Crime Rate vs. Age & Community (1990-1995)

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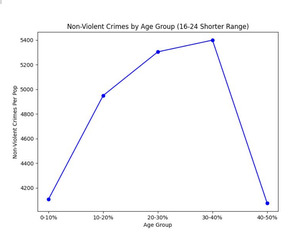
Introduction

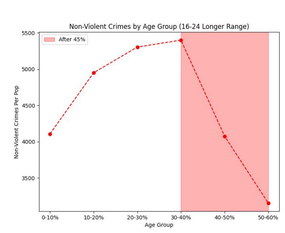
Do communities with higher densities of people aged 16-24 have higher rates of non-violent crimes?

- Every **26** seconds, a property crime is committed in the United States (Crime clock, 2018).
- **Social Control Theory**: Weak bonds with societal structures increase the likelihood of deviant behavior.
- **Social Learning Theory**: Young people mimic peers, including delinquent behavior when exposed to criminal influences.
- **Mental Health**: Impulsivity and mental health challenges in adolescence can drive non-violent crimes.
- **Community Influence**: Economic deprivation & lack of youth activities can lead to higher crime rates.

Objectives

- Analyze the relationship between non-violent crime rates (***burglary, larceny, and auto theft)*** and the proportion of individuals aged **16-24** in U.S. communities during 1990-1995.
- Investigate whether communities with higher concentrations of young adults exhibit increased non-violent crime rates.
- Explore how socioeconomic, demographic, and psychological factors contribute to crime patterns among young adults.



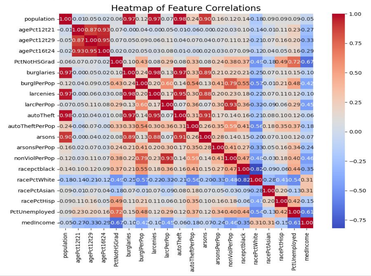


Method

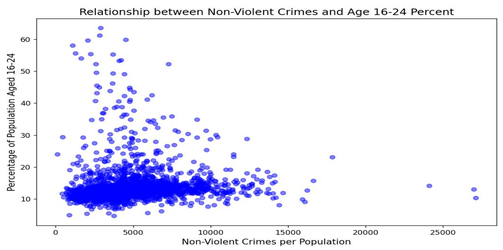
Data cleaning focused on refining the dataset by removing irrelevant features to ensure clarity and relevance for analysis.

Key target features identified include ***nonViolPerPop***, ***burglaries***, ***larcenies***, *and* ***autoTheft***, which are central to addressing the research question.

The dataset contains ***2,215 rows***, each representing specific U.S. locations; each row was kept to maintain the study's comprehensiveness.



Collected Data



- The ***nonViolPerPop*** crimes feature can keep track of the number of non-violent crimes committed based on the population of that area it is studying.
- It includes socioeconomic, demographic, and crime statistics from **2,215 U.S.** communities.
- The dataset combines information from the 1990 U.S. Census, the 1990 U.S. LEMAS survey, and the 1995 FBI UCR crime data.

Results

Higher population density areas showed a slight increase in non-violent crimes, but **no strong correlation** with the youth demographic shown..

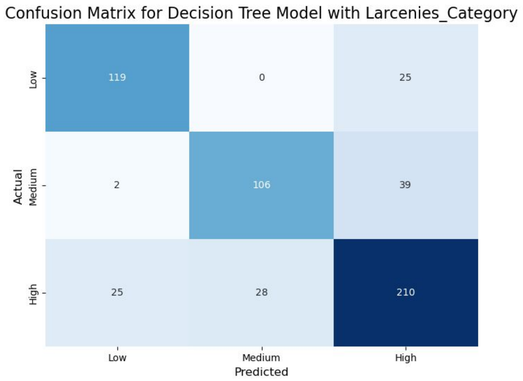
Machine learning models like Decision Trees and Random Forests effectively identified crime patterns.

Model Accuracy in Predicting Crime Rates:

- **Decision Tree Model**: **78.52% accuracy** predicting larcenies, surpassing the baseline of **49.98%**. Model with **highest** predictive accuracy.

Factors Influencing Crime Rates:

- The models suggest that socio-economic factors like **unemployment** (15%+) and **median income** (below $30,000) may have a **greater impact** on crime rates than age alone.



Illustrates the performance of the decision tree model, with accurate predictions concentrated on the diagonal and notable misclassifications between Medium and High larceny categories.

Metric	Low	Medium	High
Precision	0.815	0.791	0.766
Recall	0.826	0.721	0.798
F1-Score	0.820	0.754	0.781

The table above presents the confusion matrix scores, including **Precision**, **Recall**, and **F1-Score**, for the model's predictions.

Conclusions

- **Crime has no simple solution**; the study of crime, particularly age demographics, is crucial but only part of the equation.
- **Broader research** is needed to examine additional factors influencing crime, such as unemployment, poverty, and education.
- **Effective crime prevention** strategies require a deeper understanding of the complex dynamics behind criminal behavior.
- Our goal is to **reduce crime rates** and build communities where crime is not seen as the only option.
- **To prevent non-violent crimes**, it's important to identify their root causes and focus on targeted interventions addressing underlying issues like **unemployment** and **economic hardship**.

References

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