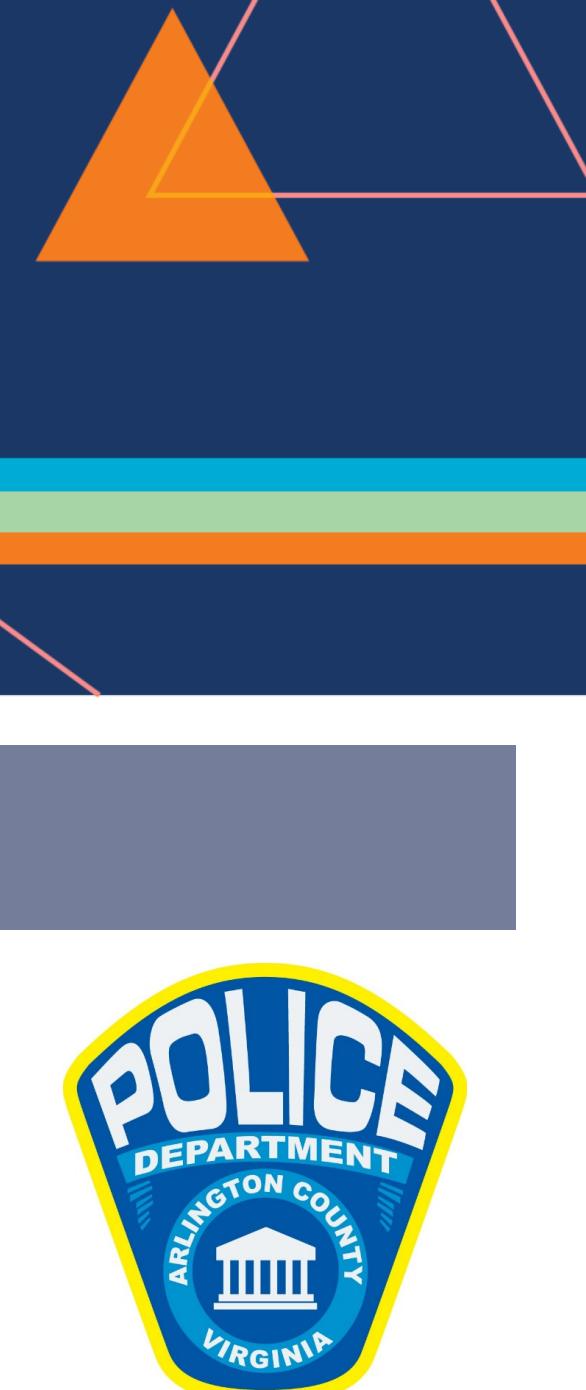
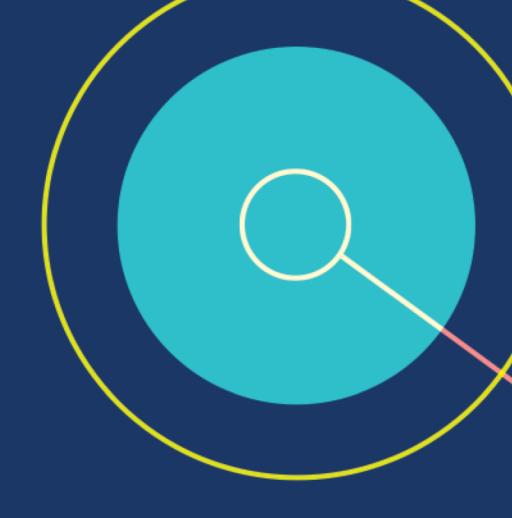


ECONOMIC AND SOCIAL IMPACT OF ARLINGTON RESTAURANT INITIATIVE

DSPG Team: Victoria Halewicz (University of Illinois at Urbana-Champaign), Kateryna Savchyn (Georgetown University), Jessica Keast (Smith College)

SDAD Team: José Bayoán Santiago Calderón, Gizem Korkmaz, and Aaron Schroeder

Sponsor: Dimitrios Mastoras, Arlington County Police Department



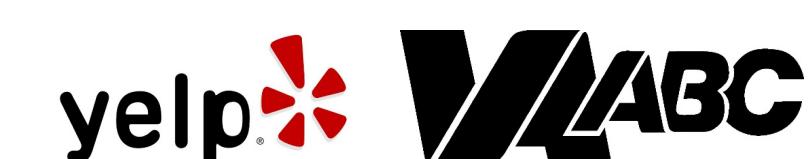
Introduction

The Arlington Restaurant Initiative trains and certifies restaurants and bars to prevent and proactively address nightlife alcohol-related incidents.

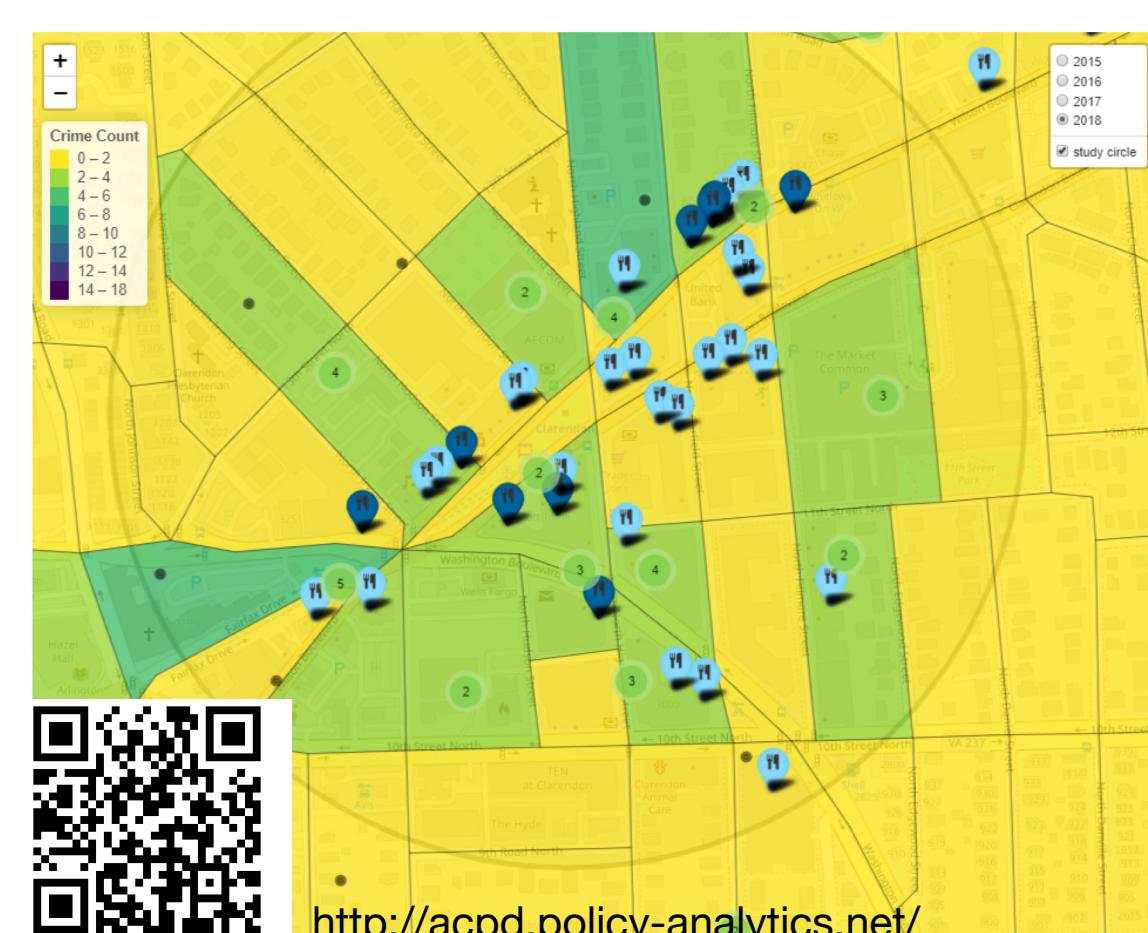
- Is the intervention reducing alcohol-related crime?
- How do we quantify the economic impact of the program?

Data Sources

- Arlington County Police Department (ACPD)
 - Police Incident Logs
 - Nightlife Detail Calls for Service
 - Restaurant Accreditation information
- Virginia Alcoholic Beverage Control (ABC)
 - Licenses and Violations
- Yelp Restaurant Features



GEOSPATIAL CRIMES APPLICATION



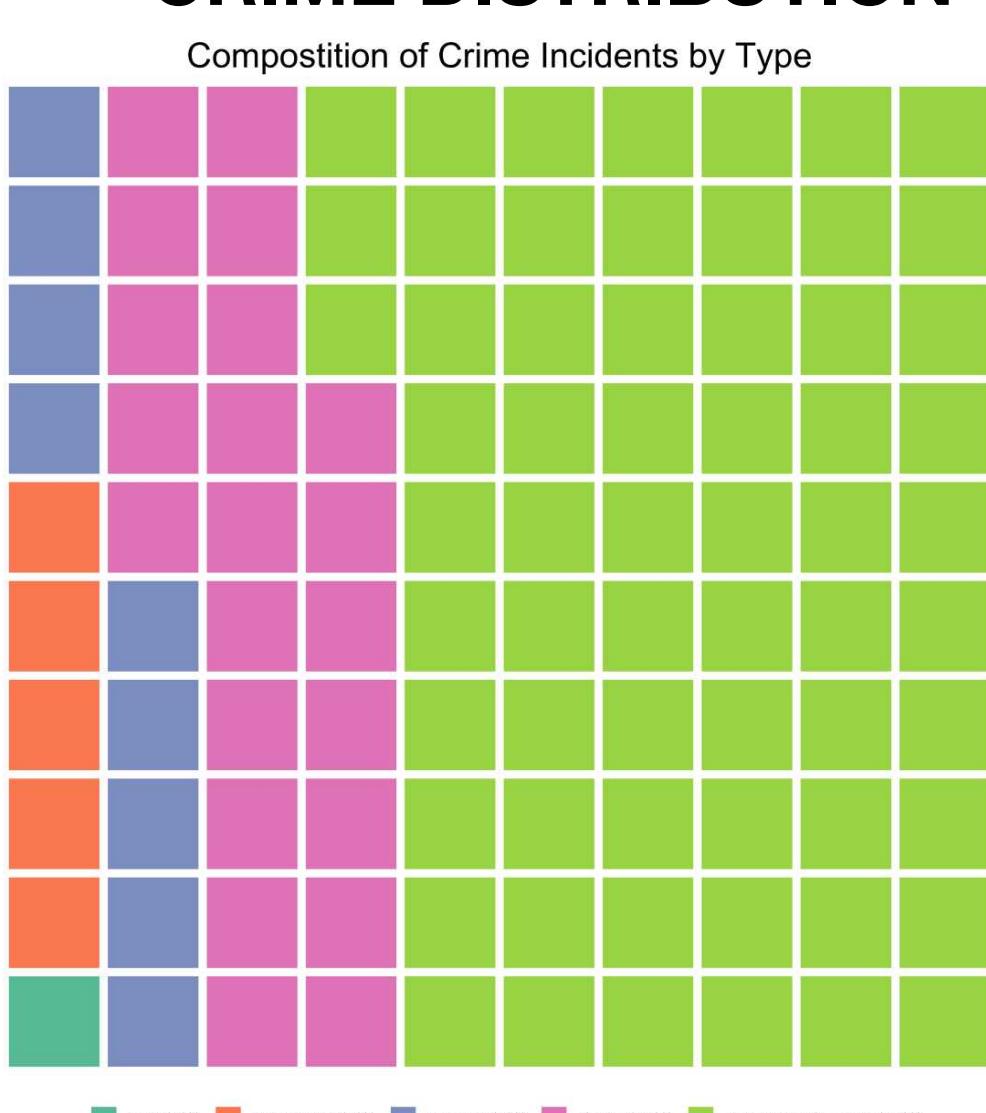
- Spatially explore crimes in Arlington County from 2016 – present
- Visualize data by year, by crime type, and area of interest
- View establishments and ABC violations for restaurants included in the analysis
- Explore incident occurrence by the hour
- Export raw data including descriptions and time stamps of incidents

SIMILARITY MATRIX

- Develop similarity scores among 89 restaurants based on Yelp 51 attribute features (e.g., "Kid Friendly", "Noise Level")
- Jaccard Similarity Indexing is computed as the intersection of shared features over the union of features between all restaurant combinations
- The similarity matrix is used to identify similar restaurants for various statistical models

Data Exploration

CRIME DISTRIBUTION

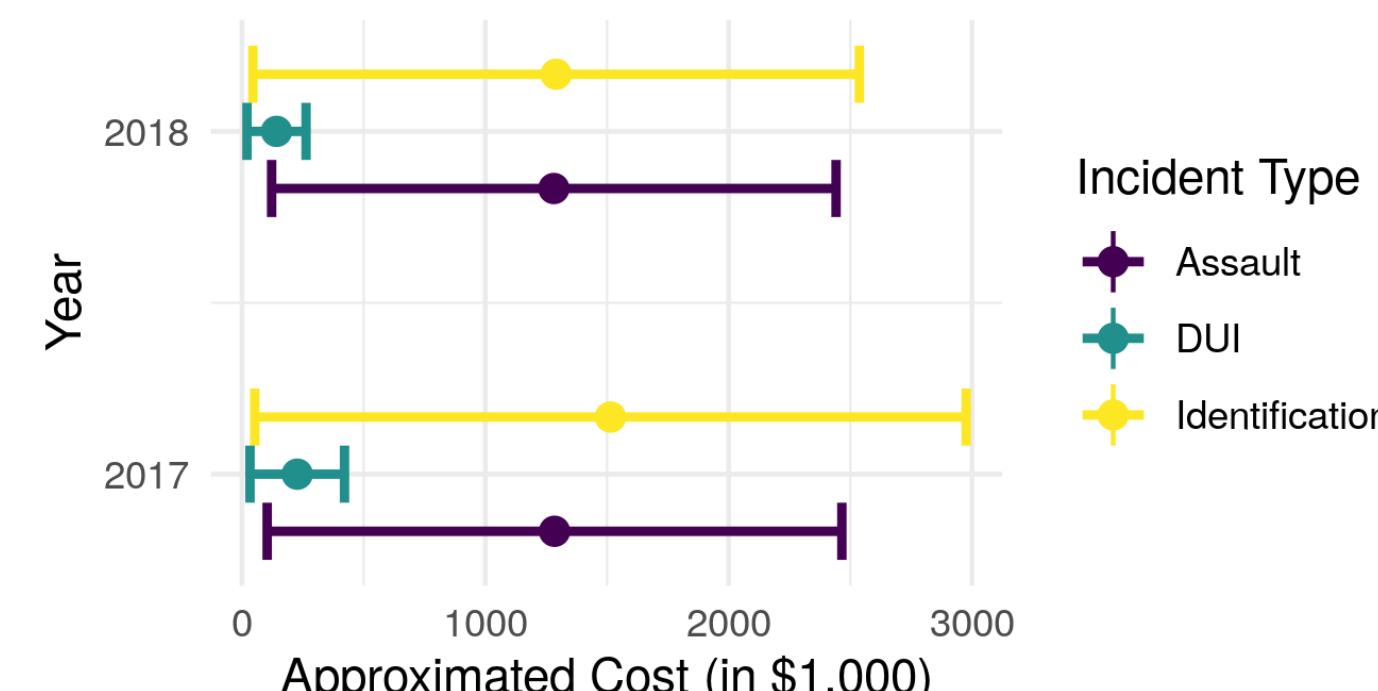


Example of a cost estimation (minimum)

Driving under influence:

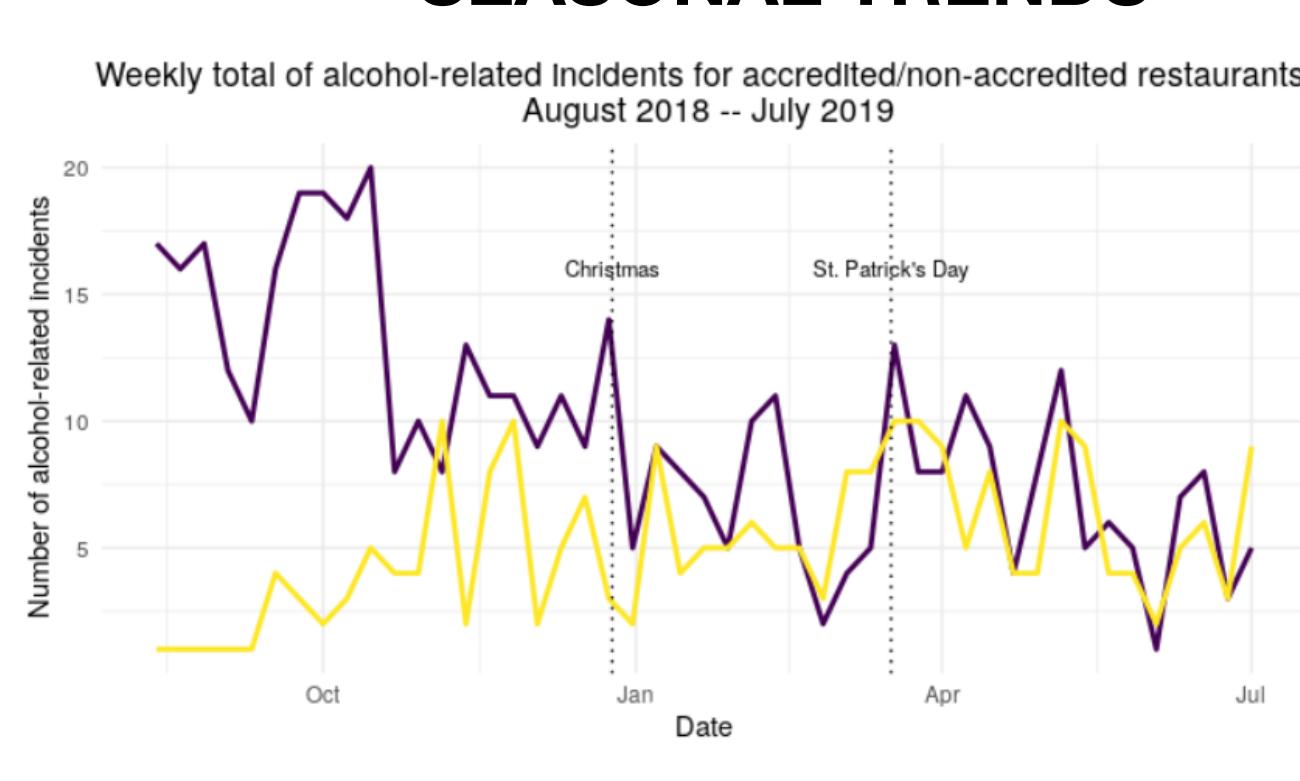
Fine.....	\$250
Jail time.....	\$634
Attorney.....	\$1,900
Court	\$1,100
Car insurance ↑	\$800
Towing vehicle.....	\$170
Mandatory Classes.....	\$250
Total	\$4,134

Yearly Cost Range by Incident Type



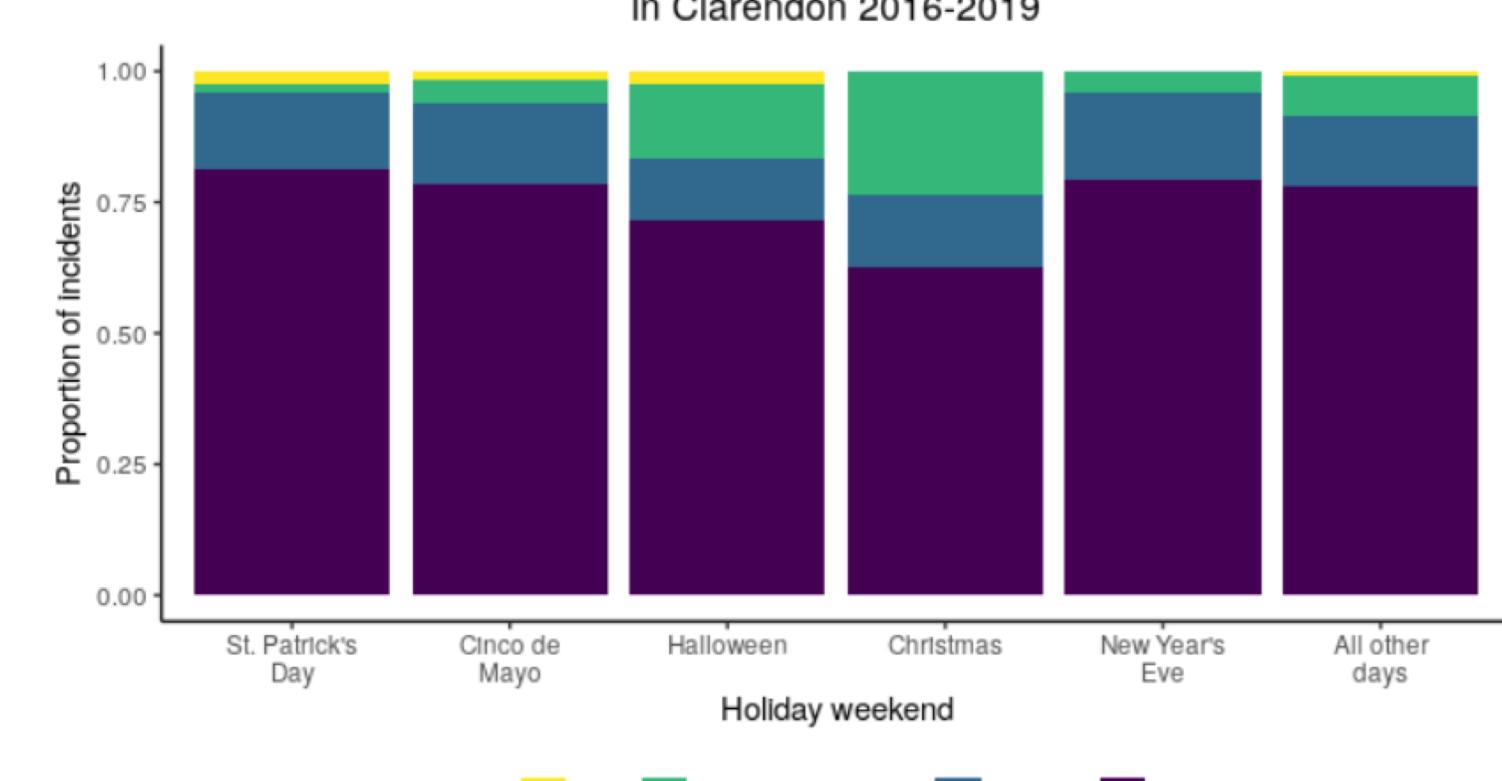
Our next steps will include intangible costs of crime such as psychological distress, impaired productivity.

SEASONAL TRENDS



General downward trend of crime across both accredited and non-accredited restaurants. Peak holidays include Christmas and St. Patrick's Day.

Proportion of Alcohol-Related Incidents over Specific Holidays In Clarendon 2016-2019



Crime type prevalence differs by holiday. Christmas has the least disorderly but greatest identification crimes. Halloween has the most DUIs.

COSTS OF CRIMES

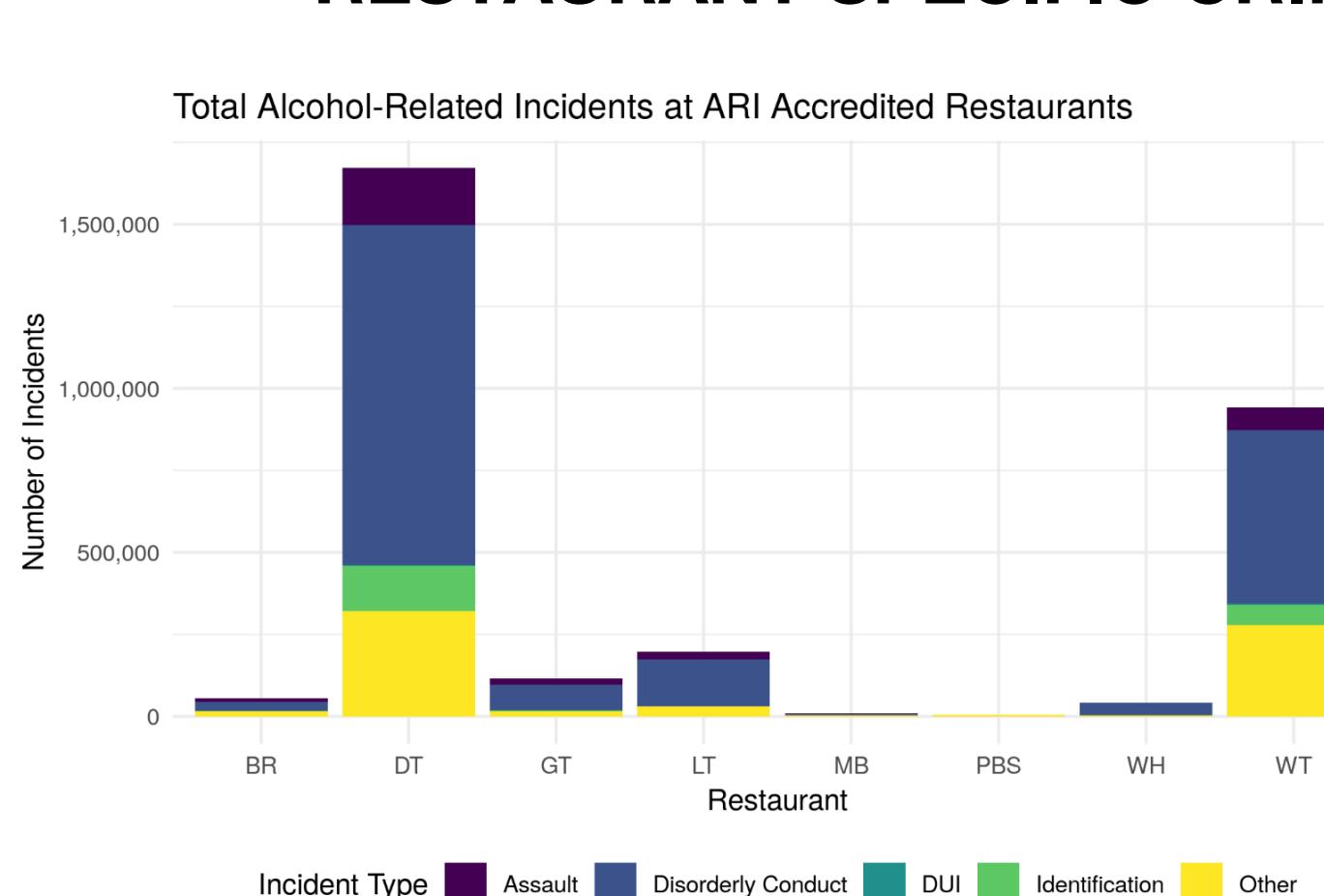
Preliminary crime costs calculated using tangible prices (see example). We used cost estimates from various studies and the number of incidents in Arlington to calculate the minimum and maximum yearly costs for crime types.

Example of a cost estimation (minimum)

Driving under influence:

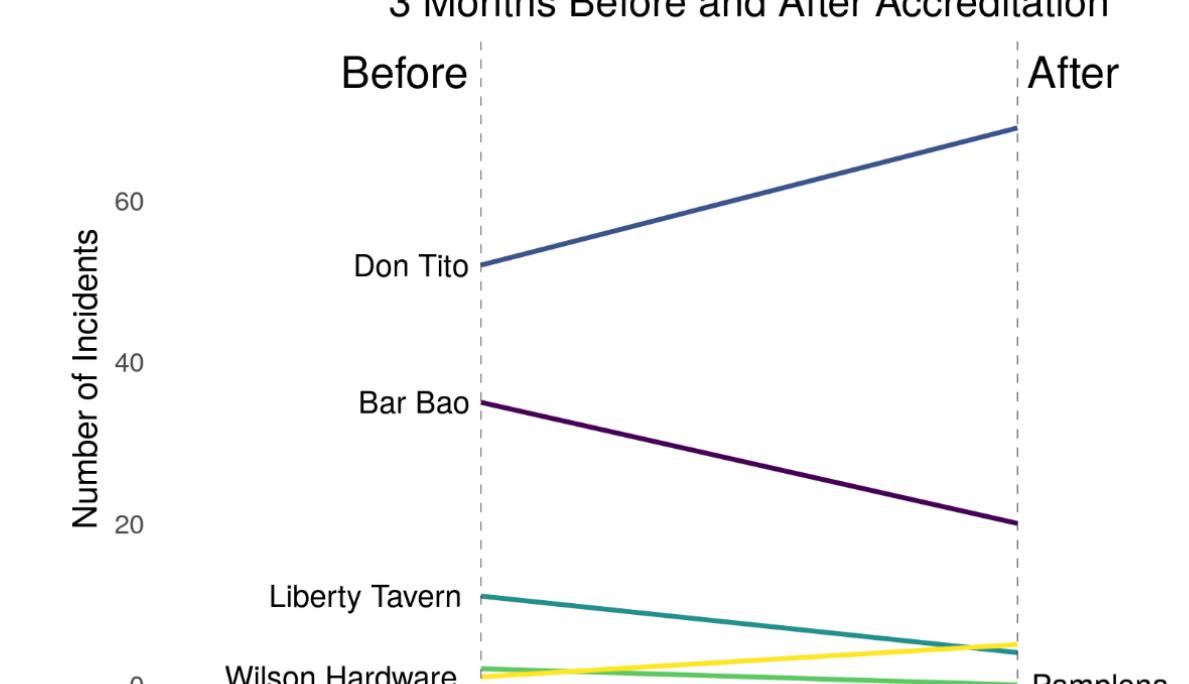
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RESTAURANT SPECIFIC CRIME COUNTS AND FLUCTUATION



Two restaurants in the accreditation program comprise the majority of crime incidents in our database.

Total Alcohol-Related Incidents at ARI Accredited Restaurants 3 Months Before and After Accreditation



While most restaurants exhibit a decreasing trend in crimes, one establishment's crime incidents continues to rise.

Conclusion & Next Steps

- Perform a cost and benefit analysis of the program
- Develop tangible and intangible estimates & incorporate disorderly conduct crimes
- Cost estimates as individual versus government costs to increase accuracy of public savings attributed to the program