

## TOURISM, CRIME, AND URBAN SEGREGATION: A SPATIAL ANALYSIS OF NATAL, BRAZIL

Ana Catarina Coutinho\*, Wilker Nóbrega\*\*, Jarvis Campos\*\*\* &amp; Fernando Almeida-García\*\*\*\*

## Abstract

Tourism theories that address the relationship with criminology have reinforced the logic of segregation and urban insecurity through statistical data that portray a stimulus-response. This supports the idea that more crime leads to fewer tourists in tourist destinations. In this sense, this article aims to understand the context of contemporary crimes through their relationship to the socio-spatial dynamics of tourism. For this, statistical data on crime, tourist flow, and urban services and equipment in a capital city in northeastern Brazil were collected to understand the relationship between public security and tourism dynamics, using statistical and georeferenced analyses supported by QGIS (version 3.10), informed by the proposed theoretical discussion. The results show that the criminal incidence may not be a determinant for the decrease in tourist flow. In addition, it confirmed that the distribution of public urban equipment in the city does not serve as a measure to combat crime, thereby endorsing existing social segregation and, even less so, the causal relationship with tourist flow. Finally, the study offers a territorial analysis of a tourist destination across its different social strata, as well as an intersectoral analysis that goes beyond a classic approach in areas with high tourist numbers. The originality of the research lies in presenting a discussion of crime in Brazil based on statistical data, thereby contributing to the territorial management of the tourist destination. In addition, it calculates the distance in meters between the crimes committed and urban public facilities and tourist attractions.

**Keywords:** Tourism and crime; Tourism planning; Public security; Leisure and tourism; Urban segregation and tourism.

## TURISMO, CRIME E SEGREGAÇÃO URBANA: UMA ANÁLISE ESPACIAL EM NATAL, BRASIL

## Resumo

As teorias do turismo que abordam a relação com a criminologia têm reforçado a lógica de segregação e de insegurança urbana com base em dados estatísticos que retratam o modelo estímulo-resposta. Isto contribui para o fomento da equação segundo a qual mais crimes geram menos turistas nas destinações turísticas. Neste sentido, este artigo tem como objetivo compreender o contexto dos crimes contemporâneos a partir da sua relação com a dinâmica socioespacial do turismo. Para isso, coletaram-se dados estatísticos criminais, de fluxo turístico e de serviços e equipamentos urbanos de uma capital do Nordeste brasileiro, para compreender a relação entre segurança pública e a dinâmica do turismo, por meio de análise estatística e georreferenciada, com suporte do Qgis (versão 3.10), a partir da discussão teórica proposta. Os resultados evidenciam que a incidência criminal pode não ser determinante para a redução do fluxo turístico. Ademais, confirmou-se que a distribuição dos equipamentos urbanos públicos na cidade não dialoga com a medida de combate à criminalidade, endossando a segregação social existente e, muito menos, a relação causal com o fluxo turístico. O estudo oferece uma análise territorial de um destino turístico em seus diferentes estratos sociais, bem como uma análise intersectorial que vai além de uma abordagem clássica em áreas com grande número de turistas. A originalidade da pesquisa reside em apresentar a discussão criminal brasileira com base em dados estatísticos criminosos, contribuindo para a gestão territorial do destino turístico. Além disso, calcula a distância, em metros, entre os crimes cometidos e os equipamentos públicos urbanos e os atrativos turísticos.

**Palavras-chave:** Turismo e crime; Planejamento turístico; Segurança pública; Lazer e turismo; Segregação urbana e turismo.

## TURISMO, CRIMEN Y SEGREGACIÓN URBANA: UN ANÁLISIS ESPACIAL EN NATAL, BRASIL

## Resumen

Las teorías del turismo que abordan la relación con la criminología han reforzado la lógica de la segregación y la inseguridad urbana a partir de datos estadísticos que ilustran el esquema de estímulo-respuesta. Esto contribuye a fomentar la idea de que un mayor índice de criminalidad se traduce en una menor afluencia de turistas a los destinos turísticos. En este sentido, el presente artículo tiene como objetivo comprender el contexto de los delitos contemporáneos a partir de su relación con la dinámica socioespacial del turismo. Para ello, se recolectaron datos estadísticos sobre criminalidad, flujo turístico y servicios y equipamientos urbanos de una capital del noreste brasileño, con el fin de entender la relación entre la seguridad pública y la dinámica del turismo. Se utilizó un análisis estadístico y georreferenciado, con el apoyo de QGIS (versión 3.10), basado en la discusión teórica propuesta. Los resultados evidencian que la incidencia delictiva puede no ser un determinante de la disminución del flujo turístico. Además, se confirmó que la distribución de los equipamientos urbanos públicos en la ciudad no constituye una medida de combate a la criminalidad, lo que respalda la segregación social existente y debilita la relación causal con el flujo turístico. El estudio ofrece un análisis territorial de un destino turístico según sus diferentes estratos sociales, así como un análisis intersectorial que trasciende el enfoque clásico en áreas de alta concentración turística. La originalidad de la investigación radica en presentar la discusión criminal brasileña basada en datos estadísticos delictivos, lo cual contribuye a la gestión territorial del destino turístico. Asimismo, calcula la distancia, en metros, entre los delitos cometidos, los equipamientos públicos urbanos y los atractivos turísticos.

**Palabras clave:** Turismo y crimen; Planificación turística; Seguridad pública; Ocio y turismo; Segregación urbana y turismo.

HOW TO CITE: Coutinho, A. C. A., Nóbrega, W., Campos, J., & Almeida-García, F. (2026). Tourism, Crime, and Urban Segregation: a Spatial Analysis of Natal, Brazil. *Anais Brasileiros de Estudos Turísticos / ABET*, v. 16, n. 1 (Edição Regular), 1 – 13, Jan./ Dez. Retrieved from:

<https://periodicos.ufrn.br/index.php/abet/article/view/45418>

DOI: <https://doi.org/10.5281/zenodo.18062392>



Licenciada por Creative Commons 4.0 / Internacional  
CC BY 4.0

\*PhD in Tourism from the Graduate Program in Tourism (PPGTUR) at the Federal University of Rio Grande do Norte (UFRN). Holds both a Master's degree and a Bachelor's degree in Tourism from UFRN. Adjunct Professor in the Tourism Program at the São Bernardo, Campus of the Federal University of Maranhão (UFMA), Brazil. Coordinator of the projects "Scientific Tourism in the Protected Area of the Foz do Rio Preguiças (Maranhão, Brazil)" and "Lazerólogo Project." Leader of the Tourism Planning and Management Research Group (GPPGTUR/CNPq). Lattes CV: <http://lattes.cnpq.br/8424702006807233>; ORCID: <https://orcid.org/0000-0001-6654-6629>; Email: [aca.coutinho@ufma.br](mailto:aca.coutinho@ufma.br)

\*\*Associate Professor in the Department of Tourism and the Graduate Program in Tourism at the Federal University of Rio Grande do Norte (UFRN), Brazil. PhD in Social and Environmental Sciences from the Federal University of Pará (UFPA/NAEA). Master's degree in Culture and Tourism from the State University of Santa Cruz (UESC), and a Bachelor's degree in Tourism from UFPA (Brazil). Postdoctoral researcher at Dalhousie University (Canada) and at UFPA/NAEA, including a research fellowship at the Cardiff University Criminology Institute (Wales, UK). Leader of the Research Group on Tourism Planning and Organization (GEPOT/UFRN/CNPq). Lattes CV: <http://lattes.cnpq.br/0025142529544906>; ORCID ID: <https://orcid.org/0000-0002-1628-3493>; Email: [wilker.nobrega@ufrn.br](mailto:wilker.nobrega@ufrn.br)

\*\*\*Ph.D. in Demography from the Center for Regional Development and Planning (CEDEPLAR) at the Federal University of Minas Gerais (UFMG), having completed a research internship at the National Institute for Space Research (INPE) during his doctoral studies. Master's and Bachelor's degrees in Geography from the Pontifical Catholic University of Minas Gerais (PUC Minas). Adjunct Professor at the Federal University of Rio Grande do Norte (UFRN), tenured faculty member in the Graduate Program in Demography (PPGDEM/UFRN), coordinator of the Spatial Demography Laboratory, and recipient of a CNPq Research Productivity Fellowship. Lattes CV: <http://lattes.cnpq.br/9521949677900552>; ORCID ID: <https://orcid.org/0000-0002-6404-6783>; Email: [jarvis.campos@ufrn.br](mailto:jarvis.campos@ufrn.br)

\*\*\*\* Full Professor at the University of Málaga (Spain), Ph.D. in Geography (University of Málaga), and researcher in the fields of tourism policy, governance, destination management, and spatial planning. He holds a bachelor's degree in Geography and History. His scholarly work focuses on the impacts of tourism, touristification, sustainability, and residents' perceptions, and he has conducted studies in various tourist destinations in Europe, Latin America, and North Africa. Author of numerous articles and books and coordinates international projects focused on governance and the sustainable development of tourism. Currently is coordinator the Master's Program in Tourism Management and Planning at Málaga University. Orcid: <https://orcid.org/0000-0001-6560-8752>; Email: [falmeida@uma.es](mailto:falmeida@uma.es)

## 1 INTRODUCTION: THE THEORETICAL AND EMPIRICAL PROBLEMS OF URBAN VIOLENCE IN TOURIST SPACES

The urban changes engendered by the ideal of modernizing tourism encourage the selective use of space and have created a framework of segregation and social polarization, framed by a discourse of employment and income generation. As a result, there is a strictly economic interest in tourism, the targeting of security policies solely for tourist spaces, and the construction of closed condominiums for second homes and hotel investments with predominantly European capital (Floresia Silva, 2007; Nunes & Fonseca, 2017). Such actions reinforce the performance of the punitive criminal justice system, based on the use of statistical data, which denies the existing tensions (Botterill et al., 2013).

In the scientific field of tourism, research and applicability are diffuse. They do not present evidence that the perception of risk, violence and crime influence the choice, visitation and indication of a destination (Chauhan, 2015; George, 2010; Ozascilar, Mawby, & Ziyalar, 2019); it does not present clarity on the areas of tourist flow and incidence of criminal violence (Costa, Câmara, et al., 2018; Costa, Brandão, Hermes Junior, & Farias, 2018) or there is no difference between measures such as fear, anxiety or insecurity (Karagiannis & Madjd-Sadjadi, 2012; Seabra, Dolnicar, & Kastenholz, 2012; Tomé, 2018). A causal relationship is sought, but no factors explaining such relationships are presented; even so, tourists and the local community continue to feel insecure about frequenting certain spaces.

Despite this, research linking crime, tourism, and public insecurity has framed overtourism as a form of symbolic insecurity, thereby intensifying socio-spatial conflicts (Sünnetçioğlu et al., 2021). It has also examined diasporic migrations as a field of struggle and a sociopolitical instrument (Rios & Oliveira, 2022) based on a reading of the landscape that has changed over time (Santos et al., 2022). In other words, there is an emphasis on spatial interpretations to understand criminality.

In Brazil, the study of critical criminology is a relatively recent area, with a predominantly urban sociology focus (Beato et al., 2004; Trindade & Durante, 2019a). The study of tourism and crime in the Brazilian context is even more incipient but follows the same international and national perspective, focusing on restrictive factors in destination choice. Such questions reinforce the pseudo-statistical ideal that increases in crime reduce tourist flow and contribute little to the discussion of the local development process.

Understanding how insecurity operates in the territory, especially in areas with a tourism dynamic, is the key to mitigating it through targeted strategies derived from this analysis. Guided by questions, we seek to know: what do the statistical data say about what happens to crimes? How are areas with tourist flow changed/modified with criminal incidence?

To answer the questions, this research draws a methodological path through the choice of Natal/RN as a research locus through two main factors: a) the significant

increase in lethal violence, becoming the scene of the crisis of the prison system, which begins in 2016 and breaks out on the main public roads and changes the social dynamics; b) change in the urban landscape that acquire new features, resulting from investments for the tourist flow and population density, initiated in the mid-1980s.

Thus, this article aims to understand the context of contemporary crimes in relation to the socio-spatial dynamics of tourism in a destination in northeastern Brazil. The research sought to fill a gap identified in this theoretical and empirical problematization, already flagged by Brazilian and foreign researchers.

The analysis using the kernel interpolation method in QGIS suggests it could be useful for planning and managing public bodies responsible for health, education, public safety, leisure, and tourism facilities, for example.

The study offers a territorial analysis of a tourist destination across its different social strata, as well as an intersectoral analysis that goes beyond a classic approach in areas with high tourist numbers. It also contributes to understanding the tourism dynamics of Ponta Negra Beach in Natal, Rio Grande do Norte.

The originality of the research lies in presenting a discussion of Brazilian crime based on statistical data, contributing to the territorial management of the tourist destination. In addition, it calculates the distance in meters between the crimes committed and urban public facilities and tourist attractions.

## 2 LITERATURE REVIEW: TOURISM, CRIME AND URBAN SEGREGATION

The relationship between tourism and insecurity has become increasingly relevant in academic circles in recent decades, especially in urban contexts in Latin America, where crime and social inequality condition tourism development. Since the classic studies by Pizam and Mansfeld (2006) and George and Booyens (2014), it has been recognized that safety is a determining factor in destination choice and that both objective crime rates and perceived risk affect the sustainability of tourism activities. Hua, Li and Zhang (2020) systematize this field into three main areas: the impacts of crime on demand, the mediated perception of insecurity and institutional responses. These authors emphasize that tourism is not only a victim of crime but also a space where structural inequalities are reproduced.

At the international level, Giusti and Raya (2019) demonstrated that the way the media conveys information about violence alters tourists' willingness to travel, while Mataković (2019) identified a negative correlation between crime rates and tourist flows in destinations with high media exposure. Tarlow (2014), from a critical criminology perspective, argues that tourism security policies often reinforce urban segregation, while resort developments increase segregation and separation between the local population and tourists (Patel, 2024).

In Brazil, these dynamics are particularly intense. Coutinho, Nóbrega and Fazito (2020) and Coutinho and Nóbrega (2023) highlight that insecurity in destinations such as Recife, Natal and Rio de Janeiro is closely linked

to processes of socio-spatial segregation and economic inequality. Their studies show that tourist areas—beaches, historic centres, and hotel zones—are located close to favelas and vulnerable neighbourhoods, creating tensions between the image of a 'tropical paradise' and the reality of social exclusion. Lohmann et al. (2022) reinforce this interpretation by pointing out that urban violence and structural corruption hinder the implementation of sustainable tourism policies.

Recent literature agrees that tourism crime in Brazil cannot be understood without considering historical inequalities and urban segregation, factors that create conditions conducive to crime (Coutinho, 2022). Current trends advocate for integrated approaches that articulate public safety, spatial justice, and local development. In this way, reducing violence in tourist areas not only enhances the destination's competitiveness but also contributes to a more inclusive and socially sustainable tourism model.

The research presented highlights the importance of methodologically distinguishing among types of crime, as these have markedly uneven impacts on the perception of safety among tourists and travellers. Violent crimes have a

very negative impact on tourists<sup>1</sup> perceptions, while crimes that mainly affect the local population have a less significant impact.

The literature analysis demonstrates that the interactions between tourism, safety, and urban development extend beyond the simple reduction of crime rates. The studies reviewed show that safety is influenced by socioeconomic, demographic, and spatial factors that affect both tourism dynamics and residents' quality of life. In this context, key factors include population density, the inverse relationship between crime and tourist flows, and their association with processes of sociospatial segregation.

The literature also suggests that tourism can contribute to urban revitalization, economic dynamism, and an enhanced perception of safety. However, these benefits are not always distributed equitably and may coexist with territorial inequalities and social exclusion. Therefore, understanding the relationship between tourism and safety requires an integrated approach that considers the economic, urban, and social impacts involved. The main elements identified in the literature are summarized in Table 1.

**Table 1.** Bibliographic Portfolio and Approaches

| Author                                                       | Conceptual and empirical approach                                                                                                       |
|--------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Pizam e Mansfeld (2006) George e Booyens (2014)              | Safety (objective rates and risk perception) is a key factor in destination choice, affecting tourism sustainability                    |
| Matakovi (2019)                                              | Inverse correlation between crime rates and tourist flows                                                                               |
| Tarlow (2014); Patel (2024); Lohmann et. al (2022)           | Tourism safety and urban development policies reinforce urban segregation and hinder the implementation of sustainable tourism policies |
| Coutinho, Nóbrega e Fazito (2020); Coutinho e Nóbrega (2023) | Tourism-related insecurity is linked to processes of socio-spatial segregation and economic inequality                                  |
| Beato et al. (2004); Ribeiro & Cano (2016)                   | Probability of crime occurrence in densely populated areas                                                                              |

Source: Own elaboration based on the literature review.

### 3 METHODOLOGICAL: FORM AND CONTENT OF STATISTICAL CRIMINAL DATA

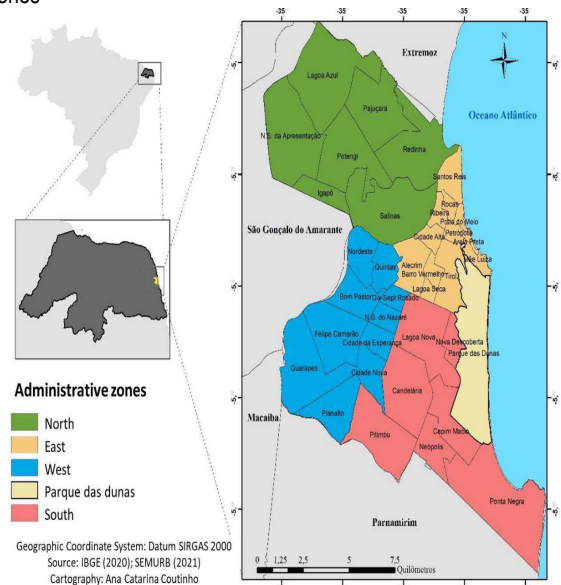
Located high on Brazil's Atlantic Coast, Natal is the capital of the state of Rio Grande do Norte, in the Northeast region of the country. It has an area of 167 km<sup>2</sup> and a population of 884,122 inhabitants, with a population density of 4,805.24 inhabitants/km<sup>2</sup>. The average monthly salary is 3.0 minimum wages, with only 36.6% of people formally employed.

This scenario contributes to a Municipal Human Development Index (HDI) of 0.763 and a Gini index of 0.53, reflecting relative poverty, social inequality, and limited social opportunity, with discrepancies across regions (Natal, 2022). Among the main economic activities, the service sector stands out, with tourism and commerce leading, followed by industry (especially the textile sector) and agriculture, which together add up to a GDP per capita of R\$ 23,454,682.58 (IBGE, 2017).

From the methodological point of view, for the analysis of the criminal context, the meta-banks of the Violence Observatory Network (OBVIO/RN) were adopted, specifically, the meta-bank of Intentional Lethal Violent Crimes (CVLI) and the meta-bank of Violent Crime Against Heritage (CVP) for having a direct relation with the local

crime scenario (see Table 1). The meta-banks of the OBVIO network use various official state and federal sources to generate uniqueness and validate the collected data, which can be accepted by society at large.

**Map 1.** Location of Natal/RN and division into administrative zones



Source: Survey data, 2024.

<sup>1</sup> The minimum wage is R\$1.518,00 (2025).

**Table 2.** Crime Typologies

| Type | Description                                                                                                         |
|------|---------------------------------------------------------------------------------------------------------------------|
| CVLI | Intentional homicide, Robbery followed by death, Femicide, Police intervention and Bodily injury resulting in death |
| CVP  | Theft, Robbery, Break-in, Extortion and receiving stolen goods                                                      |

Source: Own elaboration based on the Brazilian Penal Code (2025)

The analysis was performed for the year 2020 using the kernel interpolation method in QGIS (version 3.12). Here, the density curves are estimated, and each observation is weighted by the distance from a central value via interpolation, point intensity, and a plot map.

For the analysis of urban infrastructure, the database of the municipal public management of urban planning of Natal (Semurb) for the year 2021 was used, covering health, education, leisure, and public safety equipment. The possibility of analysis on private equipment in any of the axes investigated was excluded, configuring the following variables shown in Table 1 (712 public urban equipment were counted). Such questions may indicate divergent results from previously conducted research (Freitas, 2021) by the proposed goals and form of filtering.

**Table 3.** Variables of urban public facilities

| Equipment | Description                                                                           |
|-----------|---------------------------------------------------------------------------------------|
| Education | Kindergartens, municipal and state schools and federal university.                    |
| Security  | District police, specialized police, fire brigade and military police.                |
| Health    | Clinic, health center, hospital, Emergency Care Unit (UPA), Family Health Unit (USF). |
| Leisure   | Squares, parks and multi-sport equipment.                                             |

Source: Research data from Semurb (2021)

The analysis was performed using Kernel interpolation and spatial autocorrelation methods. A radius of 700 meters has been set<sup>2</sup> for lethal crimes (CVLI) and 800 meters for heritage crimes (CVP). The first was carried out using the set of urban equipment shown in Table 2 to contextualize the criminal dynamics. This estimation is known as a kernel estimator, which is based on the following conditions: a radius of influence greater than or equal to zero, which requires defining the neighbourhood of the point to be interpolated; and an estimation function with smoothing properties for the mapped event. Therefore, the researcher needs to define the radius of influence, which in turn should not be too small, to avoid the construction of discontinuous spots (Druck et al, 2004), and, for this work, the radius of influence of 700 meters was established:

$$\lambda_r(u) = \frac{1}{r_2} \sum_{i=1}^n k \left( \frac{d(u_i, u)}{r} \right), d(u_i, u) \leq r$$

Where the  $\lambda_r$  is the function of intensity;  $u_i$  are the locations of  $n$  events observed in the unit of analysis; and  $u$  represents the generic location whose value should be

estimated;  $r$  is the radius of influence that defines the neighbourhood of the point to be interpolated, and  $k$  is the function of interpolation (Druck et al, 2004).

The second method, spatial autocorrelation, assesses the presence of spatial dependence in relation to one or two variables, both for the set of administrative units under study and at the local level, in relation to neighbours (defined by a neighbourhood matrix). The best-known method is global Moran's  $I$  (Druck et al., 2004), which assesses the randomness of the spatial distribution of a given variable across a territory. In this sense, "spatial dependence" refers to a distribution of the variable in space that is not random; that is, when it exhibits patterns and concentrations of (low or high) rates or values in the studied territory.

The first step consists of constructing a neighbourhood (or spatial proximity) matrix  $W_{ij}$  ( $n \times n$ ), where the elements  $W$  represent a measure of proximity between  $A_i$  and  $A_j$ . Subsequently, the global Moran's  $I$  is calculated, which analyzes the deviations of each geographical unit from the average of the territory, for a given variable:

$$I = \frac{\sum_{i=1}^n \sum_{j=1}^n w_{ij} (z_i - \bar{z}) (z_j - \bar{z})}{\sum_{i=1}^n (z_i - \bar{z})^2}$$

$$I = z_i \sum_{j=1}^n w_{ij} z_j$$

According to Freitas (2021), "when the unit of analysis has several areas, it is possible that there are different spatial patterns observable in a given territory", which makes it necessary to use the Local Moran's  $I$ , which analyzes the concentration clusters of extreme values, based on the similarity between each spatial unit and its respective immediate neighbours (defined from a neighbourhood matrix). Thus, for each spatial unit, the local index is calculated using significance tests, assuming a normal distribution of the variables under study. For each unit area, random permutations are performed to obtain pseudo-distributions of the value of the other neighbouring areas.

The null hypothesis for Moran's  $I$  is spatial independence, with a value of zero. If a given territorial unit presents values in the same signal direction as the neighbours (as defined by the proximity matrix), the correlation will be positive. In contrast, if different signals (for example, the unit is positive, between 0 and 1, and the neighbours negative, between 0 and -1), the correlation will be negative. In the case of the local index, the significance tests are calculated, which generate the areas/groupings of correlations between each spatial unit and its neighbour, which can be high-high; low-high; high-low; and low-low, with the first term corresponding to each territorial unit under analysis, while the second term is the average of the neighbours. From these correlations, clusters of areas representing extremes of the statistical distribution of a

<sup>2</sup> In this type of approach the definition of the radius is random, and depends on the distribution/concentration of occurrences in the surveyed

space. Thus, considering the dynamics of crimes in the Natal destination, the authors considered this radius as suitable for data analysis.



given variable are generated, and the mean of the neighbours is also an extreme (outlier) of the distribution.

In this work, the census tracts from the 2010 demographic census were adopted as spatial units, as they represent the smallest territorial unit and are a disaggregated data level. In this case, bivariate autocorrelation was applied to the variables crimes and leisure equipment, arranged at the census tract level.

To analyze the dynamics of tourist flow, it was decided to calculate the shortest distance, in meters, between crime occurrences and tourist attractions in Natal/RN. For this, it was necessary to define six main categories, described in Table 3. In total, 179 components of the tourist offer were identified, divided between attractions and tourist circulation equipment in Natal. These data were organized in a table format, and the neighbourhood unit analysis was also considered, which helps explain the absence of certain categories of attractions within a neighbourhood.

**Table 4.** Categorization of tourist attractions in Natal/RN

|            | Component      | Description                                                                      |
|------------|----------------|----------------------------------------------------------------------------------|
| Attraction | Natural        | Elements of the environment such as beaches, dune park and slopes                |
|            | Cultural       | Sports equipment, museum, theater, historical visitation churches, public market |
|            | Crafts         | Handicraft sales centers                                                         |
| Equipment  | Gastronomy     | Restaurants and supermarkets                                                     |
|            | Accommodation  | Hotels, hostels and bed and breakfasts                                           |
|            | Infrastructure | Parks, squares, shopping malls, event center                                     |

Source: Survey data, 2024.

Thus, the research methodology comprises the following combination of information, data collection, and processing, as shown in Figure 1.

**Figure 1.** Methodological summary of the research

|          | Data Source/Year                                       | Data Analysis                                | Software           |
|----------|--------------------------------------------------------|----------------------------------------------|--------------------|
| Criminal | Violence Observatory Network (OBVIO) CVLI + CVP (2020) | Kernel Interpolation (Heatmap)               | Qgis (versão 3.18) |
| Urban    | Urban Mobility Secretariat (2021)                      | Kernel Interpolation Spatial Autocorrelation | Qgis (versão 3.18) |
| Tourist  | Tourist attraction (2023)                              | Density Around circulation cluster           | Qgis (versão 3.18) |

Source: Survey data, 2024.

#### 4 RESULTS: CONTEMPORARY CONTEXT OF VIOLENT CRIMES AND TOURISM IN NATAL/RN

The city of Natal is divided into four administrative zones, and its northern zone contains the largest territory and population of the city, with several patches of social interest and is therefore the most vulnerable socioeconomically. The west zone of Natal experiences

population growth that is disproportionately higher than the city as a whole, with a concentration in more peripheral neighbourhoods (SEMURB, 2019a).

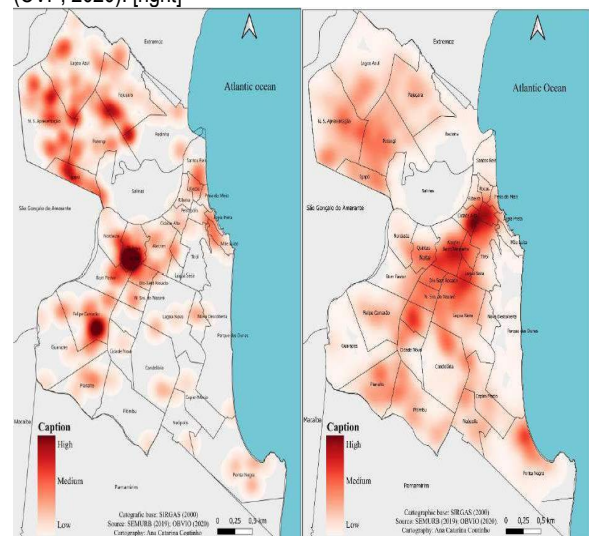
The east zone is characterized by social heterogeneity and has been experiencing population decline in recent years, especially in the commercial and peripheral neighbourhoods. In turn, there is a process of verticalization of high financial standards in the south zone, which concentrates the highest incomes in the city as a whole and presents intense real estate dynamics with a vertical pattern (Natal, 2010; SEMURB, 2019b). It is in this same area that there is a tourist flow to the city, with emphasis on the neighbourhood of Ponta Negra, which has the tourist postcard of Morro do Careca and its associated dunes.

Using the Kernel interpolation methodology, Map 2 shows that lethal crimes have a more localized incidence and, therefore, present hotter spots in certain areas, with an emphasis on the west and north of the city. The spots of low incidence (between 0 and 2) stand out in the southern zone of the city and part of the extreme south of the eastern zone. In this sense, it can be inferred that lethal crimes occur in dense areas with a more vulnerable socioeconomic profile.

In turn, property crimes (map 3) are confirmed to be more diffuse, affecting almost the entire city. It highlights warm areas, such as the east and south of the city, with spots appearing in coastal areas. The centers of neighbourhoods such as Cidade Alta, Petrópolis and Alecrim have a high incidence of property crimes (between 80 and 98 cases per year). It also highlights neighbourhoods such as Ponta Negra, Lagoa Nova and Nossa Senhora da Apresentação that have an average crime incidence (between 50 and 79 cases per year) and differ in characteristics, formation and structure, and are located in different areas.

**Map 2.** Kernel interpolation between crimes and neighbourhoods (CVLI, 2020). [left]

**Map 3.** Kernel interpolation between crimes and neighbourhoods (CVP, 2020). [right]



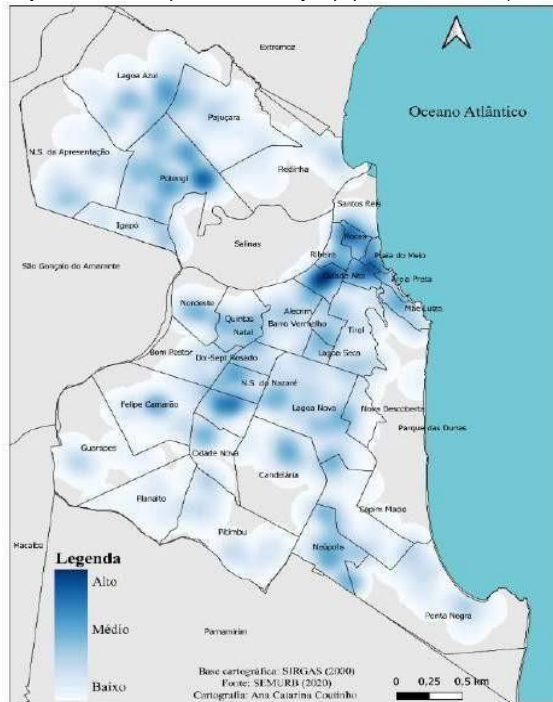
Source: Survey data as of OBVIO 2024.

It is understood that there is no standard linking

property crimes and the socioeconomic structure of a given area to explain their incidence. It is also not verified, from the data presented, that there is a direct relationship between population density and the prevalence of property crimes until then. The area with the highest population density in the city of Natal is to the west, followed by the north, and the one with the highest income is to the south. However, the east zone presents a social heterogeneity. In this sense, the discussion in the literature (Beato et al., 2004; Ribeiro & Cano, 2016) on the probability of lethal crimes occurring in dense areas does not apply to property crimes in the investigated case.

Concerning the distribution of urban services and equipment, map 4 shows that the areas with the highest concentration of urban public services and equipment in the city are located in the eastern part of the city, particularly in the central portions of the Cidade Alta, Rocas, and Petrópolis neighbourhoods. It follows, with an average density of services and equipment, some portion of the northern zone of the city, in neighbourhoods such as Potengi; in the west zone, in neighbourhoods such as Cidade da Esperança; and in the southern zone, in neighbourhoods such as Neópolis.

**Map 4.** Kernel interpolation of utility equipment, Natal/RN (2021)



Source: Survey data, 2024.

Performing a contextualized analysis of the criminal hotspots (presented in maps 2 and 3), while the CVLI has incidence in the west and north regions, the CVP is more diffuse, with emphasis on the east axis and the south coastal zone. It is observed, although in a non-deterministic way, that the areas with greater presence of public facilities are inversely proportional to the context of lethal criminal dynamics (CVLI), more than to patrimonial crime (CVP). This may indicate that public services do not engage in sufficient dialogue in the fight against violent practices in the city, across the most varied access points, such as

health, education, leisure, and security.

Motivated by a broader lens on the phenomenon of crime and urban equipment, it was chosen to highlight the category "public leisure equipment," distinct from other public equipment. Tourism finds in leisure not only a space for the transformation and reconfiguration of areas in the name of capitalist consumption, but also public spaces for the rescue of affection, social relations, and sociability that are indispensable to the daily life of cities.

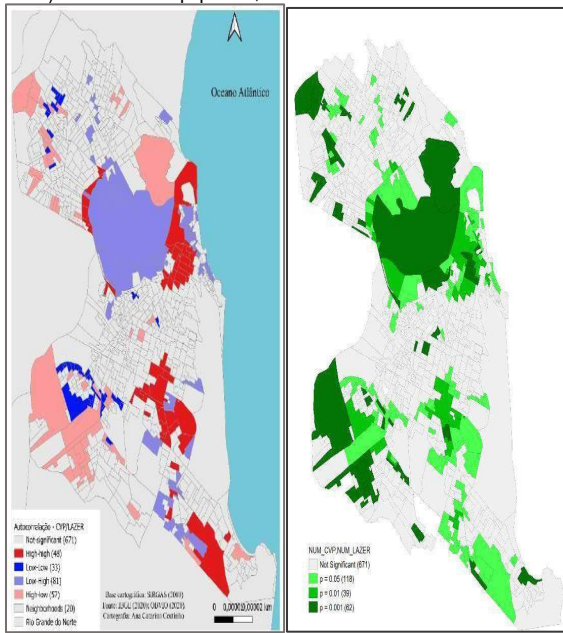
When discussing the relationship of leisure facilities and criminal dynamics used as a measure of analysis, the census tract is a fairly disaggregated administrative unit. These questions implied a positive overall Moran's I below 0.03 for the distribution of CVP and leisure equipment, and a negative index above -0.03 (specifically -0.042) for CVLI and leisure equipment. This means stating that, in the first place, there is a spatial dependence, but with a low value, expected for this type of analysis, since not all census tracts have the occurrence of crimes, which would happen with a neighbourhood analysis unit and would result in a more significant global index, so a more detailed approach to the relationship of the CVP with leisure equipment was considered. In the second, a spatial interdependence occurs.

As can be seen on map 5, the shades of red (high-high) represent census tracts with a high occurrence of crime, and the average of the neighbouring tracts shows a high concentration of leisure equipment, with strong evidence in the east and south of the city. On the other hand, the shades of pink (high-low) represent its opposite: census tracts with a high occurrence of property crime, while a low concentration of leisure equipment marks the average of neighbouring tracts. This occurs in several areas of the north and west of the city and highlights the dynamics of socio-spatial segregation in the maintenance and distribution of public leisure services.

Not all areas of the map are marked, since autocorrelation is significant only in census tracts that, together with their respective neighbours (defined by the neighbourhood matrix), present extreme values of the distribution. These data show that, although property crime is diffuse in the city of Natal, there is a very high segregation dynamic in the west and north of the city, when observing the spatial correlation between the incidence of leisure equipment and the concentration of its neighbourhood. In turn, despite the high concentration of leisure facilities relative to its neighbourhood, the east and south zones also have high levels of property crime.

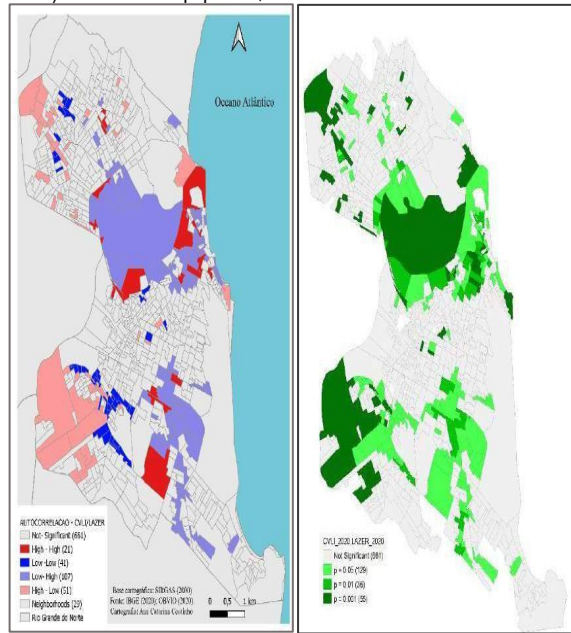
Map 6, in turn, despite presenting a negative global Moran's I, shows a high incidence of lethal crimes and the average of neighbours with a high concentration of leisure equipment, predominantly in the east and south of the city. It is also important to consider that in this region, that is, in the east and blue zones, there are still sectors with a low amount of crimes, with the average of neighbours with a high concentration of leisure equipment, which confirms the previously presented data and the existing social inequality in the city.

**Map 5.** Local bivariate autocorrelation – between crimes (CVP, 2020) and leisure equipment, Natal/RN.



Source: Survey data, 2023.

**Map 6.** Local bivariate autocorrelation between crimes (CVLI, 2020) and leisure equipment, Natal/RN.



Source: Survey data, 2023.

The spatial contextualization between urban public facilities and the criminal dynamics illustrated in the maps presented allows us to identify two main findings:

- The spatial distribution of urban equipment has little dialogue with criminal zones as a preventive measure against their combat, in both the set of urban equipment and leisure equipment. However, a level of social segregation contributes to the worsening of criminal practices.
- The dynamics of lethal crimes do not coincide with the areas of tourist flow, but it is not the reality for the dynamics of heritage crimes. It raises the understanding that, despite encouraging better urban public facilities in tourist spaces, neoliberal policy does not contribute to reducing criminal patrimonial practices.

It is understood that although crimes do not coincide with tourism dynamics, they can occur near areas that attract tourism, motivating the development of public tourism policies aimed at the safety of tourist destinations. Based on this understanding, a spatial analysis of the Euclidean distance (in meters) between crime occurrences and tourist attractions was conducted. In light of Table 1, it shows the number of crimes that occurred in the same place as tourist flow (assigned value 0) and recidivists in the south zone of the city. These crimes occur in natural attractions, accommodation facilities, and places where crafts are sold. This is also because the incidence of crimes, especially patrimonial ones, is higher in the southern zone of the city, as evidenced by previous analyses.

**Table 1.** Distance, in meters, between crimes and tourist components - Natal/RN, 2024.

| Neighborhood  | Crime | Tourist component (attraction and equipment) |          |            |               |                |        | Crimes occurrence |
|---------------|-------|----------------------------------------------|----------|------------|---------------|----------------|--------|-------------------|
|               |       | Natural                                      | Cultural | Gastronomy | Accommodation | Infrastructure | Crafts | Total             |
| South Zone    |       |                                              |          |            |               |                |        |                   |
| Ponta Negra   | CVLI  | 0                                            | -        | 1649.0     | 39.0          | 1168.0         | 590.0  | 7                 |
|               | CVP   | 0                                            | -        | 67.0       | 10.0          | 121.0          | 44.0   | 230               |
| Capim Macio   | CVLI  | 1148.6                                       | -        | 81.0       | -             | 133.0          | 2547.6 | 1                 |
|               | CVP   | 50.0                                         | -        | 90.0       | -             | 17.0           | 0      | 111               |
| Lagoa Nova    | CVLI  | -                                            | 247.3    | -          | 73.3          | -              | -      | 3                 |
|               | CVP   | -                                            | 228.9    | -          | 123.3         | -              | -      | 345               |
| Via Costeira  | CVLI  | 112.2                                        | -        | -          | 66.9          | 171.9          | -      | 1                 |
|               | CVP   | 0                                            | -        | -          | 0             | 59.3           | -      | 15                |
| East Zone     |       |                                              |          |            |               |                |        |                   |
|               |       | Natural                                      | Cultural | Gastronomy | Accommodation | Infrastructure | Crafts |                   |
| Mãe Luíza     | CVLI  | -                                            | -        | 506.6      | 337.0         | 353.4          | -      | 7                 |
|               | CVP   | -                                            | -        | 276.1      | 50.5          | 65.7           | -      | 20                |
| Areia Preta   | CVLI  | 557.6                                        | -        | -          | -             | -              | -      | 1                 |
|               | CVP   | 0                                            | -        | -          | -             | -              | -      | 9                 |
| Praia do Meio | CVLI  | 281.5                                        | 410.2    | 653.7      | 556.4         | -              | 759.1  | 1                 |
|               | CVP   | 37.3                                         | 101.0    | 151.8      | 114.6         | -              | 138.1  | 19                |
| Petropolis    | CVLI  | -                                            | 209.9    | 543.7      | -             | -              | -      | 2                 |

|             |      |        |        |       |   |        |   |     |
|-------------|------|--------|--------|-------|---|--------|---|-----|
| Tiro        | CVP  | -      | 26.7   | 29.0  | - | -      | - | 135 |
|             | CVLI | 2461.6 | 1534.1 | -     | - | 2507.6 | - | 1   |
|             | CVP  | 371.9  | 178.4  | -     | - | 83     | - | 139 |
| Ribeirão    | CVLI | -      | 123.4  | 82.7  | - | 368.4  | - | 1   |
|             | CVP  | -      | 100.2  | 97.3  | - | 225    | - | 18  |
|             | CVLI | -      | 230.4  | -     | - | -      | - | 4   |
| Cidade Alta | CVP  | -      | 25     | -     | - | -      | - | 131 |
| North Zone  |      |        |        |       |   |        |   |     |
| Redinha     | CVLI | 863.7  | 927.9  | 787.5 | - | -      | - | 10  |
|             | CVP  | 90     | 0      | 142.7 | - | -      | - | 39  |

Source: Survey data, 2024.

Regarding the typology of crimes, it was observed that heritage crimes occur closer to the city's tourist attractions than lethal crimes. Still, this is a truth closer to the crimes that occur in the south of the city than in the east. It is verified that the distance is maintained for longer (between lethal and patrimonial crimes in relation to the tourist attraction) as one moves toward other areas, such as the east. For example, the median distance from a lethal crime to a tourist attraction in the south zone is 171.9 meters, and from a heritage crime is 85.5 meters. In turn, in the east zone, the median distance to a lethal crime is 458.4 meters, and to a property crime is 98.75 meters. In the north zone, the median lethal crime is higher, at 863.7 meters, and heritage crime is 90 meters from the tourist attraction. This means that the probability of tourists suffering a heritage crime in the south of the city, when visiting a tourist attraction, is higher than when visiting in the east or north of the city.

However, no trend was observed in the distance from which the different types of crimes occurred in relation to the type of tourist attraction. In other words, based on the analyzed data, tourists in Natal have no way to avoid certain tourist attractions to reduce the likelihood of a particular type of crime. The distance, in meters, between the crimes committed reinforces Brazilian inequality and the need for public policies that are not restricted to the tourist space. Criminal spatial analysis for tourism studies becomes an innovative approach in studies like this.

## 5 DISCUSSION AND BRIEF CONSIDERATIONS: THE ANSWER TO THE PROBLEM

Since the beginning of the 21st Century, violence and crime have been accentuated in Brazil, migrating to territories that were previously known for their tranquillity. In the scientific field, it is noted that the relationship between the criminal context and the socio-spatial dynamics of tourism is a recent theme with few elucidating contributions. Thus, the results presented in this research went beyond the structural positivist logic, which allows brief considerations.

It was identified that lethal crime is related to the dense and vulnerable areas of the city. Property crimes, in turn, have their own dynamics, and social heterogeneity is examined as an indicator of environmental conditions. In the field of urban development, the process indicates that the distribution of urban equipment, either in its entirety or through targeted allocation to leisure equipment, is not a measure to combat crime in the city of Natal/RN. Such issues

endorse and explain existing social segregation and punitive policy mechanisms.

Perhaps one of the most interesting results is that criminal incidence was ruled out as a determinant of the decrease in tourist flow. It was found that there is a probability of property crimes occurring within less than 1 meter of a tourist attraction, but this does not mean that the victim is a tourist; rather, it is a result of environmental conditions.

In general, the research identifies that statistical and criminal data can help to understand reality - and more than that, serve as subsidies for the elaboration of public policies - from a theoretical and methodological basis that allows expanding the analyses beyond their mere technical description. It can thus be understood that there is not the best data or the best analysis, but rather the set of perceptions through its theories and methodologies.

Based on the analysis of the research findings, in conjunction with the relevant literature, Chat 5 was developed. It presents a comparative synthesis of the main theoretical frameworks that address the relationships between crime, tourism, and urban development, as well as the empirical findings obtained in this study.

The table makes it possible to identify convergences and divergences between established theoretical approaches and the observed results, highlighting how different perspectives interpret the dynamics among criminality, tourist flows, and urban transformations. In addition, this systematization contributes to the identification of recurring analytical patterns in the literature, while also emphasizing contextual specificities revealed by the empirical research.

Thus, Table 5 not only organizes and integrates the main theoretical references and results, but also supports a critical discussion of the multiple dimensions that structure the relationship between tourism, safety, and urban development, reinforcing the complexity and multifactorial nature of this phenomenon.

In summary, the results indicate that the relationship between tourism, crime, and urban development is characterized by high complexity and spatial heterogeneity. Although factors such as socio-spatial segregation, economic vulnerability, and population concentration remain relevant to understanding urban violence, the findings suggest that crime in tourist areas cannot be explained solely by the presence of visitors. Consequently, public policies aimed at security and tourism development must incorporate integrated approaches that simultaneously consider the social, economic, and territorial dimensions of the generation of violence.



**Table 5.** Conceptual research framework

| Author                                                         | Conceptual and empirical approach                                                                                                       | Results                                                                                                                                                                                        |
|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pizam e Mansfeld (2006)<br>George e Booyens (2014)             | Safety (objective rates and risk perception) is a key factor in destination choice, affecting tourism Sustainability                    | Destination choice decisions were not measured, but crimes do occur in tourist areas;                                                                                                          |
| Matakovi (2019)                                                | Inverse correlation between crime rates and tourist flows                                                                               | Property crimes have a higher incidence in tourist areas. However, tourist flow is not a determinant for the occurrence of crime, which does not justify [specific] tourism security measures. |
| Tarlow (2014)<br>Patel (2024)<br>Lohmann et. al (2022)         | Tourism safety and urban development policies reinforce urban segregation and hinder the implementation of sustainable tourism policies | Social segregation is strongly linked to the worsening of criminal activity. Therefore, public policy interventions can reduce urban violence.                                                 |
| Coutinho, Nóbrega e Fazito (2020)<br>Coutinho e Nóbrega (2023) | Tourism-related insecurity is linked to processes of socio-spatial segregation and economic inequality                                  | Lethal crimes occur in densely populated areas with more vulnerable socioeconomic profiles. However, property crimes are more widely dispersed.                                                |
| Beato et al. (2004)<br>Ribeiro & Cano (2016)                   | Probability of crime occurrence in densely populated areas                                                                              | The probability of lethal crimes occurring in densely populated areas does not apply to property crimes in the case investigated.                                                              |

Source: Own elaboration, 2025.

The originality of the research lies in presenting a discussion of Brazilian crime based on statistical data, contributing to the territorial management of the tourist destination. In addition, it calculates the distance in meters between the crimes committed and urban public facilities and tourist attractions.

Research has limitations and difficulties inherent to its scientific production. The processes presented here comprise two main processes. First, when constructing statistical data that are scarce and difficult to access, many inferences are necessary. These questions were posed during methodological construction to guide further research on improving this relationship. Second, the connection between the theories of different areas – crime, tourism, and urbanism- and the availability of data that would allow discussion based on the analyzed data. In some moments, it is understood that the results and analyses were more organic than a theoretical approach, that is, without the due theoretical support that allowed their relationship.

## REFERENCES

- Bauman, Z. (2009). *Confiança e medo na cidade*. São Paulo, Brasil: Zahar.
- Beato, C., Peixoto, B., & Andrade, M. (2004). Crime, oportunidade e vitimização. *Revista Brasileira de Ciências Sociais*, 19(55), 73–89.
- Beato Filho, C., & Marinho, F. (2007). Padrões regionais de homicídio no Brasil. In C. Beato Filho (Org.), *Homicídios no Brasil* (pp. 1–252). Rio de Janeiro, Brasil: FGV.
- Botterill, D., Pointing, S., Hayes-Jonkers, C., Clough, A., Jones, T., & Rodriguez, C. (2013). Violence, backpackers, security and critical realism. *Annals of Tourism Research*, 42, 311–333. <https://doi.org/10.1016/j.annals.2013.01.007>
- Caldeira, T. P. R. (2003). *Cidade de muros: Crime, segregação e cidadania* (34ª ed.). São Paulo, Brasil: EDUSP.
- Chauhan, V. (2015). Safety and security perceptions of tourists visiting Kashmir, India. *Advances in Hospitality and Leisure*, 3(1), 3–17.
- Costa, J. H., Brandão, T. S., Hermes Junior, I. E. S., & Farias, T. R. P. (2018). “Polícia do turista”: Contradições e revelações.

- International Journal of Safety and Security in Tourism/Hospitality*, 18, 1–12.
- Costa, J. H., Câmara, H. M. S., Brandão, T. S., & Hermes Junior, I. E. S. (2018). *Spatial distribution (2015–2017) of homicides in the city of Natal/RN (Brazil) and its (non-)relations with touristic areas*. *International Journal of Safety and Security in Tourism/Hospitality*, 19, 1–16.
- Coutinho, A. C., Nóbrega, W., & Fazito, M. (2021). Turismo e medo do crime: Reflexões sobre a política de desenvolvimento urbano no centro histórico de Natal/RN. *Novos Cadernos NAEA*, 23(3), 81–104. <https://doi.org/10.5801/ncn.v23i3.9523>
- Dammert, L. (2007). *Perspectivas y dilemas de la seguridad ciudadana en América Latina*. Quito, Ecuador: FLACSO Ecuador.
- De Biasi, A. (2017). Transforming vacant lots: Investigating an alternative approach to reducing fear of crime. *Journal of Environmental Psychology*, 50, 125–137. <https://doi.org/10.1016/j.jenvp.2017.02.007>
- Druck, S., Carvalho, M. S., Câmara, G., & Monteiro, A. V. M. (Eds.). (2004). *Análise espacial de dados geográficos*. Brasília, Brasil: EMBRAPA.
- Feitoza, B., & Costa, J. H. (2019). Violência urbana, insegurança e turismo na “Cidade do Sol” (Natal, RN, Brasil). *Turismo y Sociedad*, 25, 93–112. <https://doi.org/10.18601/01207555.n25.05>
- Floresia Silva, M. F. P. S. (2007). Gated communities: The new ideal way of life in Natal, Brazil. *Housing Policy Debate*, 18(3), 557–576. <https://doi.org/10.1080/10511482.2007.9521611>
- Freitas, P. H. O. (2021). *Violência no município de Natal/RN em 2019 e 2020: Uma abordagem espacial e demográfica sobre as mortes violentas com foco nos efeitos decorrentes da pandemia da COVID-19* (Dissertação de mestrado). Universidade Federal do Rio Grande do Norte, Natal, Brasil.
- George, R. (2010). Visitor perceptions of crime-safety and attitudes towards risk: The case of Table Mountain National Park, Cape Town. *Tourism Management*, 31(6), 806–815. <https://doi.org/10.1016/j.tourman.2009.08.011>
- Harvey, D. (2014). *Cidades rebeldes: Do direito à cidade à revolução urbana*. São Paulo, Brasil: Martins Fontes.
- Karagiannis, N., & Madjd-Sadjadi, Z. (2012). Crime, criminal activity and tourism performance: Issues from the Caribbean. *Worldwide Hospitality and Tourism Themes*, 4(1), 73–90. <https://doi.org/10.1108/17554211211198606>

- Maricato, E. (2003). Metrópole, legislação e desigualdade. *Estudos Avançados*, 17(48), 151–166. <https://doi.org/10.1590/S0103-40142003000200013>
- Natal. Prefeitura Municipal de Natal. (2010). *Conheça melhor seu bairro: Ponta Negra*. Natal, Brasil: Autor.
- Nunes, M., & Fonseca, M. (2017). Risk and tourism crisis in a coastal destination. *ATLAS Tourism and Leisure Review*, 3, 19–31.
- Ozascilar, M., Mawby, R. I., & Ziyalar, N. (2019). Perceptions of risk on vacation among visitors to Istanbul. *Safer Communities*, 18(1), 16–29. <https://doi.org/10.1108/SC-06-2018-0017>
- Ribeiro, E., & Cano, I. (2016). Vitimização letal e desigualdade no Brasil: Evidências em nível municipal. *Civitas: Revista de Ciências Sociais*, 16(2), 285–305. <https://doi.org/10.15448/1984-7289.2016.2.23066>
- Rios, D. A., & Oliveira, M. A. S. A. (2022). O turismo nos processos de intervenções urbanas: O caso da Pequena África (RJ). *Anais Brasileiros de Estudos Turísticos (ABET)*, 12(1), 1–15. <https://doi.org/10.5281/zenodo.6872521>
- Rigolon, A., Stewart, W. P., & Gobster, P. H. (2020). What predicts the demand and sale of vacant public properties? Urban greening and gentrification in Chicago. *Cities*, 107, 102948. <https://doi.org/10.1016/j.cities.2020.102948>
- Santos, S. R., Ferreira, D. E. S., & Marques, M. A. (2022). Transformações da paisagem patrimonial induzidas por políticas públicas urbanas e turísticas em espaços públicos na cidade de São Luís (Maranhão). *Revista Anais Brasileiros de Estudos Turísticos*, 12.
- Seabra, C., Dolnicar, S., & Kastenholz, E. (2013). Heterogeneity in risk and safety perceptions of international tourists. *Tourism Management*, 36, 502–510. <https://doi.org/10.1016/j.tourman.2012.09.008>
- SEMURB. (2019a). *Revisão do Plano Diretor: Leitura da cidade – Zona Oeste*. Natal, Brasil: Secretaria Municipal de Meio Ambiente e Urbanismo.
- SEMURB. (2019b). *Revisão do Plano Diretor: Leitura da cidade – Zona Sul*. Natal, Brasil: Secretaria Municipal de Meio Ambiente e Urbanismo.
- Sünnetçioğlu, S., Mercan, Ş. O., Özkök, F., & Sünnetçioğlu, A. (2021). Overtourism perception in the islands: The case of Bozcaada and Gökçeada. *Anais Brasileiros de Estudos Turísticos (ABET)*, 11, 1–13. <https://doi.org/10.34019/2238-2925.2021.v11.32304>
- Silva, B. F. A., & Beato Filho, C. C. (2014). Ecologia social do medo: Avaliando a associação entre contexto de bairro e medo de crime. *Revista Brasileira de Estudos de População*, 30(Suppl.), 155–170. <https://doi.org/10.1590/S0102-30982013000400010>
- Tomé, M. (2018). Factores restrictivos del turismo: La percepción de la demanda real y potencial sobre la seguridad pública en Rio de Janeiro (Brasil). *Estudios y Perspectivas en Turismo*, 27, 968–984.
- Trindade, A., & Durante, M. O. (2019). Medo do crime e vitimização no Distrito Federal: Analisando as vulnerabilidades de gênero, idade, raça e renda. *Dilemas: Revista de Estudos de Conflito e Controle Social*, 12(2), 239–265.
- Zaluar, A. (1999). Um debate disperso: Violência e crime no Brasil da redemocratização. *São Paulo em Perspectiva*, 13(3), 3–17. <https://doi.org/10.1590/S0102-88391999000300002>

#### CRediT author statement

| Term                       | Definition                                                                                                                                                                                                    | Author 1 | A2 | A3 | A4 |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|----|----|
| Conceptualization          | Ideas; formulation or evolution of overarching research goals and aims                                                                                                                                        | x        | x  | x  |    |
| Methodology                | Development or design of methodology; creation of models                                                                                                                                                      | x        | x  | x  | x  |
| Software                   | Programming, software development; designing computer programs; implementation of the computer code and supporting algorithms; testing of existing code components                                            | x        | x  | x  |    |
| Validation                 | Verification, whether as a part of the activity or separate, of the overall replication/ reproducibility of results/experiments and other research outputs                                                    | x        | x  | x  | x  |
| Formal analysis            | Application of statistical, mathematical, computational, or other formal techniques to analyze or synthesize study data                                                                                       | x        | x  | x  | x  |
| Investigation              | Conducting a research and investigation process, specifically performing the experiments, or data/evidence collection                                                                                         | x        |    |    |    |
| Resources                  | Provision of study materials, reagents, materials, patients, laboratory samples, animals, instrumentation, computing resources, or other analysis tools                                                       | x        | x  |    |    |
| Data Curation              | Management activities to annotate (produce metadata), scrub data and maintain research data (including software code, where it is necessary for interpreting the data itself) for initial use and later reuse | x        | x  | x  | x  |
| Writing - Original Draft   | Preparation, creation and/or presentation of the published work, specifically writing the initial draft (including substantive translation)                                                                   | x        | x  | x  | x  |
| Writing - Review & Editing | Preparation, creation and/or presentation of the published work by those from the original research group, specifically critical review, commentary or revision – including pre-or post-publication stages    | x        | x  | x  | x  |
| Visualization              | Preparation, creation and/or presentation of the published work, specifically visualization/ data presentation                                                                                                | x        | x  | x  | x  |
| Supervision                | Oversight and leadership responsibility for the research activity planning and execution, including mentorship external to the core team                                                                      | x        | x  |    | x  |
| Project administration     | Management and coordination responsibility for the research activity planning and execution                                                                                                                   | x        | x  |    |    |
| Funding acquisition        | Acquisition of the financial support for the project leading to this publication                                                                                                                              | x        |    |    |    |

Source: reproduced from Elsevier (2022, s/p), based upon Brand et al. (2015).

Processo Editorial / Editorial Process / Proceso Editorial

Editor Chefe / Editor-in-chief / Editor Jefe: PhD Thiago D. Pimentel (UFJF).

Recebido / Received / Recibido: 30.07.2024; Revisado / Revised / Revisado: 31.07.2024 – 21.12.2024 – 17.06.2025 – 20.11.2025; Aprovado / Approved /

Aprobado: 12.12.2025; Publicado / Published / Publicado: 10.07.2026\*.

[\* Editorial note: article originally scheduled for publication in 2025, but published in 2026 due to disruptions in the editorial workflow associated with external factors, including the interruption of services provided by a third-party editorial support provider.]

Documento revisado às cegas por pares / Double-blind peer review paper / Documento revisado por pares ciegos.