THE EVOLUTION OF ROBBERY IN GREECE DURING 2013–2023: A SPATIAL ANALYSIS

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Abstract

This article examines the spatial and temporal evolution of robbery in Greece during the period 2013–2023. Drawing on official police records and population data, the study applies GIS-based spatial and statistical analysis to identify regional patterns and changes over time. The findings show an overall decline in robbery incidents during the decade under examination. However, robbery remains unevenly distributed across the country, with the highest concentration observed in the major urban areas of Attica and Thessaloniki. The article highlights the value of spatial analysis for understanding crime patterns and for supporting more targeted and evidence-based crime prevention policies.

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Introduction

Spatial crime analysis serves as a key methodological pillar in both criminological research and crime prevention strategy. The earliest systematic attempts to geographically map crime and examine criminogenic conditions date back to the early 19th century, notably through the contributions of the French-Belgian Cartographic School (Friendly, 2007: 368; Eknoyan, 2008: 47). Pioneers such as Guerry and Quetelet employed thematic cartography to depict regional disparities in crime rates and correlated them with social indicators like education levels and poverty (Zarafonitou, 2004: 54; Karzis, 2015: 52).

Subsequently, the Chicago School of Sociology introduced the ecological approach, emphasizing the persistence of criminal activity within specific urban zones, even amidst demographic turnover (Zarafonitou, 2023: 175). These foundational schools of thought laid the groundwork for what would become modern Environmental Criminology.

Crime is not distributed randomly across space but displays persistent geographic concentrations and temporal variations; mapping therefore aids in identifying where specific forms of offending cluster and how these patterns relate to wider social and environmental conditions (Zarafonitou, 2004: 81–82). By combining spatial representation with sociological variables, it becomes possible to interpret crime patterns within a specific place and time, moving beyond aggregate counts towards understanding local particularities and underlying correlations (Zarafonitou, 2023: 39).

This is particularly evident within urban environments, where criminal incidents tend to concentrate disproportionately in a limited number of areas, forming relatively stable “hot spots”, especially in large metropolitan centers. Such spatial analysis makes these concentrations visible at the neighbourhood level (e.g., city center and specific clusters of districts), allowing the identification of localized patterns that are obscured in aggregate statistics (Zarafonitou, 2004: 81–83). Such spatial concentrations are not independent of the social context; they are associated with conditions such as physical and social disorder, as well as other adverse neighbourhood characteristics that shape everyday risk and vulnerability within urban space (Zarafonitou, 2023: 231).

In recent decades, Geographic Information Systems (GIS) have revolutionized the field by enabling the integration and spatial analysis of complex, multidimensional datasets (Hunt, 2019: 281; Zhang & Drake, 2014: 2392). GIS technologies support the structured collection, management, and visualization of georeferenced crime data, offering essential analytical capabilities for identifying spatial crime patterns and enhancing operational planning in law enforcement (Pearce, Kavanagh & Thornton, 2011: 5–7; Chainey & Ratcliffe, 2005: 2).

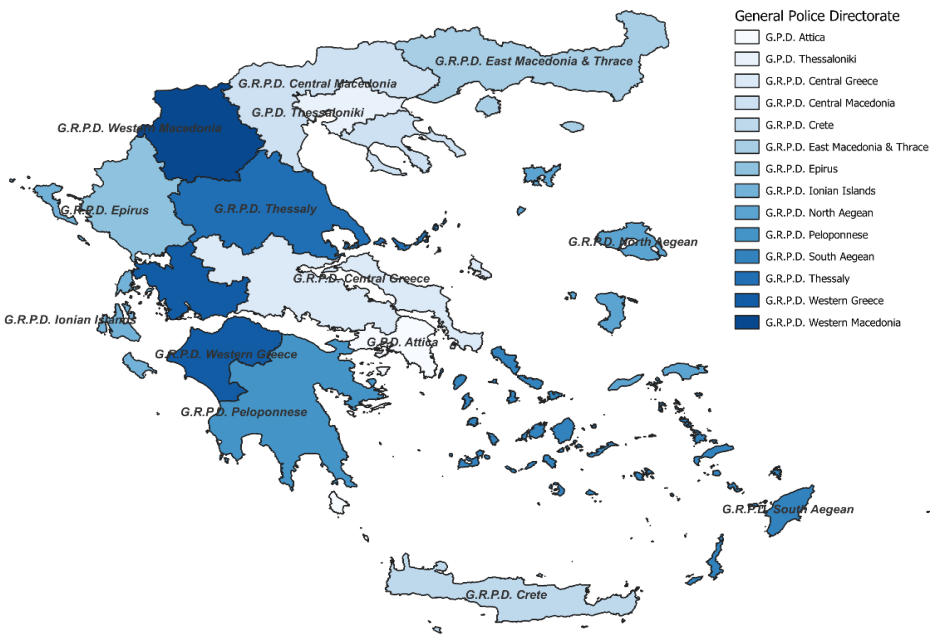
This study[2]examines the spatial distribution of robbery incidents in Greece from 2013 to 2023. Drawing on official records from the Hellenic Police and the Hellenic Statistical Authority, and utilizing GIS-based spatial analysis, the research aims to identify high-risk zones, explore geographic patterns of offending, and examine associations with socioeconomic indicators such as unemployment, demographic trends, and urban inequality. The overarching objective is to inform evidence-based crime prevention strategies and support the targeted allocation of police resources within complex urban landscapes.

Methodology

The collection and organization of robbery data in Greece follow the official administrative hierarchy of the Hellenic Police. This structure consists of multiple territorial levels, designed to ensure systematic data recording and centralized reporting.

At the top level, Greece is divided into 15 General Regional Police Directorates (GRPDs) or General Police Directorates (GPDs), each responsible for overseeing law enforcement activities within its broader geographic region (Map 1). Under the GRPDs operate 69 Police Directorates (PDs), which function as the primary administrative units for crime data aggregation. Each Police Directorate supervises several local police stations, which are responsible for the initial registration and investigation of criminal incidents within specific municipalities. The municipal boundaries generally correspond to the territorial responsibilities of these police stations.

[2] This study forms part of the author's Master's thesis conducted within the MA in Criminology at the Department of Sociology, Panteion University of Social and Political Sciences, under the supervision of Professor Chr. Zarafonitou.



Map 1. Spatial distribution of General Regional Police Directorates (G.R.P.D.) across Greece. The map illustrates the administrative jurisdiction of each G.R.P.D., grouped by geographic regions. Source: Author's own elaboration[3] based on municipality geodata and the Hellenic Police classification of municipalities by directorate.

Overall, the 69 Police Directorates collectively cover 327 municipalities across Greece, providing a consistent framework for collecting, aggregating, and reporting criminal statistics.

The dataset includes both attempted and completed robbery incidents for the period 2013–2023, provided by the Hellenic Police. Robberies are classified into two main categories, namely "Robbery" and "Robbery with Abduction", and both categories — as well as both forms of completion — were retained in the analysis to ensure comprehensive coverage of the phenomenon. For spatial processing and visualization, municipality boundary data were obtained from GADM[4] and used as the base layer for aggregating municipalities into the corresponding G.P.D./G.R.P.D. areas of responsibility, following the Hellenic Police jurisdictional classification. To ensure analytical consistency across regions of varying population sizes, official census data were used to normalize robbery counts. A comparison between the 2011 and 2021 national censuses revealed no significant demographic changes

[3] Tableau Software. (2023). *Tableau Desktop* (Version 2023.3)
[4] version 4.1; Greece GeoPackage: *gadm41_GRC.gpkg*

that would substantially impact the interpretation of crime rates at the regional level. Therefore, the 2021 census population figures were adopted as the reference baseline for the entire study period (2013–2023) (Figure 1).

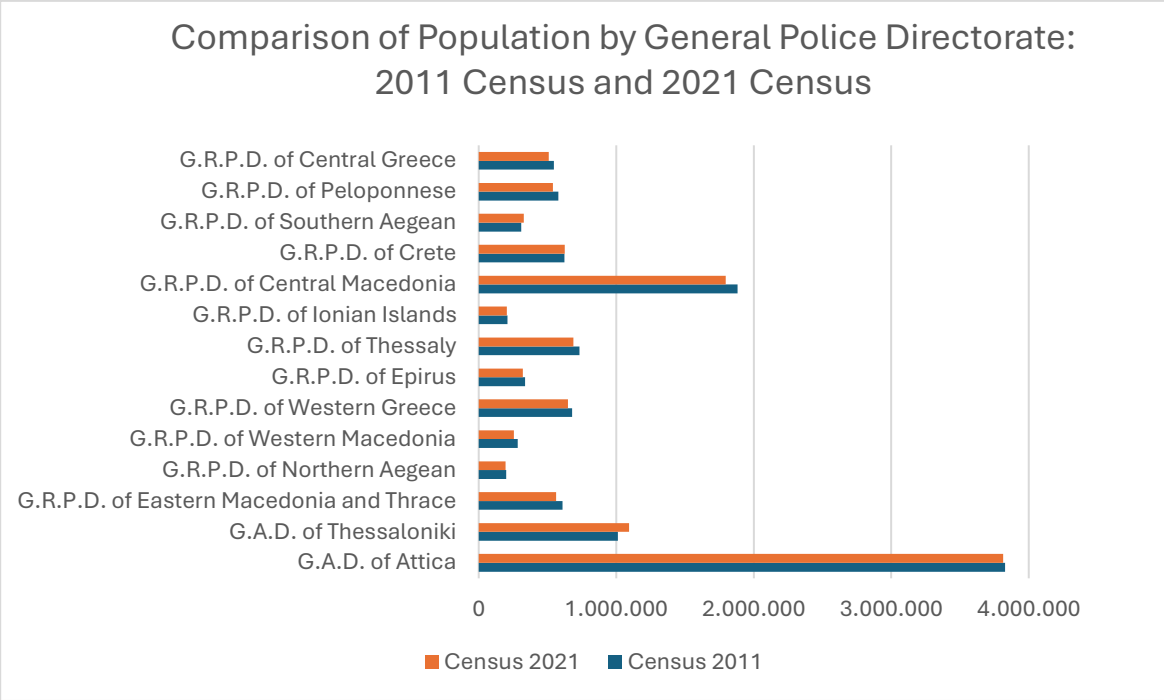


Figure 1. Comparison of population by General Police Directorate & General Regional Police Directorate based on the 2011 and 2021 national censuses. Source: Author's own elaboration[5] based on municipality geodata and the Hellenic Police classification of municipalities by directorate.

Spatial and Statistical Analysis of Robbery Data

The analysis covers 45,633 robbery cases recorded from 2013 to 2023 across all administrative regions of the Hellenic Police (Table 1). The distribution of incidents among the General Police Directorates (G.P.D. and G.R.P.D.) is highly uneven, reflecting population density and urban activity concentrations.

When robbery counts are standardized by population (Figure 2), the spatial concentration becomes even clearer. Attica records the highest average robbery rate per 100,000 inhabitants (**91.00**), followed by Thessaloniki (**51.25**), indicating a markedly elevated per-capita burden

[5] Tableau Software. (2023). *Tableau Desktop* (Version 2023.3)

General Police Directorate	Total Cases
G.P.D. Attica	34,710
G.P.D. Thessaloniki	5,601
G.R.P.D. Western Greece	911
G.R.P.D. Central Greece	792
G.R.P.D. Peloponnese	666
G.R.P.D. Central Macedonia	583
G.R.P.D. East Macedonia & Thrace	453
G.R.P.D. South Aegean	432
G.R.P.D. Thessaly	397
G.R.P.D. Epirus	276
G.R.P.D. Crete	231
G.R.P.D. North Aegean	203
G.R.P.D. Ionian Islands	191
G.R.P.D. Western Macedonia	181
Other Services	6
Total:	**45,633 cases**

Table 1. Distribution of recorded robbery cases across General Police Directorates (G.P.D. and G.R.P.D.) in Greece during the period 2013–2023. The data include both completed and attempted robberies.

in the two largest metropolitan areas. A second tier of directorates displays moderate rates-Western Greece (**16.17**), Central Greece (**15.96**), Peloponnese (**13.79**) and the South Aegean (**12.63**). By contrast, the remaining regions form a low-rate group, with values generally below 10 robberies per 100,000 inhabitants over the decade (2013–2023), underscoring the pronounced metropolitan–peripheral gradient in robbery risk.

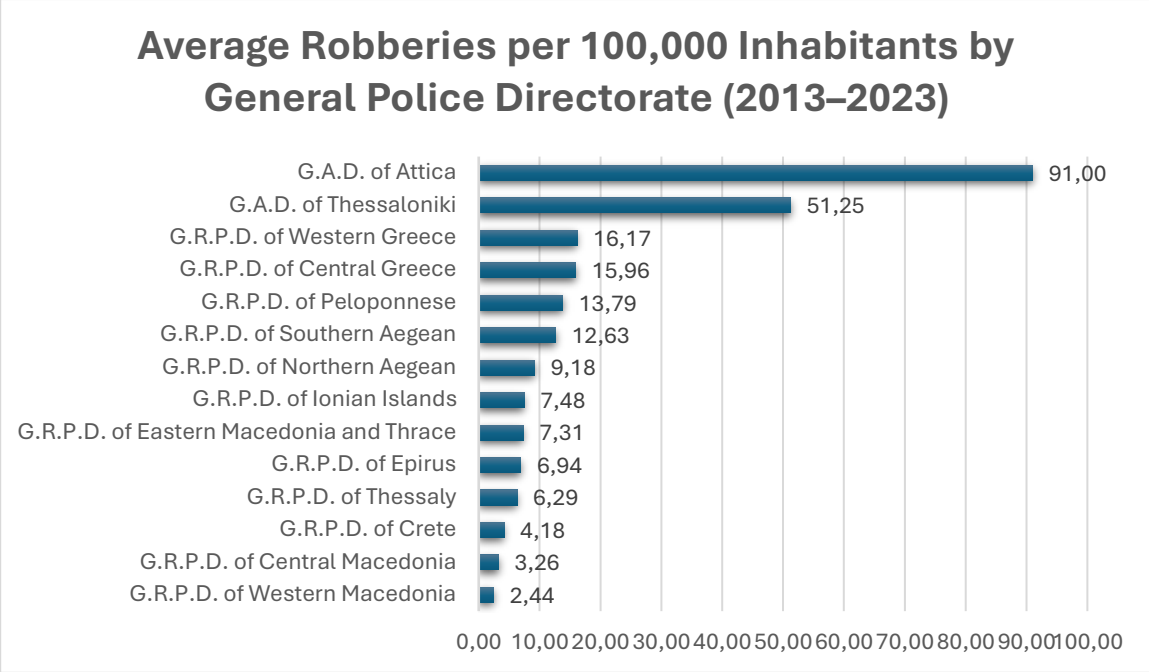


Figure 2. Robbery rate per 100,000 inhabitants across General (Regional) Police Directorates in Greece. The values represent the population-adjusted average number of robberies over the decade 2013–2023, based on data provided by the Hellenic Police and the 2021 Census population figures. Source: Author's own elaboration[6] based on municipality geodata and the Hellenic Police classification of municipalities by directorate.

Temporal and Spatial Trends in Robbery (2013–2023)

The analysis of robbery data for the period 2013–2023 across the General Regional Police Directorates of Greece reveals clear temporal and spatial variations. Major urban areas consistently report higher numbers of robberies, while peripheral regions remain at lower levels.

Attica: Attica consistently records the highest robbery rate per 100,000 inhabitants throughout the decade, highlighting its persistent spatial concentration of such incidents. In 2013, a peak of 4,091 incidents was reported. Although there was a decline in 2014 (3,300 incidents), the number of robberies increased again to 3,919 in 2016. From 2017 onward, a gradual decrease is observed, reaching the lowest point in 2021 (1,955). A moderate rise followed, with 2,373 robberies recorded in 2023.

Thessaloniki: The country's second-largest urban center followed a similar pattern at lower levels. The peak occurred in 2016 with 643 incidents, while the lowest point was recorded in

[6] Tableau Software. (2023). *Tableau Desktop* (Version 2023.3)

2014 with 456 incidents. In recent years, robbery levels have stabilized, with 415 incidents in 2023.

Crete and the South Aegean: These regions showed relatively low and stable levels of robbery. In Crete, incidents dropped to 15 in 2018 and slightly increased to 19 by 2023. The South Aegean displayed steady levels, from 43 incidents in 2013 to 25 in 2023.

Peloponnese: A significant decline was observed, from 172 robberies in 2013 to only 20 in 2023, indicating a major shift in local criminal dynamics.

Low-crime regions: Other peripheral regions such as Eastern Macedonia and Thrace, Western Macedonia, and the Ionian Islands recorded much lower robbery rates. For example, Eastern Macedonia and Thrace saw a decrease from 56 incidents in 2013 to 30 in 2023. Western Macedonia had extremely low levels, with zero robberies reported in 2017 and five in 2023.

General trends: Nationally, the number of robberies shows an overall decline over the decade, with the highest levels consistently recorded in major urban areas such as Attica and Thessaloniki, while peripheral regions remain at comparatively low levels. However, the trajectory is not linear, as a pronounced decrease is observed in 2014 (−21.81% compared to 2013), followed by a rebound in 2015 (+10.74%), and a period of relative stabilization with minor fluctuations before the sharp decline during the Covid-19 period (Zarafonitou, 2023: 57).

This decline may be attributed to several interacting factors. Initially, the post-2009 economic crisis was associated with increased pressures linked to unemployment and financial insecurity, particularly in large urban centres, which may have affected property-related crime dynamics (Zarafonitou, 2023: 103–105). Over time, improvements in policing strategies — such as the deployment of rapid response motorcycle patrols (DIAS units) — appear to have strengthened police presence and reaction time in high-crime areas, especially in Athens and Thessaloniki (Georgiou & Papanicolaou, 2016: 397–419). Moreover, the marked reduction observed during the pandemic aligns with evidence that restrictive measures and lockdowns in Greece were accompanied by an overall decrease in recorded crime. In the case of robbery, this decline can be interpreted in relation to the restructuring of routine activities, reduced mobility, and fewer opportunities for direct offender–target convergence in public space (Zarafonitou et al., 2022: 4–32).

Community policing initiatives and strengthened cooperation between law enforcement and residents may also have contributed to crime prevention through increased trust and perceived legitimacy (Zarafonitou, 2023: 114-117).

In conclusion, the steady decline in robbery incidents in Greece between 2013 and 2023 may reflect a combination of effective law enforcement strategies, increased community engagement, and gradual socioeconomic stabilization following the crisis years.

The analysis of robbery rates per 100,000 inhabitants reveals notable regional disparities across Greece. The highest rates are concentrated in major urban centers, particularly Attica and Thessaloniki, where population density and economic activity are greatest, conditions associated with increased criminal opportunities and weaker informal social control in contemporary cities (Zarafonitou, 2004: 183). In contrast, regions such as Western and Central Macedonia record the lowest rates, consistent with less intense urban concentration and comparatively stronger community-level regulation mechanisms (Zarafonitou, 2004: 183).

Some island regions, like the South Aegean, show higher-than-expected rates compared to similarly populated areas. This may be linked to seasonal tourism, which increases temporary populations and crime opportunities.

To complement the regional analysis, Figure 3 presents the annual evolution of average robbery rates per 100,000 inhabitants in Greece between 2013 and 2023, distinguishing between attempted, completed, and total incidents. The figure highlights the overall downward trend during the study period, beginning with a noticeable decline in 2014, followed by a short-term rebound in 2015 and subsequent fluctuations. The marked decrease observed during the Covid-19 period further reflects the impact of restricted mobility on routine activities and crime opportunities.

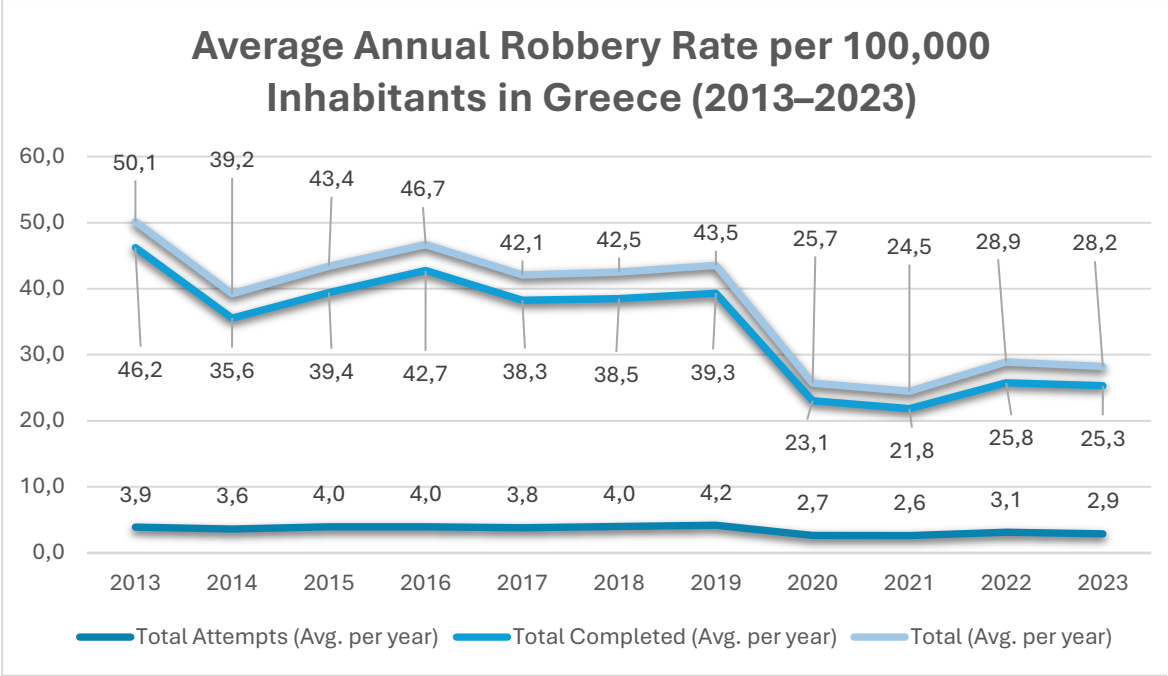


Figure 3. Evolution of average annual robbery rates per 100,000 inhabitants in Greece from 2013 to 2023, distinguishing between attempted, completed, and total incidents. The data reflect police-recorded offenses and are adjusted for population size based on the 2021 national census. Source: Author's own elaboration[7] based on municipality geodata and the Hellenic Police classification of municipalities by directorate.

Discussion

The spatial and temporal patterns identified in this study can be interpreted through an opportunity-based perspective, in which robbery risk varies across places and times depending on the convergence of suitable targets and limited guardianship. In this sense, Routine Activity Theory is used as a concise interpretive lens, highlighting that crime is more likely when motivated offenders, suitable targets and the absence of capable guardians co-occur in time and space (Cohen & Felson, 1979: 589). Rather than treating robbery as a product of individual characteristics, this approach supports a reading of the findings that emphasizes the practical conditions of everyday urban life and the situational contexts shaping criminal opportunities.

Robbery, as a confrontational offense, appears particularly sensitive to spatial–temporal configurations that facilitate access to targets and constrain effective guardianship. Urban environments marked by anonymity and weakened informal control may increase exposure to predatory crime, especially where neighbourhood ties are weaker and informal social

[7] Tableau Software. (2023). *Tableau Desktop* (Version 2023.3)

control is reduced, thereby amplifying opportunities for victimization (Zarafonitou, 2023: 325). This framing helps contextualize the observed concentration of robbery in metropolitan settings as a place-based phenomenon linked to how urban spaces are used, monitored and socially regulated.

From a preventive standpoint, the findings point to the value of strengthening guardianship in high-risk settings through coordinated, place-focused interventions. Community-oriented policing and closer cooperation between police forces and local communities may support prevention by reinforcing trust, legitimacy and informal control mechanisms (Zarafonitou, 2003: 154; Chalkia, 2017: 42–53). The regular presence of uniformed officers in neighbourhoods, increased visibility of patrols and locally embedded policing practices may contribute to deterrence and improve responsiveness in everyday urban environments (Zarafonitou, 2007: 358). In addition, the involvement of community representatives in local prevention initiatives (e.g., local crime prevention councils) may facilitate communication and joint problem-solving (Zarafonitou, 2003: 158–162).

Moreover, technology-based tools and targeted communication channels may supplement traditional forms of guardianship by enabling timely information exchange at the neighbourhood level, provided that such approaches are adapted to local realities and are consistent with data protection requirements and public trust considerations (Giannaki, 2022).

In summary, situational and place-based measures that strengthen social and physical guardianship can inform robbery prevention, particularly in urban settings (Tapakoudis, 2016). At the same time, such measures are unlikely to be sufficient on their own: a broader, more holistic approach is required, in which opportunity-focused interventions are complemented by wider social and institutional measures for crime prevention, the enhancement of social cohesion and the safeguarding of the social fabric.

Conclusion

This study examined the spatial aspects of robbery in Greece from 2013 to 2023. Using Geographic Information Systems and population-adjusted analysis, the results show clear spatial differences in robbery rates, with a consistent concentration in major urban areas — especially Attica and Thessaloniki — and notably lower levels in rural regions. The temporal

analysis also revealed a gradual decrease in robbery incidents nationwide, probably shaped by a combination of law enforcement reforms, community involvement, and post-crisis stabilization, alongside the additional decline observed during the Covid-19 period and the marked reduction reported in bank robberies during the crisis years (Papadimitropoulos, 2016).

The observed spatial patterns align with the ideas of Routine Activity Theory, which suggests that crime is not only related to deviant motives but also to the regular organization of daily life. Robbery appears as a situational event, triggered by the meeting of motivated offenders, suitable targets, and the lack of capable guardians in specific spatial-temporal settings. Urban areas, with their higher population density, anonymity, and fragmented social control, naturally create more opportunities for these situations.

The policy implications of this framework are equally significant. Crime prevention strategies that strengthen both formal and informal guardianship-particularly through community policing, local partnerships, and adaptive technologies-align directly with the theoretical model. These approaches not only deter offending but also restructure opportunity spaces, rendering criminal acts less likely by design.

By integrating empirical analysis with environmental criminological theory, this research contributes to a deeper understanding of how robbery occurs across different spaces and times in the Greek context. It also highlights the importance of evidence-based crime prevention, where spatial intelligence and routine activity patterns can guide targeted, context-specific interventions. As urban areas continue to grow and change, combining spatial analysis, criminological theory, and community-focused practices remains crucial for developing effective and sustainable public safety policies.

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