

Philadelphia Crime Detector

Tamara Prabhakar

Beatriz/Trixie Go

Tierra Sharae

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The purpose of this program is to project the likelihood of crime for a user based on his or her location and the time of day. Given this information, the user can navigate to safer areas if the probability is relatively high.

Overview:

Using Philadelphia Police Department [crime incidents](#) from 2017 to present, Philadelphia Crime Detector calculates a likelihood of violent crimes in a given location and hour of day *relative* to other locations in Philadelphia at the same hour.

More than 228,000 crimes in the following categories are included in the analysis:

Aggravated Assault	Homicide	Rape
Firearm	Motor Vehicle Theft	Robbery Firearm
Arson	Offenses Against Family and Children	Robbery No Firearm
Burglary Non-Residential	Other Assaults	Theft from Vehicle
Burglary Residential	Other Sex Offenses (Not Commercialized)	Thefts
Disorderly Conduct	Public Drunkenness	Weapon Violation
Driving Under the Influence		
Forgery and Counterfeiting		

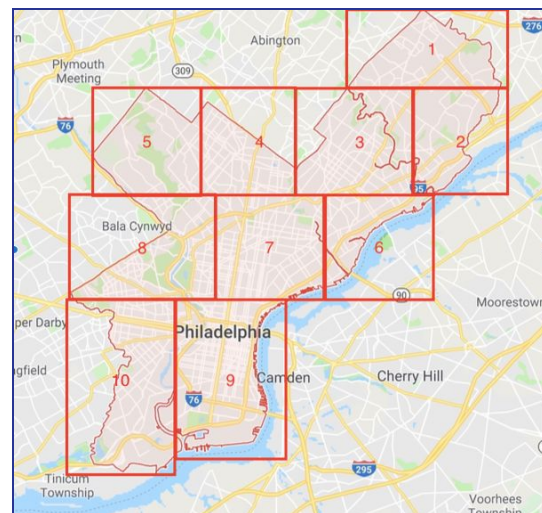
How to Run:

Installation and Setup:

Download the program's src folder. It should contain six classes: CrimeIncident.java, Geocoder.java, IncidentAnalysis.java, IncidentReader.java, IncidentReporter.java, and ZoneAnalysis.java. Next, ensure the file "new_data_grid.csv" is stored in the same folder that contains the src folder. Finally, the user configures the build path with [java-json.jar](#) or an equivalent json handler.


Zone Creation:

Download Crime Incidents CSV file from the link above. Run R file: PhillyZones.rmd. Remember to install packages before running the file by typing "install.packages("name-of-package")" in the console. After running the R markdown file, the file new_data_grid.csv will be exported into your working folder with the columns ("the_geom", "lng", "lat", "hour", "dispatch_date", "text_general_code", "geo"). This file will be used for all our following work.



How to Use:

1. Running Program

Initiate our program through the command line by pressing the green “run” button. 

2. Entering Location

When prompted, the user will input his/her location. The location does not have to be a formal address; for instance, it can be a Philadelphia neighborhood, zip code, intersection or landmark.

The following are examples of acceptable locations:

Upenn	15th Street Station
32nd and Walnut	Amy Gutmann's House
2040 Market Street	Locust Street Philly
Fishtown	Fresh Grocer Philly
19104	Rittenhouse Square
Penn's Landing	

However, if a location is outside of or not specific to Philadelphia, the user will see an error message.

The following are examples of unacceptable locations:

Locust Street	1060 West Addison Street
Fresh Grocer	The White House
Rittenhouse	68137
Penn	

Sample Error:

```
Where are you? nyc
Sorry, we do not currently have data for New York, NY, USA. Please try a location in Philadelphia.
```

3. Entering Time

Next, the user is prompted to input a time, using the 24-hour clock (Military Time). Acceptable formats for input include hh and hh:mm. If the hours are greater than 23, the user will see an error message.

Sample Error:

```
Where are you? Philly Museum
Using "Military Time," what time is it? (hh:mm) 38:16
The time you entered is invalid.
```

4. Understanding Results

Sample results:

```
Where are you? North Philadelphia
Using "Military Time," what time is it? (hh:mm) 22:03
Calculating relative likelihood of violent crime for North Philadelphia in the 22 o'clock hour...
42%
This means North Philadelphia is pretty unsafe in the 22 o'clock hour.
```

The average percentage of crime across our entire data set is around 10% and the highest percentage of crime across all times and zones is 42% and the lowest is 0%; hence, we used this range as the relative benchmark for criminal activity across the city mainly by increments of 10. For example, if the percentage is in the 30-40% range, we consider danger to be relatively high whereas if the results are between 0-10%, then the zone is relatively safe.