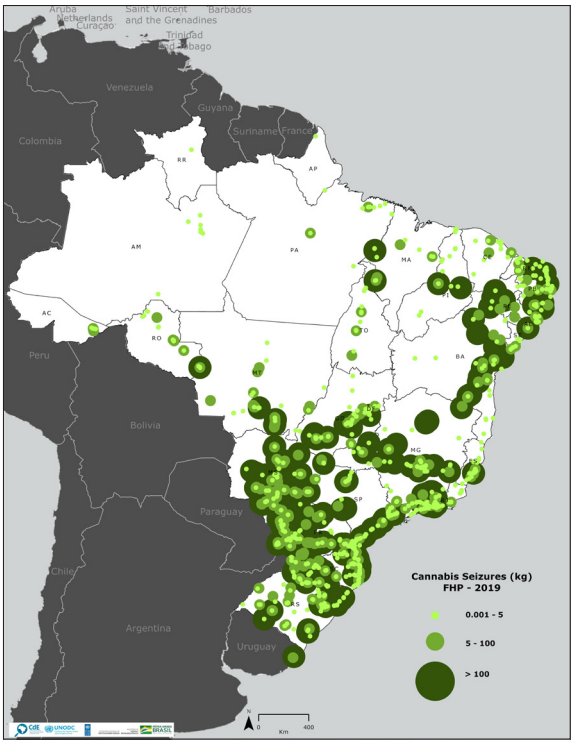
Map 9 – Amount of cannabis seized by the FHP in 2020



Prepared by: CoE Brazil – Centre of Excellence
for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police).

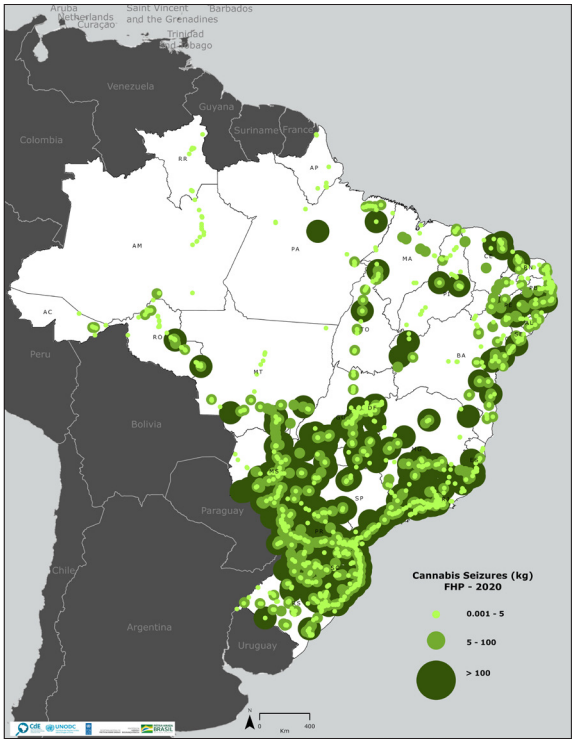
It can be noted that, for both 2019 (maps 8 and 10) and 2020 (maps 9 and 11), individual seizures maintained a relatively uniform spatial behaviour, with strong concentrations in Brasilia, Chapecó, Curitiba, Florianópolis, João Pessoa, Natal, Porto Alegre, Recife, Rio Janeiro, São Paulo, Sarandi, in the border region with Paraguay (mainly in Campo Grande), and in the twin cities of Bela Vista, Ponta Porã, Coronel Sapucaia, Paranhos, Mundo Novo, Guaíra, Foz do Iguaçu, Santo Antônio do Sudoeste and Barracão. However, in general, the concentration of seizures remains similar between the two periods.

Map 10 – Individual cannabis seizures by the FHP in 2019



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police).

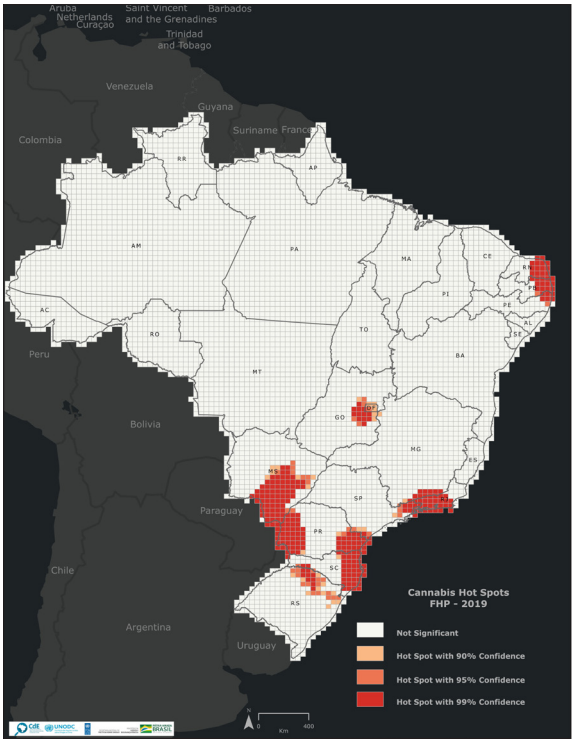
Map 11 – Individual cannabis seizures by the FHP in 2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police).

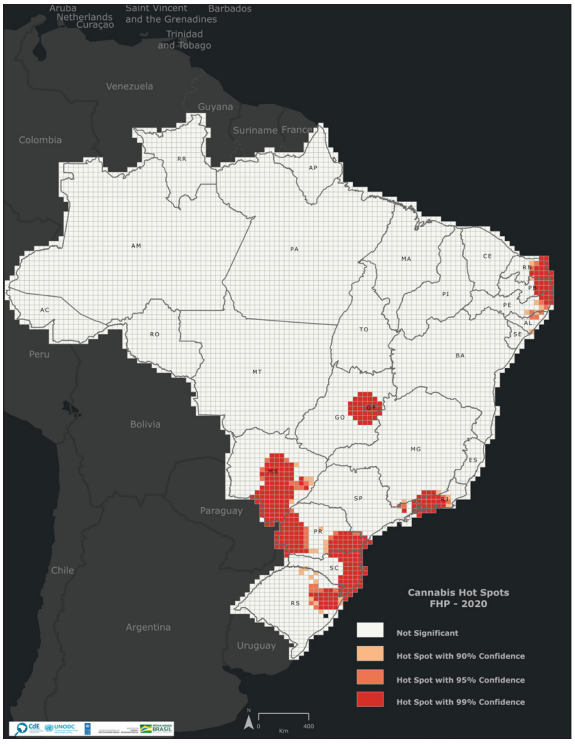
When analyzing this same information using the heat point technique, it is observed the concentration of seizures in six heat points in 2019 (coast of Rio Grande do Norte, Paraíba and Pernambuco; Federal District and Goiás; southern region of Rio de Janeiro; border of Mato Grosso do Sul and Paraná; coast of Paraná and Santa Catarina; and northern of Rio Grande do Sul) and five in 2020. It is emphasized that the reduction of one point in 2020, is nothing more than a junction of two points already existing in 2019, which connects the entire coast of Santa Catarina with the northern region of Rio Grande do Sul.

Map 12 – Heat signatures of cannabis seizures by the FHP in 2019



Prepared by: CoE Brazil – Centre of Excellence
for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police).

Map 13 – Heat signatures of cannabis seizures by the FHP in 2020

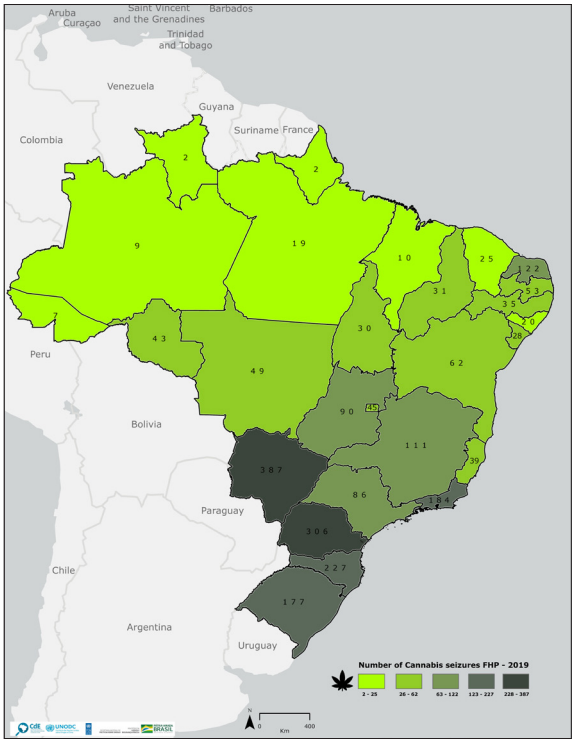


Prepared by: CoE Brazil – Centre of Excellence
for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police).

These patterns confirm that the behaviour of illicit drug trafficking is not random in its spatial distribution; on the contrary, it is concentrated in certain areas where there are favorable conditions for this criminal activity, possibly being one of the main factors influencing the permanence of this distribution, represented by the border region with Paraguay and the Northeast of the country as the main points of origin of the cannabis that supplies the illicit drug market in the national territory.

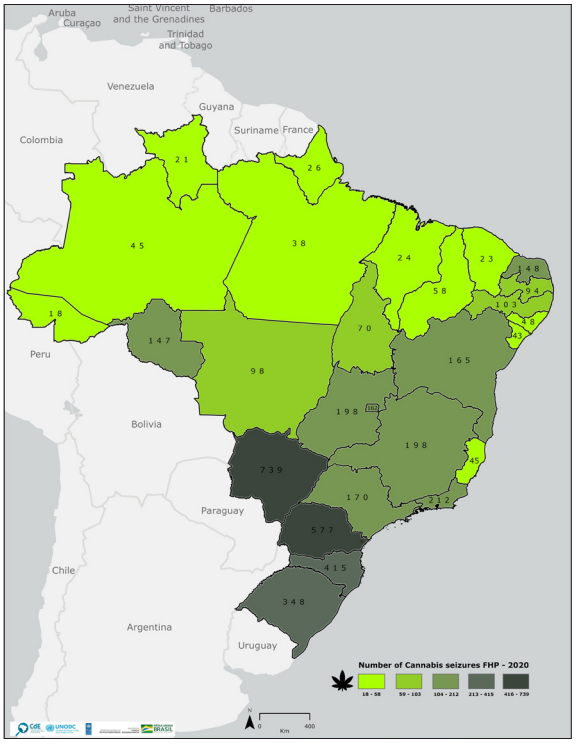
Regarding the difference between individual cannabis seizures (maps 14 and 15), it is observed that the states of Mato Grosso do Sul, Paraná, Santa Catarina and Rio Grande do Sul, for both periods, were characterized by concentrating the largest number of individual seizures at the national level, with an increase of more than 80% between 2019 and 2020. From 2019 to 2020, there was an increase in the number of seizures in Rondônia, the Federal District and Bahia.

Map 14 – Number of cannabis seizures by the FHP in 2019



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police).

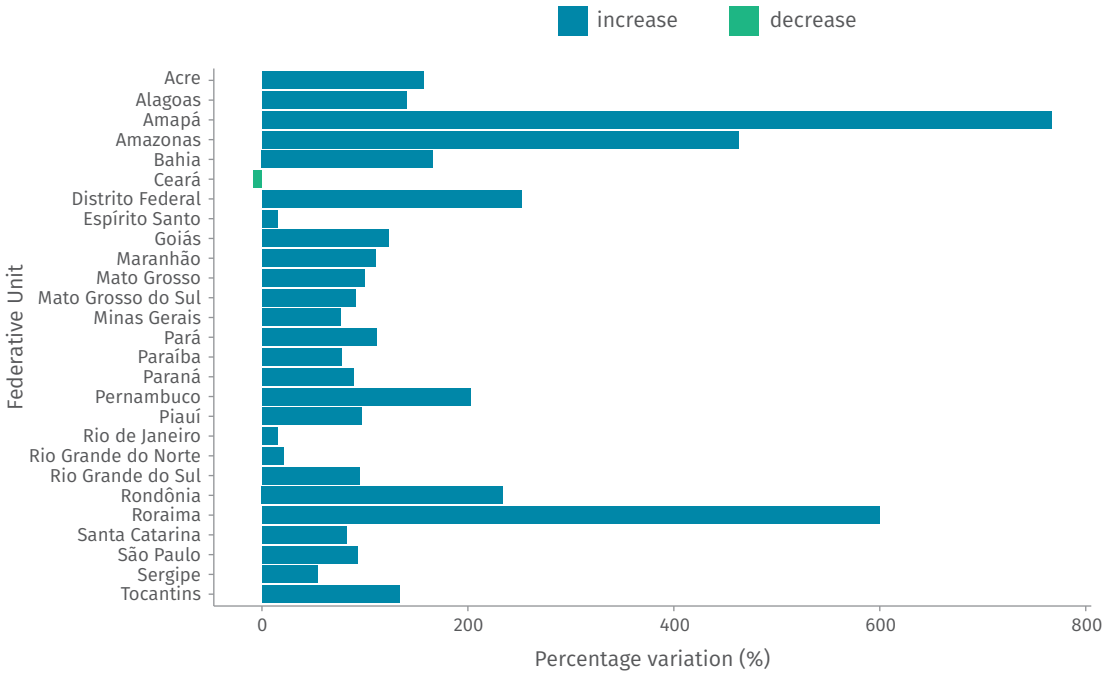
Map 15 – Number of cannabis seizures by the FHP in 2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police).

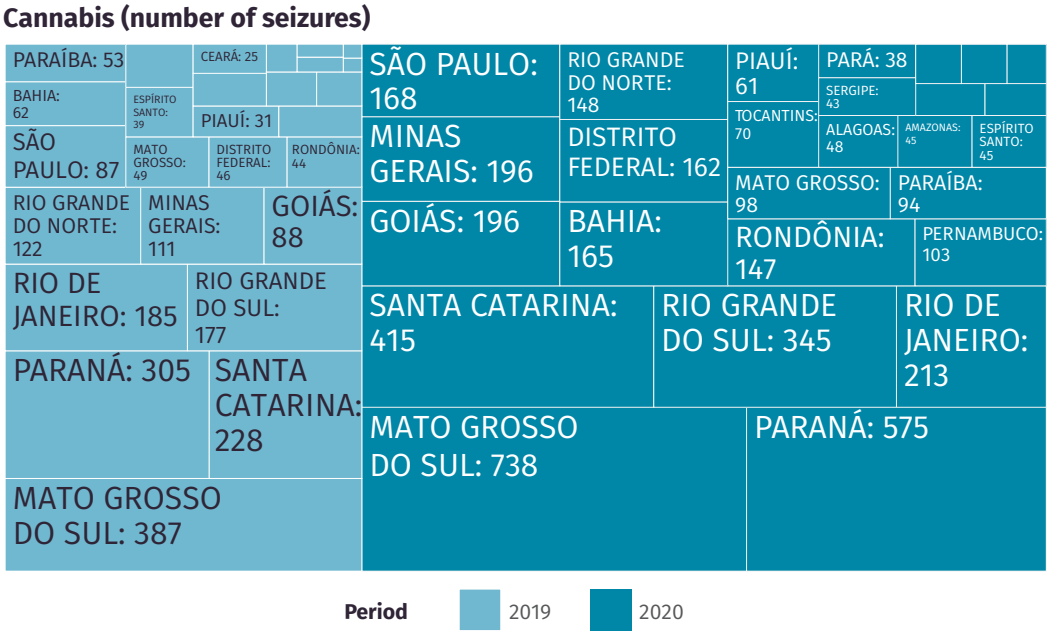
The following figures illustrate the number of cannabis seizures in each FU in 2019 and 2020, as well as the percent variation. It is observed that Amapá and Roraima showed an increase of 1,200% and 950 % between 2019 and 2020, according to Figure 17. However, according to the tree map, Mato Grosso do Sul and Paraná are the states that presented the highest numbers of seizures in both years. These two states border Paraguay, the main cannabis producer in the region and were the first states to participate in the VIGIA Program. Another fact to be highlighted based on this information was the reduction of seizures in only one state, Ceará, which practically maintained the same level of seizures between 2019 and 2020. Therefore, it is noted that the increase in cannabis seizures may have occurred in a generalized manner in the country.

Figure 17 – Percent change in the number of cannabis seizures by the FHP, Brazil, 2019 – 2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police) 2019, 2020.

Figure 18 – Treemap of the number of cannabis seizures by the FHP, Brazil, 2019-2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police) 2019, 2020.

Part of the significant increase in cannabis seizures in Brazil, according to interviewees, is due to the fact that cannabis eradication operations in Paraguay were suspended for a few months in the COVID-19 pandemic, which could be one of the explanatory factors that would indicate that in fact there was an increase in the production of this drug and consequently would be circulating in larger quantities throughout Brazil.

4.3 Trends in the States surveyed – Cannabis

In this section, the descriptions of information passed on by the public security teams of the States are presented. It is emphasized that the data forwarded are not standardized, a fact that made it impossible to use the same pattern of analysis for the three FUs. In addition, qualitative information collected in interviews and focus groups, specific to each location, will also be presented below.

In the case of the three States analyzed, cannabis appears with different logics, and the PR and MS showed the highest number of cannabis seizures in terms of the volume seized by the FP and in terms of the number of seizures by the FHP, even with populations much smaller than SP. This is due to the fact that they have an extensive border with Paraguay. Therefore, much of what is in the MS and PR is involved in a wholesale logic of drug supply, with distribution to all other Brazilian states. SP appears as one of the main destinations, where most of the seizures follow a retail logic of drug trafficking.

4.3.1 Mato Grosso do Sul

Economically, the State is recognized for its agricultural, mining, tourism and service provision sectors. However, due to the large border with Paraguay and Bolivia, Mato Grosso do Sul is also sought as a gateway for transnational trafficking, as Paraguay is the main supplier of cannabis in Brazil and there is production of cocaine in Bolivia. This relationship promotes the development of historically complex socio-spatial dynamics between border regions, mainly in relation to the different illegal markets identified in the region, such as drug trafficking, firearms trafficking, goods for smuggling and tax evasion (MINISTÉRIO DA JUSTIÇA E CIDADANIA, 2016).

In Mato Grosso do Sul, a relevant aspect of its division with neighboring countries is the predominance of a "dry" area, with the separation made by border[24] marks, being common the existence of properties in regions where there is intense transit between countries. The research revealed that criminal groups open clandestine roads, known as "cabriteiras", to optimize the passage of illicit drugs in areas with less movement.

The Department of Border Operations (DOF) and the Specialized Police Department for the Suppression of Border Crimes (DEFRON) act in a specialized manner in these areas in the repression of the various crimes that occur in the border region. Both agencies occupy the same building, based[25] in the municipality of Dourados. This area is strategic, as verified in the research.

24 A border mark is characterized by a concrete structure indicating the separation of countries, being visually striking, but without creating an obstacle to mobility between territories.

25 Revealing an effective integration strategy between different police forces.

Dynamics of the use of warehouses after entering the Brazilian border

The interviews indicated that, in the border region, the strategy of loading via lorry occurs via warehouse. Between the producer pole and the consumer, transportation is done in smaller volumes to be unloaded and accumulated in warehouses positioned at strategic points in the region. The municipality of Dourados was reported as an important point for this strategy. According to local representatives, seizures are more likely to be made in the vicinity of the border between Brazil and Paraguay. For this reason, drug trafficking has the strategy of accumulating the drug at a point further away from this strip in order to resume its transport later. The strategy of warehouses is also a way for criminal organizations to adapt to the work of police repression.

According to the interviewees, cannabis is hardly transported by airplanes at the state's borders, because its volume and price do not economically compensate for air transport. The most common is entry via a land transportation method. In Mato Grosso do Sul, it was quite common to refer to the "crazy[26] horse" as a form of cannabis transport.

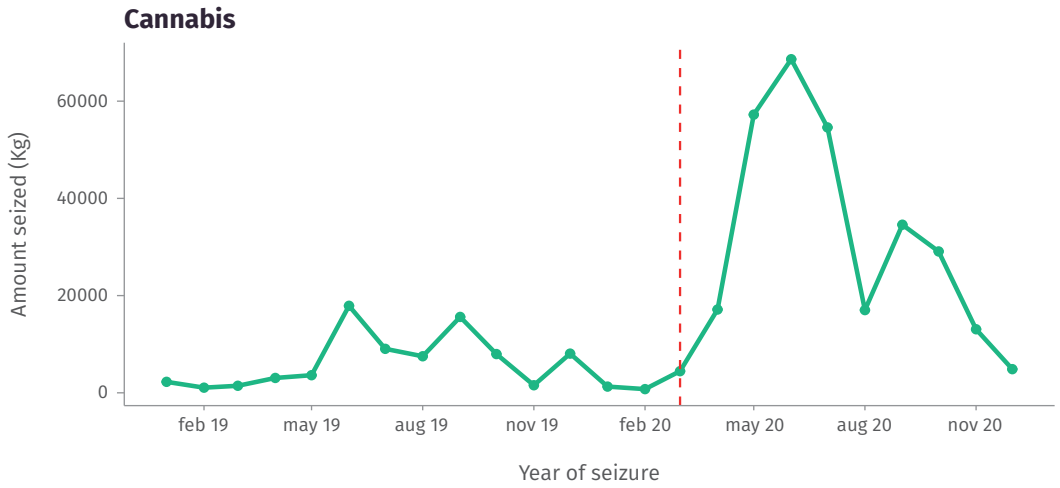
There was a consensus among the interviewees of the MS that there was an increase in the prices of commercialization of cannabis. However, this is a complex calculation, because there is the pricing of the kilo in dollars, but there are also transactions made with stolen cars,[27] which can be exchanged and then have their parts sold, or even be used as a means of transporting the drug.

In Mato Grosso do Sul, a relevant increase in seizures of cannabis was verified as of February 2020 with data from the Federal Police, highlighting the month of June (68,628.7 kg) and the month of April, for the volume of seizures having increased 284.8% in relation to the previous month (Figure 19).

26 See box 3.

27 It was reported, in some interviews, that it is common for criminal organizations to steal high-end cars and travel to Paraguay, leaving part of the stolen cars, and then return by "crazy horse" with one of the stolen cars.

Figure 19 – Amount (kg) of cannabis seized by month and year, Brazil – Mato Grosso do Sul, 2019 – 2020

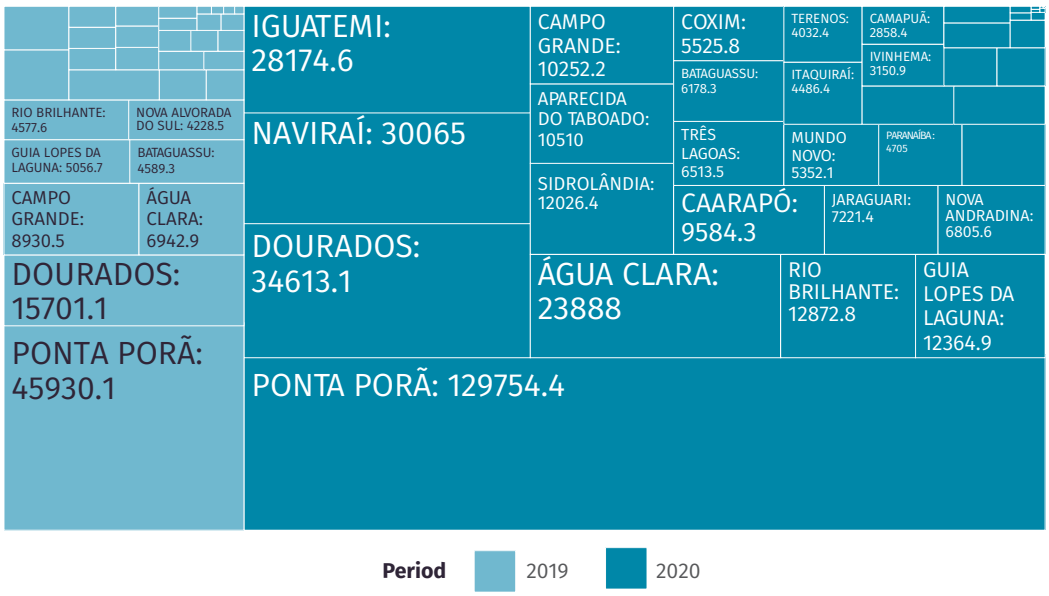


Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FP (Federal Police).
Note: Total quantity of cannabis is the sum of cannabis, hashish and skunk.

There were 79,115.37 kg of cannabis seized in 2019 and 302,707.52 kg in 2020, with 0.08% and 0.02% of these, respectively, carried out at airports. Despite the low percentage, seizures at Corumbá and Dourados airports only occurred in 2019, while there was an increase of 43.8% between 2019 and 2020 in the volume of seizures at Campo Grande airport, going from 49.5 kg to 71.2 kg.

Regarding the land transportation method, about 116,675.5 kg of cannabis were seized on federal highways in 2019, according to data from the Federal Highway Police, increasing about 233.9% in 2020. Ponta Porã stands out as the municipality with the highest volume of seizures in both years, 45,930.1 kg seized in 2019 and 129,754.5 kg in 2020. Dourados and Água Clara also had a significant increase, of 120.5% and 244.1%, respectively (Figure 20).

Figure 20 – Treemap of the amount (kg) of cannabis seized by municipalities by year, Brazil – Mato Grosso do Sul, 2019 – 2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police).

SEJUSP data confirm the increase in the volume of cannabis and hashish seizures in 2020 carried out by MS security forces, as can be seen in Table 5. Furthermore, they indicate that these seizures occurred predominantly within the state.

Table 5 – Seizures of cannabis and derivatives, Brazil – Mato Grosso do Sul, 2019 – 2020

Drogas (Kg)	Capital			Interior		
	2019	2020	Variation (%)	2019	2020	Variation (%)
Haxixe	6,4	108,3	1.592,2	100,3	246,3	145,6
Maconha	118.352,6	252.921	113,7	245.166,5	479.921,5	95,8
Total	**118.359**	**253.029,3**	**113,8**	**245.266,8**	**480.167,8**	**95,8**

Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: SEJUSP/MS.

Following a similar pattern to that of the FHP, the seizures are concentrated in the interior of the state, revealing a logic of national distribution, since loads of cannabis, often with high volumes, constantly cross the border. Part of the dynamics of crime in the drug crossing is made from the monitoring of people enticed by criminal groups, who are hired as "olheiros" and "mateiros", passing on information about police activity through mobile phone messaging apps or phone calls.

The changes in some procedures with an impact on police activity were aspects related to the COVID-19 pandemic reported by interviewees in the MS. According to the representatives, the online format of the judiciary's hearings caused part of the military police force responsible for escorting people in custody to be dismissed to perform their routine activities for longer than in the period before the pandemic.

4.3.2 Paraná

Due to its wide border with Paraguay, admittedly one of the largest cannabis producers in the world, Paraná has become an important route for cannabis entry into Brazil, and has high seizure numbers of this drug. The conditions that characterize this border, such as the extensive Paraná River and its tributaries, make even more challenging the actions of surveillance and repression of cannabis trafficking locally.

This scenario requires the adaptation of police work to hostile environments, such as the performance in riverside areas, between woods and forests, and in the Paraná River, mainly through night surveillance. Among the complicating factors mentioned by the representatives are the shallow places for navigation, the need for night vision and communication equipment, and the imminent risks related to climate change when working in rivers, lakes and riverside regions.

In this scenario, the integration between the security forces is presented as essential for several reasons, such as: sharing relevant information, carrying out joint operations, increasing the number of personnel to cover a large area, among others.

Most representatives interviewed work directly on the border between Paraná and Paraguay, and surveillance in this region occurs mainly by specialized groups of the military and civil police forces of the State, the Federal Police, represented mainly by the Special Maritime Police Center (NEPOM), Federal Revenue Service, Brazilian Army and other institutions.

In general, these players reported that cannabis is the main drug trafficked in the border through river or land, and also indicated the high volume of smuggling of cigarettes.

The relationship between cannabis trafficking and smuggling of cigarettes in the border between Paraná and Paraguay

The smuggling of cigarettes appeared predominantly in the interviews and focus groups conducted in the border of the State of Paraná. According to security agents, this practice is historically carried out in the region, and constitutes a source of income for several individuals, especially young people. Thus, the smuggling, although illegal, is not perceived as something necessarily negative, because a considerable number of city residents — especially those who could not enter the formal market — subsist on informal activities involving illicit circulation of lawful goods, as well as illicit goods.

According to previous research findings (MINISTÉRIO DA JUSTIÇA E CIDADANIA, 2016), smuggling of cigarettes is characterized by family relationships and local loyalties that, in addition to ensuring the orderly development of activities, hinder the establishment of others criminal groups in the region.

The security agents interviewed identify current relationships between this practice and cannabis trafficking around the Paraná River, such as the organization of people involved in networks for the sharing of existing resources, such as clandestine ports, "olheiros", vessels and others, in order to enhance their actions and results. Eventually, cannabis is also transported "in the package of the cigarette", that is, hidden among the cigarette load, because it is bulkier.

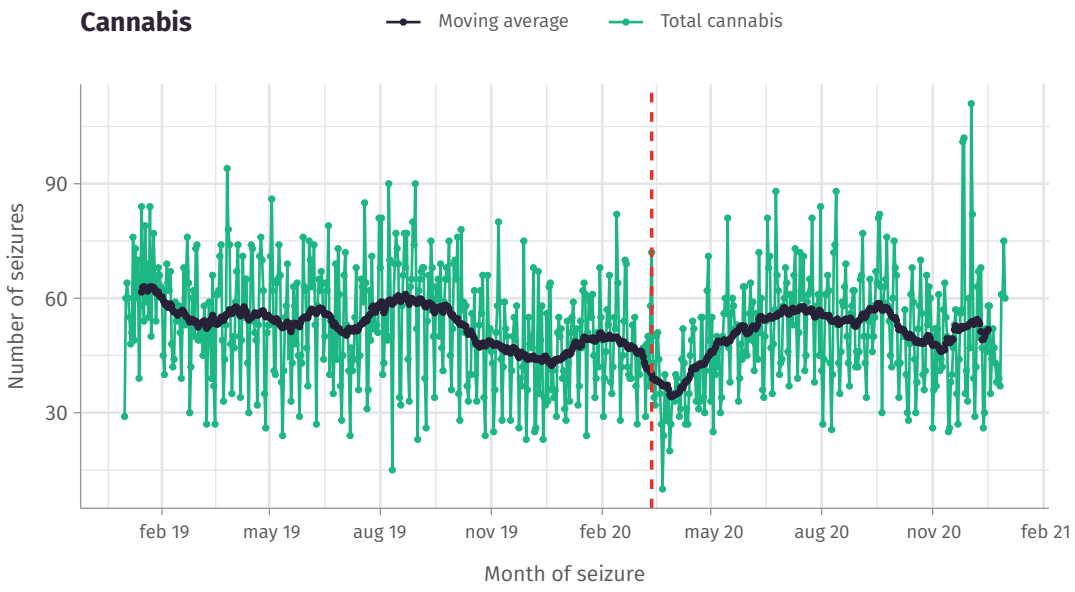
It is important to mention that, according to the high rate of smuggling of cigarettes in the region, the Federal Revenue Service of Paraná, the institution responsible for the destruction of illegal cigarettes arising from the seizures, improved its techniques, establishing sustainable means for the loads destruction process, by recycling most of its components.

According to data from the Center for Analysis, Planning and Statistics of Paraná (CAPE-SESP/PR)[28], there were 117,641 police reports on drug seizures recorded in Paraná between 2017 and 2020, which corresponds to 153,220 narcotics seizures, 33,767 of them in 2019 and 33,681 in 2020.

Considering only 2019 and 2020, there is a decrease of -7.3%, totaling 18,260 seizures in 2020. The moving average in Figure 21, based on 14 days, indicated a decrease in the number of cannabis seizures until March 2020 and an increase between April 2020 and August 2020.

28 CAPE-SESP/PR is responsible for the constant analysis and monitoring of crime records and point-to-point criminal mapping of the State of Paraná. By identifying more sensitive areas, strategic information is passed on to managers to support the planning of systematic operations and actions in the area of Public Security in the State. Available at: https://www.seguranca.pr.gov.br/CAPE. Accessed on November 18, 2021.

Figure 21 – Number of cannabis seizures per day, Brazil – Paraná, 2019 – 2021

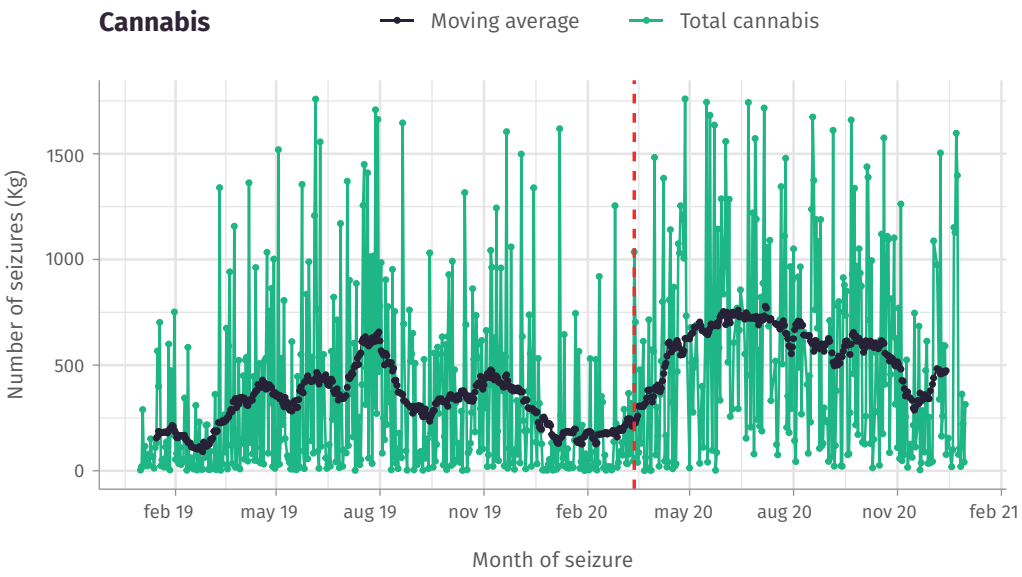


Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: CAPE-SESP/PR (Center for Analysis, Planning and Statistics from the Secretary of Public Safety of Paraná) (2021).

On the other hand, the volume seized in kilograms increased by about 107.1%, with the quantitative twice as high in 2020 compared to the previous year, which had totaled 137,148.0 kg.

Due to 44 observations in which the seizure volume was atypical, such as on August 30, 2020, with about 10,465.7 kg, the moving average showed some stability in the period before the pandemic. When removing these observations whose quantity was greater than 1,784 kg seized (upper limit indicating the discrepant points), it was found that the amount of cannabis seized follows the same trend seen in relation to the number of seizures. Between February and July of both years there was an increase in the volume of seizures.

Figure 22 – Amount of cannabis seized per day, Brazil – Paraná, 2019 – 2021



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: CAPE-SESP/PR (Center for Analysis, Planning and Statistics from the Secretary of Public Safety of Paraná) (2021).
Note: 44 observations (outliers) were excluded.

The heat map points out that in 2019 and 2020, as in the case of Mato Grosso do Sul, seizures were high in the months of June and July, not graphically presenting a pattern of day of the week or period. In May 2019, the largest seizures occurred at night or on Fridays. And in May 2020, the morning and evening periods corresponded to large volumes of seizures. Grey fields correspond to those where the atypical values are located, so they indicate values higher than the scale.

Furthermore, in August 2020, there is a pattern in the afternoon and evening periods, while in September 2020 there were few seizures on Sunday.

Figure 23 – Heat signature map of the amount of cannabis seized by weekday and time of day, per month, Brazil – Paraná, 2019

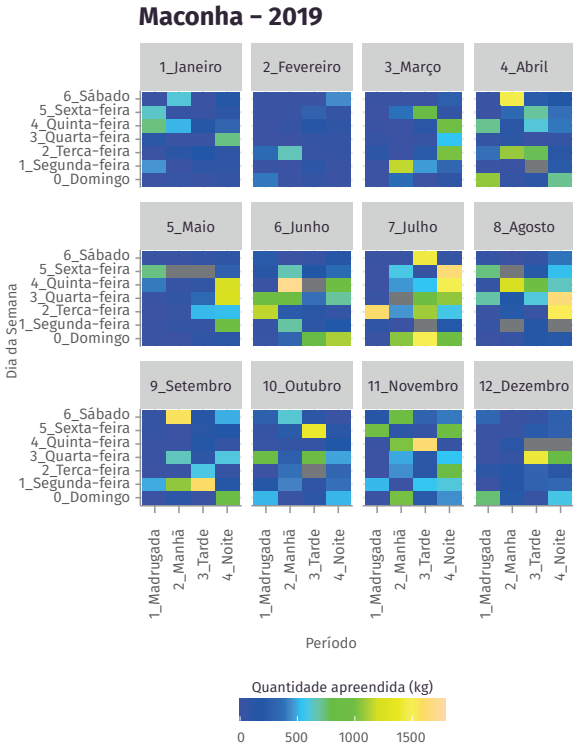
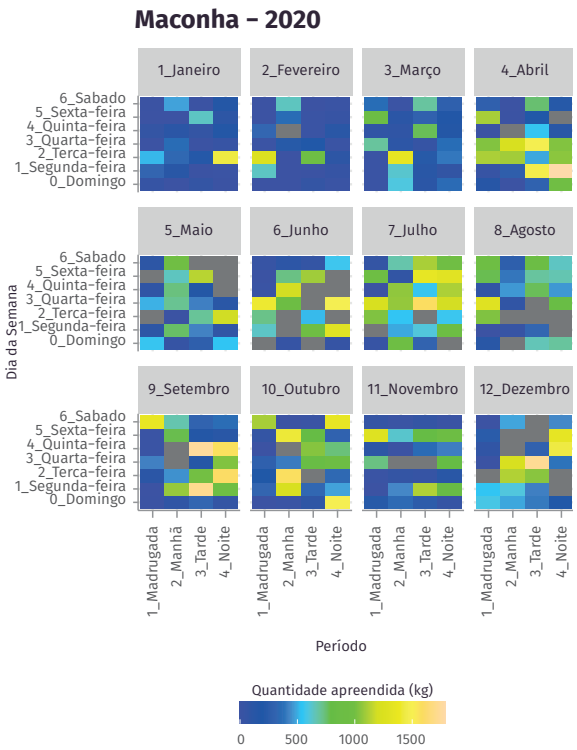


Figure 24 – Heat signature map of the amount of cannabis seized by weekday and time of day, per month, Brazil – Paraná, 2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: CAPE-SESP/PR (Center for Analysis, Planning and Statistics from the Secretary of Public Safety of Paraná) (2021).

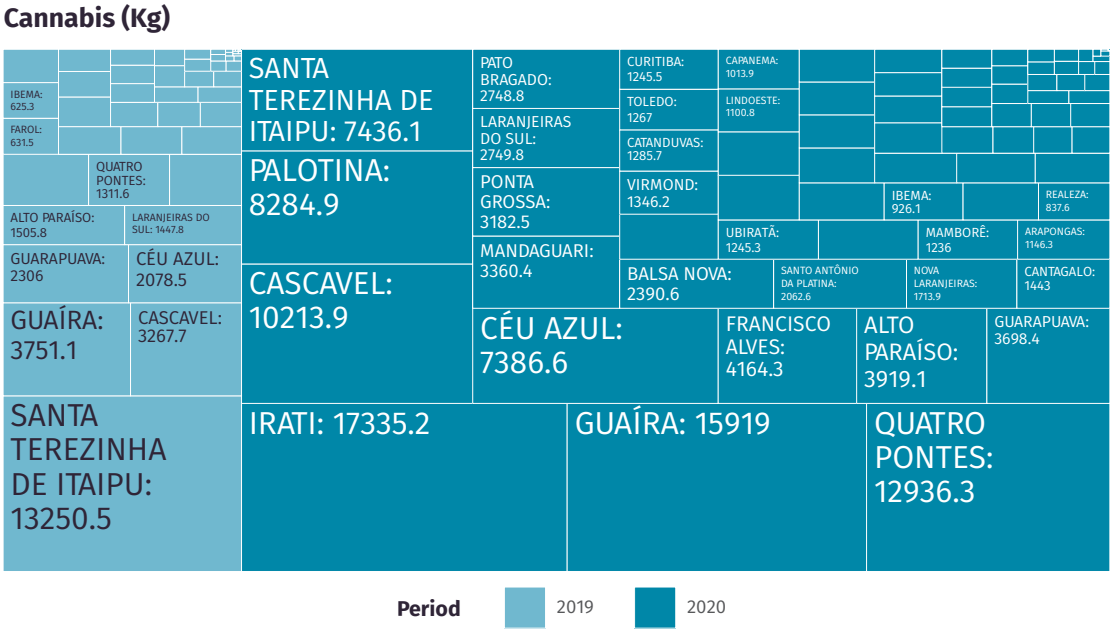
It is apparent from field research that the restrictions on cross-border travel as a result of the pandemic, including the closure of the Friendship Bridge (Ponte da Amizade) between[29] March and October 2020, have led to an increase in cannabis trafficking on the Paraná River/Lake. The Friendship Bridge has an intense flow of cars and transportation of various legal and illicit goods, and configures a significant route for the transportation of cannabis.

A recurrent perception of all police groups surveyed during the pandemic period in the State, and which is related to the possibility of increased traffic by river, was the increase in the construction of clandestine ports and the number of "olheiros" to assist in monitoring police work and provide information to prevent such cargoes from being seized. The drug dealers also sought to improve their methods to make the crossings and the flow of the drug faster, and using more modern equipment. The activities of drug trafficking by river require complex logistics, such as strategies for concealing boats and opening trails for transport, and there are indications that criminal groups are increasingly organizing themselves into networks. Additionally, it was found in the reports that the perceived changes in drug trafficking are also related to changes in police activities, the increase in police personnel to act in the border and new local strategies, such as the implementation of the VIGIA Program.

29 The Friendship Bridge connects Foz do Iguaçu (Brazil) to Ciudad de Leste (Paraguay).

In general, police institutions reported the perception of an increase in seizures, and with higher volumes of drugs. The Federal Highway Police, for example, had an 88.5% increase in the number of seizures made in 2020 compared to the previous year. These corresponded to approximately 143,495.8 kg of cannabis seized in the last year, of which 12.1% occurred in Irati, a municipality that had only accounted for 50 kg in 2019, showing an increase. On the other hand, Santa Terezinha de Itaipu had a reduction of 43.9%, totaling 7,436.1 kg seized (Figure 25).

Figure 25 – Treemap of the amount (kg) of cannabis seized by municipalities by year, Brazil – Paraná, 2019 – 2020



Preparation: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police).

Also noteworthy are the increases in the volumes of seizures that occurred in the municipalities of Guaíra (324.4%), Foz do Iguaçu (152.7%) and São José dos Pinhais (104.1%) between 2019 and 2020.

In this scenario, it is important to highlight that the allocation of a specialized group for air surveillance in Guaíra, of camera monitoring technologies in Foz do Iguaçu, and of communication devices enhanced the police work and its results, as mentioned by the representatives. Technology and capacity strengthening have important functions for the performance of police actions, enabling improved information sharing flows,

streamlines data analysis and cross-checking, and facilitates constant monitoring of criminal groups.

When asked about the identification of the active criminal organizations, some representatives indicate that the PCC has already been detected as the main agent in cannabis trafficking between Brazil and Paraguay, but they emphasize the existence of smaller and local groups. In a previous study conducted in the region, security agents also mentioned the existence of a well-constituted local market related to the control of smuggling (MINISTÉRIO DA JUSTIÇA E CIDADANIA, 2016, p. 59).

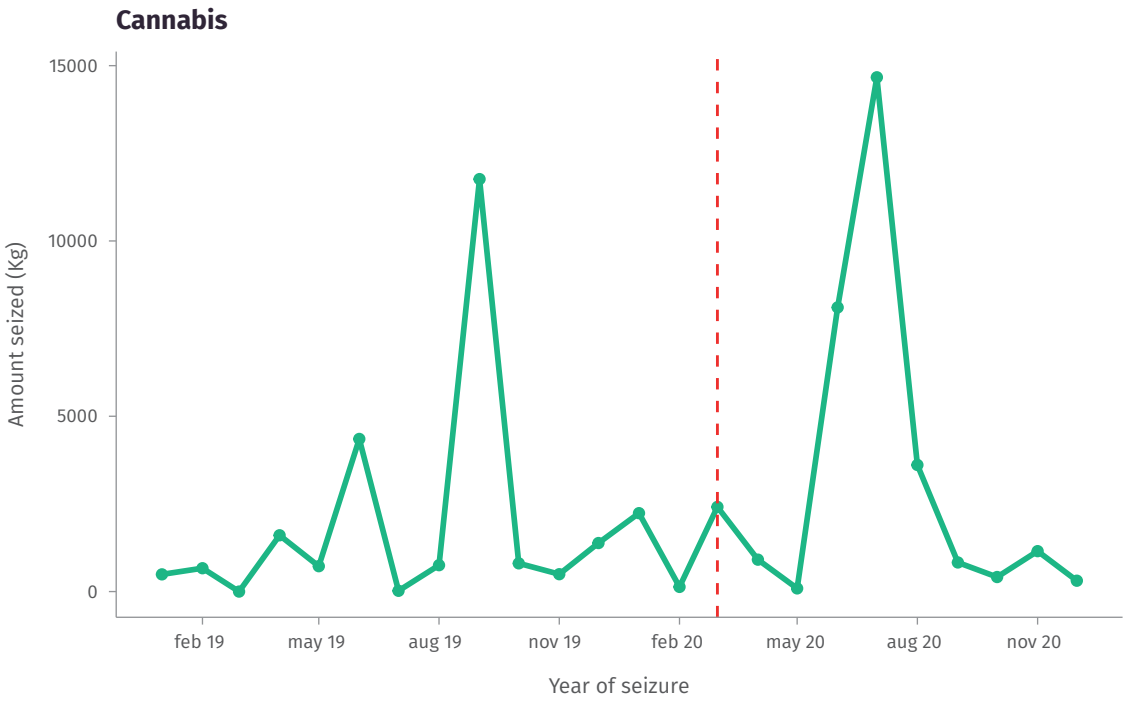
According to investigations, Paraná[30] is one of the main strongholds of the PCC, after São Paulo and Mato Grosso do Sul. However, this organization does not have full control of the region. The criminal organizations Clan Barakat, Comando Vermelho and Mafia Paranaense were also mentioned (INSIGHTCRIME, 2021). After a two-year investigation into the activities of the PCC in the region, conducted by the Centre for Latin American and Latin Studies (CLALS) of the American University and by InSight Crime, it was found that after the murder of Jorge Rafaat and the end of truce with the Comando Vermelho, the PCC achieved greater prominence in drug trafficking between Paraguay and Brazil (INSIGHTCRIME,2020).

30 The information was taken from a field investigation in Foz de Iguaçu, Paraná, and São Paulo, where InSight Crime interviewed representatives of the Republic's General Attorney Office, a national police investigation unit, a national division to combat organized crime, a border security unit, the Federal Police, the Brazilian Public Security Forum (FBSP) and local journalists. InSight Crime was also based on information from FBSP, O Globo and the local press. Available at: https://insightcrime.org/brazil-organized-crime-news/parana-brazil/.

4.3.3 São Paulo

The volume of cannabis seizures increased about 51.2% in São Paulo between 2019 and 2020, according to data from the Federal Police. This increase is largely due to the quantities seized in June and July 2020, of 8,104.8 kg and 14,668.1 kg, respectively (Figure 26).

Figure 26 – Amount (kg) of cannabis seized by month and year, Brazil – São Paulo, 2019 – 2020



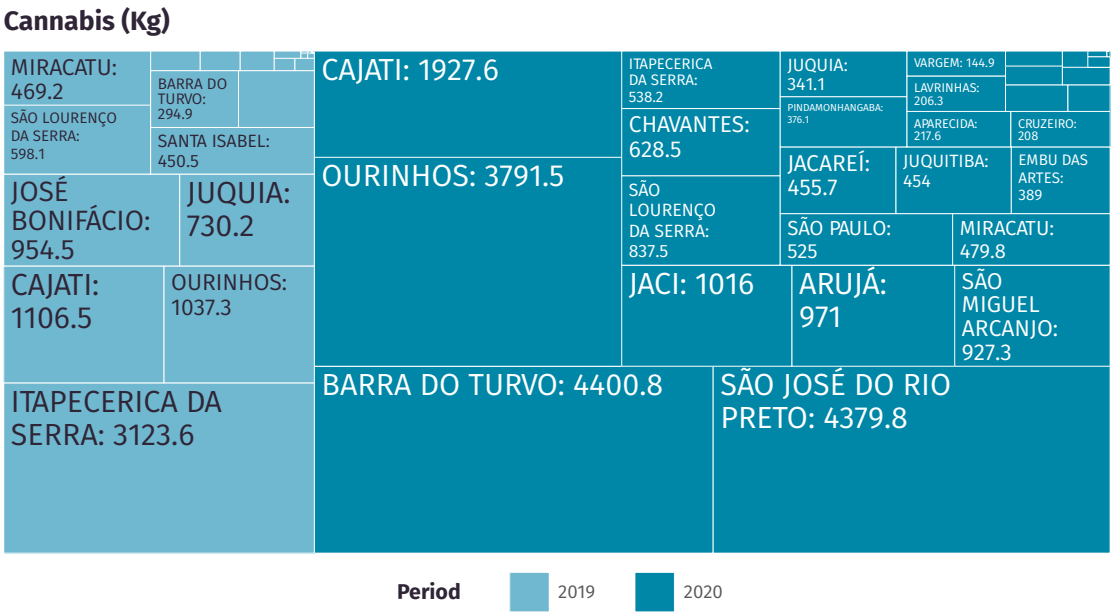
Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FP (Federal Police).
Note: Total quantity of cannabis is the sum of cannabis, hashish and skunk.

Regarding the transportation methods, the predominant form appears to be by land, since less than 1% of the volume of cannabis seized came from airports between 2019-2020, being recurrent at the international airport of Viracopos and of São Paulo/Guarulhos.

The Federal Highway Police data report a considerable increase, of 156.2%, in the volume of seizures on federal highways between 2019 and 2020, highlighting the first four months of 2020, which corresponded to 7,643.7 kg seized.

Over the two years, there is a change about the volume of seizures in the municipalities. The cities with the highest number in 2019 are not the same as in 2020, with the exception of Cajati and Ourinhos, which recorded an increase of 74.2% and 265.5%, respectively. Barra do Turvo went from 294.9 kg seized in 2019 to 4,400.8 kg in 2020, corresponding to an increase of 1,392.3% (Figure 27).

Figure 27 – Treemap of the amount (kg) of cannabis seized by municipalities by year, Brazil – São Paulo, 2019 – 2020



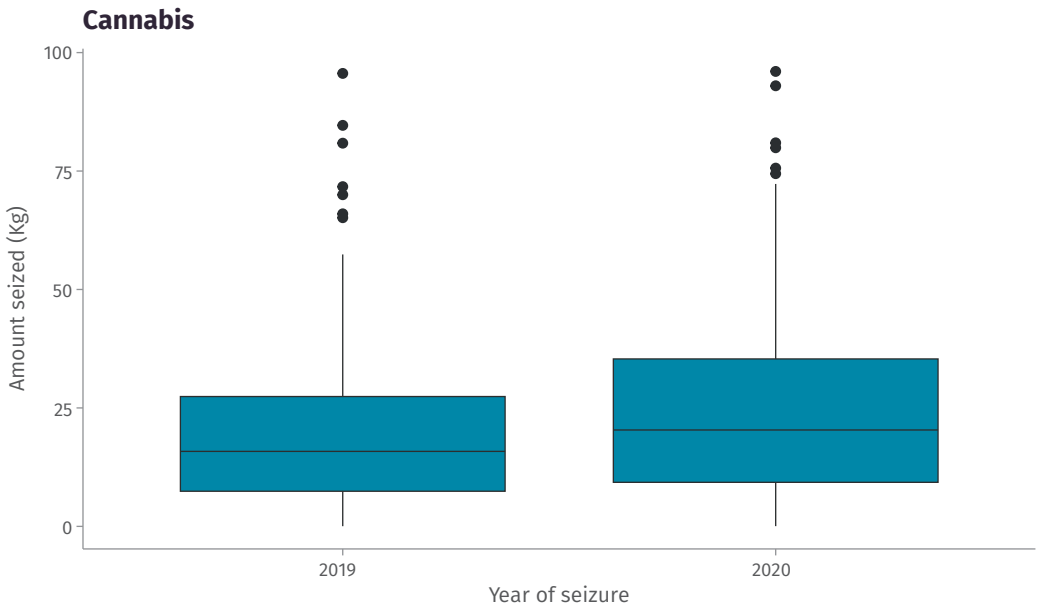
The data of flagrant in the city of São Paulo, available by the Narcotics Testing Centre (NEE) of the Institute of Criminalistics of the Technical and Scientific Police of the State of São Paulo, reveal that between 2019 and 2020 there were 17,244 flagrant and, of these, 46,250 tests of substances, 23,601 tests opened in 2019 and 22,649 in 2020.

Of the 44,158 exams that were completed, 9,188 detected cannabis (THC) in 2019 and 9,255 in 2020, which shows an increase of only 0.7%. The cannabis samples found were mostly in portions of dried plant fragments, consisting of leaves, leaflets, inflorescences, stems and fruits.

Another source of data analyzed for the State refers to the seizures by the Military Police. In total, the database contained 336 cases of cannabis seizures in 2019 and 476 in 2020, which totaled 4,331.7 kg and 6,098.9 kg seized, respectively. Cannabis seizures ranged from 0.038 kg to 95.6 kg, with an average of 25.4 kg per occurrence in 2019. In 2020, the interquartile range increased from 24.1 to 30.9, with 50% of seizures over a volume of less than 28.2 kg.

Observing the *boxplot* diagram of cannabis per year, it is noted asymmetry to the right and the presence of discrepant points, that is, seizures were concentrated below 50 kg in the two years, although in 2020 the amplitude was greater. The presence of discrepant points indicates that there were seizures of atypical volume, as well as that the average may be being influenced by these values.

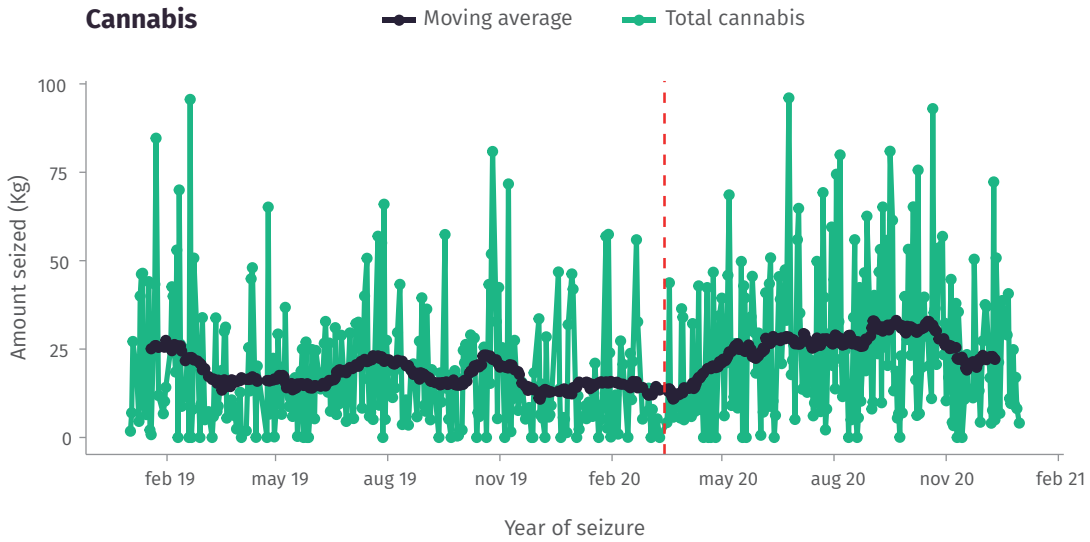
Figure 28 – Boxplot of the distribution of cannabis seizures carried out by the Military Police of São Paulo, Brazil – São Paulo, 2019 – 2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: São Paulo Military Police/SPMP.

With reference to the volume seized per day, the moving average calculated for cannabis shows a decreasing trend in the amount seized until March 2020, despite the oscillation seen between July and December 2019. Moreover, it is noted that in the first three months of the pandemic there was a sharp growth, which then appears to be less intense until November 2020.

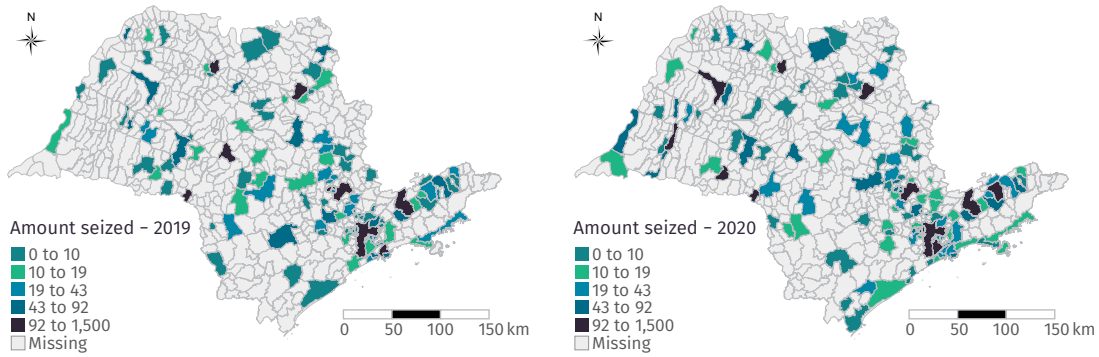
Figure 29 – Moving average of cannabis seizures by the São Paulo Military Police in 2019 and 2021 per month



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: São Paulo Military Police/SPMP.

The highest volumes of seizures are found in the capital, which totaled an increase of 46.0%, and in Campinas, with an increase of 251.0%. About 51 municipalities obtained cannabis seizure records in 2020 alone. Of these, the largest volume was seized in Presidente Prudente (118 kg).

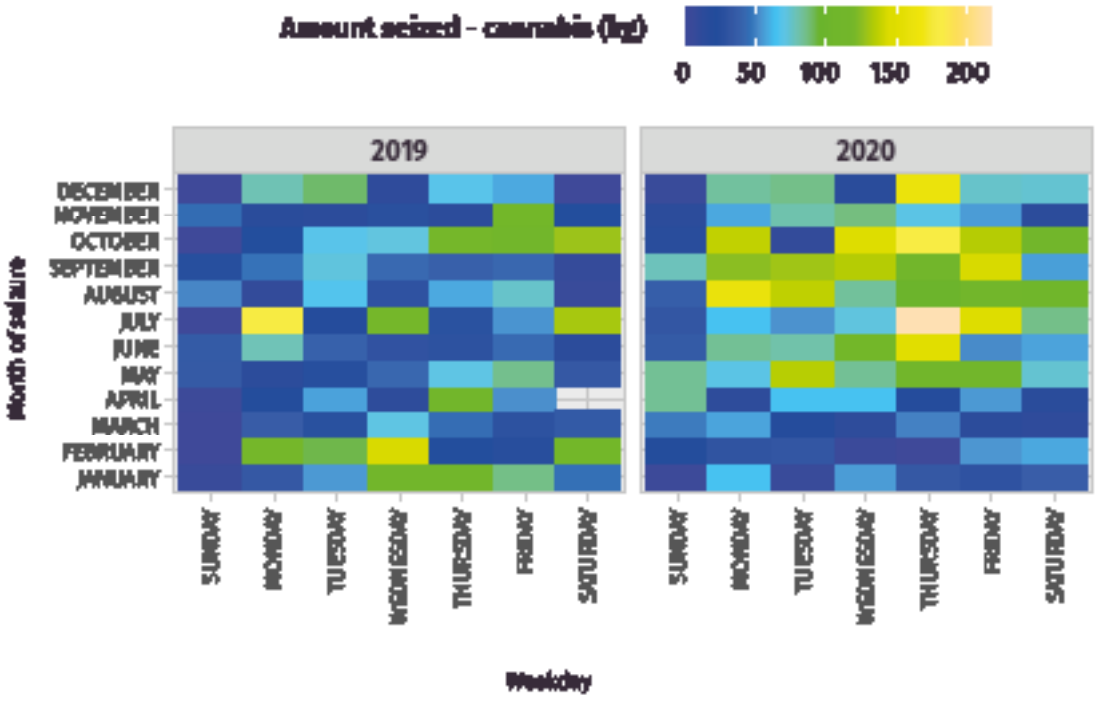
Figure 30 – Cannabis seizure records by the São Paulo Military Police by municipality, Brazil – São Paulo, 2019 – 2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: São Paulo Military Police/SPMP.

Finally, the figure below shows the distribution of seizures by day, month and year. The 2019 heat map shows that the highest volume seizures took place in a dispersed manner, with the exception of Saturdays in April, when there were no seizures. In addition, the month of October draws attention for concentrating high volumes of seizures on all days of the week, except Sundays. The 2020 heat map, on the other hand, shows a low volume seized in the first four months of the year, which is seen in a concentrated manner on weekdays in the following months.

Figure 31 – Cannabis seizure records by the São Paulo Military Police by weekday, month and year, Brazil – São Paulo, 2019 – 2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: São Paulo Military Police/SPMP.

With regard to cannabis use, it was reported that during the COVID-19 pandemic period, there was an increase in sales of the drug through telephone applications, especially on platforms that promote dating for emotional relationships. This was due to the restriction measures imposed, because people who use cannabis did not stop buying the drug. This type of drug trafficking had already been identified before. However, with the pandemic, sales were intensified on several platforms.

In São Paulo, it was reported that, due to the identification of greater movement in the home delivery of drugs, there was police guidance to perform more approaches in people who drove motorcycles, with the purpose of catching drug trafficking crime.

4.4 Cocaine

Data from the *World Drug Report* (UNITED NATIONS OFFICE ON DRUGS AND CRIME, 2021b) indicate an increase in the volume of cocaine seizures in the world, even with the observed reduction of coca leaf cultivation areas, which is possibly related to the improvement of the means of production of cocaine observed in recent years. There are indications that global production doubled between 2014 and 2019, and the amount of cocaine seized more than doubled in the same period, reaching its record in 2019 with about 1,436 tons seized, an increase of 9.6% over the previous year. However, there was a reduction in the production and seizure quantities in 2020, especially in the initial months of the pandemic.

The Monitoring Report of illicit crop areas 2020, produced by[31] UNODC Colombia, also points out that local cocaine production was impacted at the first moment of the pandemic (March to June 2020). The movement restrictions generated by the pandemic increased the risks of entry into the cultivation areas, which, in turn, momentarily reduced the prices of coca paste/base, returning to normality between the months of October and December 2020. Additionally, a relevant point is the perception of the increase in the price of cocaine in wholesale, recorded mainly in the Northern region of Brazil, due to the possible difficulties in transporting the drug between Brazil, Colombia and Peru (UNITED NATIONS OFFICE ON DRUGS AND CRIME, 2020a).

Although cocaine is the second illicit substance with the highest volume of seizures in Brazil, the country is not considered a producer.

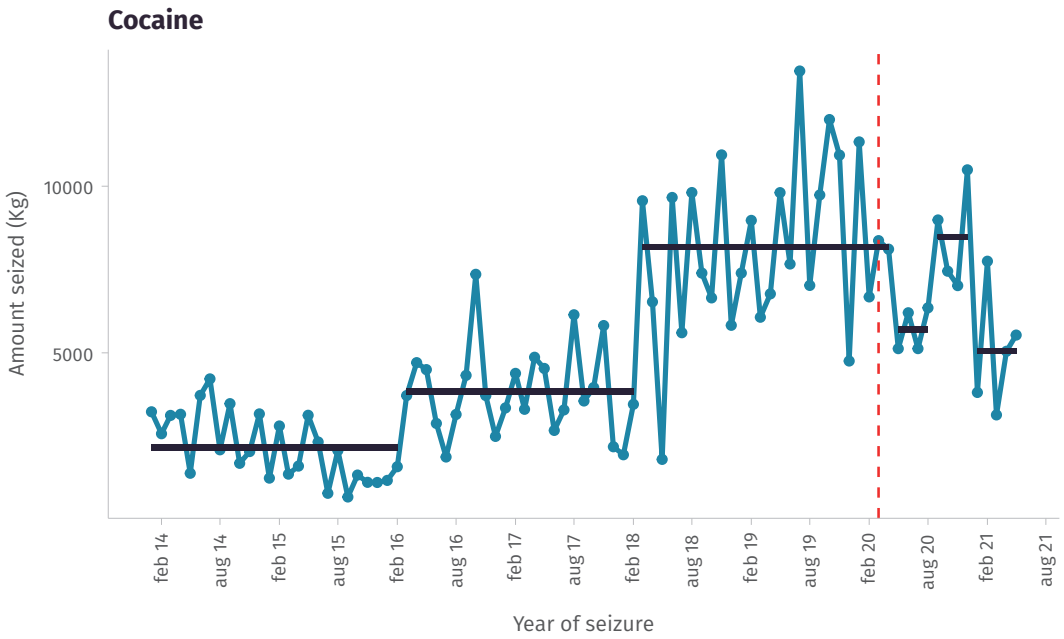
31 Monitoreo de territorios afectados por cultivos ilícitos 2020, UNODC Colômbia, July 2021, available at: https://www.unodc.org/documents/crop-monitoring/Colombia/Colombia_Monitoreo_de_territorios_afectados_por_cultivos_ilicitos_2020.pdf. Accessed on 10/04/2021.

Similar to the section on cannabis, most of the quantitative information on cocaine trafficking contained in this study was obtained from seizures by the Federal Police and the Federal Highway Police.

The Federal Police's national cocaine seizure data, presented in Figure 32, reveal an increasing trend in the volume of seizures made until 2020, with 13,457.5 kg seized only in July 2019.

With the analysis of points of change in relation to the average, it can be verified that there were six changes in levels over the studied time (black line). In addition, there is a growing trend until March 2020, the month that marks the beginning of the pandemic. After the beginning of this, there are three trend changes in the seized amount of the drug: a decline in the period from February to August 2020; a return to the pre-pandemic level between August 2020 and February 2021; and another reduction in the period from February to August 2021. These large fluctuations may indicate some instabilities in the current drug trafficking market.

Figure 32 – Amount (kg) of cocaine seized by month and year, Brazil, 2014 – 2021



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FP (Federal Police).
Note: Quantitative of cocaine is the sum of cocaine hydrochloride, coca paste/base (including crack).

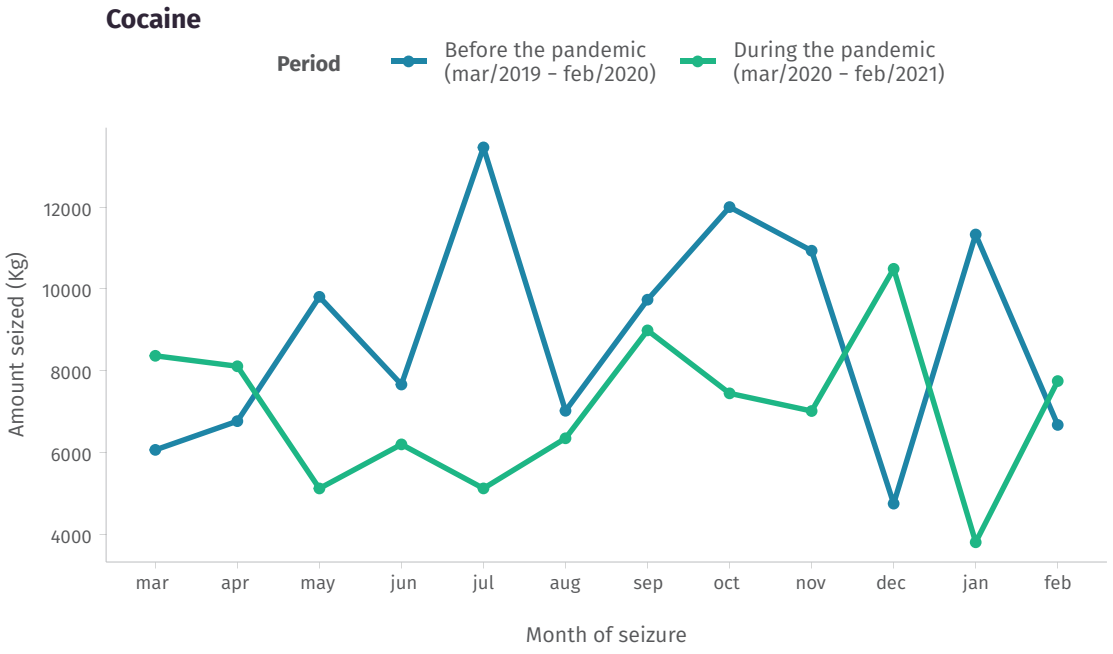
Comparing twelve months before the pandemic and twelve during the pandemic, it is noted that there was a reduction of 20.2% in the amount of this drug seized (Table 6). In the pandemic period, the only month in which more than 10,000 kg of cocaine seized was recorded was December (10,491.367 kg), while in the previous period the values were largely higher, with July 2019 having recorded 13,457.5 kg.

Table 6 – Amount (kg) of cocaine seized by period before and during the pandemic period, Brazil, 2019 – 2021

Type of drug	Period	Quantity seized (Kg)
Cocaine[1]	Before the pandemic (Mar/2019 – Feb/2020)	106.222,2
	Pandemic period (Mar/2020 – Feb/2021)	84.787,3

Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FP (Federal Police).
Note: 1 – Sum of cocaine hydrochloride, coca paste/base (including crack).

Figure 33 – Amount (kg) of cocaine seized per period before and during the pandemic, Brazil, 2019 – 2021



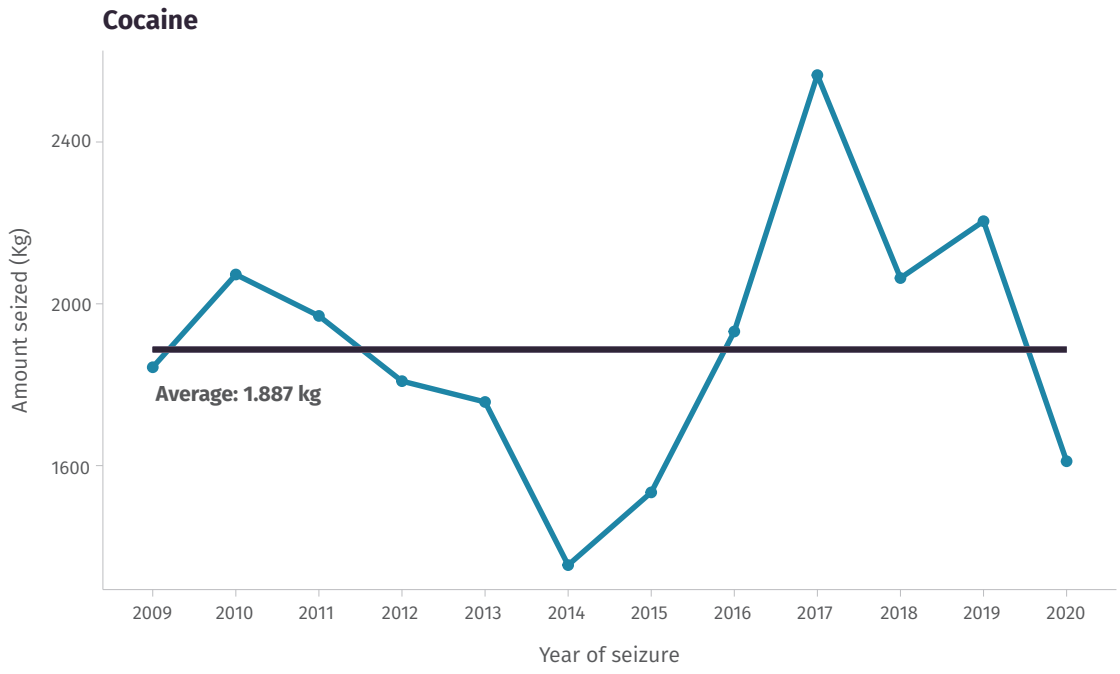
Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FP (Federal Police).
Note: Quantitative of cocaine is the sum of cocaine hydrochloride, coca paste/base (including crack).

Although a decrease in cocaine seizures was observed during the pandemic period, there was a high volume of this drug in the Brazilian territory. According to a police interlocutor, this fact confirms that Brazil is a place of transit of cocaine and, although there is domestic use, the European market is decisive in relation to the trafficking of this drug.

Regarding the seizure of cocaine at airports in Brazil, 2021 was not considered because the information was not complete. Thus, it is understood, according to Figure 34, that there was an increase in the volume of seizures between 2014 and 2018, but also that both 2014 and 2017 were the years in which the amount seized is out of proportion to the median, corresponding to a difference of 533 kg and 678.4 kg, respectively.

Also, compared to the total number of seizures in Brazil, the percentage of kilograms of cocaine seized at airports was low in all years, less than 10%. In 2015, about 19,537.9 kg were seized and of these, about 7.9% were in airports (1,533.8 kg), pointing this year as the one with the highest comparative percentage

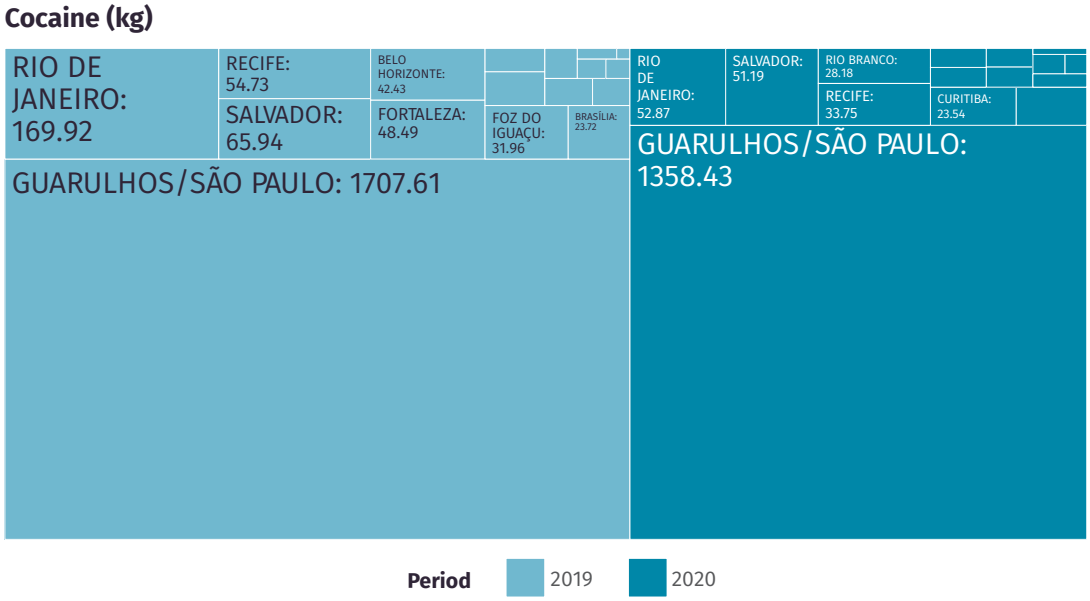
Figure 34 – Quantity (kg) of cocaine seized at airports per year in Brazil, 2009 – 2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FP (Federal Police).

Guarulhos airport in São Paulo was predominant as a location for cocaine trafficking in 2019 and 2020 (Figure 35), but there was a 20.5% reduction in cocaine seized in this period. Rio de Janeiro, Salvador and Recife also showed high numbers of seizures in 2019, totaling 169.9 kg, 65.9 kg and 54.7 kg, respectively.

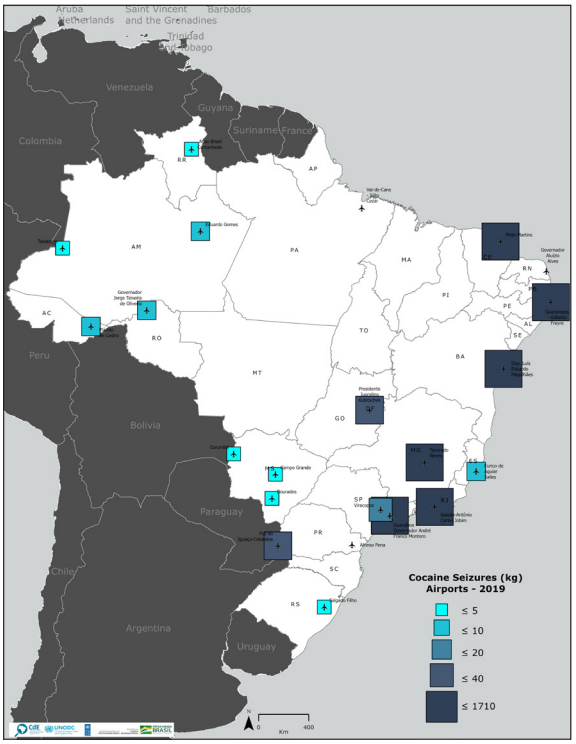
Figure 35 – Treemap of the amount (kg) of cocaine seized at airports per year, Brazil, 2019 – 2020



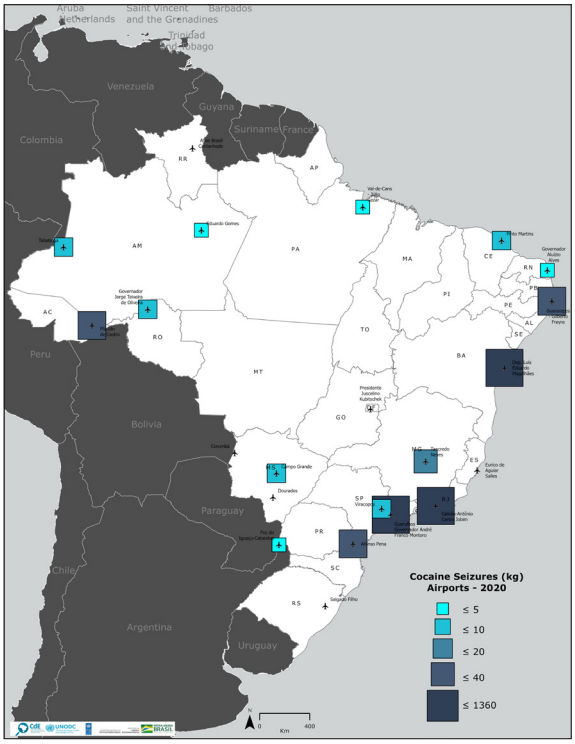
Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FP (Federal Police).

From maps 16 and 17, a greater concentration of cocaine seizures can be noticed at the airports of São Paulo, Paraná, Rio de Janeiro, Bahia, Acre and Pernambuco in 2020. In addition, while in 2019, the airport of Fortaleza (Ceará) accounted for a high volume of seizures, in 2020 there was a reduction in the quantity for this airport, as well as records of seizures at the airport of Natal (Rio Grande do Norte). The seizures recorded at the airports of Corumbá, Campo Grande, and Dourados seen in 2019 seem to have been concentrated only in Campo Grande in 2020.

Map 16 – Amount of cocaine seized by the FP at airports, Brazil, 2019



Map 17 – Amount of cocaine seized by the FP at airports, Brazil, 2020



According to a police interlocutor, some drug trafficking strategies were identified to replace commercial flights used by trafficking groups considered "smaller". According to him, on these flights, cocaine is usually hidden in luggage, with a volume limitation of less than 3 kg. In view of the high travel restrictions during the pandemic, there was an increase in drug delivery by mail, with China being identified as a postal route for shipping small amounts of cocaine, and considered a possible alternative to commercial air transportation routes.

When analyzing the seizures in ports, the main transportation method used to export cocaine, it is observed that São Paulo also had prominence in the volume of seizures, especially in the ports of São Sebastião and Santos. The heatmap (Figure 36) shows a high concentration of cocaine seized in these ports, mainly in Santos, between 2016 and 2020, totaling about 27,667.3 kg seized in 2019. In that same year, the port of Paranaguá, in Paraná, had the second highest seizure volume recorded, about 21,554 kg. Thus, a growing trend of seizures over the years is verified (Table 7). This fact, according to representatives of the interviewed institutions, is the result of the continuous work to improve surveillance and the use of technologies and intelligence process to direct the work.

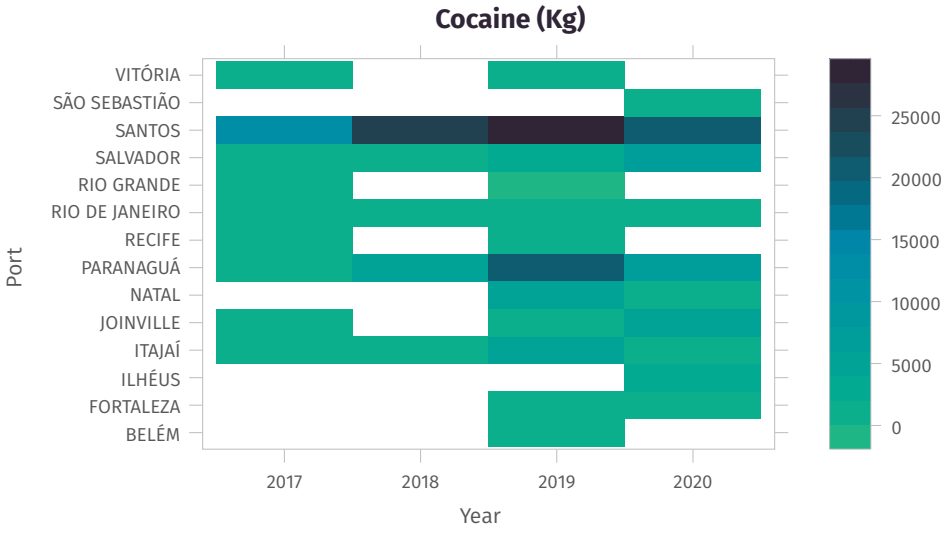
Table 7 – Quantity (kg) of cocaine seized in ports by the Federal Police, Brazil, 2017 – 2020

Year	Quantity seized (Kg)
2017	18.327,8
2018	32.319
2019	66.770,8
2020	48.265,0

Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FP (Federal Police) and RFB (Federal Revenue Service of Brazil).
Note: 1 – Sum of cocaine hydrochloride, coca paste/base (including crack).

The highest volume of cocaine seizures in ports was in November 2019, the month in which 9,514.5 kg was totaled, corresponding to 87% of the 10,933.4 kg seized in the same month according to the Federal Police, although this total included coca paste/base. Furthermore, the month of June 2020 stands out, in which port seizures corresponded to 65.3% of the total seized in the month (6,202.3 kg), which suggests greater use of ports as an alternative for cocaine trafficking during that period of the pandemic.

Figure 36 – Heatmap of the quantity (kg) of cocaine seized by the Federal Police by port in Brazil, 2017 – 2021



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FP (Federal Police) and RFB (Federal Revenue Service of Brazil).

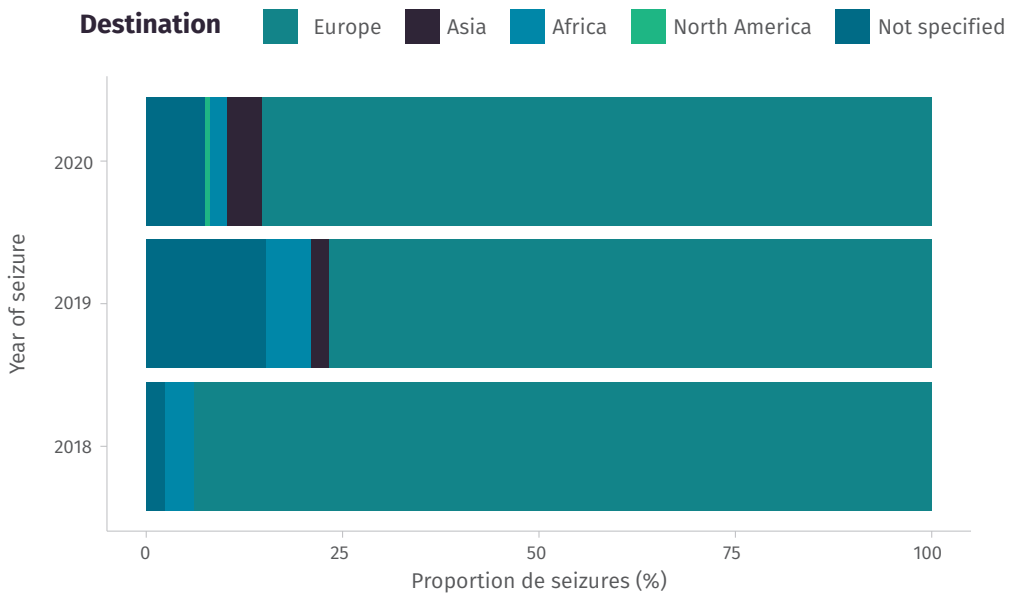
There is a prevalence of cocaine seizures in the ports of Santos (SP) and Paranaguá (PR) in all years, but mainly in 2019 and 2020. The ports of Salvador (BA) and Itajaí (SC) had lower amounts of seizures when compared to the ports of Santos and Paranaguá, but they have records in almost every year in this historical series, in addition to expressive values in the last two years. The blank fields inform that, for the respective year, there was no record of cocaine seizure or was not informed.

Moreover, there is no increase in seizures in other ports over the period analyzed. However, according to reports of the professionals interviewed, it is already possible to identify a diversification of the use of ports by criminal organizations and, for this reason, training and sharing of surveillance patterns between the various Brazilian ports were initiated.

The data indicate that these quantities seized were destined in each year, predominantly to the European continent, followed by the African and Asian continents, according to the proportion shown in Figure 37. There was only one occurrence where the destination was North America in 2020. According to some representatives, it is very challenging to act only on the supply side, while there is a consumer market.

Brazilian institutions act with a focus on reducing supply, trying to bar the entry, exit and transit of substances through the Brazilian territory. However, existing information indicates that the price of cocaine in Europe did not rise during the pandemic, a sign that the local market continues to be supplied even with the restrictions observed throughout the pandemic. Another situation that may have contributed to the maintenance of availability was the reduction of events and agglomerations, spaces in which illicit drugs use was more frequent.

Figure 37 – Proportion of the quantity (kg) of cocaine seized in ports in Brazil, 2018 – 2020



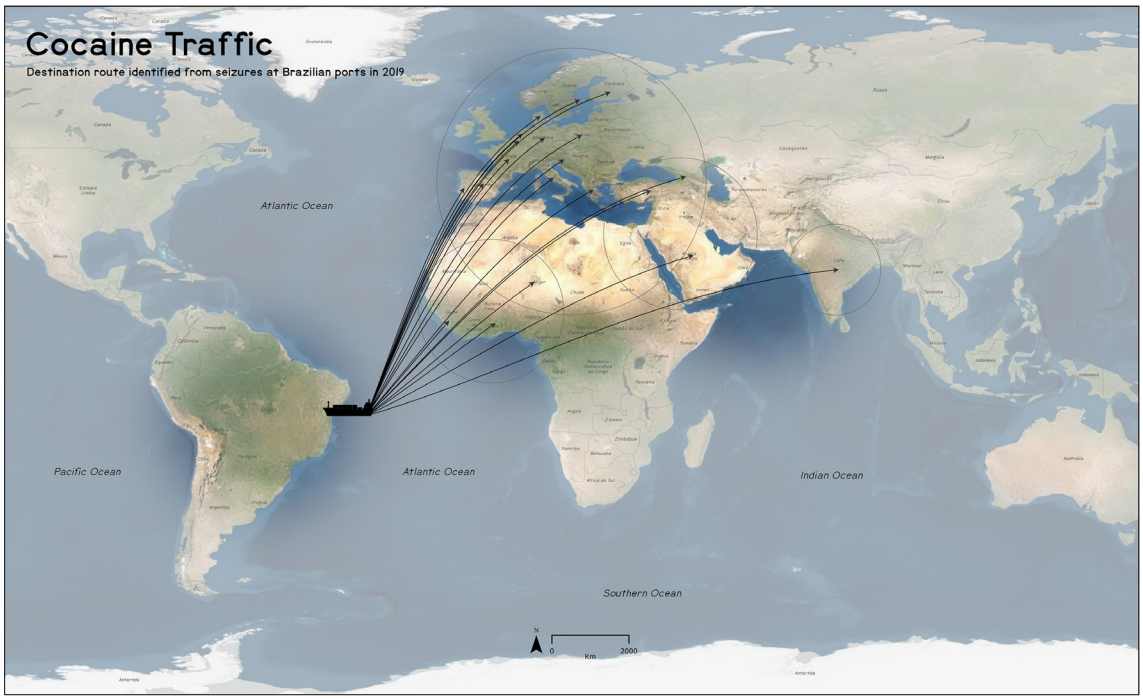
Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FP (Federal Police).

From a geographical point of view, the seizure data in the Brazilian ports where the destination route was identified suggest that, between 2019 and 2020, Belgium, the Netherlands, Spain, France and Nigeria continued to be the main destination countries for cocaine trafficking with larger quantities of the substance. In this sense, the data allow the identification of Belgium and the Netherlands as important geostrategic areas for the entry of cocaine into the European continent. This *modus operandi* is also highlighted in recent studies, which consider the relative importance of both countries as gateways to cocaine in Europe, with Brazil being the main country from which cocaine arrives in Belgium (UNITED NATIONS OFFICE ON DRUGS AND CRIME; EUROPOL, 2021).

Furthermore, in 2020, a change in the pattern of destinations for this trafficking can be observed, which indicates the intention to diversify routes to the east coast of Central Africa, West Asia, Southeast Asia and, to a lesser extent, North America (map 18).

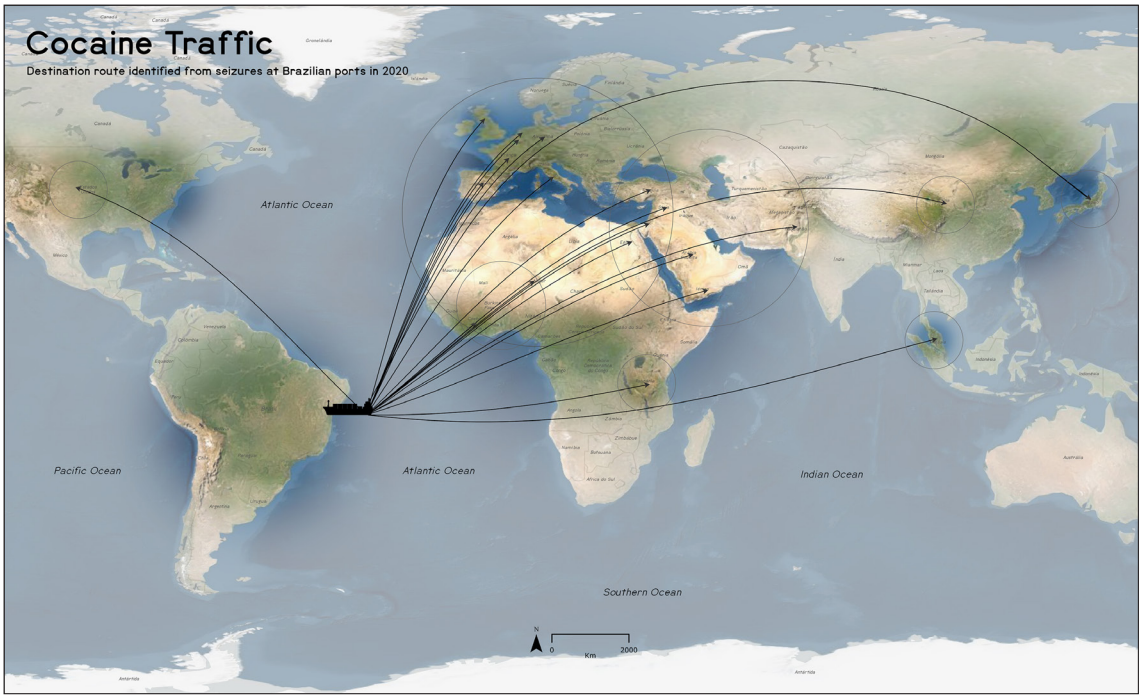
The maps presented suggest that, during 2020, there was a greater extension and expansion of the routes, when compared to the previous year. This may indicate the alteration of some international cocaine trafficking routes from Brazil after the beginning of the COVID-19 pandemic. The diversification and expansion of routes in cargo ports are reflected in data on cocaine seizures in ports carried out by the Federal Police.

Map 18 – Destination route identified from cocaine seizures in Brazilian ports 2019



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FP (Federal Police).

Map 19 – Destination route identified from cocaine seizures in Brazilian ports 2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FP (Federal Police).

Of the Brazilian ports, the port of Santos is where the largest cocaine seizures have been recorded since the year 2016. From 2019, other ports start to have significant seizures, concomitantly with the fact that, in 2020, the ports of Santos and Paranaguá started to register lower amounts of seizures compared to the previous year.

At the port of Santos, there was a reduction of 24.6% in the amount seized between 2019 and 2020, while there was an increase of 121.7% and 1,736.3% in the ports of Salvador and Joinville, respectively, for the same period.

Figure 38 – Number of seizures, in kilograms, of cocaine at the port of Santos, Brazil, 2016 – 2020

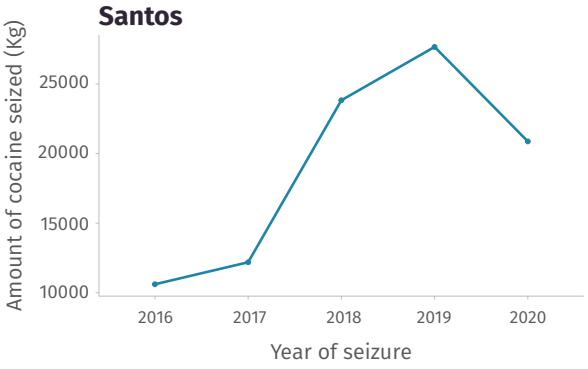
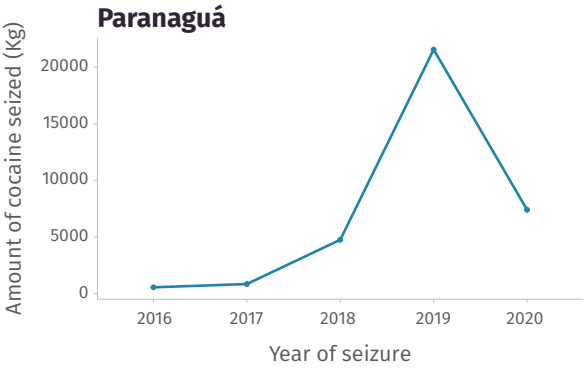


Figure 39 – Number of seizures, in kilograms, of cocaine at the port of Paranaguá, Brazil, 2016 – 2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FP (Federal Police) and RFB (Federal Revenue Service of Brazil).

The above charts point out that, in the years prior to the COVID-19 pandemic, there were increasing cocaine seizures in the port of Santos, while in the year of the beginning of the health crisis, it is possible to observe a reduction in this volume. Among some factors, a possible explanation, according to a police interlocutor, would be the use of other ports by drug dealers of cocaine. According to him, even before the pandemic, there was a tendency for criminal organizations to diversify the use of ports for this type of trafficking. Even though the main seizures are still concentrated in the ports of Santos and Paranaguá, it is increasingly observed that criminal organizations began to use ports with smaller surveillance structures.

Table 8 – Seizure of cocaine in ports according to quantity, in kilograms, in 2019 and 2020

Port	2019	Percentage (%)	2020	Percentage (%)
BELÉM	1,462.0	2.2		0.0
FORTALEZA	930.0	1.4	673.0	1.4
ILHÉUS		0.0	2,188.5	4.5
ITAJAÍ	4,133.0	6.2	1,364.0	2.8
JOINVILLE	235.0	0.4	4,315.4	8.9
NATAL	5,645.6	8.5	943.0	2.0
PARANAGUÁ	21,554.0	32.3	7,401.2	15.3
RECIFE	808.2	1.2		0.0
RIO DE JANEIRO	755.5	1.1	1,482.0	3.1
RIO GRANDE	22.3	0.0		0.0
SALVADOR	3,383.0	5.1	7,499.1	15.5
SANTOS	27,667.3	41.4	20,874.4	43.3
SÃO SEBASTIÃO		0	1,524.5	3.2
VITÓRIA	175.0	0.3		0.0
Total	**66,770.8**	**100.0**	**48,265.0**	**100.0**

Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: Federal Police.

As it can be seen in the table above, other ports besides Santos and Paranaguá were highlighted in the seizures in the evaluated period. If, in 2019, the occurrences in these two ports represented 73.7% of the seizures, in 2020, the proportion fell to 58.6%.

In the interviews conducted, the use of small aircraft for the transport of cocaine to Brazil, the use of highways for the displacement, and the use of a great diversity of transportation methods for the concealment of the drug were significantly pointed out. Additionally, the relevance of seizures at ports is highlighted, since the cocaine seized in these locations is generally destined for the European market and others that are advantageous. It is worth mentioning that, practically, there is no seizure of other drugs in Brazilian ports.

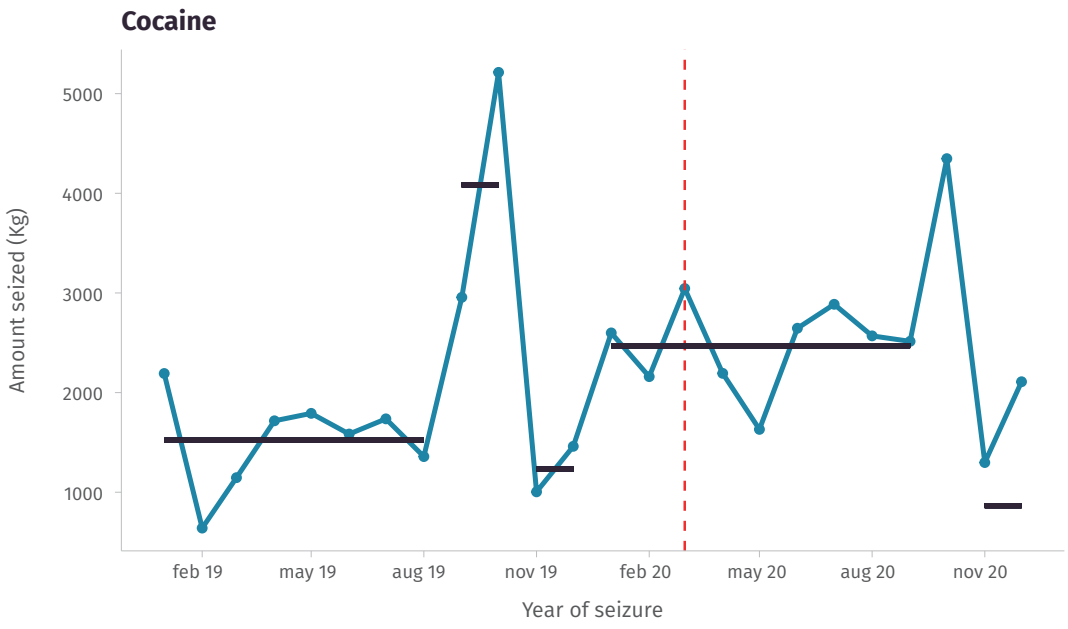
According to state and federal interviewees, the surveillance of some types of cargo creates complex situations that require caution on the part of security agents. In addition to the need for an inspector part of the Ministry of Agriculture for inspection, the perishable characteristic of some types of shipments makes it difficult to open them, as they could cause great economic losses. With this difficulty in mind, criminal organizations can benefit from some situations and difficulties involving the logistics of certain cargoes.

According to some representatives, surveillance in Brazilian ports is also deficient, since the scanner models are outdated, there is a low number of staff to inspect many containers transiting through the ports, as well as high pressure not to paralyze the country's foreign trade.

In relation to cocaine seizures made on federal highways by the Federal Highway Police, it is possible to note that, from March to May 2020, there was a fall in the amount seized, totaling 1,630.9 kg in the last month, followed by an increase between May and July 2020 (Figure 40).

However, with the five changes in levels revealed over the period studied, the first few months of the pandemic are at the same level as the three months prior to the pandemic, according to the change point analysis. This may indicate that there were no significant changes in this time interval, which only proved relevant from October 2020 onwards. This month is not found on any segment and accounted for 4,347.8 kg seized. In 2019, the amount seized in that month was 5,213.7 kg. Furthermore, comparing twelve months before the pandemic with twelve months after, there is practically a stability in the seizures of cocaine, going from 24,726.9 kg to 25,294.3 kg.

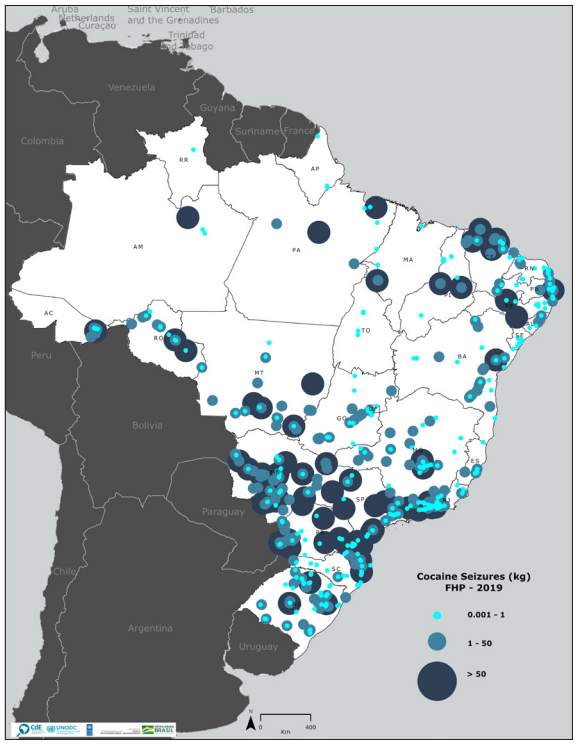
Figure 40 – Amount (kg) of cocaine seized per month in Brazil (on highways), 2019 – 2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police).

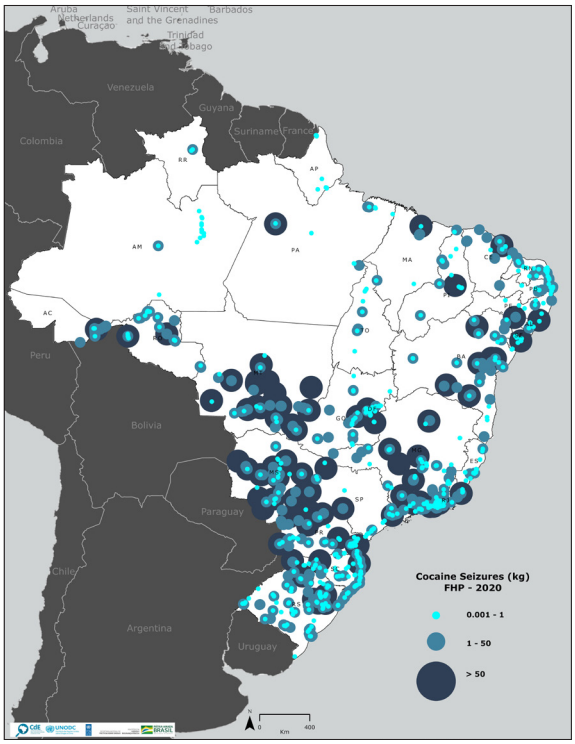
Observing the spatial behaviour of individual cocaine seizures on federal highways, it can be noted that, both in 2019 and 2020, the highest concentration of seizures occurred in the states of the Midwest, South and Southeast regions of the country, with a directional trend and densification from West to East, and lower concentration in the North region. We highlight the increases in the quantities of seizures in Mato Grosso, Mato Grosso do Sul, west of São Paulo and south of Minas Gerais and reductions in Pará and interior of Pernambuco.

Map 20 – Individual cocaine seizures by the FHP in 2019



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police)..

Map 21 – Individual cocaine seizures by the FHP in 2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police)..

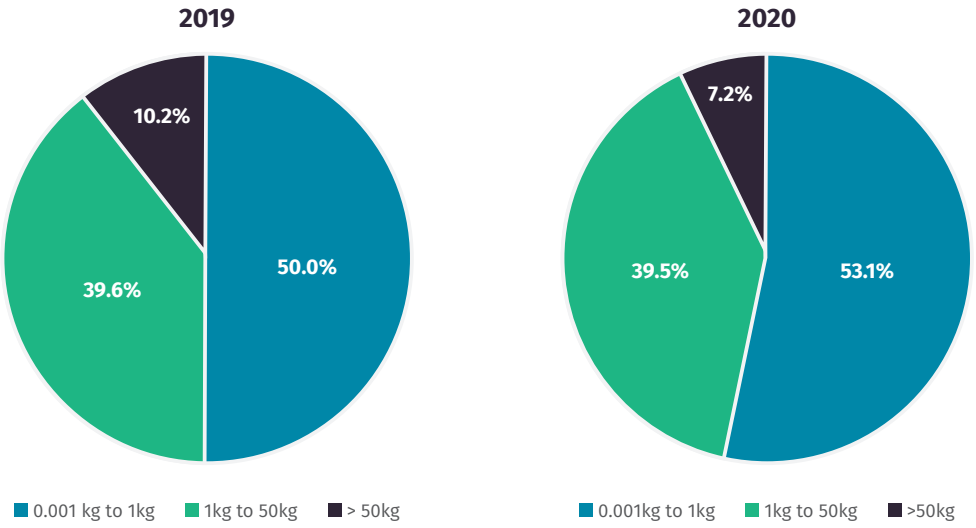
Regarding the relationship between the occurrences and the amount of cocaine seized, it can be observed that, for the year 2019, approximately 50% of the occurrences corresponded to seizures of less than 1 kg and, for the year 2020, these seizures corresponded to 53%, following a similar pattern between the two periods, with a non-significant difference (p=0.11). As this study has access only to information on the relationship between occurrences and the amount of cocaine seized by the Federal Highway Police, it is not possible to compare whether if in other transportation methods, such as ports and airports, the volume is higher by seizure, as well as whether it is a characteristic to transport smaller volumes of this drug by road.

Table 9 – Relationship between occurrences and quantity of cocaine, Brazil, 2019 – 2020

Cocaine FHP				
	2019		2020	
	Occurrences	%	Occurrences	%
0.001 kg a 1 kg	434	50.0%	766	53.1%
1 kg a 50 kg	344	39.6%	570	39.5%
> 50 kg	83	10.2%	105	7.2%
Total	867		1441	

Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police)..
Note: Chi-Square test had p-value of: 0.108, with 2 degrees of freedom; significance level of 5%.

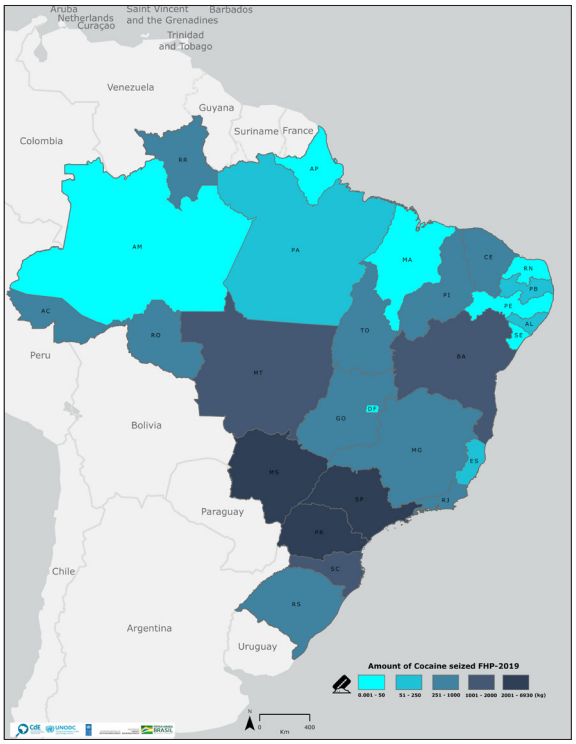
Figure 41 – Range by amount of cocaine seizures by the FHP, Brazil, 2019 – 2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police).

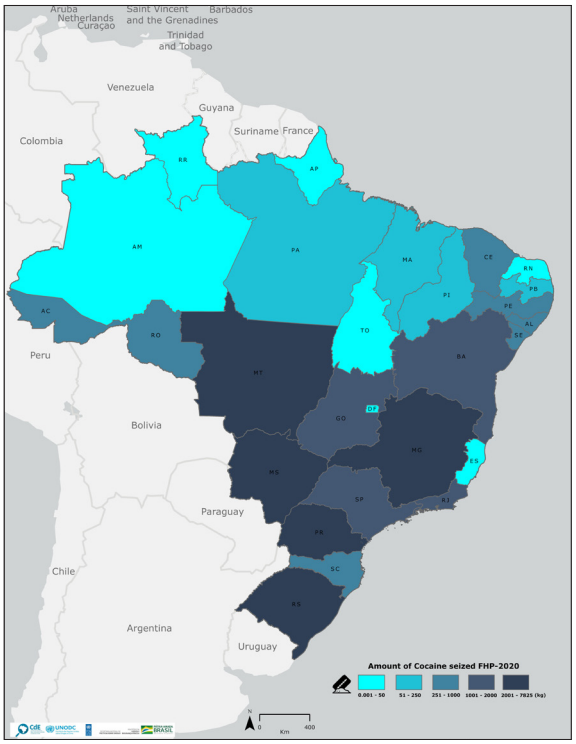
The following maps illustrate, by State, the amount of cocaine seized between 2019 and 2020. It is noted that there was only a reduction in seizures in Tocantins, Piauí, Sergipe, São Paulo and Espírito Santo. The largest seizures were concentrated in the states of the Midwest, South and Southeast, indicating an already consolidated axis of transit of this drug.

Map 22 – Amount of cocaine seized by the FHP in 2019



Prepared by: CoE Brazil – Centre of Excellence
for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police)..

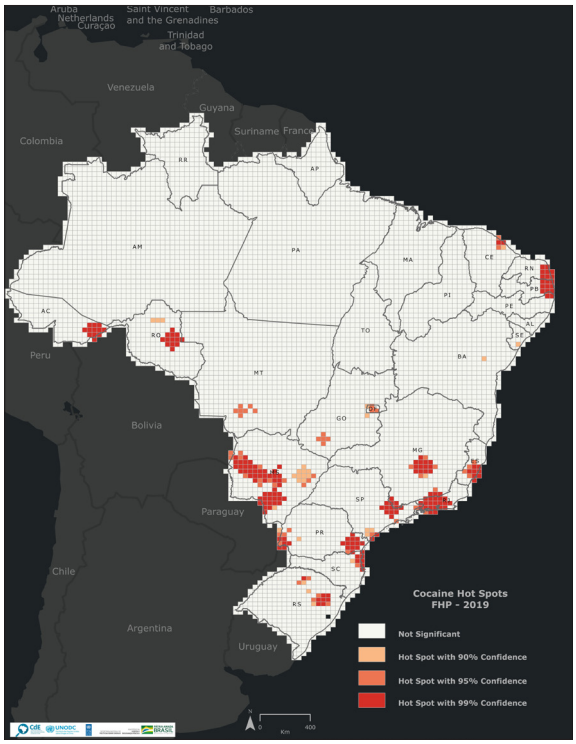
Map 23 – Amount of cocaine seized by the FHP in 2020



Prepared by: CoE Brazil – Centre of Excellence
for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police)..

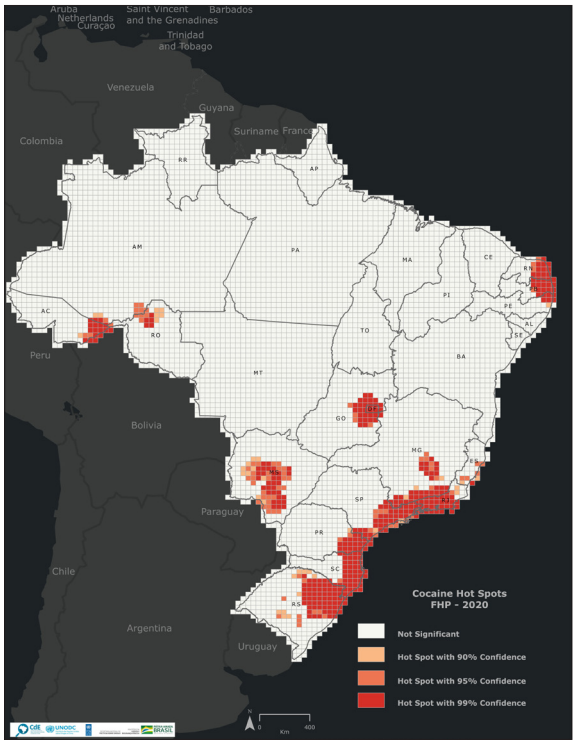
In turn, the maps of heat points contribute to some new information on the concentrations of seizures made. In both years, the heat signatures are concentrated in the border and "edges" of the country. In the comparison of 2019 and 2020, it is perceived that the heat signatures, mainly on the coast of the South and Southeast regions, are more fragmented and, in 2020, they connect in a large hot spot.

Map 24 – Heat signatures of cocaine seizures by the FHP in 2019



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police)..

Map 25 – Heat signatures of cocaine seizures by the FHP in 2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police)..

For the year 2019, Mato Grosso do Sul, Paraná, Rio de Janeiro and São Paulo were characterized by large numbers of cocaine seizures (map 26), evidencing a possible spatial pattern of the already identified route of international cocaine trafficking, characterized by the entry of cocaine across the border with Bolivia and Paraguay, moving in a West-East direction, until it reached the coast of São Paulo and continued its destination to Europe and West Africa.

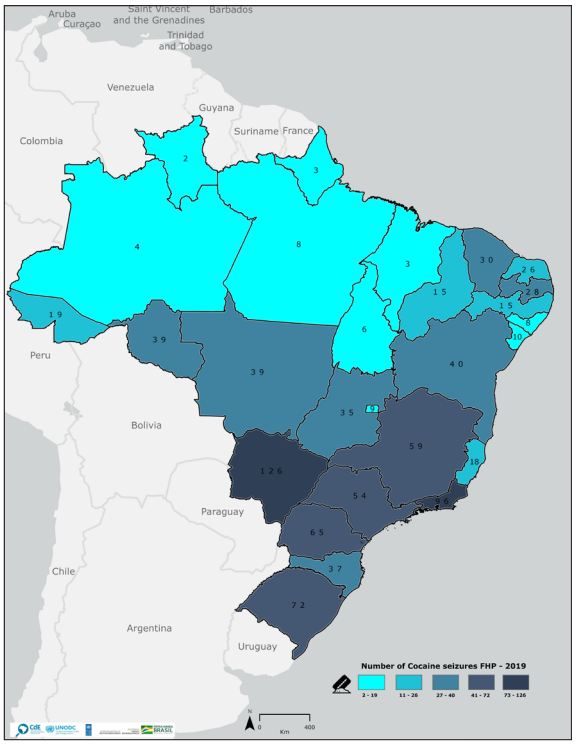
Likewise, high concentrations of seizures can be identified in the municipalities of Rio Branco (Acre) and Ouro Preto do Oeste (Rondônia), close to the border region with Bolivia, followed by the metropolitan areas of Rio de Janeiro, São Paulo, Curitiba, Belo Horizonte and Vitória, whose spatial distribution characterizes them as distribution centers and export points to international destinations.

Already in 2020, it is possible to observe a considerable change in the spatial distribution of seizures. In this regard, it can be observed a possible change and adaptation of the route of international cocaine trafficking, based on the data of seizures on federal highways, manifested by a possible spatial pattern that allows us to infer the existence of adaptations of the criminal dynamics to enter the substances through the border states of Mato Grosso and Mato Grosso do Sul, following the transit route through the states of Goiás, Minas Gerais, Bahia and São Paulo, and the possible entry of cocaine through Rio Grande do Sul.

These routes can be part of the strategy of using the Brazilian territory as a platform until reaching the ports of the Southeast and South coast to follow destination in the international markets. In addition, it was observed that Rio Grande do Sul and Santa Catarina showed an increase of more than 150% in cocaine seizures between 2019 and 2020.

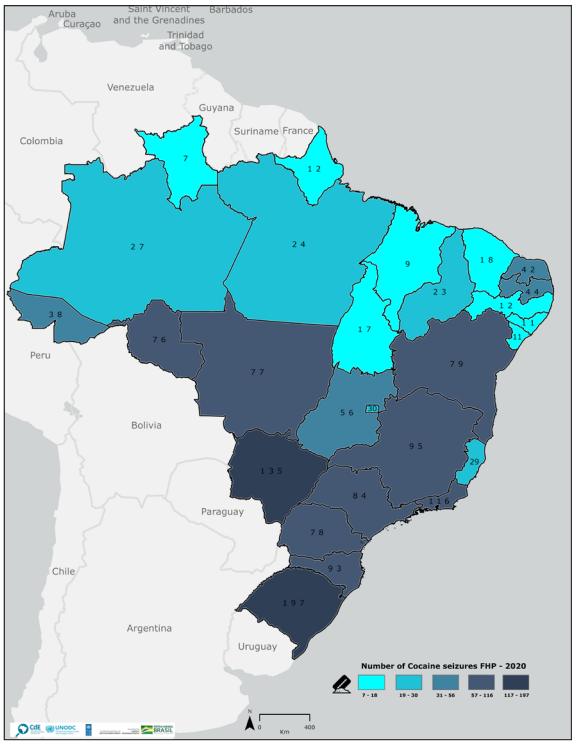
It is also interesting to note the increase in seizures in the country's capital, Brasília, which suggests the city as a strategic point of distribution and transit for criminal organizations, due to the opportunities offered by its geographic location. In relation to the Northeast region, there is also an increase in seizures on the coast of Natal, João Pessoa and Recife, showing that this geographic region continues to offer opportunities in the export of cocaine to international markets.

Map 26 – Number of cocaine seizures by the FHP in 2019



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police)..

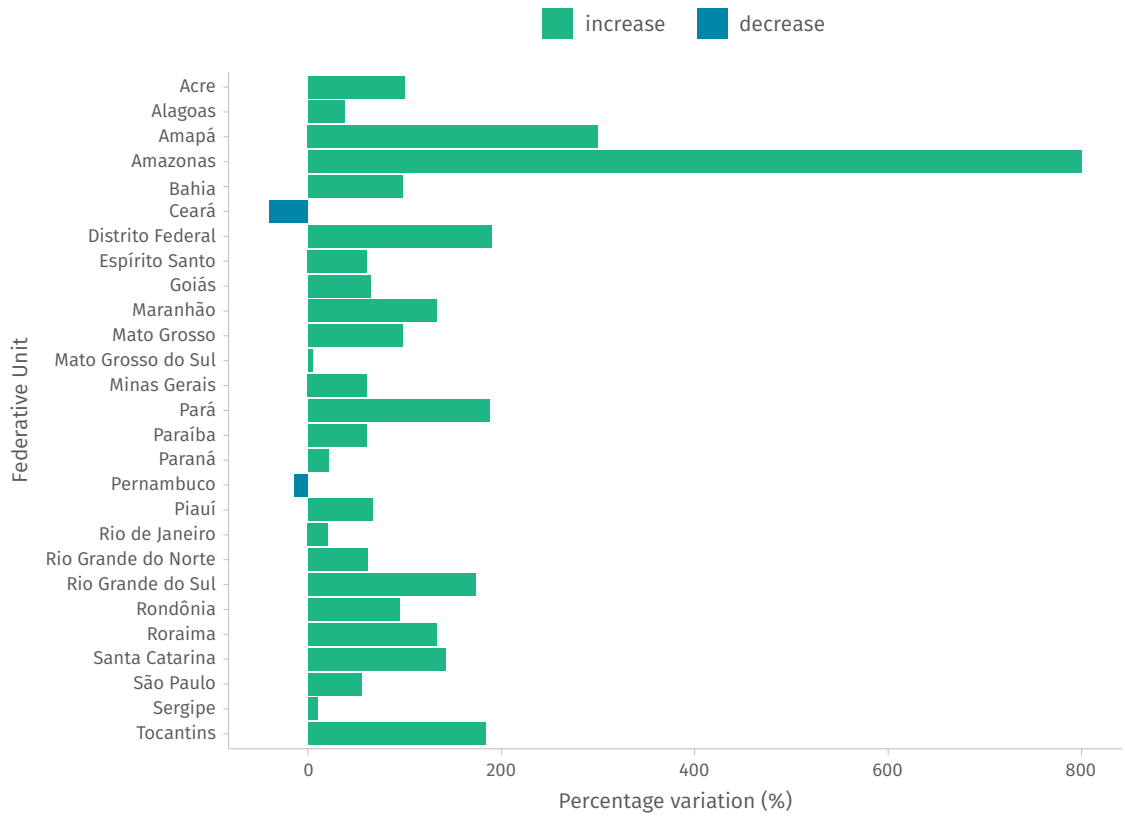
Map 27 – Number of cocaine seizures by the FHP in 2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police)..

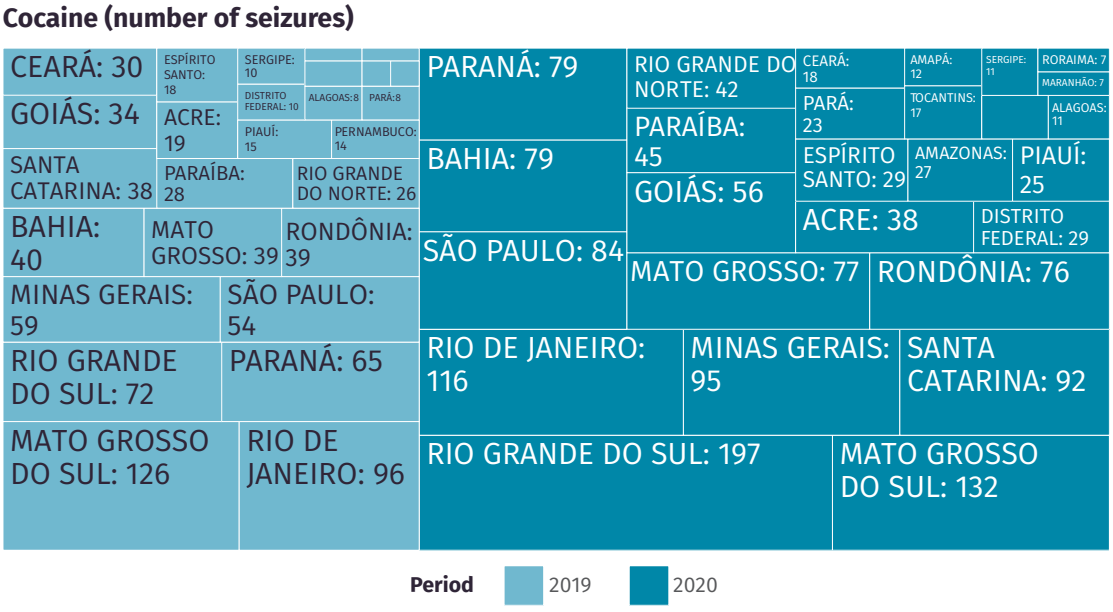
The following figures provide more details on the number of seizures in 2019 and 2020 per state. Although Amazonas and Amapá show the largest increases, one should consider the small number of seizures in both states compared to the others. Rio Grande do Sul, Rondônia and Santa Catarina had the highest increases in cocaine seizures from one year to another among the states with the largest seizures (in darker colors in the maps above). Similar to what was observed in cannabis seizures, most Brazilian states registered a percentage increase. Only Pernambuco and Ceará registered lower percentages of cocaine seizures between 2019 and 2020.

Figure 42 – Percent change in the number of cocaine seizures by the FHP, Brazil, 2019 – 2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police) 2019, 2020.

Figure 43 – Treemap of the number of cocaine seizures by the FHP, Brazil, 2019 – 2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police) 2019, 2020.

According to interviewees, due to restrictions in countries where there is cocaine production, many institutions that routinely carry out activities to combat illicit drugs had to accompany the surveillance of health measures, failing to act in their original functions, which may have influenced the amount seizures carried out during the pandemic. It was also reported that the closure of borders had a specific impact in Peru and Bolivia, as part of the chemical inputs used to produce cocaine leave Brazil, thus making it impossible for some procedures for handling the coca leaf for production of illicit drugs. The situation may have contributed to the surplus of coca leaves that, at the time of the reopening of the borders, was used by drug dealers in the resumption of cocaine production.

This hypothesis raised by local institutions is corroborated by information from the World Drug Report, which indicates that coca leaf production was not affected, but the supply chain of cocaine-related products was interrupted in the early stages of the pandemic, when buyers in the Colombia and Peru could not have access to coca production areas. However, production was resumed at the moment after the relaxation of sanitary restrictions. The break was evident with the sharp drop in coca leaf prices, a reduction of about 50% in Colombia and Peru from the first to the second quarter of 2020 (UNITED NATIONS OFFICE ON DRUGS AND CRIME, 2021b).

4.5 Trends in the States surveyed – Cocaine

In this section, we will present the descriptions of information passed on by the state public security forces. It is important to note that the quantitative data sent by the FUs are not standardized, which made it impossible to use the same pattern of analysis for the three states.

Regarding the dynamics of cocaine trafficking in the states surveyed, similar findings were observed in the international scenario. The report produced by UNODC (2020b) on the impacts of COVID-19 on the drug production and trafficking chain indicates that there has been a reduction in the circulation of cocaine outside the producing countries, possibly justified by the difficulty of disposal and consequent storage of the drug during the movement restriction measures. This may have caused, even with some difficulty in producing the drug, the maintenance of cocaine supply even during the pandemic.

However, such changes were observed mainly in the first months of the pandemic, since the drug trafficking chain soon had its flow normalized globally, and the main producing countries did not register significant changes in their production. This confirms the hypothesis that criminal organizations have found alternative ways to carry out the transport of drugs – such as sea transport or air freight (DÍAZ, 2020).

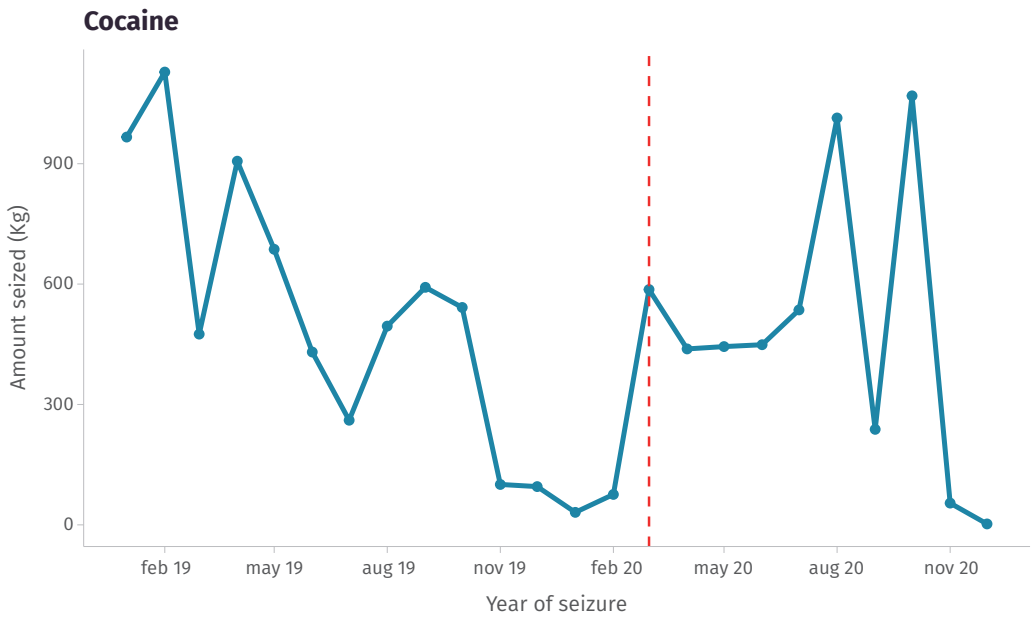
In the interviews and focus groups of this study, a similar view on the subject was found. The work to combat cocaine trafficking should be differentiated, with greater use of intelligence, due to the recurrent use of aircraft. This fact makes monitoring and possible interception difficult.

The data collected corroborate evidence that the transport of cocaine in the State has been carried out largely by air, and by the road for internal distribution to local ports, which would be exit points of the drug to other countries.

4.5.1 Mato Grosso do Sul

Federal Police data show that 4,938.1 kg of cocaine were seized in 2020 in Mato Grosso do Sul, a reduction of 26.1% compared to the previous year. When observing per month, it was possible to observe a decreasing trend until February 2020, being observed two high seizure volumes in the pandemic period, totaling 1,014.0 kg in August 2020 and 1,069.1 kg in October 2020. In December 2020, only 2.3 kg of cocaine were seized.

Figure 44 – Amount (kg) of cocaine seized by month and year, Brazil – Mato Grosso do Sul, 2019 – 2020

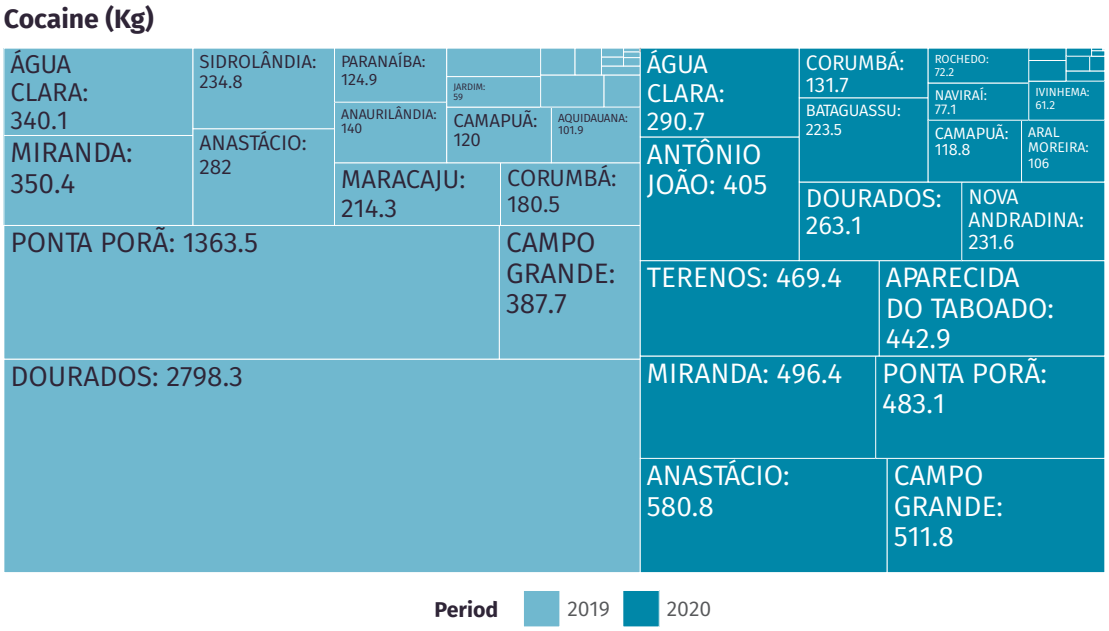


Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FP (Federal Police).
Note: Quantitative of cocaine is the sum of cocaine hydrochloride, coca paste/base (including crack).

At airports, an average of about 8 kg of cocaine was seized in each year analyzed, 4 kg in 2019 and 7.63 kg in 2020 at Campo Grande airport, in addition to 3.37 kg at Corumbá airport in 2019.

With regard to federal highways, according to the Federal Highway Police, 6,873.4 kg were seized in 126 seizures made in 2019 and 5,017.0 kg in 132 seizures in 2020. The high volumes seized in 2019 were recorded in the municipalities of Dourados and Ponta Porã, which totaled 2,798.3 kg and 1,363.5 kg, respectively. On the other hand, in 2020, the municipalities of Anastácio, Campo Grande and Miranda were highlighted, totaling 580.8 kg, 511.8 kg and 496.4 kg seized, in due order (Figure 45).

Figure 45 – Treemap of the amount (kg) of cocaine seized by municipalities by year, Brazil – Mato Grosso do Sul, 2019 – 2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police).

This reduction in the volume of cocaine seized between 2019 and 2020 can also be seen in the capital and interior relationship, even though the interior of the state remains the place with the highest seized volumes (Table 10). The fact that the reduction was observed with greater force in the interior corroborates the information that there is in the State a wholesale logic of distribution to other regions in the country. A lower intensity in the capital may be related to the drug use (which was maintained, according to reports).

Table 10 – Seizures of cocaine and derivatives, Brazil – Mato Grosso do Sul, 2019 – 2020

Drugs (Kg)	Capital			Interior		
	2019	2020	Variation (%)	2019	2020	Variation (%)
Cocaine	1,391.8	1,244.2	-10.6	2,216.3	1,934.0	-12.7
Cocaine paste/ base	96.8	61.5	-36.5	1,638.9	1.061,7	-35.2
Crack	0.8	0.1	-87.5	380.2	38,8	-89.8
Total	**1,489.4**	**1,306.8**	**-12.3**	**4,235.4**	**3,034.5**	**-28.4**

Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: SEJUSP/MS.

In MS, the use of land and air transportation methods for cocaine and derivatives, such as helicopters or small aircraft, was reported. According to interviewees, cocaine trafficking, although more profitable than cannabis, requires a more complex logistical capacity.

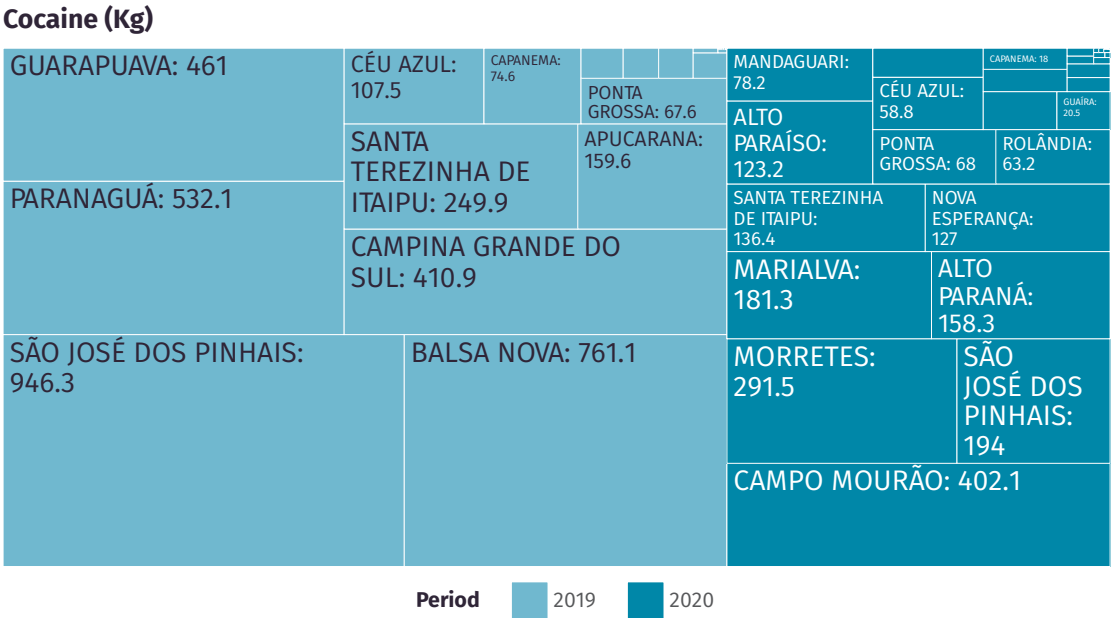
Despite the 47.1% reduction in the volume of cocaine seized, the FHP data point out that only in the road transportation method there was an increase of 21.5% in the number of seizures, with six seizures in Céu Azul and five in Campina Grande do Sul in 2020. São José dos Pinhais had 15 seizures, followed by Santa Terezinha de Itaipu, with 8 seizures.

4.5.2 Paraná

Paraná is one of the states with the highest amount of cocaine intercepted in Brazil, according to the data analyzed from the different surveillance institutions. According to CAPE data, there were around 21 seizures per day between 2019 and 2020, which totaled 5,036.7 kg seized in 2019 and 4,230.3 kg in 2020. Additionally, 24,452.1 kg of drugs were seized by the Federal Police in 2019 and 10,268.6 kg in 2020.

The tree map shows that of the 3,815 kg seized in 2019, 946.3 kg were in São José dos Pinhais and 761.1 kg in Balsa Nova. This, as well as in the municipality of Paranaguá, had no records of seizure using land transportation methods in 2020, while there was a reduction of 79.5%. In contrast, Campo Mouro and Morretes, who had no seizure in 2019, accounted for 402.1 kg and 291.5 kg seized in 2020.

Figure 46 – Treemap of the amount (kg) of cocaine seized by municipalities by year, Brazil – Paraná, 2019 – 2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police).

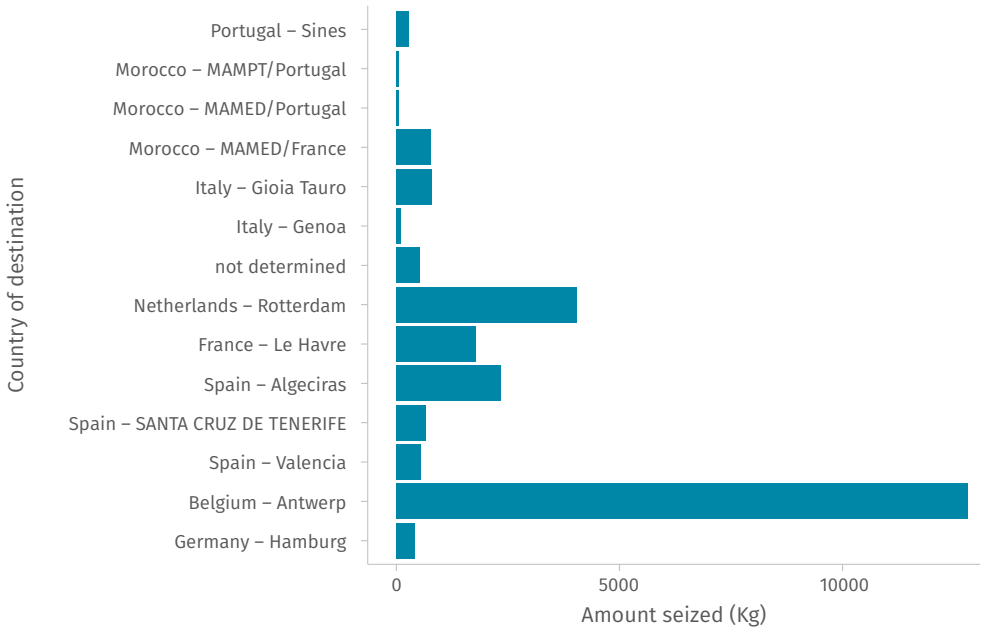
The quantitative data mentioned above in this section corroborate the view on the reduction in the volume of cocaine seizures in this region between 2019 and 2020, which may be related to difficulties in the cocaine production and distribution chain, as also observed in the national and international scenario.

From the interviews conducted, it is evident that the *modus operandi* for the trafficking of cannabis and cocaine differs in several aspects in this state. There is an indication that the cocaine routes are more diversified, aiming to make surveillance more difficult. Because the cocaine market is considerably more profitable than cannabis, the cocaine supply chain uses more complex and robust strategies for transportation and marketing. There are still reports that sometimes the route practiced for the transport of the drug is more extensive, while there would be "shortcuts", or shorter routes that could be adopted.

According to interviewees, cocaine usually arrives from the producing countries in small aircraft, which descend in the interior of São Paulo or somewhere else in the interior of Paraná. Then, the drug is stored and later shipped to the ports in false bottoms of trucks, vans, among others, and another part is consumed by the Brazilian market.

In 2019, the port of Paranaguá accounted for 20.6% of the cocaine seized. According to data from the Federal Revenue Service, there were about 15,238 kg this year, while 2020 recorded a lower number of 6,893.5 kg. In addition, it was noted that the destinations that would receive the largest share of the cocaine seized between 2019 and 2021 were Rotterdam (Netherlands) and Antwerp (Belgium).

Figure 47 – Amount of cocaine seized, in kilograms, at the port of Paranaguá by country of destination, Brazil – Paraná, 2019 – 2021



Author: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: Federal Revenue Service.

It is important to highlight that, for public security operators operating in the border between Brazil and Paraguay, there is no recurrence of cocaine transport across the Paraná River, using speedboats or small boats.

Regarding the possible effects of the pandemic on cocaine trafficking, it was reported that the main change observed in the period refers to the reduction in cocaine seizures in the first months of the pandemic in Brazil. Furthermore, it is noteworthy that there may have been a reduction in the demand for the drug in Brazil and Europe during the pandemic period, but that, mainly, the mobility restrictions for circulation and closing of borders generated difficulties in transport and production of cocaine – the latter being impacted by obstacles to obtaining chemical precursors. Moreover, in general, no significant changes were observed in the methods employed by criminal groups for cocaine trafficking and drug concealment in Paraná ports.

4.5.3 São Paulo

With regard to cocaine trafficking, São Paulo stands out as a major consumer market, but, in addition, it has historically played a significant role in the flow of drugs to various parts of the world through the port of Santos.

The surveillance work at the port of Santos

The safety network of the port of Santos — the largest port complex in Latin America — is composed of a multiplicity of public and private players. The administration and security of the "organized port" area is the property of the Union. However, the port has more than 50 port and administrative areas terminals, managed by private companies, where port operations are carried out, and each of these terminals has its own private security.

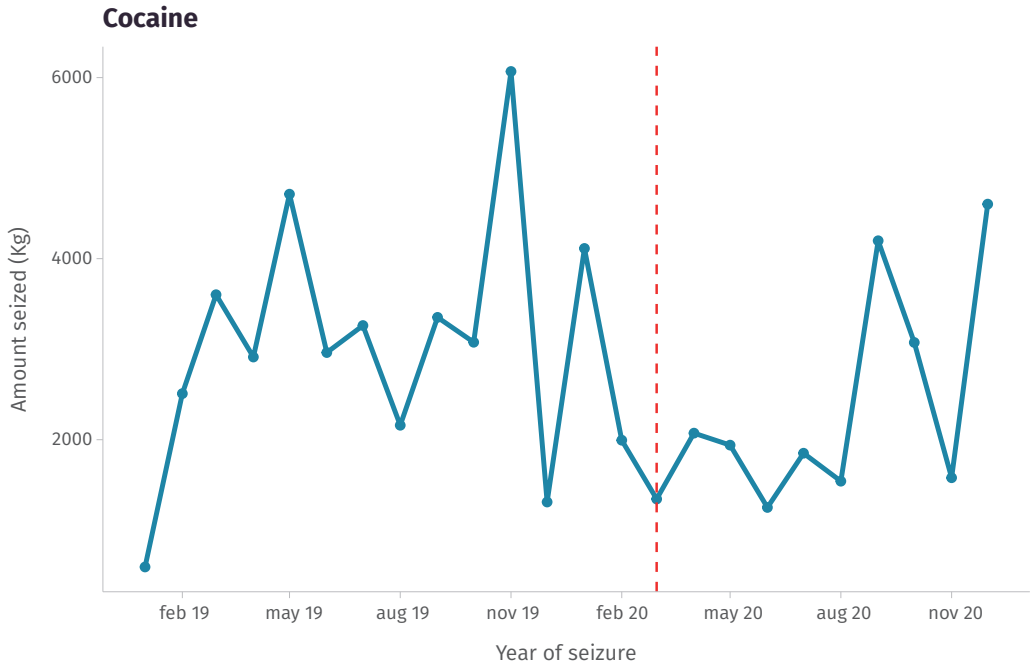
In this border space, police and customs authorities and other public players are added to the Port Guard, as well as many other private actors that provide security services. According to a study conducted by Patriarca and Lopes (2020), there is a safety network in the port formed by 29 organizations, 15 (52%) public and 14 (48%) private, connected by an extensive complex network of relationships.

One difficulty reported in the research is the low effective for surveilling cocaine trafficking. In view of the large flow of goods that pass through the port, cargo surveillance becomes a challenge, which had its complexity increased during the pandemic, as it resulted in a reduction in teams in some periods, as well as the difficulties imposed by the health crisis itself. There are reports that criminal organizations constantly adapt to surveillance, circumventing the ability to detect drugs in cargo and using administrative procedures for container transport in their favor.

According to interviewees, the city of Santos functions as a warehouse for international cocaine trafficking, with relevant locations for the stockpile of the drug, which will be drained to several countries in the world.

In the State of São Paulo, the first six months of the pandemic presented a low seizure volume in relation to the other months analyzed. Prior to the pandemic, the amount seized ranged from 593.9 kg to 6,067.7 kg, with an average of 3,043.4 kg, while in the pandemic period, seizures ranged between 1,251 kg and 4,602 kg, with an average of 2,463 kg. The month of November 2019 stands out as the month with the highest volume of seizures prior to the pandemic, with 6,067.7 kg of cocaine seized, and December 2020, during the pandemic, with 4,602.4 kg.

Figure 48 – Amount (kg) of cocaine seized by month and year, Brazil – São Paulo, 2019 – 2020



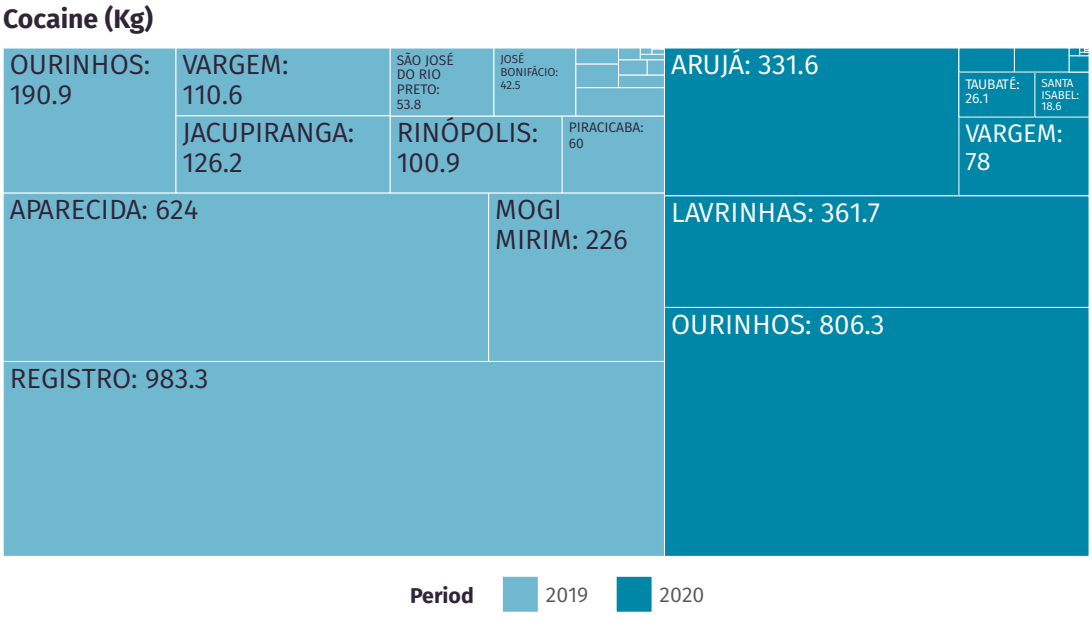
Author: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FP (Federal Police).
Note: Quantitative of cocaine is the sum of cocaine hydrochloride, coca paste/base (including crack).

In 2019 and 2020, approximately 4.6% of cocaine seizures by the Federal Police occurred at the airports of Viracopos and Guarulhos. On the other hand, approximately 75.8% were carried out in the ports of São Sebastião and Santos, with a highlight on the port of Santos, which accounted for 70.6 % of the volume of cocaine seized in 2020, around 27,667.27 kg.

FHP data show that there was a 35.8% reduction in the volume of cocaine seized on federal highways between 2019 and 2020, totaling 1,646.2 kg in the last year. During the pandemic period, there were only two peaks in the volume of seizures, in July 2020 and in October 2020, which totaled 771.9 kg and 669.5 kg, respectively.

In the municipalities, the volume of seizure in Ourinhos increased about 322.4% in 2020. The municipalities Registro, Aparecida and Mogi Mirim do not appear in Figure 49 because the volume of seizures was less than 10 kg.

Figure 49 – Treemap of the amount (kg) of cocaine seized by municipalities by year, Brazil – São Paulo, 2019 – 2020



Author: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: FHP (Federal Highway Police).

The data of flagrant in the city of São Paulo, available by the Narcotics Testing Centre (NEE) of the Institute of Criminalistics of the Technical and Scientific Police of the State of São Paulo, reveal that of the 44,158 tests completed between 2019 and 2020, 14,747 proved to be the cocaine substance, 12,108 in 2019 and 10,620 in 2020, which shows a reduction of 12.29%. In addition, this substance was found predominantly in a lot of particulate solid material.

According to the seizure data forwarded by the State Military Police, 222 cases of refined cocaine (1,776.6 kg) and 8 cases of coca paste/base (89.3 kg) were recorded in 2019. In 2020, there were 265 cases of refined cocaine (1,535.6 kg) and 11 cases of coca paste/base cocaine (147.6 kg). Regarding the volumes of refined cocaine, it is observed that the median did not change from one year to the other, corresponding to 4.2 kg. In addition, the largest volume seized in 2020 was 69.2 kg.

The *boxplot* diagram of cocaine shows that 75% of seizures were less than 20 kg, indicating concentration in low amounts and asymmetry to the right. However, there is the presence of more than ten discrepant points. In turn, the moving average charts indicates that the volume seized from refined cocaine between 2019 and 2020 appears to be constant, suggesting that there was no impact of the pandemic on seizure.

Figure 50 – Boxplot of the amount of refined cocaine seized in São Paulo, 2019-2020

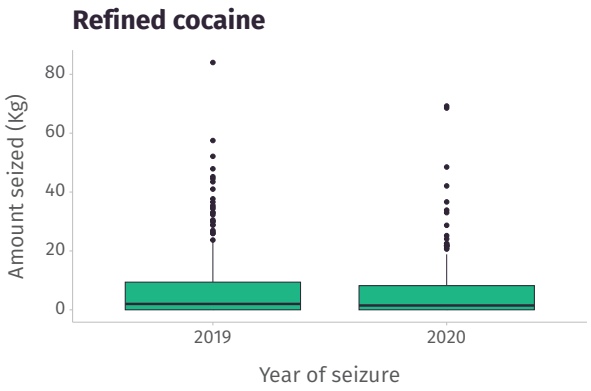
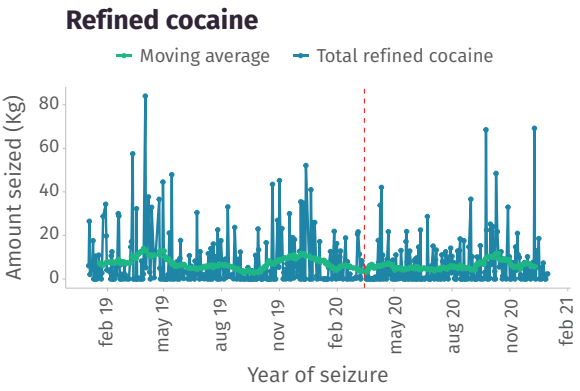


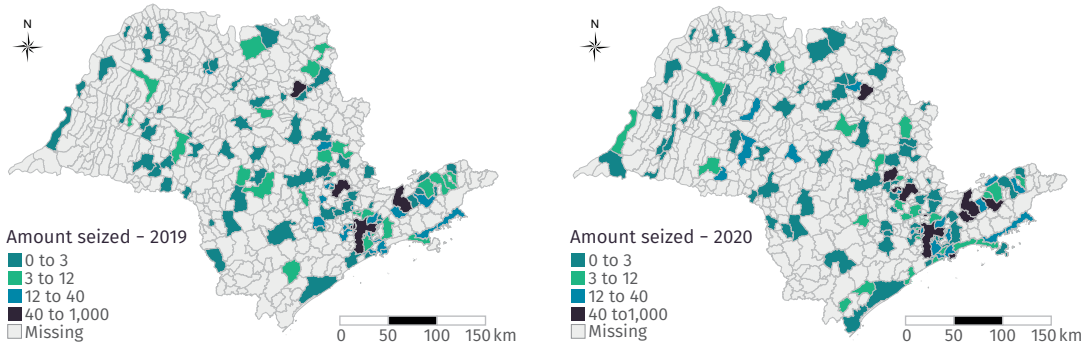
Figure 51 – Distribution of the amount of refined cocaine seized in São Paulo, 2019-2021 per month



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: São Paulo Military Police/SPMP.

When analyzing the geographic distribution of seizures, 51 municipalities showed a volume of cocaine seizures in 2020 but had not presented them in 2019. Of these, the municipality of Suzano had the highest quantity recorded, 22.6 kg. In relation to those with records in both years, the capital São Paulo showed a reduction of 50.5% in volume, followed by Carapicuíba, with a reduction of 66.5%. At the same time, the municipality of Campos de Jordão, which had registered 0.8 kg seized in 2019, had 23.6 kg seized in 2020, as well as Francisco Morato, which had an increase of 655%, and Jacareí, with 109%.

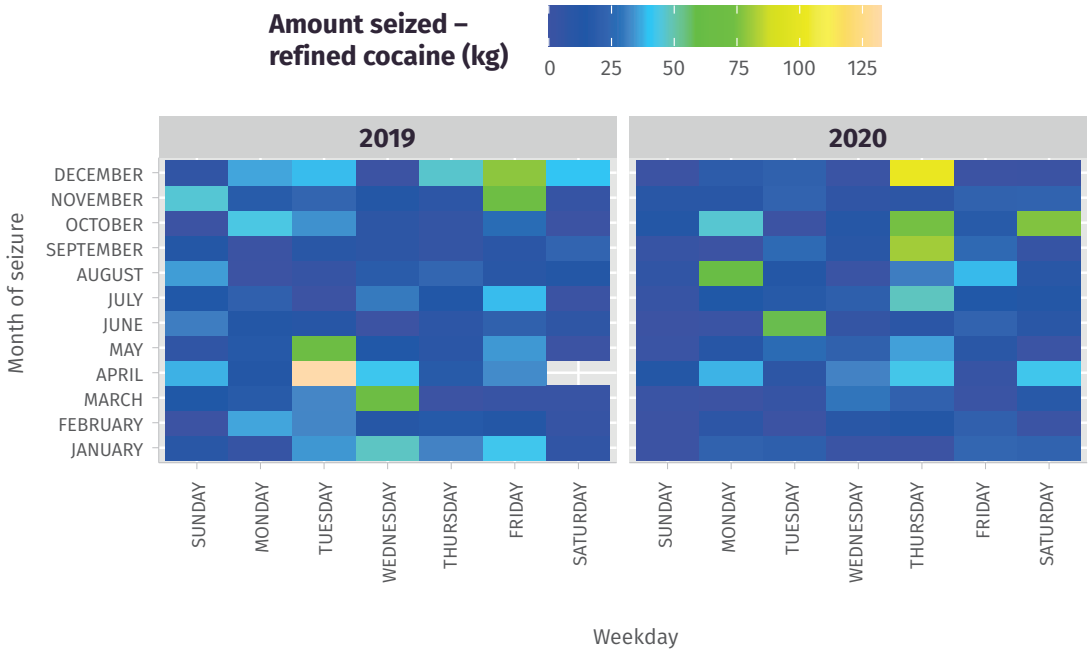
Figure 52 – Cocaine seizure records by the São Paulo Military Police by municipality, Brazil – São Paulo, 2019 – 2020



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: São Paulo Military Police/SPMP.

The heatmap of the volume of seizures of refined cocaine, in kilograms, shows that Sunday to Tuesday and Friday were the days of the week corresponding to the largest seizures. This configuration is not seen in 2020, when noting that Thursday and Friday were those of high values in more than half of the months. The colors green and yellow represent the highest values, which indicates Fridays in November and December 2019 and Thursdays in September and October 2020. Saturdays in April 2019 did not present a seizure volume, but Tuesdays, together, totaled the highest number of seizures, 132.3 kg seized.

Figure 53 – Distribution of the amount of refined cocaine seized in São Paulo, 2019 – 2020 per month, day and hour



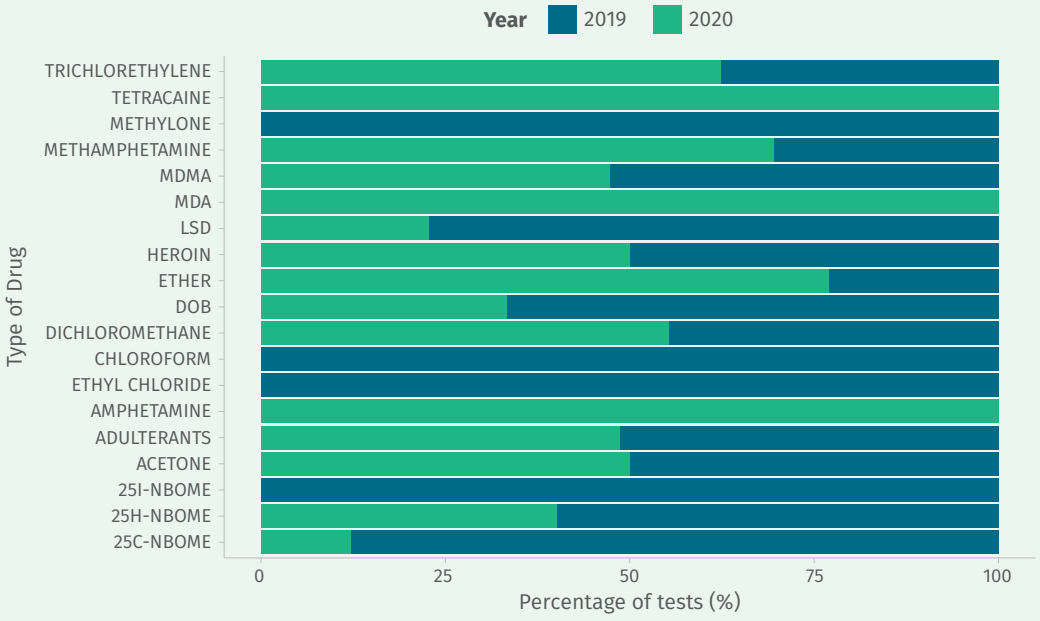
Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: São Paulo Military Police/SPMP.

Box 4 – Seizures of other drugs in the State of São Paulo

Data from the Narcotics Testing Centre (NEE) of the Institute of Criminalistics of the Technical and Scientific Police of the State of São Paulo show that, in the last two years alone, there were 17,244 flagrant and 46,250 drug tests, being 23,601 exams opened in 2019 and 22,649 in 2020, in the capital of São Paulo. With about 44,158 tests completed, Figure 54 shows the proportion of all substances found, in addition to cocaine, considering the years 2019 and 2020.

It is noted that the number of tests for which the conclusions were amphetamine, dichloromethane, ether, MDA, methamphetamine and trichlorethylene increased between the two years, highlighting methamphetamine, which was 2.3 times higher in 2020, and amphetamines, for which there was no record in 2019, but which were found in 19 exams the following year.

Figure 54 – Number of exams completed by type of drug by year, São Paulo, 2019 – 2020



4.6 Characterization of Mato Grosso do Sul, Paraná and São Paulo in the context of the research

Within the scope of this study, interviews were conducted in an online and face-to-face manner in ten municipalities located in four Federative Units of Brazil: Federal District (DF), Mato Grosso do Sul, Paraná and São Paulo. In the case of the DF, the content of the interviews refers to national aspects. Mato Grosso do Sul and Paraná have in common the fact that they border countries where there is relevant production and international trafficking of illicit drugs, being characterized[32] as important routes for the entry of these narcotics into Brazil.

In turn, São Paulo records one of the main exit routes used by international drug trafficking, due to its port and airport structure, which makes it strategic for the shipment of illicit drugs to various regions of the world.

According to the Ibge Cities Portal,[33] the MS has a territorial area of 357,147.994 km² and an estimated population for the year 2021 of 2,839,188 people. In the state, there are 45 municipalities in the border (IBGE, 2020) predominantly "dry"[34]. Among the state institutions that act in the repression of drug trafficking, the DOF, DEFRON and the[35] Battalion of[36] Military Motorway Police (BPMRv) stand out, as well[37] as other units of the police forces Military and Civil of the MS. At the federal level, the Federal Police and the Federal Highway Police play an important role in investigating transnational trafficking and carrying out policing on highways.

Paraná comprises a territory of 199,298.982 km² and a population of 11,597,484 people[38]. It has, in its border, 139 municipalities (IBGE, 2020), with the predominant characteristic of having[39] rivers that separate the territories, thus having the challenge of performing policing in river areas. Among the state institutions that act in the repression of drug trafficking in the border region, the Border Police Battalion (BPFron)[40] of the Paraná Military Police and its specialized platoons such as the Water Search

32 MS borders Paraguay and Bolivia. The PR borders Paraguay and Argentina, a country that is more important as a route for the international trafficking of illicit drugs than for their production.

33 Available at: https://www.ibge.gov.br/cidades-e-estados. Accessed on: September 13, 2021.

34 Predominance of separation between countries without the presence of rivers or lakes.

35 Part of the State Secretariat for Justice and Public Security of Mato Grosso do Sul (SEJUSP/MS).

36 Part of the Civil Police of the State of Mato Grosso do Sul (CPMS).

37 Part of the Military Police of Mato Grosso do Sul (MPMS).

38 IBGE Cities Portal.

39 Especially the Paraná River, which covers the entire division of Paraná with Paraguay.

40 The BPFRON operates in 139 municipalities in the border strip, which covers an approximate radius of 150 km of territory, carrying out ostentatious and preventive patrols to cross-border crimes.

and Repression Operations Corps stand out (COBRA), land patrolling using motorcycles and dog patrols, as well as specialized areas of the Paraná Civil Police, such as the Special Police Operation Centre (COPE) in Foz do Iguaçu, the Air Operations Group (GOA) and the Integrated Tactic of Special Repression Groups (TIGRE) in Guaíra.

At the federal level, one of the actions of the Federal Police takes place through NEPOM. On the other hand, the Federal Highway Police focuses on policing of highways, and the Federal Revenue Service, on border surveillance for the movement of drugs between countries. The State also has the Integrated Border Operations Centre (CIOF) of the MJSP, which encourages the exchange of information between defense, public security, surveillance and control institutions, and offers support to integrated operations.

With a territorial extension of 248,219.481 km² and a population of 46,649,132 people, the State of São Paulo is the most populous in Brazil.[41] Besides being the largest economy among the 27 federative units, São Paulo's GDP corresponds to 31.2 % of the entire national GDP (IBGE; SEADE, 2020). Despite not having a territorial border with any country, the State has the airport with the largest flow of flights in Brazil, the São Paulo International Airport (GRU), in the city of Guarulhos. It also has the largest port in the country, known as the port of Santos, in the municipality of Santos. Among the state security institutions that act in the repression of drug trafficking, the Narcotics Department of the Civil Police of São Paulo (DENARC) stands out. In addition to this specialized unit, various units of the Military and Civil Police work daily, in addition to the Institute of Criminalistics of the Technical and Scientific Police of the State of São Paulo. At the federal level, the Federal Police and the Federal Revenue Service carry out important work in the ports and airports of São Paulo, achieving high levels of seizures, especially of cocaine. The Federal Highway Police operates in policing ostentatious on highways.

41 IBGE Cities Portal.

5 Impacts of COVID-19 beyond seizures

In addition to the impacts and changes in drug trafficking presented in item 4 of this study (changes in operation mode and in the volumes of cannabis and cocaine seized), some other consequences of the pandemic in criminal dynamics were also identified.

Police organizations reported, in some regions, an increase in the number of thefts, right in the initial period of the health crisis. The increase in shoplifting and commercial break-ins was also identified, mainly because they were closed due to mobility restrictions. It was also reported a perception of an increase in the number of places used to sell drugs and an increase in the number of illegal parties that brought together, in general, drug users and sellers.

In general, the perception was that there was an increase in the demand for drugs, which led to the modification of the dynamics of distribution of these substances, through delivery or supply by messaging applications. The use of technologies to deliver drugs to consumers has expanded in the pandemic and has become one of the main challenges for repression measures, as it implies the need to change the actions of the security forces. Also, on the use of technologies, national intelligence structures were concerned about the advance of the use of cryptocurrencies in drug trafficking activities. The use of cryptoactive proved to be relevant for these criminal organizations, as it is a way of transferring resources without the control of banking institutions.

Finally, the financial and socioeconomic crisis resulting from the pandemic was also considered by police organizations as a relevant impact factor. According to the institutions, one of the most mentioned reasons to justify the entry of people into trafficking in the period was the need to generate income, since many lost their livelihoods. The role of “olheiro” for trafficking is especially attractive, characterized by offering less risk of arrest and death, in addition to being a lucrative activity.

In this context, there was an increase in arrests of people with small doses of drugs, using motorcycles. Furthermore, in the perception of representatives, the mobility restrictions much stricter in Paraguay would have led many people to crime, including in the border areas. In several interviews, security professionals have expressed concern about the expansion of the number of people working for the illicit drug market, which points to the multicausality of the problem and the need to promote comprehensive, inclusive and multidimensional strategies to prevent drug trafficking, aimed at social and economic development, with social measures, educational and security that foster a people-centered culture of legality.

Box 5 – Profile of prisoners involved in drug trafficking

Somehow, the pandemic reached all sectors of society. However, the intensity of its impact is different between people, organizations and institutions, depending on the adaptability and adjustments to a new context of movement restriction, new models of remote work and, above all, in relation to the inconstancy of the planning of traditional daily activities.

In Brazil, which registered the first cases of COVID-19 in March 2020, the impacts on national daily life were profound. In the economic area, the first quarter of 2020 registered a negative variation in GDP, reaching an average change of -4.1%. Furthermore, the first months of the pandemic were marked by increased unemployment rates due to economic restrictions, followed by some recovery in admissions in the following months, until reaching a positive balance in August 2020. In the social area, data from the Continuous Brazil National Household Sample Survey (PNAD) indicate an increase in income inequality in the country, as measured by the Gini coefficient, which increased from 0.525 in 2015 to 0.543 in 2019. However, although these rates were significantly reduced in 2020 with the distribution of emergency aid (INSTITUTO DE PESQUISA ECONÔMICA APLICADA, 2021), data from the Continuous PNAD show worsening in some social indicators, such as income, unemployment and inequality in 2021.

In this context, the judicial and prison systems also experienced the impacts of the pandemic and, as a way to ensure the safety and human rights of people who committed crimes, they modified some guidelines and procedures. It was in this queue of action that the National Council of Justice (CNJ) reinforced the recommendation, according to the guidelines of Resolution[42] 62/2020, the suspension of custody hearings, the implementation of measures to reduce sentences for restriction of freedom and the collection of information from the profile of people who committed crimes in the face of the risk of COVID-19 considering the arrest records for people caught in the act.

Thus, the counties were instructed to fill in a form with information on the assessed persons, as of March 2020. The profile of those involved in drug trafficking crimes is presented below (art. 33, Law 11.343/06), privileged trafficking (art. 33, § 4, Law 11.343/06), or association for trafficking (art. 35, Law 11.343/06), resulting in a total of 80,566 people.

42 Recommendation N 62, of March 17, 2020, of the National Council of Justice. Available at: https://www.cnj.jus.br/wp-content/uploads/2020/03/62-Recomenda%C3%A7%C3%A3o.pdf. Accessed on November 18, 2021.

This profile should be seen as complementary information about who are the people who were involved in drug trafficking and were arrested during the pandemic period, with limitations in the diverse and complex representativeness of the national territory. The vast majority (88 %) are male, 7.7% black and 36.1% mixed race. For 29.5% of the individuals, no color or race was informed.

Figure 55 – Gender of people involved in drug trafficking, Brazil, 2020 – 2021

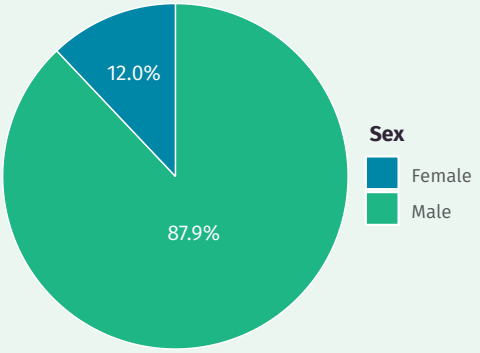
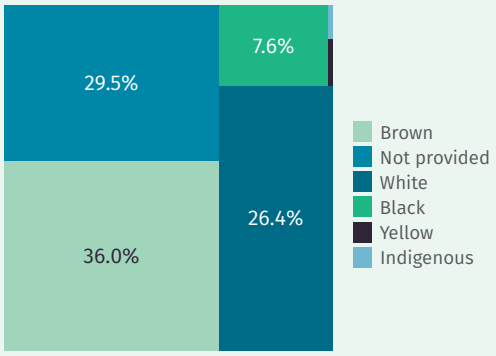


Figure 56 – Color or race of people involved in drug trafficking, Brazil, 2020 – 2021



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: CNJ/2020 and 2021.

Regarding education and occupation, despite the high percentage of uninformed data (34.8% and 31.7%, respectively), the low education level and lack of formal employment by individuals are highlighted. About 21.3% of the people involved in drug trafficking have not completed junior school and 18 % have completed junior school. In terms of occupation, 25.3 % declared themselves unemployed and 19.7% declared having informal employment, as shown in the figures below.

Figure 57 – Education of people involved in drug trafficking, Brazil, 2020 – 2021

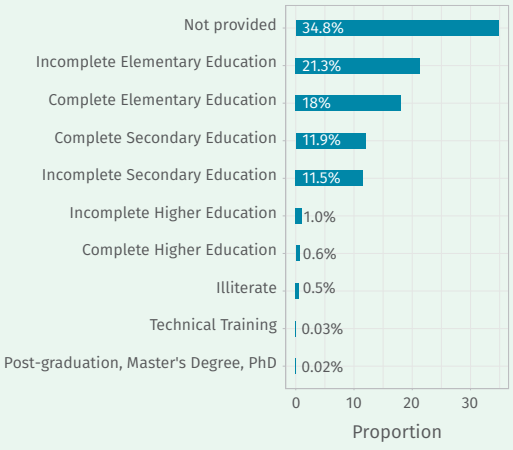
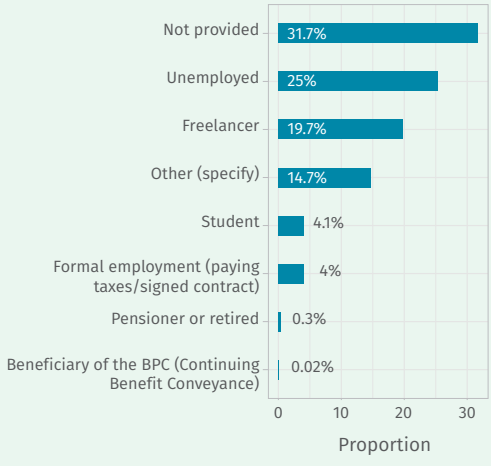


Figure 58 – Occupation of people involved in drug trafficking, Brazil, 2020 – 2021



Prepared by: CoE Brazil – Centre of Excellence for Illicit Drug Supply Reduction.
Source: CNJ/2020 and 2021.

According to the analysis of the arrest records for people caught in the act, the judges considered that only 3.3% of the individuals belonged to the risk group for the COVID-19. They assigned preventive detention to 66.4% of the cases, and provisional freedom with precautionary measure for 28.4% of the cases.

Comparatively, data presented at the 2018 National Arrest Warrant Bank [43] (BNMP) indicate that there were 602,2017[44] people arrested in Brazil that year, 95% of which were men and 5% were women. In relation to criminal typification, drug trafficking and related conduct corresponded to 24.8% of crimes attributed to persons deprived of liberty, being the second most recurrent criminal type in the country, after the theft. Regarding the profile of people deprived of liberty, it was found that, regarding the age group[45], 30.5% were between 18 and 24 years old, while 23.4% were between 25 and 29 years old, showing that more than half of the prisoners registered with the Bank was up to 29 years old. As for the race, color or ethnics of the data included in the register of the person deprived of liberty[46], 55% were classified as black or mixed race and 42.0% as white. And, finally, regarding education[47], 52.3% had completed junior school. In general, as the available data indicate, there was a possible continuity of aspects related to the profile of people arrested in the country during the pandemic period.

The data provided by the CNJ, and presented in this study, reinforce the need to reflect on the various impacts that drug trafficking generates on society. From the analyzed profile of the people arrested in the period, criminal organizations seem to use socially vulnerable men as workers, usually with low education, unemployed or working in the informal labor market, which configures a complex social problem.

43 The BNMP contains the data of prisoners by judicial decision in Brazil, that is, the register of people under judicially decreed prison regime, on a provisional basis or for serving a sentence.

44 According to the BNMP Report of 2.0 in relation to the data collected in all FUs in Brazil: the Court of Justice of the State of São Paulo had not yet closed the feeding. The TJSP, on August 6, 2018, already had 76.5 % of the estimated prisoners registered. And the Court of Justice of the State of Rio Grande do Sul had not yet started the implementation.

45 The percentage of responses about age group of 90.2 % in relation to the total number of people deprived of liberty.

46 The percentage of responses about race, colour and ethnics was 34.7 % in relation to the total number of people deprived of liberty.

47 The percentage of answers about education was 34.51 % in relation to the total number of people deprived of liberty.

6 Final considerations

This study shows that the police institutions responsible for the repression of drug trafficking in Brazil are under constant pressure. Just as criminal organizations are constantly articulating and adapting, it is up to public security organizations to be alert and ready to improve their way of operating whenever necessary. Old formulations and analyses regarding surveillance in border regions state that when control is increased in these areas, there is a direct relationship in the increase of the capacity to evade surveillance and crime adaptation (REUTER, 1988).

In view of the COVID-19 pandemic, the present study brings some aspects and evidence that may contribute to new formulations regarding criminal activities. That is, in addition to the ability to circumvent surveillance, these groups have shown themselves capable of maintaining their operations during a severe period of health crisis that significantly impacted the way of moving around the world. Such flexibility of action of criminal organizations was also observed in the international scenario (UNITED NATIONS OFFICE ON DRUGS AND CRIME, 2021b).

Although it did not appear as a response to the pandemic, the implementation of the VIGIA Program influenced the dynamics of trafficking in the period, and proved to be a strategy of institutional partnership that allowed greater interaction between the different police forces. The initiative fostered the improvement of knowledge exchange, the creation of local networks and improvements in frontier work, which inherently demand even more exchange of information and tactical knowledge. The expansion of exchange activities between states, promoted by the MJSP under the program, also brought success in some police activities.

The interviews showed that one of the possible results of VIGIA was the possibility of strengthening state policing in border areas, allowing for a greater presence of the State in the region. Both in Mato Grosso do Sul and Paraná it was reported that, from the incentives of the program, it was

possible to increase the time of operation and the number of teams working simultaneously. Criminal organizations, in turn, had to adapt by, for example, hiring more "olheiros" to monitor police work. Considering that this increase in police presence occurred concomitantly with the pandemic, the changes observed in the performance of criminal organizations can be explained from these two factors: both by improving surveillance and by the restrictions of circulation imposed during the health crisis.

Overall, seizure data show an increase in cannabis seizures in the pandemic. Interruptions in cannabis eradication surveillance initiatives in Paraguay because of the pandemic, as well as a possible increase in demand for this substance during the period of restricted mobility, may have contributed to the dynamics observed. However, the use of geospatial analysis techniques indicates that there were no changes in the routes used for cannabis trafficking.

In relation to cocaine, there was a reduction in the volume of seizures made. This decrease in seizures should be read in a broader context, in which the drug production was affected, as well as the complex shipping logistics to various parts of the world by air and sea (among other means). Some objective data in the context of this study corroborate the international panorama offered by publications from other countries, such as the increase in production, demand, and seizures of cannabis in various regions of the world, as well as the disruption of cocaine production in some of the producing regions in South America (UNITED NATIONS OFFICE ON DRUGS AND CRIME, 2021a).

In the case of cocaine, the same geospatial analysis techniques identified changes in trafficking routes, as well as a diversification of ports and airports used to deliver the drug to the most lucrative markets abroad.

Analyzing the actions of criminal organizations based on the trafficking of cocaine and cannabis is relevant, taking into account the differences between the two types of substances. Cannabis originating in Paraguay is destined to the local market, besides involving production in the national territory. On the other hand, cocaine trafficking involves a more complex network of international players, given that the drug is destined for various countries around the world.

Although there has been a more ostentatious policing in border regions, it is evident the resilience of criminal organizations, which continued to succeed in smuggling high volumes of illicit drugs into the national territory, and maintained international trafficking.

In addition to the lack of integration between public security organizations, many institutions suffer from low staff, lack of equipment and lack of qualified information, which undermines the quality of work and explains, in part, the capacity to adapt to crime. Public security institutions are also seeking to improve themselves to act on the financial bias of drug trafficking. Improving the development of intelligence activities is a choice of public authorities to increase the impact on the structures of criminal organizations through their decapitalization.

However, it is known that with each step and improvement made by the State in the repression, criminal organizations also quickly bypass their way of acting. Examples of this improvement are asset shielding strategies, in tax havens, with the use of business structures that, in some way, break the link between the product of trafficking, the resource of the criminal organization and the lawful good. The objective is to launder the money from trafficking in an increasingly professional way.

In the interviews, national managers pointed out that criminal organizations have developed a very significant role, and reinforced in the pandemic, for the virtualization of currencies, with the use of cryptoactive for international transfers. Aware of this challenge, Brazilian drug combating institutions are organizing themselves to make use of artificial intelligence in an attempt to verify transfer patterns and identify operations made to cover up the money trail.

These institutions are also working to increase knowledge about the flow of digital currencies in order to identify and track illicit financial flows. Improving the strategies for monitoring these flows is a permanent and essential challenge to have an increasing level of accuracy level of accuracy in the interception of cargoes that illegally enter the country.

The importance of monitoring the financial activities of criminal organizations is evident when we think about the limitations of an analysis based only on numbers of seizures, for example. The more drugs that are seized, the question is reinforced: is the increase in seizures due to a greater efficiency of the institutions of repression or to a lower efficiency of trafficking? This issue can only be better evaluated when the country has integrated monitoring systems, which allow for inter-organizational work, aggregating data on cocaine production in Andean countries, data on use in consumer countries, data on the price of the drug in the main international markets, among other indicators.

In addition to the articulation for data standardization, security institutions operating in the territory have demonstrated the need to improve links with public security institutions in producing countries, because, to date, all articulation and exchange of information is done largely informally.

Transposing issues specific to the area of public safety, this study demonstrated the need to discuss the social impacts of the pandemic. In the view of the agents interviewed, the increase in unemployment and inequalities contributed to new members being recruited to work in drug trafficking. Thus, the pandemic of COVID-19 proved to be an additional factor of instability and deepening of inequalities, and, in the context of illegal drug trafficking, can generate as a consequence the strengthening of criminal organizations and the expansion of the number of vulnerable people involved in this activity.

Finally, given the information compiled, the continuity of the pandemic and the changes still in force in the daily life of society, it is recommended to monitor, for longer periods of time, the behavior of drug seizures, as well as improve information on trafficking routes, production, consumption market and drug prices. It is a complex market and, from the analysis of this information, it will be possible to build a more concrete overview of the operation of the gears of the drug trafficking market. Like putting together a puzzle, in which the correct position of each piece makes the scenario more evident, studies and diagnoses on the subject also create a favorable framework for the implementation of more effective public policies. In this sense, the analyses contained in this study are one more piece for the continuous improvement of the management of police activities, anticipating repressive activities that prevent the strengthening of criminal organizations in our country.

The data presented here also offer some aspects that can serve to complement other studies on the possible adaptations of illicit drug trafficking as a result of the COVID-19 pandemic. Moreover, reflecting on the events that occurred during the health crisis can serve to be better prepared for future challenges that may arise.

Furthermore, this study is part of a collective effort that has emerged in various regions of the world to provide information about drug trafficking. Recent publications on cocaine have provided important data on its circulation in Europe (UNITED NATIONS OFFICE ON DRUGS AND CRIME; EUROPOL, 2021), as well as aspects related to its use, production and by-products (UNITED NATIONS OFFICE ON DRUGS AND CRIME, 2021a). This publication adds information to complement existing gaps in the research already produced, as well as will serve as a reference for future ones.

6.1 Recommendations and directives for the improvement of activities to combat illicit drug trafficking, based on the results obtained in the study

As presented throughout the study, the COVID-19 pandemic directly impacted the daily life of the whole society, including the way criminal organizations work. The pandemic context is still in force and, for this reason, it is not possible to determine whether changes in the standards of action of organizations responsible for illicit drug trafficking will be permanent. What was evident was the ease of adapting these criminal organizations to new scenarios. It is observed that they have dynamic, flexible structures, with great capacity to act quickly in new work models and with abundant labor available in the country and in the region, given the socioeconomic impacts experienced by the population.

Based on the information collected and analyzed in this study, and with the objective of contributing to the improvement of national activities to combat drug trafficking, it is recommended to:

(I)	Improvement of the articulation of police forces, especially with regard to the mobilization of staff and equipment for patrolling and investigation at the borders;
(II)	Development of structured cooperation strategies with the police forces of the drug-producing countries in the region, in order to deepen joint work in the repression of illicit drug trafficking, monitoring the entire flow, from production;
(III)	Definition of an integrated monitoring model between the police forces with a repository of information on the performance and characteristics of the criminal organizations operating in the regions;
(IV)	Training of police investigation forces on cryptocurrencies and new technologies used by criminal organizations;
(V)	Integration of drug seizure information carried out by various police organizations;
(VI)	Fostering the ability to monitor possible new routes, and identify new modus operandi of criminal organizations;
(VII)	Based on the experience of the resilient performance of criminal organizations during the COVID-19 pandemic, establish mechanisms that can generate a rapid integrated mobilization of the different institutions that act in the surveillance and combat to drug trafficking for future crises.

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