Understanding the Spatial-Temporal Patterns of Motor Vehicle Theft (MVT) in Riyadh, Saudi Arabia (SA) under Western Environmental Criminology

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Introduction

Key features in SA that are different from typical Western contexts:
- About 70% of Saudi’s population is under 29 years old in 2007(1), while approximately 38% of the UK’s population under 30 years old in 2008(2).
- Around 30% of population in Saudi Arabia in 2007 were non-Saudis, but they made up nearly 55% of the labor force (3).
- Until July 2013, Thursday and Friday were the official weekend days, then the system switched to Fridays and Saturdays.

By law, women are not allowed to drive.
- Drinking alcohol is illegal and punished by the law.
- Friday prayer, fasting during for a month every year during Ramadan are religious practices of Saudi community.
- Cars are the main form of transportation inside the city.
- The climate is dry and hot.

Not only this, but also the MVT is different

Differences between environments can have an important effect on crime statistics.

Figure 1. Percentages of MVT of property crimes in SA, UK and US

Can differences between environments also make spatial patterns of MVT different?

Significant elements of spatial crime patterns in Riyadh are apparently absent in the current literature as follows:
- Can largely Western environmental criminology theories be applied to explain motor vehicle theft in Saudi Arabia?
- Are the MVT incidents in a neighborhood associated with specific factors (e.g. demographic and land use)?
- Are these factors different from those factors that have been found in different countries?

Aims

To improve our understanding of the spatial and temporal of MVT in SA.
- To analyse the interaction between the geographical location of MVT and external factors.

Data

Methodology

Visualisation of MVT Data

To provide insight into the spatial distribution of MVT patterns

Spatial statistical analysis of MVT

To describe and measure the distribution of MVT incidents

Spatial Regression Analysis

To examine the spatial relationships between MVTs and other factors

Predicting Models

To forecast where crime when it is likely to happen in the future

Exploratory Analysis of MVT

Figure 3. A density map illustrating MVT incidents in Riyadh (2012-2014)

1. Visualisation of MVT incidents

2. Spatial cluster analysis of MVT incidents

3. Temporal analysis

4. A comparison between MVTs on weekdays and weekends

Figure 4. Average Nearest Neighbour Summary

Figure 6. Percentages of MVT incidents per day of time

Figure 7. Comparing the two periods of time (6am-9am) and (9pm-12am) Weekday

Figure 8. Comparing the two periods of time (6am-9am) and (9pm-12am) Weekend

Conclusion and Future Work

Saudi Arabia is very different from Western countries as a result of differences in a number of regional factors, such as social, environmental and legal circumstances.

This difference also appears in the variations in crime rates, since MVT accounts for the largest proportion of property crime in Saudi Arabia, while MVT in UK and US represents a small proportion of property crime. This has prompted us to ask whether the factors that contribute to spatial patterns of MVT in Saudi Arabia are similar to or different from those in Western countries. Through this project, this phenomenon will be further examined in greater depth and additionally contextualised within the theoretical frameworks developed in environmental criminology theories.

References


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