

Analysis of NYPD Arrest Data

Breaks down every arrest in NYC
during the year 2024

Data Overview

Dataset Source: NYC Open Data

Key Variables:

- NYC's crime data provides insights into trends and patterns across various demographics and offenses.
 - AGE_GROUP: Age ranges of individuals (<18, 18-24, 25-44)
 - ARREST_BORO: Boroughs where arrests occurred (Bronx, Brooklyn, Manhattan, Queens, Staten Island).
 - OFNS_DESC: Level of offense (Felony Assault, dangerous Drugs).
 - **Total Arrest:** Total number of arrests in each category for both groups.
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Is there a significant difference in the proportions of arrests for Felony Assault and Dangerous Drugs between the age groups 18–24 and 25–44 in NYC?

Null Hypothesis:

There is no difference in the proportion of arrests for Felony Assault and Dangerous Drugs between the age groups 18–24 and 25–44.

$H_0: p_1 = p_2$

Alternative Hypothesis:

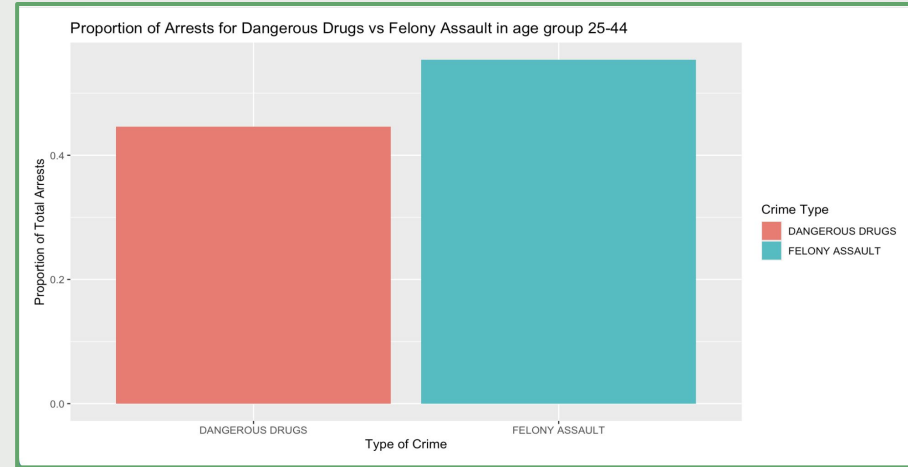
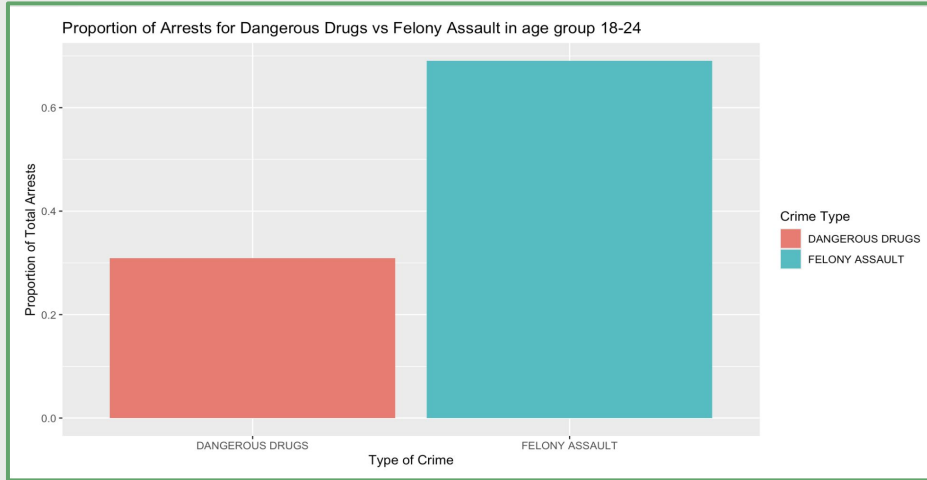
There is a difference in the proportion of arrests for Felony Assault and Dangerous between the age groups.

$H_A: p_1 \neq p_2$

where p_1 is the proportion for age group 18–24 and p_2 is the proportion for age group 25–44.

Statistical Test: Two-sided hypothesis test

Comparison of crime rates for different age groups and boroughs using summary statistics and hypothesis testing.



Key Findings

Confidence Interval for Drug-Related
Crimes for Age Groups 18-24 and 25 to
44:
-0.1678186 -0.1054619

Confidence Interval for Assault-related
Crimes for Age Groups 18-24 and 25 to
44:
0.1054619 0.1682183

Dangerous Drugs:

- Age Group 18–24: higher proportion
- Age Group 25–44: lower proportion
- Statistically significant

Felony Assault:

- Age Group 18–24: lower proportion
 - Age Group 25–44: higher proportion
 - statistically significant
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Discussion

Age-Specific Trends:

- distinct crime patterns across age groups, emphasizing the need for targeted interventions.
- For example:
 - Drug prevention and education programs could focus more on younger individuals (18–24).
 - Conflict resolution and violence prevention efforts might be better suited for the older group (25–44)

Resource Allocation:

- Law enforcement can use this data to allocate resources efficiently based on the offenses prevalent in each age group.

Shortcomings of the Analysis:

1. Demographic Gaps:
 - Factors like gender, ethnicity, or socioeconomic status were not included but could influence the results.
2. Geographic Influence:
 - The analysis does not account for variations across NYC boroughs, which might show differing trends by location.
3. Temporal Context:
 - No distinction was made for trends over time (e.g., annual shifts or seasonal variations in crime rates).

Questions for Future Investigation:

1. Broader Crime Categories:
 - How do other types of offenses vary between these age groups?
2. Demographic Influences:
 - Are these trends consistent across different genders or socioeconomic groups?
3. Geographic Variations:
 - Do these patterns differ significantly across NYC boroughs?
4. Policy Effectiveness:
 - How have past intervention programs impacted these crime rates?