Predicting Monthly Crime Risk in Tierra del Fuego

This study explores the use of a machine learning model to predict monthly crime risk in Tierra del Fuego, aiming to support better decision-making and prevention strategies. The model identifies patterns in official crime reports that include 35 types of offences, and its results may help guide public safety campaigns. Initially, police data from different cities of Tierra del Fuego were combined and structured for analysis. Then, we split the data into training and test sets and applied a machine learning technique based on decision trees. A high-risk month means having a total crime count above the 75th percentile. Thresholds should be updated every year to keep the system accurate. The results show that the model identifies up to 80% of high-risk months correctly, achieving 80% recall and 75% precision on the test set. However, a basic single-tree model resulted in lower recall, failing to capture several high-risk months; consequently, the chosen approach proved more effective and reliable. This approach is suitable for other regions or crime types. Although the data has some limitations, the method is consistent and useful. Authorities should consider updating the model regularly to maintain its performance.