Presentation title:

Application of unsupervised classification and random forest in the study of urban crime patterns in a data rich environment. The case of Stockholm, Sweden. transit environments:

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Street theft crimes pose a significant challenge for urban areas. This research paper presents a comprehensive approach to predict and map the risk of street theft crimes by integrating land cover analysis from remote sensing data, socioeconomic variables, and machine learning techniques for statistical analysis.

The study begins by applying an unsupervised classification method to aerial imagery to identify distinct land cover classes, capturing the physical environment's characteristics. Socioeconomic variables such as unemployment, age of population, and type of house are incorporated to create a dataset for crime analysis.

A random forest regression model is employed to predict street theft crimes based on the compiled dataset. This algorithm effectively captures complex relationships between predictor variables and crime occurrences, enhancing the accuracy of predictions.

Using the prediction results, a risk map is generated to visualize areas with higher probabilities of street theft crimes. A new random point dataset is overlaid on the predicted crime probabilities, producing a spatially explicit risk map.

The proposed methodology is applied to real-world street theft crime data, demonstrating its effectiveness. It highlights the importance of land cover and socioeconomic variables in crime analysis, providing valuable insights into crime distribution. The resulting risk map can serve as a valuable tool for policymakers, law enforcement agencies, and urban planners to mitigate street theft crimes and improve urban community safety.