

Crime and Incarceration in Chicago

[Code ▾](#)[Code](#)

Introduction

Using the Chicago's Million Dollar Blocks website we can tally the costs of of incarceration based upon residential addresses of incarcerated individuals. Using this information, we can get a general idea of how much money the city of Chicago spends on policing and incarcerating people in these specific neighborhoods. A preliminary analysis like this is detrimental in understanding how the City of Chicago spends its money. This can help people understand how much money is being used to police communities as opposed to funding communities for better opportunities. This data can be insightful in critiquing the way in which cities allocate funds for policing, investment, and community programs.

[Code](#)[Code](#)

```
[1] 60162
```

[Code](#)

```
[1] 60162
```

The Data

The data we will work with for this lab comes from the Chicago's Million Blocks website which provides a description of the type of crimes committed, count of the types of crimes, arrest date, and the address block of where the person who committed the crime lives. The incarceration data set provides a large sum of information such as case number, street address, arrest date, and sex just to name a few variables. This incarceration full data set provides information regarding address of block where the crime was committed and mapping variables such as longitude and latitude. This full data set can be used to map out where incarcerated or formerly incarcerated persons reside throughout the city of Chicago. For purposes of this lab, we are only focusing on crimes committed in the city of Chicago. Through combing these data sets we can have a larger amount of information to inform this data through mapping, or just generating a table overall.

[Code](#)

```
[1] 332
```

[Code](#)

```
[1] 251
```

Working with Cases

In this data set there are multiple records associated with each case number. The chrgdisp field contains information regarding the disposition of each individual charge. In some cases, the charge doesn't mean that the individual was imprisoned, thus it is imperative to figure out how many individuals were incarcerated and how many were not. The following table shows what the variables in the the chrgdisp field contains:

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```
inc_add_chi %>% select(chrgdisp) %>% distinct()
```

chrgdisp

<chr>

CREDIT DEFENDANT FOR TIME SERV
DEF SENTENCED TO COOK CNTY DOC
DEF SENTENCED TO PROBATION
DEF SENTENCED ILLINOIS DOC
PROB AND OTHER DISC CONDS
SENT/CRT SUPV-SOC SERV-SPC CND
DEF SENT TO LIFE IMPRISONMENT
SENTENCED TO COMMUNITY SERVICE
DEF SENT CONDITIONAL DISCHARGE
DEF SENT TO PAY RESTITUTION

1-10 of 11 rows

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The following values appear to be associated with imprisonment:

“DEF SENTENCED ILLINOIS DOC” (Defendant Sentenced to Illinois Department of Correction) “DEF SENTENCED TO COOK CNTY DOC” (Defendant Sentenced to Cook County Department of Correction) “DEF SENT TO LIFE IMPRISONMENT” (Defendant Sentenced to Life Imprisonment) “SENTENCED CCDOC BOOT CAMP” (Sentenced to Cook County Department of Corrections Boot Camp) “DEF SENTENCED TO DEATH” (Defendant Sentenced to Death) “DEF SENT CCDOC, PERIODIC IMP” (Defendant Sentenced to Cook County Department of Corrections, Periodic Imprisonment)

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```
inc_add_chi %>% select(chrgdisp) %>% distinct()
```

chrgdisp

<chr>

CREDIT DEFENDANT FOR TIME SERV
DEF SENTENCED TO COOK CNTY DOC
DEF SENTENCED TO PROBATION
DEF SENTENCED ILLINOIS DOC

chrgdisp <chr>
PROB AND OTHER DISC CONDS
SENT/CRT SUPV-SOC SERV-SPC CND
DEF SENT TO LIFE IMPRISONMENT
SENTENCED TO COMMUNITY SERVICE
DEF SENT CONDITIONAL DISCHARGE
DEF SENT TO PAY RESTITUTION
1-10 of 11 rows
Previous 1 2 Next

Code

We can recode this data to show which cases are associated with imprisonment, and which cases did not result in imprisonment. The following table shows the proportion of records associated with imprisonment:

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in_prison <chr>	count <dbl>
1 In Prison	0.3904382
2 Not in Prison	0.6095618
2 rows	

From this table, we can see that 39 percent of the cases resulted in imprisonment, and 60 percent did not.

Furthermore, we can further filter the data to show the information regarding cases that resulted in imprisonment. This is the data we will use to figure out how much money the city of Chicago spends on incarceration.

Code

Calculating to the cost of imprisonment

The Million Dollar Blocks researchers assume that the cost of prison is \$22,000 per year. They use the minimum sentence associated with each case as a conservative estimate of the cost of incarceration. The minimum sentence data is split into years, months, and day (Greenlee, 2021). By creating a new column in our data set we can estimate the number of days for each sentence.

Code

The following table summarizes the average number of days associated with felony and misdemeanor charges.

Code

charge_type <chr>	count <int>	days <dbl>
1 AGG BATTERY	1	30.00000

	charge_type <chr>	count <int>	days <dbl>
2	AGG BATTERY OF A CHILD	1	2555.00000
3	AGG CRIM SEX ABUSE	2	1095.00000
4	AGG CRIM SEX ASSAULT	6	3224.16667
5	ARMED ROBBERY	2	11680.00000
6	ARMED VIOL (CAT I WPN)	1	1460.00000
7	ATT (AGG CRIM SEX ASSA	6	5475.00000
8	ATT (ARMED ROBBERY)	1	4380.00000
9	ATT (CRIM SEX ASSAULT)	1	1460.00000
10	ATT (MURDER)	3	5110.00000
1-10 of 40 rows		Previous	1 2 3 4 Next

Code

	charge_type <chr>	count <int>	days <dbl>
1	AGG BATTERY	1	30.00000
2	AGG BATTERY OF A CHILD	1	2555.00000
3	AGG CRIM SEX ABUSE	2	1095.00000
4	AGG CRIM SEX ASSAULT	6	3224.16667
5	ARMED ROBBERY	2	11680.00000
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10	ATT (MURDER)	3	5110.00000
1-10 of 40 rows		Previous	1 2 3 4 Next

Furthermore, we can look at the average cost associated with each sentence. The new column called `sentence_cost` multiplies the number of days of each minimum sentence by the cost per day ($22,000/365 = \$60.27$ per day).

Code

Adding missing grouping variables: `chrgdesc`

chrgdesc <chr>	sentence_cost <dbl>
AGG BATTERY	1.808219e+03
RAPE	2.200000e+05
MURDER	1.100000e+06
MURDER	1.188000e+06
MURDER	3.080000e+05
ARMED ROBBERY	8.800000e+04
ARMED VIOL (CAT I WPN)	8.800000e+04
UNLAWFUL RESTRAINT	8.800000e+04
AGG CRIM SEX ASSAULT	8.800000e+04
AGG CRIM SEX ASSAULT	8.800000e+04
1-10 of 98 rows	Previous 1 2 3 4 5 6 ... 10 Next

Observations

Having this cleaner version of a combined data set is beneficial for making general observation in terms of where crime is concentrated and how much in taxes is being paid toward incarceration. Based on a preliminary observation from the tables created, we can see that prison is a costly investment that makes up a large sum of local taxes. Moving forward, I think that mapping out these crimes and costs would be beneficial to observe which neighborhoods are “producing the most crime.” This can give us a general idea of the neighborhoods and city blocks where the most crime occurs. Through mapping this information we can also compare the total sum of prison costs to the total community reinvestment from the city. This can give us a general understanding of whether or not the city is proactively trying to combat crime through community reinvestment programs, or simply using these funds to police the community.

Discussion

Having this data available to map out where and what types of crimes were committed is very beneficial; however, there can be a lot of negative effects from having this information in hand. This data can be used to determine values of real estate in particular communities. While this would be good for real estate agents and potential home buyers, this can have negative effects on current home owners and community members because of the lack of investment from the real estate side. Similarly, this can be discouraging for developers and potential business owners as well as current business owners. While this information may be beneficial to look at the potential market, this can discourage grocery stores and essential businesses from being there. For example, Engelwood in the South side of Chicago is known for being a neighborhood with high crime rates. For this reason, real estate values are low, property taxes are low, quality of schools are low and there is a lack of places to buy healthy food due to a lack of grocery stores. Again, this type of information can be good to know in terms of risky market conditions, however, this also affects the life of people who currently live there.

On the plus side, this information, if used properly can help cities inform policy makers, banks, organizations , and other institutions about the needs of the community. It is clear that policing and incarceration becomes expensive for the city and police department, so another solution is necessary. Instead, the city could use this information to fund resources and organizations that will help decrease crime rates in the community rather than using policing as a solution. I think the next step for this data set is to map it to have a visual of what these patterns look like. It would also be interesting to map investments within those total communities to see if the city is adequately funding these communities of need.