OVERHAUL

Brazil Q2-2023 Cargo
Theft Report

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Executive Summary

Supply chain challenges are growing increasingly intense globally. Factors such as wars, China's internal policies aimed at Covid-19 and its intensification in the domestic market, changes related to friend-shoring, inflation levels in the world's largest economies, and energy crises such as the one faced by Europe end up acting as sources of disruptions to supply chains. In turn, we've witnessed reductions in the supply of services, products, raw materials, components, transportation options, and storage availability, among other restrictions.
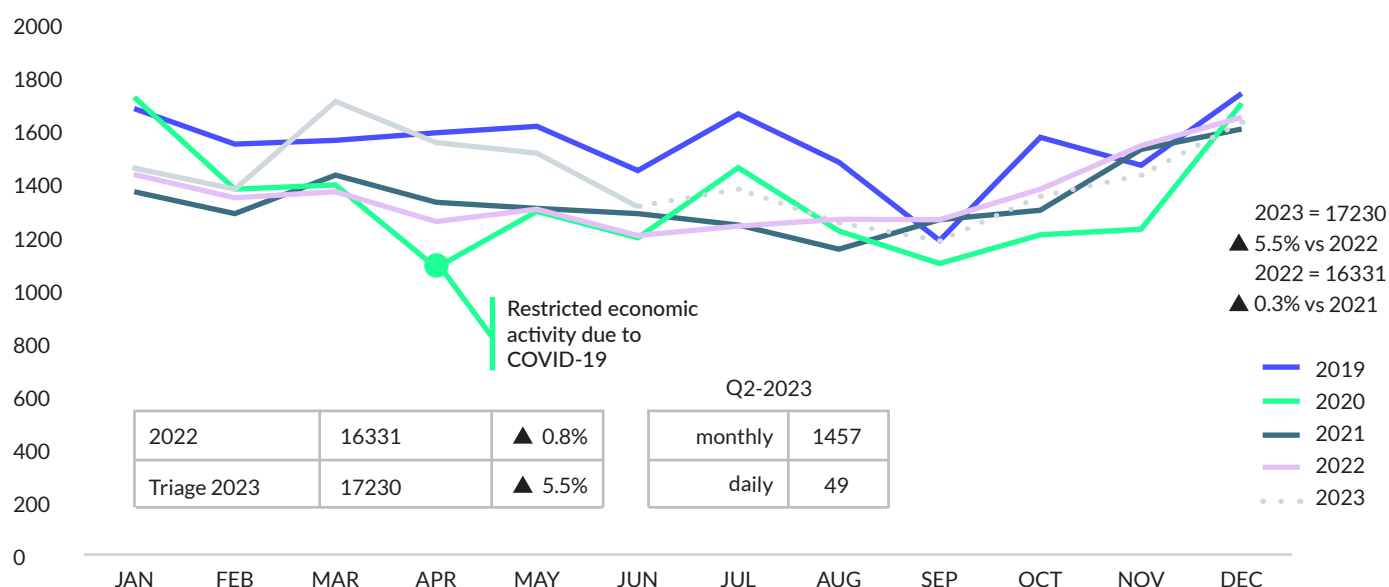
Brazil is one such country whose supply chain has been affected by the above factors. In addition, several internal elements must be considered, including a large part of its road network being in poor condition (more than 60% of its cargo transport is via road), constant pressure to increase the use of fuels that compromise the profitability of companies and contributes to increased inflation, ports with very high waiting times for berthing, slow implementation of regulations that can accelerate rail development, and on top of all this, an insufficient level of safety on the roads.

Organized crime operating in the country seeks to produce illicit wealth through practices such as smuggling, counterfeiting, misappropriation, and cargo theft. The levels of financial losses due to cargo theft remain high, whether through direct losses related to the value of the goods or truck lost or indirect losses related to unfair competition of the product itself at a lower price in the market, negative impacts on the brand, freight costs and additional packaging, delays in deliveries, increased insurance rates, and other factors.

In this report for the second quarter of 2023, Overhaul's Intelligence Center sought data and information on cargo theft events. It analyzed them in terms of geographic patterns of concentration, days of the week and times of highest concentration, types of cargo most stolen, and modus operandi most used by gangs. It also examined whether the thefts occurred in warehouses, at road stops, or while vehicles were in transit.

Our analysis revealed that most cargo theft events in Q2-2023 occurred in the Southeast Region, with São Paulo and Rio de Janeiro remaining the most critical states. Our report highlights these events in the State of Rio de Janeiro and the increase of events related to Food and Drinks theft nationwide. Overall, 2023 is expected to end with more events than in 2022, thus continuing the trend of returning to levels faced before the Covid-19 pandemic.

Graph 1: Annual Trend of Cargo Theft in Brazil 2019-2022/ Predictive Analysis from Jul to Dec 2023

Restricted economic activity due to COVID-19

2023 = 17230
▲ 5.5% vs 2022
2022 = 16331
▲ 0.3% vs 2021

2022	16331	▲ 0.8%
Triage 2023	17230	▲ 5.5%

Q2-2023

monthly	1457
daily	49

Legend:
— 2019
— 2020
— 2021
— 2022
···· 2023

Spatial and Temporal Analysis of Cargo Theft in Brazil

Dividing the country into quadrants, as can be seen in the map to the right, it was identified that 87% of cargo thefts were concentrated in Quadrant 4 (C4), which includes the states of São Paulo, Rio de Janeiro, Minas Gerais, Paraná, Rio Grande do Sul, and Goias. This concentration has been maintained over the last few years and demonstrates the strong relationship between cargo theft in the regions with the most significant movements of goods.


Regional Analysis

In the second quarter of 2023, 79% of cargo theft occurrences were concentrated in the Southeast Region, similar to the first quarter of this year when the concentration was 80%. The Midwest Region reduced the incidence of events somewhat; in contrast, the South Region of the country again appears in second place, demonstrating a pattern of action of the gangs.

In some states such as Rio de Janeiro in the Southeast Region and Mato Grosso in the Midwest Region, we observed actions by local governments to modify the system of registration and classification of cargo thefts. For example, they started to record events that occur in motorcycle delivery operations as thefts in general, not cargo theft. This creates more challenges for mapping the events granularly and designing efficient mitigating actions.

Graph 2: Brazil Cargo Theft by Region

Midwest, 4% — North, 1%
Northeast, 6%
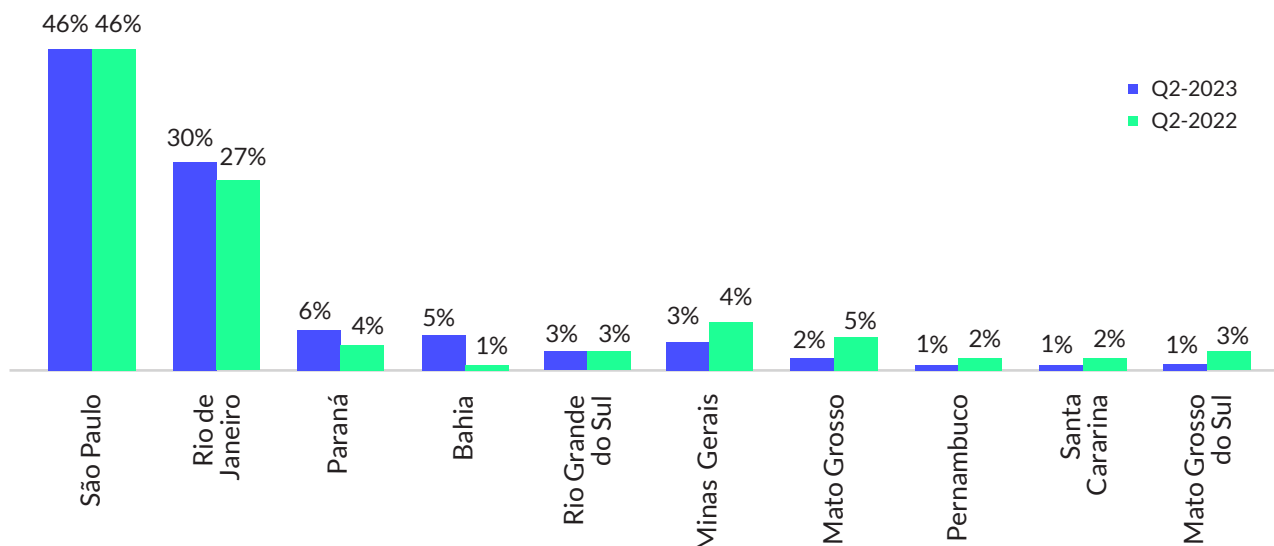South, 10%
Southeast, 79%
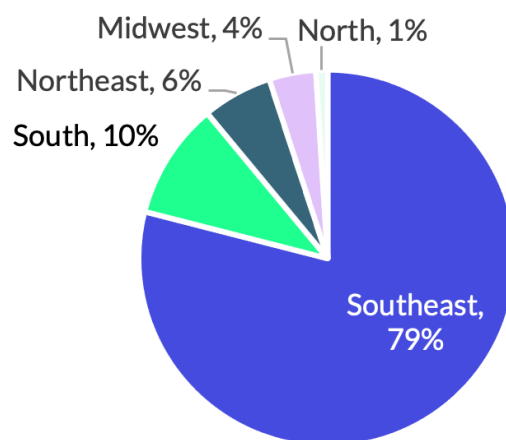
Analysis of the 10 States with the Highest Volume of Cargo Theft

The 10 states in Graph 3 represent 98% of the events in the second quarter of 2023. The states of São Paulo and Rio de Janeiro accounted for 76% of cargo theft events, two percentage points more than in the first quarter of 2023.

The state of Rio de Janeiro had an increase of 3 percentage points compared to the second quarter of 2022. The state of Paraná also had a significant increase from 4% in 2022 to 6% in 2023. However, the state with the most tremendous variation was Bahia, going from only 1% in 2022 to 5% in 2023.
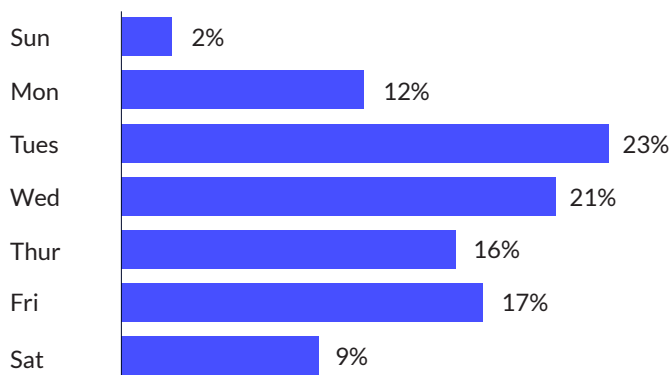
Graph 3: Brazil Cargo Theft by State

Legend: Q2-2023, Q2-2022

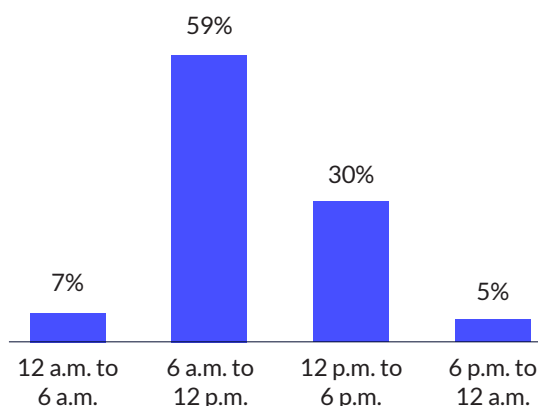| State	Q2-2023	Q2-2022
São Paulo	46%	46%
Rio de Janeiro	30%	27%
Paraná	6%	4%
Bahia	5%	1%
Rio Grande do Sul	3%	3%
Minas Gerais	3%	4%
Mato Grosso	2%	5%
Pernambuco	1%	2%
Santa Cararina	1%	2%
Mato Grosso do Sul	1%	3%

Theft by Day and Hour

In April, May, and June 2023, cargo thefts were primarily concentrated from Tuesday to Friday. Tuesday represented 23%, making it the day that showed the greatest risk for cargo transport; this was a change from the first quarter when Thursday was the most critical day. Still, when compared with the previous quarter, it is relevant to highlight the fall in incidents on Mondays and a slight trend of increased cargo thefts on Saturdays. However, workdays remain, in general, the ones with the highest incidence of cargo theft due to the greater exposure of cargo in circulation.

Graph 4: Cargo Theft in Brazil by Day of the Week

Day	Percentage
Sun	2%
Mon	12%
Tues	23%
Wed	21%
Thur	16%
Fri	17%
Sat	9%

Graph 5: Cargo Theft in Brazil by Time

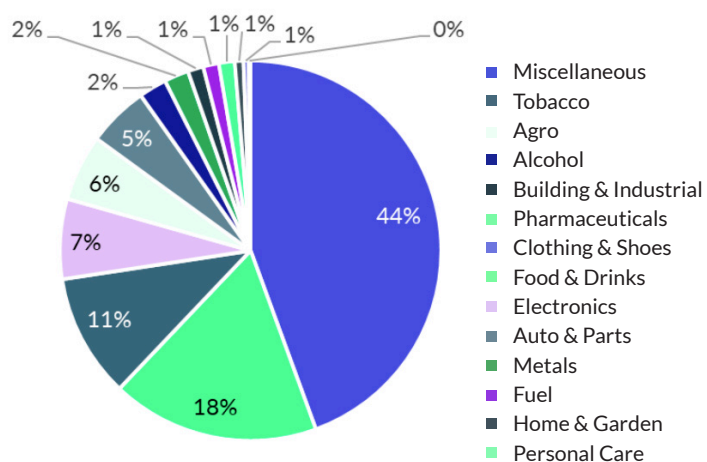| Time	Percentage
12 a.m. to 6 a.m.	7%
6 a.m. to 12 p.m.	59%
12 p.m. to 6 p.m.	30%
6 p.m. to 12 a.m.	5%

As for the times of day, a similar pattern remained in the first quarter of 2023, with the highest incidence of events in the morning between 6 a.m. and noon, at 59%. This higher concentration is due to the higher incidence of cargo thefts in e-commerce deliveries and other delivery operations to consumers starting in the early morning hours. Thus, the gangs seek to run their events in the morning to be able to pick up trucks that have most of their high-value products before they are delivered to their buyers.

Theft by Product Type

Concerning the types of cargo most affected in the second quarter, *Miscellaneous* (which include loads of different types being transported together) were the most targeted with 44% of the events. The second most stolen were *Food and Drinks* (18%), followed by *Tobacco* (11%), *Electronics* (7%), and *Agro* (6%). Comparing this data from the second quarter of 2023 with the same period in 2022, events with *Auto & Parts* fell 3 percentage points, and those involving *Miscellaneous* fell 7 percentage points. However, *Tobacco* thefts were up 2%, and thefts of *Food and Drinks* cargo went up 10%. Later in this report, we will dedicate a particular study detailing the scenario and its variables involving the thefts of *Food and Drinks* cargo.

Graph 6: Cargo Theft by Type of Product

Legend:
- Miscellaneous
- Tobacco
- Agro
- Alcohol
- Building & Industrial
- Pharmaceuticals
- Clothing & Shoes
- Food & Drinks
- Electronics
- Auto & Parts
- Metals
- Fuel
- Home & Garden
- Personal Care

Theft by Location

In Brazil, we've seen an increase in cargo theft incidents in urban distribution and e-commerce operations. The gangs, usually local and without high levels of expertise, typically approach stopped vehicles and target loads of Electronics or other types of cargo that have high value and ease of commercialization. Food and Drinks shipments are increasingly becoming targets of this type of modus operandi.

Organized crime gangs gather information regarding shipment schedules, routes, planning of stops, and risk management measures. After approaching the drivers at food or rest stops, it is expected that these gangs continue to follow all procedures provided for safety to prevent the Tracking Centers from detecting their approach. Their next stop is made overnight when the loads are unloaded and transferred to another gang's truck. There are cases where the perpetrators use jammers at this time. Sider trailers have also been increasingly used in these events.

Graph 7: Cargo Theft in Brazil by Location

Legend:
- Street
- Highway
- Warehouse/DC
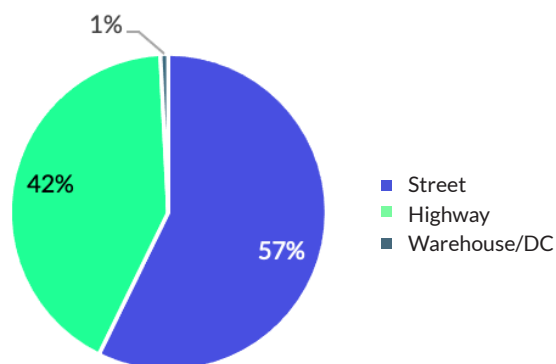
Raids on warehouses and distribution centers show an upward trend if we look at the data from October 2022 to the end of the second quarter of 2023. Specifically, there was a slight decrease in the second quarter of 2023 compared to the first quarter of the same year. The events are planned, and the gangs usually work with internal people to facilitate entry. They also typically act on holidays or weekends, which allows them to stay longer hours at the event site to steal the stored cargo and attack the places with the lowest levels of security.
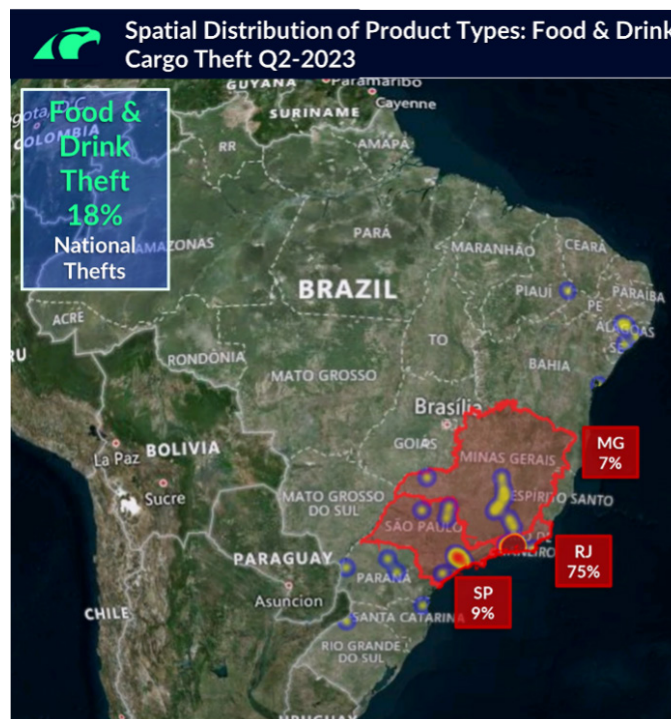
Special Report Q2-2023

The Overhaul Intelligence Center has determined that the State of Rio de Janeiro demonstrated significant increases in cargo theft in Q2-2023. Our analysis also revealed that Food and Drinks products had the most significant growth in thefts when compared to the second quarter of 2022. Therefore, the following analyses will cover thefts that occurred in the State of Rio de Janeiro, as well as thefts involving Food and Drinks loads throughout Brazil during the second quarter of 2023.

Food and Drinks Product Theft Analysis

According to the results of the PNAD 2012-2022 survey (National Household Sample Survey) conducted by IBGE (Brazilian Institute of Geography and Statistics), the profile of poverty in Brazil portrays a large group of unemployed people who seek to enter the labor market but cannot find employment. According to the survey, among the poorest 10%, 64% seek to be fully employed; that is, they currently work informally.

This situation has led families to change their consumption habits and search for cheaper alternatives, thus contributing to the increase in informal markets. Gangs and organized crime have found opportunities to supply these informal markets with food and drinks resulting from theft, and they sell such goods at attractive prices, without taxes, thus raising high-profit rates.

Spatial Distribution of Product Types: Food & Drink Cargo Theft Q2-2023

Food & Drink Theft 18% National Thefts

MG 7%
RJ 75%
SP 9%

According to our data sample, the theft of Food and Drinks cargo was concentrated in the Southeast Region of the country (91%), and 75% of the events occurred in the State of Rio de Janeiro. The cities of Duque de Caxias, São João do Mereti, and Rio de Janeiro (state capital) were responsible for 67% of the events.

The events took place mostly on weekdays, with Wednesday being the day of the week with the highest concentration (29%). Mixed Loads composed of various types of Food and Drinks were the most stolen. Individually analyzing products showed that loads of Meat were the most targeted (10%).

Cargo Theft in the State of Rio de Janeiro

According to the Violence Monitor (a partnership between Rede Globo Television's G1 website, the Center for the Study of Violence at the University of São Paulo, and the Brazilian Forum on Public Security), there was a 3.4% drop in the level of violence in the country during the first half of 2023. However, the State of Rio de Janeiro presented results contrary to the national trend, with a growth of 17.3%. Coupled with this increase in violence, due to restrictions on police operations in the communities, gangs linked to drug trafficking have increased their activities. Specifically, because they know they're less likely to come into contact with police, they've started taking stolen trucks here to unload.

In this scenario, drivers are exposed to risky conditions and go through psychological stress. According to media reports, on May 15, 2023, on Avenida Brasil in Rio de Janeiro, about 350 truck drivers staged a demonstration against cargo theft and demanded action from the authorities.
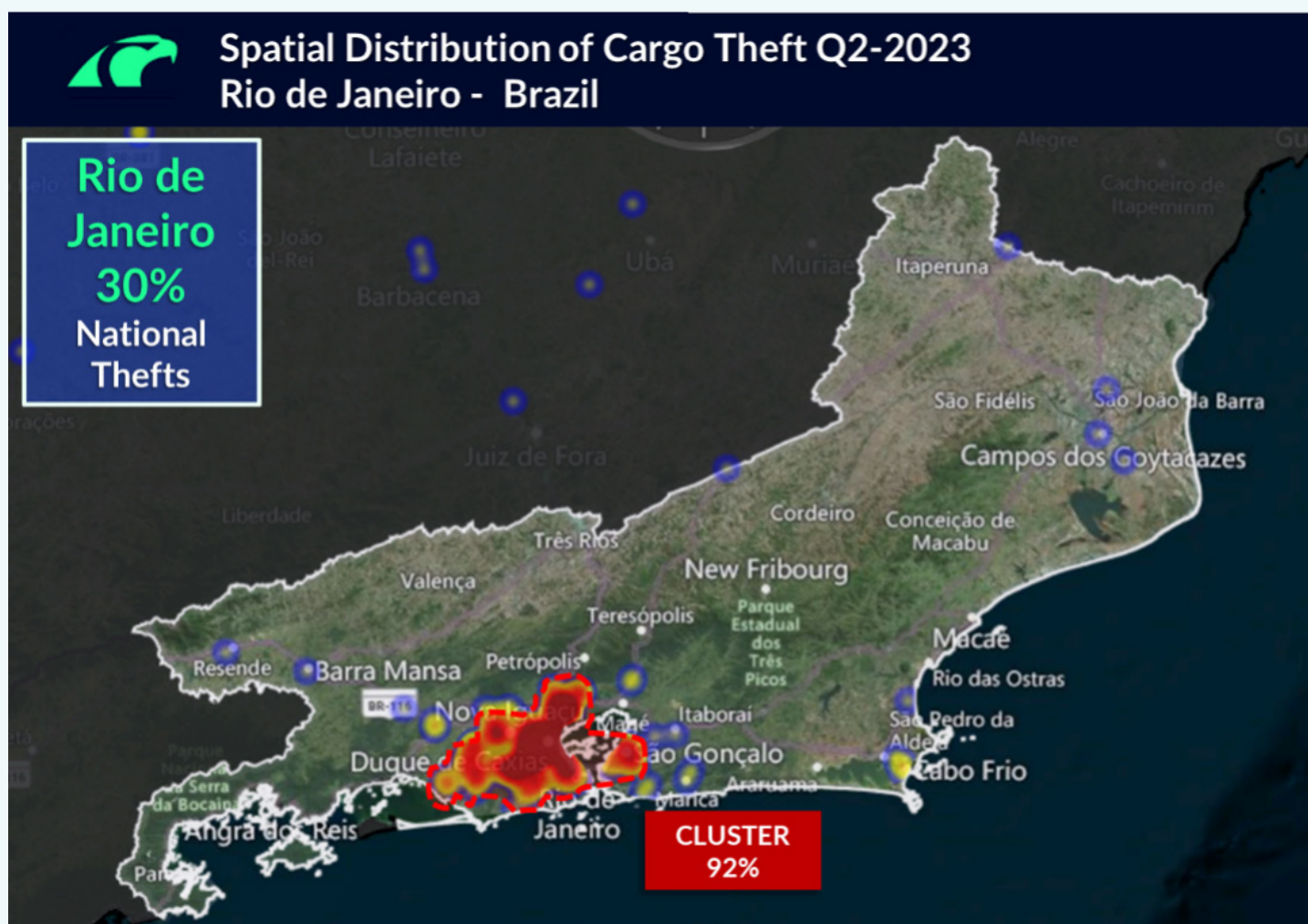
As shown in the figure above, 92% of the events occurred in the cluster highlighted on the map, clearly indicating the relationship of cargo theft events with the areas where the activities of criminal factions arise. Some regions have high rates, such as Duque de Caxias when traveling along the Washington Luiz (BR-040), Arco Metropolitano (BR-493), and Rio-Magé (BR-116) highways, and the city of Rio de Janeiro (state capital) mainly on the Presidente Dutra, BR-040, and Avenida Brasil.

General Recommendations

Economically, Brazil presents positive results for the first half of 2023 that surprised financial analysts. However, there is still some skepticism about whether Brazil will continue this positive trend in the future. If Brazil continues victoriously with its reform agenda—in regards to its tax reform, expected reduction to the basic interest rate, and ability to avoid being affected by possible recessions of first-world countries—it seems evident that the economy in Brazil will reheat, thus leading to an intensification of the movements of goods in transport operations.

For this reason, it is imperative that organizations operating in the country prepare themselves with integrated planning involving their operations (supply chain) and risk management practices. To this end, it is recommended that shippers and transporters seek in advance to plan and organize transport operations with improvements in preventive safety measures to avoid accidents on the highways, invasions of warehouses, and theft of cargo.

It is essential to consider that organized crime in Brazil has been demonstrating more and more professionalization, technological expertise, and access to privileged information. In addition, these criminal organizations have been utilizing more effective tactics for the execution of robberies, seeking to employ lower levels of violence and being more careful to make it difficult for telematics to detect them. This context leads Overhaul's Intelligence Center to consider shipments in Brazil to be at SEVERE risk of cargo theft.

The Southeast Region of Brazil, followed by the South Region, is the most targeted. Types of cargo such as Food & Drinks, Electronics, Agro, and Cigarettes deserve special care. Other types of loads, such as Pharmaceuticals, for example, did not present significant variations in the results of the analysis of the data used for this report. However, they are historically attractive and highly valued, making them always interesting targets for crime.

We recommend that shippers plan their routes with safe stopping points and use tracking technology for shipments, as well as multiple layers of protection. It has also become increasingly important that organizations that operate the transportation and storage of cargo seek to improve the use of technology on board their vehicles. They should use their data to predict future events and thus increase the efficiency of preventive practices. Trucking companies can make a difference in fighting cargo crime by actively planning and organizing their trips and working with professionals who specialize in supply chain risk management.