Chicago Crime Mapper

An interactive, visual website dedicated to interpreting Chicago crime data 2001-Present

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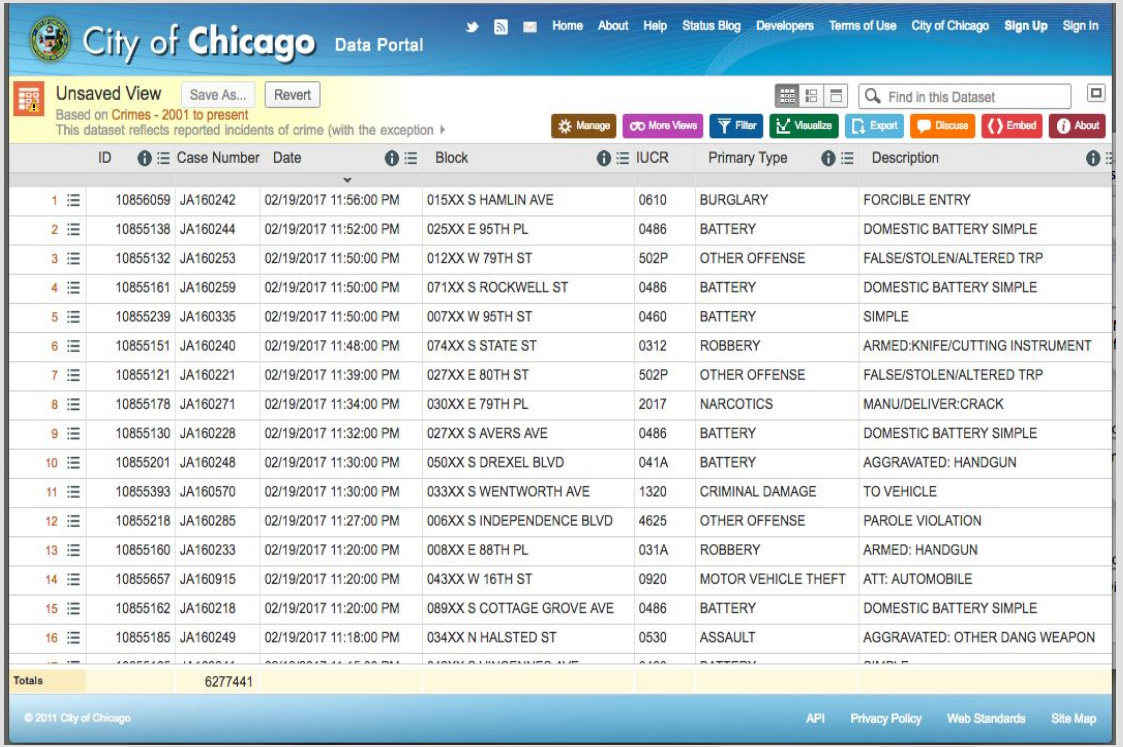
City of Chicago Crime Data Portal

- Data provided by City of Chicago Data Portal
  - https://data.cityofchicago.org/Public-Safety/Crimes-2001-to-present/ijzp-q8t2/data
- A lot of useful information
- Too difficult to interpret

OUR GOAL:
Present the data in a better way



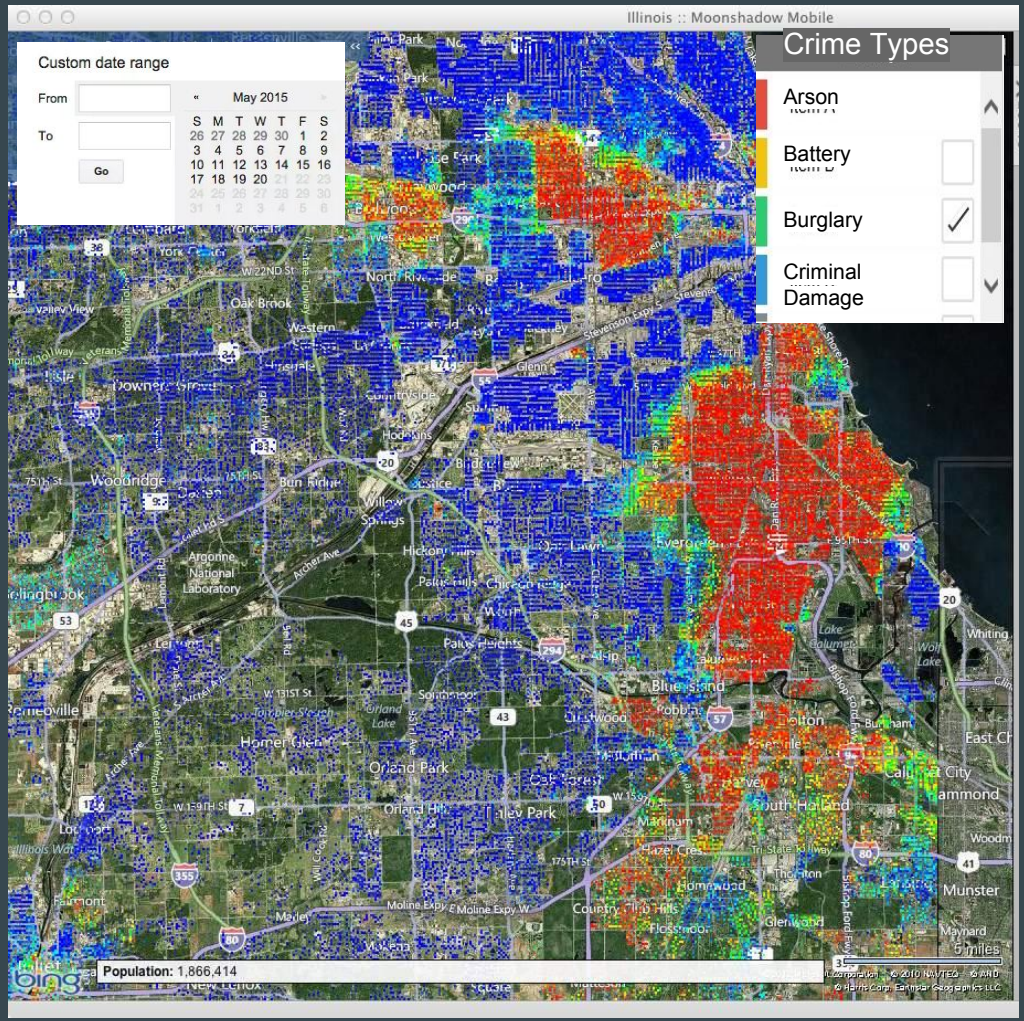
	ID	Case Number	Date	Block	IUCR	Primary Type	Description
1	10856059	JA160242	02/19/2017 11:56:00 PM	015XX S HAMLIN AVE	0610	BURGLARY	FORCIBLE ENTRY
2	10855138	JA160244	02/19/2017 11:52:00 PM	025XX E 95TH PL	0486	BATTERY	DOMESTIC BATTERY SIMPLE
3	10855132	JA160253	02/19/2017 11:50:00 PM	012XX W 79TH ST	502P	OTHER OFFENSE	FALSE/STOLEN/ALTERED TRP
4	10855161	JA160259	02/19/2017 11:50:00 PM	071XX S ROCKWELL ST	0486	BATTERY	DOMESTIC BATTERY SIMPLE
5	10855239	JA160335	02/19/2017 11:50:00 PM	007XX W 95TH ST	0460	BATTERY	SIMPLE
6	10855151	JA160240	02/19/2017 11:48:00 PM	074XX S STATE ST	0312	ROBBERY	ARMED:KNIFE/CUTTING INSTRUMENT
7	10855121	JA160221	02/19/2017 11:39:00 PM	027XX E 80TH ST	502P	OTHER OFFENSE	FALSE/STOLEN/ALTERED TRP
8	10855178	JA160271	02/19/2017 11:34:00 PM	030XX E 79TH PL	2017	NARCOTICS	MANU/DELIVER:CRACK
9	10855130	JA160228	02/19/2017 11:32:00 PM	027XX S AVERS AVE	0486	BATTERY	DOMESTIC BATTERY SIMPLE
10	10855201	JA160248	02/19/2017 11:30:00 PM	050XX S DREXEL BLVD	041A	BATTERY	AGGRAVATED: HANDGUN
11	10855393	JA160570	02/19/2017 11:30:00 PM	033XX S WENTWORTH AVE	1320	CRIMINAL DAMAGE	TO VEHICLE
12	10855218	JA160285	02/19/2017 11:27:00 PM	006XX S INDEPENDENCE BLVD	4625	OTHER OFFENSE	PAROLE VIOLATION
13	10855160	JA160233	02/19/2017 11:20:00 PM	008XX E 88TH PL	031A	ROBBERY	ARMED: HANDGUN
14	10855657	JA160915	02/19/2017 11:20:00 PM	043XX W 16TH ST	0920	MOTOR VEHICLE THEFT	ATT: AUTOMOBILE
15	10855162	JA160218	02/19/2017 11:20:00 PM	089XX S COTTAGE GROVE AVE	0486	BATTERY	DOMESTIC BATTERY SIMPLE
16	10855185	JA160249	02/19/2017 11:18:00 PM	034XX N HALSTED ST	0530	ASSAULT	AGGRAVATED: OTHER DANG WEAPON
Totals		6277441					

Learning about Crime Trends in various Neighborhoods

- Neighborhoods change
- There is an overwhelming amount of information
- A visual representation distilling those changes is the easiest way to understand them

Presenting the Data

- Maps allow a lot of data to be displayed at once
- Comparative data is made clear



Plan of Action

- Divide tasks into Front and Back end
- Divide the City of Chicago into Zones
- Begin with partial data
- Compile a zone “score” for data
- Serve up data to a front end

Front End

Peizhen Chen
Ibrahim Akay

- Displays map
- Gathers user input
- Receives info about zones
- Displays info about zones as colors

How the front end will operate

Displaying The Map:

- Importing map from Google Maps or Open Street Maps
- HTML, JavaScript, CSS
- Folium
  - Python & Leaflet.js strengths

Gathering User Input:

- Calendar fields for range
- Drop down menu for crime filter

Sending receiving info:

- Send JSON object for date range and crime
- Receive JSON for zone:value map

Back End

Adnan Canovic
Galil Gertner

- Receives parameters from end user
- Filters database for correct info
- Processes information
- Returns a dictionary-like object mapping numerical values to zones

How the back end will operate

Gathering user input:

- Receives end user parameters as a JSON.

Filtering the data:

- Queries the SQL server for the appropriate data.

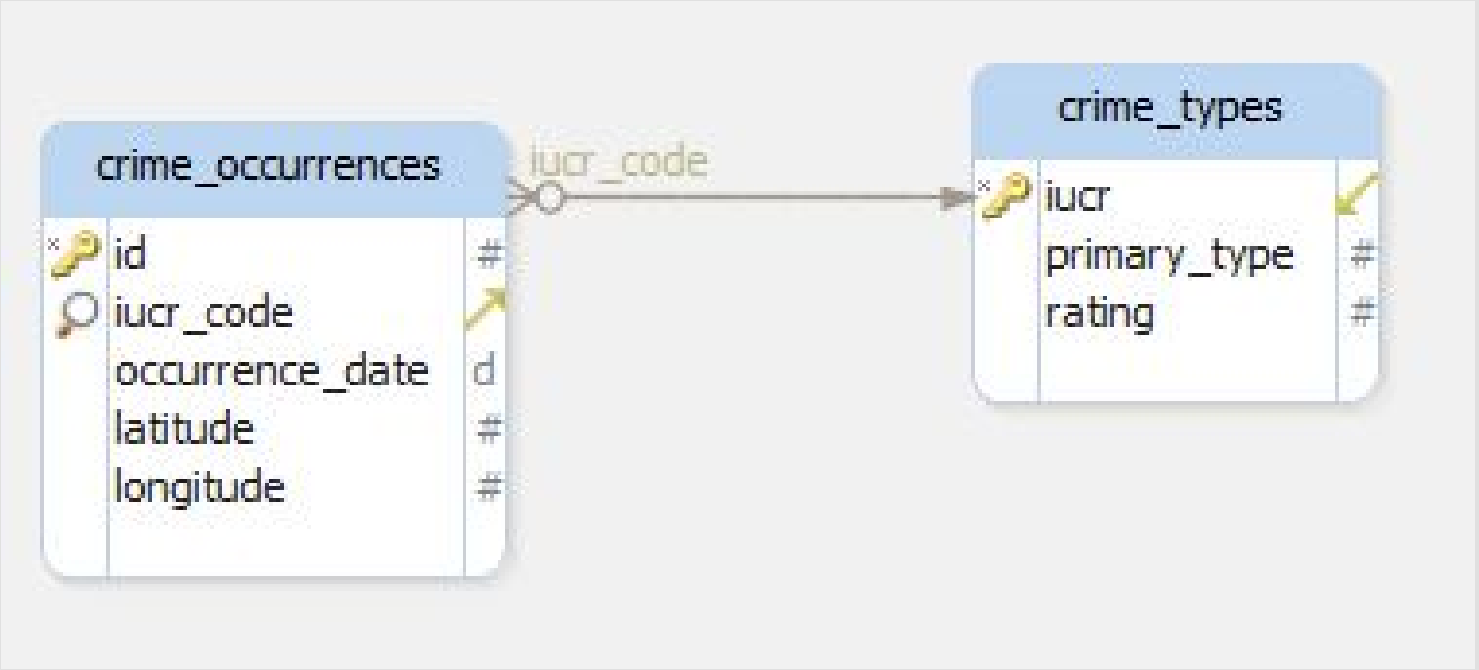
Processing and returning the data:

- Calculates a zone score based on:
  - Freq.
  - City Av.
  - Time delta

SQL Schema

Two tables indicating:

- Crime Occurrence
- Crime type



Plan for Calculating the Zone Scores

KEY:

1: No Crime

2: Below Average

3: Average

4: Above Average

5: Excessive

6: Super Rude

Compare frequency in zone to city average

1 = 1-25% of Average (Outlier)

2 = 25-75 % of Average

3 = 75-125% of Average

4 = 125-175% of Average

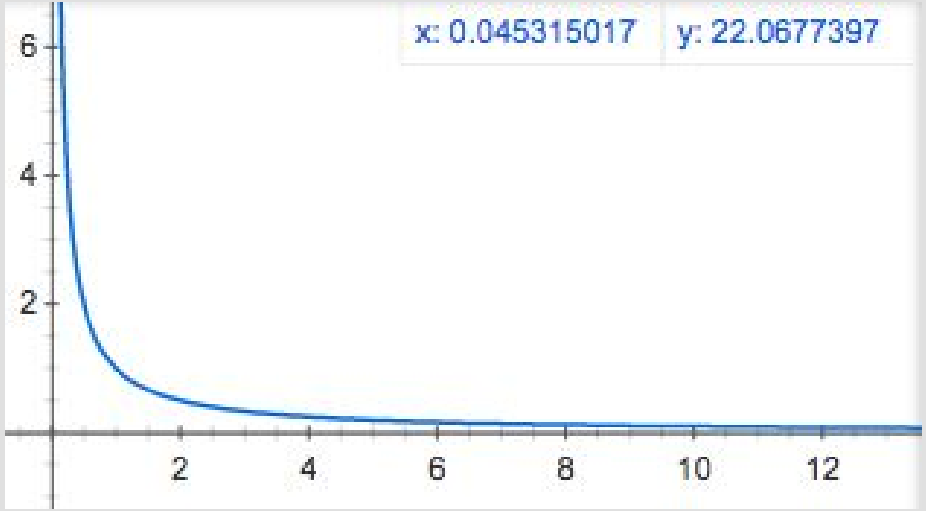
5 = 175- 225% of Average(Outlier)

6 = 225% + of Average (Far Outlier)

Normal Curve: Standard Deviation

Calculating Aggregate Zone Scores

POSSIBLE FUNCTION: 1/X

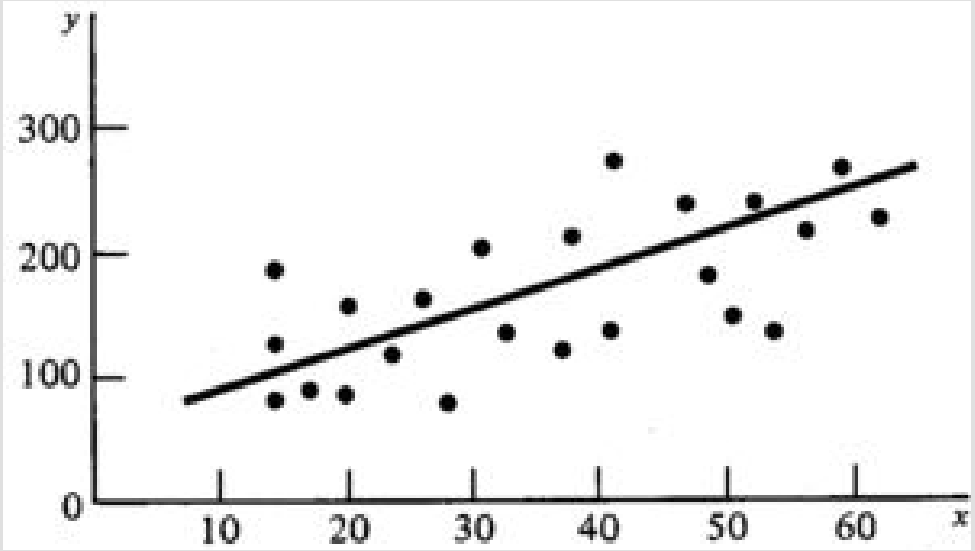


Crime weight decreases as Time Delta increases

Weighted Time Function

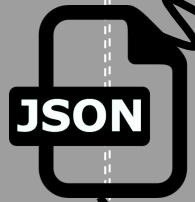
10 year old crime score affects current score by 1/10

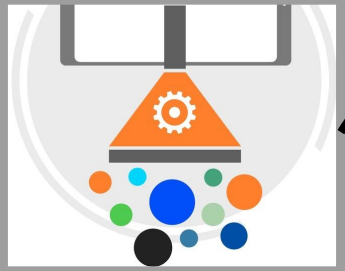
Crime Trends



- Creating a linear regression
- Creating boundaries for that regression (very challenging!)

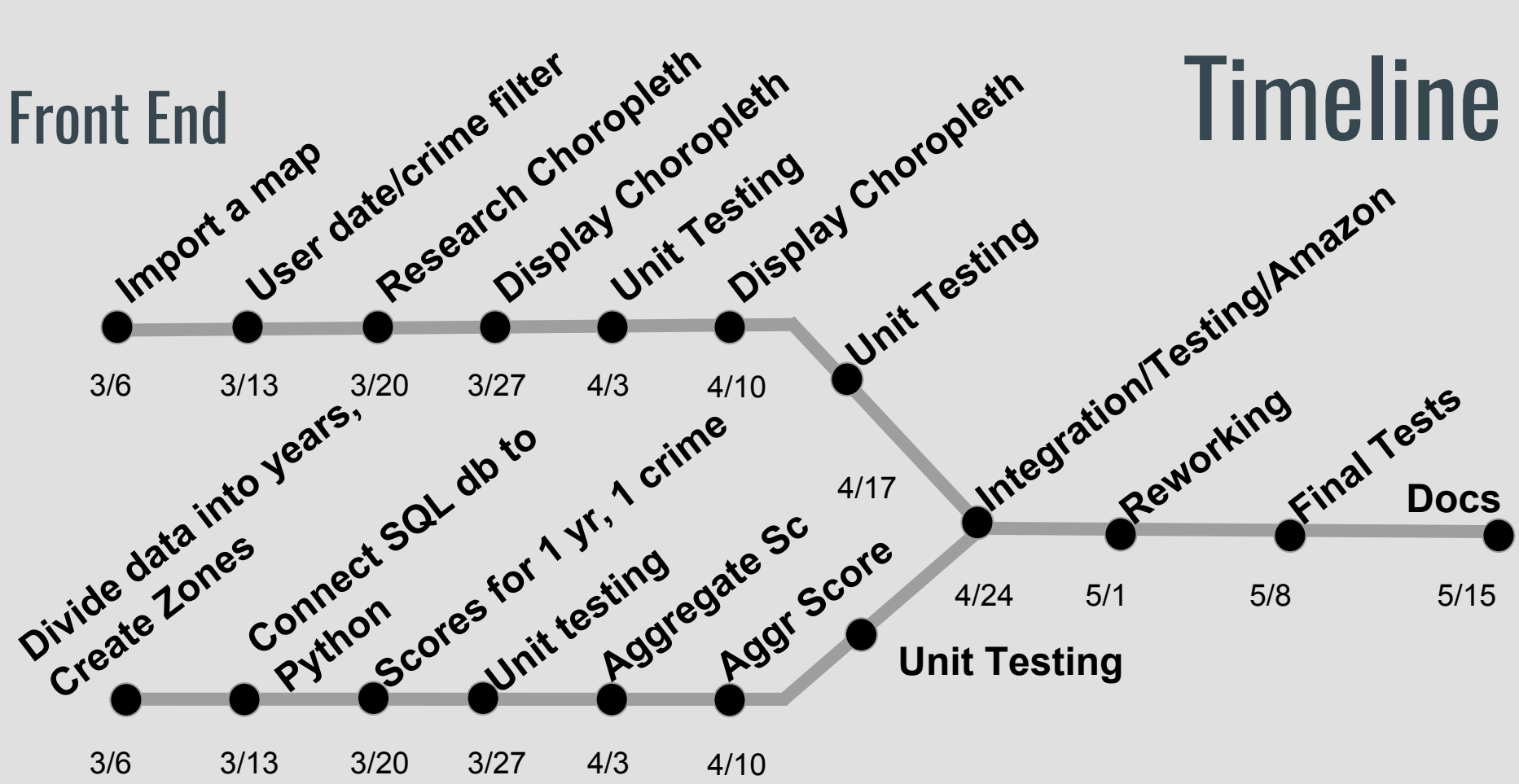
System Architecture





Timeline

Front End



Back End

Further Links

GitHub: https://github.com/HunterCrimeMapper/ChicagoCrimeMapper

Team webpage: http://69.120.125.192:4009

Questions?