Impact of Crime and Property Quality on Rental Prices and Tenant Satisfaction in Los Angeles

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Project Idea and Research Question: In the Los Angeles rental market, safety and property quality are two critical factors that influence tenant satisfaction. Renters want to find affordable housing in safe neighborhoods, but understanding how crime rates, property ratings, and amenities impact satisfaction can be challenging. This project will address the following key questions: (1) How do neighborhood crime rates influence rental prices in Los Angeles? (2) Do safety-related amenities in apartment complexes correlate with crime rates in the surrounding area? (3) How do property ratings reflect tenant satisfaction with neighborhood crime and nearby amenities?

Data Collection: Data will be collected from the following sources:
- **Apartments.com:** I'll crawl Apartments.com to gather rental data, including property listings, rental prices, amenities, and property ratings. These ratings provide insight into tenant satisfaction and property quality, allowing us to correlate satisfaction and prices with safety factors.
- **City of Los Angeles Crime Data:** Using publicly available crime data from City of LA Crime Data from 2020 onward. This dataset includes crime location, type, and time, which we will map to apartment listings to analyze correlations with tenant satisfaction and neighborhood safety.
- **Additional Sources (e.g., government document):** I will apply Los Angeles County's definition of district categorize related property listings from Apartments.com, ensuring that our analysis reflects neighborhood-level trends.

Analysis and Visualizations: Our study will examine how crime rates and amenities impact tenant satisfaction. Specific analyses include:
- **Crime and Price Correlation Analysis:** I will use linear or random forest regression to examine the relationship between crime rates and rental prices across Los Angeles neighborhoods. By mapping crime data to rental properties, I'll assess whether higher crime rates correlate with lower rental prices or if high-demand areas retain high prices despite crime. Visualizations will include heatmaps overlaying crime rates with rental prices and scatter plots showing correlations between crime rates and rental prices across listings.
- **Amenity and Crime Pattern Analysis:** Using logistic regression, I'll analyze whether high-crime neighborhoods have a higher prevalence of safety-focused amenities (e.g., gated access security cameras) in apartment complexes. With a decision tree classifier, I can handle complex decision paths; a decision tree can help show which crime level thresholds most influence the presence of safety amenities. Bar charts will show the distribution of amenities across crime levels, while pie charts will break down the amenities most common in high-crime areas.
- **Safety Score and Satisfaction Prediction:** First, assess how tenant satisfaction (property ratings) varies with neighborhood crime levels and the presence of safety amenities using linear or random forest regression to determine if high-crime areas with amenities show better satisfaction. Then, logistic regression will be used to compare the likelihood of high satisfaction from safety amenities in high-crime versus low-crime areas, revealing if amenities are more valued in riskier locations. Stacked bar or line charts will display satisfaction differences between properties with and without amenities across crime levels.