

Project Proposal

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INTRODUCTION: What lead to a decrease in crime in NYC since the 1960s? After reading from Steven Levitt's book Freakonomics, we assumed that features listed below may contribute to the decrease and our aim is to examine the causal relation of these features to the crime rate in NYC.

- Abortion rates / legalization (ultimately identified as the root cause in the book)
- Capital punishment
- Increased incarceration rates
- Growing number of police officers
- Dow Jones industrial average
- Employment rate

PROCEDURE:

- Create the dataset and fill in missing data through imputation and the information in the research paper
- Sampling of data
- Chi - square test of independence
- Define Independence Relations
- Draw Dynamic Bayesian Network (if possible)
- Find spurious causes (if any)
- Find causal chains (if any)
- Granger Causality of cause and effect in each case
- Counterfactual analysis removing cause (if possible)

DATA SOURCES:

- *Criminal Rate*: <https://data.cityofnewyork.us/browse?q=crime>
- *Abortion Rate*: https://abort73.com/abortion_facts/states/new_york/
- *Death Penalty*: https://deathpenaltyinfo.org/state_by_state
- *Police Employment data*:
<http://www.governing.com/gov-data/safety-justice/police-officers-per-capita-rates-employment-for-city-departments.html>
- *Dow Jones Industrial Average (National)*:
<https://finance.yahoo.com/quote/%5EDJI/history/>
- *Employment Rate*: <https://data.bls.gov/timeseries/CES0000000001>

EVALUATION: Once we have identified the root cause/causes based on our study, we will study the other major cities including LA, Chicago, Houston and Philadelphia after controlling for differences with NYC.

RESPONSIBILITIES:

Aubhik:

- 1) Growing number of police officers
- 2) Capital Punishment
- 3) Dow Jones Industrial Average

Yuan:

- 1) Abortion rates/legalization
- 2) Increased Incarceration rates
- 3) Employment rate