

## **ABSTRACT :**

This report analyzes data on Chicago crimes, public schools, and socioeconomics to understand the relationships between these factors. The objective is to gain insights into the city's social landscape and identify areas needing intervention.

## CONTENT:

| Topics                                                                                                                                                                                                                                                                                                                                                                                        | Page Number                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| <b>1.INTRODUCTION</b> <ul style="list-style-type: none"><li>• <i>Purpose of the project</i></li><li>• <i>Objectives</i></li></ul>                                                                                                                                                                                                                                                             | 4                                       |
| <b>2.Methodology</b> <ul style="list-style-type: none"><li>• <i>ERD</i></li><li>• <i>Primary Key Assignment in the table</i></li><li>• <i>SQL Statements to assign Foreign Key to the table</i></li><li>• <i>Inserting Additional Data into the Table</i></li><li>• <i>SQL Statements to summarize and synthesize the Business Operations</i></li><li>• <i>Views and Procedures</i></li></ul> | 5<br>6-8<br>9<br>9-12<br>13-34<br>35-38 |
| <b>3. Data Visualization</b>                                                                                                                                                                                                                                                                                                                                                                  | 13-34                                   |
| <b>4. Analysis and Discussion</b> <ul style="list-style-type: none"><li>• <i>Dashboard, Analysis and Summary</i></li></ul>                                                                                                                                                                                                                                                                    | 40-46                                   |

## **PURPOSE OF THE PROJECT:**

The purpose of this project is to:

- Understand the relationships between crime rates, socioeconomic factors, and educational opportunities in Chicago.
- Implement the full cycle of database management, including design, implementation, querying, and analysis.

## **OBJECTIVE:**

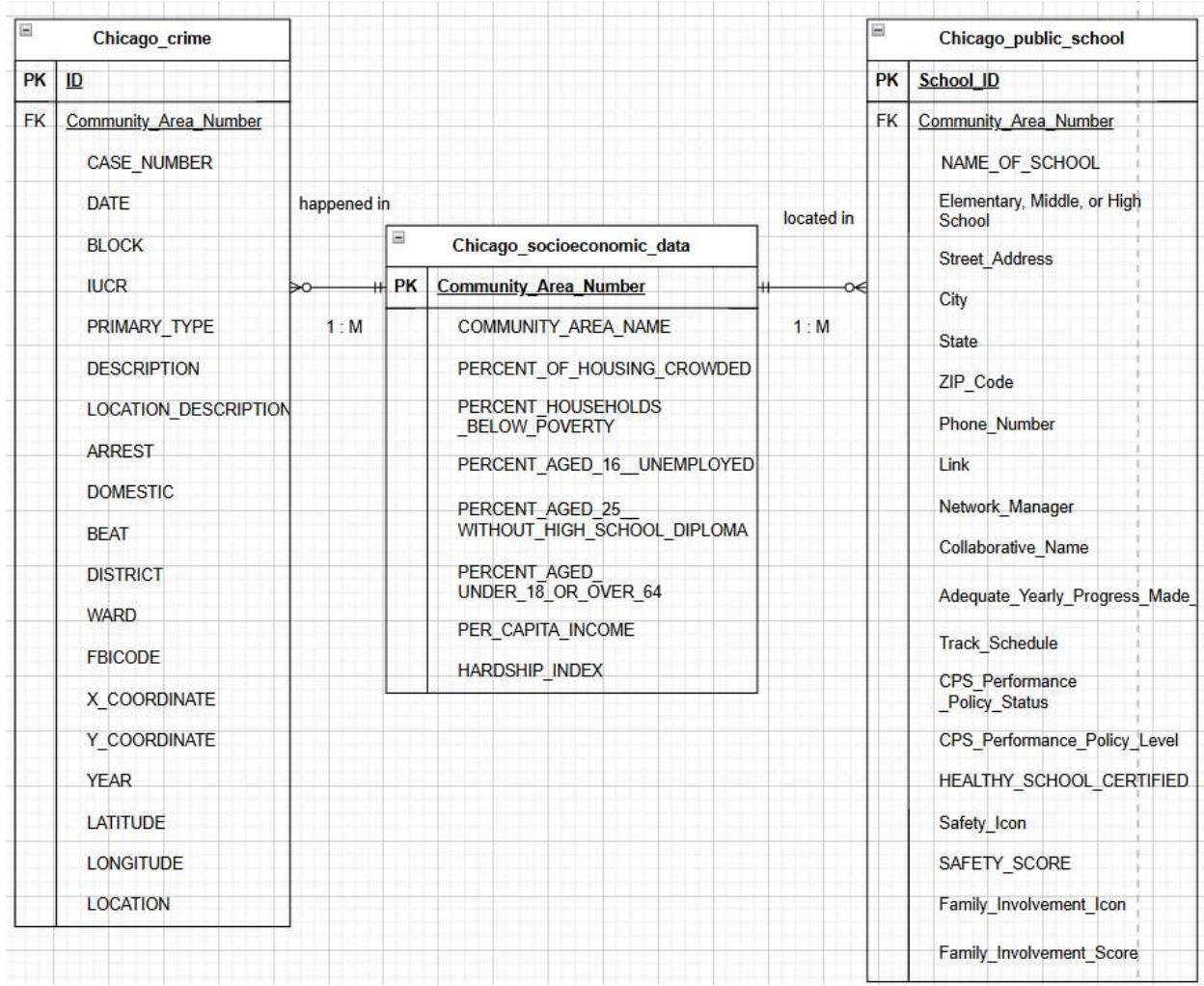
The objective of our project is to understand the complex relationship between crime, poverty, and educational outcomes in Chicago. We aim to analyze data from Chicago Crime, Chicago Public Schools, and Chicago Socioeconomic Data to:

- Identify high-crime areas and their socioeconomic characteristics.
- Analyze the impact of poverty and socioeconomic disparities on crime rates.
- Explore the relationship between school safety, performance, and community crime rates.
- Implement the full cycle of database management, including design, implementation, querying, and analysis.

By achieving these objectives, we hope to gain valuable insights that can inform policy decisions and resource allocation to improve public safety and educational outcomes in Chicago.

## METHODOLOGY:

### 1.ERD:



## 2.Primary Key assignment in the Table:

### Chicago Crime

Primary Key: ID

### Table: chicago\_crime

#### Columns:

|                      |  |             |
|----------------------|--|-------------|
| ID                   |  | int PK      |
| CASE_NUMBER          |  | varchar(8)  |
| DATE                 |  | varchar(10) |
| BLOCK                |  | varchar(35) |
| IUCR                 |  | varchar(4)  |
| PRIMARY_TYPE         |  | varchar(33) |
| DESCRIPTION          |  | varchar(46) |
| LOCATION_DESCRIPTION |  | varchar(33) |
| ARREST               |  | varchar(5)  |
| DOMESTIC             |  | varchar(5)  |
| BEAT                 |  | int         |
| DISTRICT             |  | int         |

### Table Chicago Crime:

| Result Grid |             | Filter Rows: |                        | Edit: |                     | Export/Import:         |                         | Wrap Cell Content: |  |
|-------------|-------------|--------------|------------------------|-------|---------------------|------------------------|-------------------------|--------------------|--|
| ID          | CASE_NUMBER | DATE         | BLOCK                  | IUCR  | PRIMARY_TYPE        | DESCRIPTION            | LOCATION_DESCRIPTION    | ARRES              |  |
| 21149       | HW519443    | 2013-11-03   | 044XX S RICHMOND ST    | 110   | HOMICIDE            | FIRST DEGREE MURDER    | HOUSE                   | TRUE               |  |
| 23469       | JA359626    | 2017-07-23   | 015XX E 82ND ST        | 110   | HOMICIDE            | FIRST DEGREE MURDER    | STREET                  | FALSE              |  |
| 1111111     | 11111110    | 2024-01-01   | 100 S STATE ST         | 0810  | THEFT               | STOLEN VEHICLE         | STREET                  | TRUE               |  |
| 1326195     | G021609     | 2001-01-11   | 087XX S ESCANABA AV    | 9901  | DOMESTIC VIOLENCE   | DOMESTIC VIOLENCE      | APARTMENT               | TRUE               |  |
| 1340847     | G040244     | 2001-01-19   | 063XX N NAGLE AV       | 820   | THEFT               | \$500 AND UNDER        | GROCERY FOOD STORE      | TRUE               |  |
| 1353618     | G056330     | 2001-01-27   | 078XX S SAWYER AV      | 460   | BATTERY             | SIMPLE                 | RESIDENCE PORCH/HALLWAY | TRUE               |  |
| 1363954     | G070193     | 2001-02-03   | 004XX W WRIGHTWOOD AV  | 460   | BATTERY             | SIMPLE                 | RESIDENCE               | FALSE              |  |
| 1367327     | G057394     | 2001-01-28   | 046XX S CICERO AV      | 1513  | PROSTITUTION        | SOLICIT FOR BUSINESS   | STREET                  | TRUE               |  |
| 1414626     | G134016     | 2001-03-01   | 055XX S NOTTINGHAM AV  | 1310  | CRIMINAL DAMAGE     | TO PROPERTY            | RESIDENCE               | FALSE              |  |
| 1419496     | G140454     | 2001-03-11   | 077XX S SOUTH SHORE DR | 460   | BATTERY             | SIMPLE                 | APARTMENT               | FALSE              |  |
| 1427912     | G122095     | 2001-03-02   | 039XX N ASHLAND AV     | 1505  | PROSTITUTION        | CALL OPERATION         | RESIDENCE               | TRUE               |  |
| 1438213     | G161722     | 2001-03-21   | 011XX W WILSON AV      | 1210  | DECEPTIVE PRACTICE  | THEFT OF LABOR/SERV... | CTA PLATFORM            | TRUE               |  |
| 1448800     | G170513     | 2001-03-25   | 074XX S PAXTON AV      | 1811  | NARCOTICS           | POSS: CANNABIS 30G...  | SIDEWALK                | TRUE               |  |
| 1455002     | G158614     | 2001-03-18   | 059XX S GREEN ST       | 261   | CRIM SEXUAL ASSAULT | AGGRAVATED: HANDGUN    | ALLEY                   | FALSE              |  |

## Chicago Socioeconomic Data:

Primary Key: Community Area Name

**Table: chicago\_socioeconomic\_data**

### Columns:

| <u>COMMUNITY AREA NUMBER</u> |                                             |  |  |              |
|------------------------------|---------------------------------------------|--|--|--------------|
|                              | COMMUNITY_AREA_NAME                         |  |  | varchar(2)   |
|                              | PERCENT_OF_HOUSING_CROWDED                  |  |  | PK           |
|                              | PERCENT_HOUSEHOLDS_BELOW_POVERTY            |  |  | varchar(22)  |
|                              | PERCENT_AGED_16_UNEMPLOYED                  |  |  | decimal(3,1) |
|                              | PERCENT_AGED_25_WITHOUT_HIGH_SCHOOL_DIPLOMA |  |  | decimal(3,1) |
|                              | PERCENT_AGED_UNDER_18_OR_OVER_64            |  |  | decimal(3,1) |
|                              | PER_CAPITA_INCOME                           |  |  | decimal(3,1) |
|                              | HARDSHIP_INDEX                              |  |  | int          |
|                              |                                             |  |  | varchar(2)   |

**Table Chicago Socioeconomic Data**

|    | COMMUNITY_AREA_NUMBER | COMMUNITY_AREA_NAME | PERCENT_OF_HOUSING_CROWDED | PERCENT_HOUSEHOLDS_BELOW_POVERTY | PERCENT_AGED_16_UNEMPLOYED |
|----|-----------------------|---------------------|----------------------------|----------------------------------|----------------------------|
| ▶  |                       | CHICAGO             | 4.7                        | 19.7                             | 12.9                       |
| 01 |                       | Near North Side     | 8.5                        | 10.2                             | 9.0                        |
| 02 |                       | West Town           | 15.0                       | 12.1                             | 11.5                       |
| 03 |                       | South Lawndale      | 12.0                       | 25.4                             | 10.8                       |
| 04 |                       | West Garfield Park  | 22.5                       | 35.2                             | 15.0                       |
| 05 |                       | Chatham             | 10.0                       | 15.0                             | 8.0                        |
| 1  |                       | Rogers Park         | 7.7                        | 23.6                             | 8.7                        |
| 10 |                       | Norwood Park        | 2.0                        | 5.4                              | 9.0                        |
| 11 |                       | Jefferson Park      | 2.7                        | 8.6                              | 12.4                       |
| 12 |                       | Forest Glen         | 1.1                        | 7.5                              | 6.8                        |
| 13 |                       | North Park          | 3.9                        | 13.2                             | 9.9                        |
| 14 |                       | Albany Park         | 11.3                       | 19.2                             | 10.0                       |
| 15 |                       | Portage Park        | 4.1                        | 11.6                             | 12.6                       |
| 16 |                       | Irving Park         | 6.3                        | 13.1                             | 10.0                       |

## **Chicago Public School:**

Primary Key: School ID

### **Table: chicago\_public\_schools**

#### **Columns:**

|                                    |  |             |
|------------------------------------|--|-------------|
| <u>School_ID</u>                   |  | int PK      |
| NAME_OF_SCHOOL                     |  | varchar(65) |
| Elementary, Middle, or High School |  | varchar(2)  |
| Street_Address                     |  | varchar(29) |
| City                               |  | varchar(7)  |
| State                              |  | varchar(2)  |
| ZIP_Code                           |  | int         |
| Phone_Number                       |  | varchar(14) |
| Link                               |  | varchar(78) |
| Network_Manager                    |  | varchar(40) |
| Collaborative_Name                 |  | varchar(34) |
| Adequate_Yearly_Progress_Made_     |  | varchar(3)  |
| Track_Schedule                     |  | varchar(12) |

### **Table:**

| School_ID | NAME_OF_SCHOOL                                  | Elementary, Middle, or High School | Street_Address  | City    | State | ZIP_Code | Phone_Number   |
|-----------|-------------------------------------------------|------------------------------------|-----------------|---------|-------|----------|----------------|
| 101       | Lincoln High School                             | HS                                 | 615 W Kemper PA | Chicago | IL    | 60614    | (818) 534-5780 |
| 102       | Grant High School                               | HS                                 | 300 E Kemper PB | Chicago | IL    | 60614    | (990) 534-5770 |
| 103       | Washington Middle School                        | MS                                 | 400 N Kemper PC | Chicago | IL    | 60614    | (532) 534-576  |
| 104       | Roosevelt High School                           | HS                                 | 500 S Kemper PD | Chicago | IL    | 60614    | (228) 534-5750 |
| 105       | Kennedy High School                             | HS                                 | 900 W Kemper PE | Chicago | IL    | 60614    | (121) 534-5740 |
| 400018    | Austin Business and Entrepreneurship Academy... | HS                                 | 231 N Pine Ave  | Chicago | IL    | 60644    | (773) 534-6316 |
| 609674    | Chicago Vocational Career Academy High School   | HS                                 | 2100 E 87th St  | Chicago | IL    | 60617    | (773) 535-6100 |
| 609676    | Paul Laurence Dunbar Career Academy High Sc...  | HS                                 | 3000 S King Dr  | Chicago | IL    | 60616    | (773) 534-9000 |

### **3.Assigning foreign key to table : chicago\_crime**

```
ALTER TABLE chicago_crime  
ADD FOREIGN KEY (COMMUNITY_AREA_NUMBER)  
REFERENCES chicago_socioeconomic_data(COMMUNITY_AREA_NUMBER);
```

### **4.Changing data type from int to varchar to maintain consistency across all tables**

```
ALTER TABLE chicago_public_schools  
MODIFY COLUMN COMMUNITY_AREA_NUMBER varchar(2)
```

### **5.Assigning foreign key to table : chicago\_public\_schools**

```
ALTER TABLE chicago_public_schools  
ADD FOREIGN KEY (COMMUNITY_AREA_NUMBER)  
REFERENCES chicago_socioeconomic_data(COMMUNITY_AREA_NUMBER);
```

### **6.INSERTING 5 new rows to table : chicago\_socioeconomic\_data**

```
INSERT INTO chicago_socioeconomic_data (COMMUNITY_AREA_NUMBER,  
COMMUNITY_AREA_NAME, PERCENT_OF_HOUSING_CROWDED,  
PERCENT_HOUSEHOLDS_BELOW_POVERTY, PERCENT_AGED_16_UNEMPLOYED,  
PERCENT_AGED_25_WITHOUT_HIGH_SCHOOL_DIPLOMA,  
PERCENT_AGED_UNDER_18_OR_OVER_64, PER_CAPITA_INCOME,  
HARDSHIP_INDEX)  
VALUES  
('01', 'Near North Side', 8.5, 10.2, 9.0, 5.3, 20.4, 42000, 5.0),  
('02', 'West Town', 15.0, 12.1, 11.5, 6.8, 22.3, 39000, 7.5),  
('03', 'South Lawndale', 12.0, 25.4, 10.8, 20.0, 19.6, 30000, 8.0),  
('04', 'West Garfield Park', 22.5, 35.2, 15.0, 45.0, 25.5, 25000, 9.0),  
('05', 'Chatham', 10.0, 15.0, 8.0, 7.5, 15.0, 35000, 6.5);
```

## **7.INSERTING 5 new rows to table : chicago\_crime**

```
INSERT INTO chicago_crime (ID, CASE_NUMBER, DATE, BLOCK, IUCR, PRIMARY_TYPE, DESCRIPTION, LOCATION_DESCRIPTION, ARREST, DOMESTIC, BEAT, DISTRICT, WARD, COMMUNITY_AREA_NUMBER, FBICODE, X_COORDINATE, Y_COORDINATE, YEAR, LATITUDE, LONGITUDE, LOCATION)
VALUES
(1111111, '11111110', '2024-01-01', '100 S STATE ST', '0810', 'THEFT', 'STOLEN VEHICLE', 'STREET', 'TRUE', 'FALSE', 1234, 12, '10', '01', 'FB1', '1234567', '7654321', 2024, '41.8074405', '-87.70395585', '(41.8074405, -87.703955849'),,
(2222222, '22222220', '2024-01-02', '200 S STATE ST', '0820', 'BURGLARY', 'RESIDENTIAL BURGLARY', 'RESIDENCE', 'FALSE', 'TRUE', 1234, 12, '10', '02', 'FB2', '1234568', '7654322', 2024, '41.8074405', '-87.70395585', '(41.8074405, -87.703955849'),,
(3333333, '33333330', '2024-01-03', '300 S STATE ST', '0830', 'ASSAULT', 'SIMPLE ASSAULT', 'STREET', 'FALSE', 'FALSE', 1234, 12, '10', '03', 'FB3', '1234569', '7654323', 2024, '41.8074405', '-87.70395585', '(41.8074405, -87.703955849'),,
(4444444, '44444440', '2024-01-04', '400 S STATE ST', '0840', 'ROBBERY', 'ARMED ROBBERY', 'STREET', 'TRUE', 'TRUE', 1234, 12, '10', '04', 'FB4', '1234570', '7654324', 2024, '41.8074405', '-87.70395585', '(41.8074405, -87.703955849'),,
(5555555, '55555550', '2024-01-05', '500 S STATE ST', '0850', 'HOMICIDE', 'MURDER', 'STREET', 'FALSE', 'FALSE', 1234, 12, '10', '05', 'FB5', '1234571', '7654325', 2024, '41.8074405', '-87.70395585', '(41.8074405, -87.703955849');
```

## **8.INSERTING 5 new rows to table : chicago\_public\_schools**

```
INSERT INTO chicago_public_schools
```

```
('School_ID', 'NAME_OF_SCHOOL', 'Elementary, Middle, or High School', 'Street_Address', 'City', 'State', 'ZIP_Code', 'Phone_Number', 'Link', 'Network_Manager', 'Collaborative_Name', 'Adequate_Yearly_Progress_Made_', 'Track_Schedule', 'CPS_Performance_Policy_Status', 'CPS_Performance_Policy_Level', 'HEALTHY_SCHOOL_CERTIFIED', 'Safety_Icon', 'SAFETY_SCORE', 'Family_Involvement_Icon', 'Family_Involvement_Score', 'Environment_Icon', 'Environment_Score', 'Instruction_Icon', 'Instruction_Score', 'Leaders_Icon', 'Leaders_Score', 'Teachers_Icon', 'Teachers_Score', 'Parent_Engagement_Icon', 'Parent_Engagement_Score', 'Parent_Environment_Icon', 'Parent_Environment_Score',
```

`AVERAGE\_STUDENT\_ATTENDANCE`, `Rate\_of\_Misconducts\_per\_100\_students\_`,  
 `Average\_Teacher\_Attendance`, `Individualized\_Education\_Program\_Compliance\_Rate`,  
 `Pk\_2\_Literacy\_`, `Pk\_2\_Math\_`, `Gr3\_5\_Grade\_Level\_Math\_`,  
 `Gr3\_5\_Grade\_Level\_Read\_`, `Gr3\_5\_Keep\_Pace\_Read\_`, `Gr3\_5\_Keep\_Pace\_Math\_`,  
 `Gr6\_8\_Grade\_Level\_Math\_`, `Gr6\_8\_Grade\_Level\_Read\_`, `Gr6\_8\_Keep\_Pace\_Math\_`,  
 `Gr6\_8\_Keep\_Pace\_Read\_`, `Gr\_8\_Explore\_Math\_`, `Gr\_8\_Explore\_Read\_`,  
 `ISAT\_Exceeding\_Math\_`, `ISAT\_Exceeding\_Reading\_`, `ISAT\_Value\_Add\_Math`,  
 `ISAT\_Value\_Add\_Read`, `ISAT\_Value\_Add\_Color\_Math`, `ISAT\_Value\_Add\_Color\_Read`,  
 `Students\_Taking\_Algebra\_`, `Students\_Passing\_Algebra\_`, `9th Grade EXPLORE (2009)`,  
 `9th Grade EXPLORE (2010)`, `10th Grade PLAN (2009)`, `10th Grade PLAN (2010)`,  
 `Net\_Change\_EXPLORE\_and\_PLAN`, `11th Grade Average ACT (2011)`,  
 `Net\_Change\_PLAN\_and\_ACT`, `College\_Eligibility\_`, `Graduation\_Rate\_`,  
 `College\_Enrollment\_Rate\_`, `COLLEGE\_ENROLLMENT`, `General\_Services\_Route`,  
 `Freshman\_on\_Track\_Rate\_`, `X\_COORDINATE`, `Y\_COORDINATE`, `Latitude`,  
 `Longitude`, `COMMUNITY\_AREA\_NUMBER`, `COMMUNITY\_AREA\_NAME`, `Ward`,  
 `Police\_District`, `Location`)

## VALUES

(101, 'Lincoln High School', 'HS', '615 W Kemper PA', 'Chicago', 'IL', 60614, '(818) 534-5780',  
<http://lincolnelementary.org>, 'Fullerton Elementary Network', 'NORTH-NORTHWEST SIDE  
 COLLABORATIVE', 'No', 'Standard', 'Not on Probation', 'Level 1', 'Yes', 'Very Strong', '99', 'Very  
 Strong', '99', 'Strong', '74', 'Strong', '66', 'Weak', '65', 'Strong', '70', 'Strong', '56', 'Average', '47',  
 '96.00%', '2.0', '96.40%', '95.80%', '80.1', '43.3', '89.6', '84.', '60.', '62.', '81.', '85.', '52', '62.', '66.',  
 '77.', '69.7', '64.4', '0.2', '0.9', 'Red', 'Green', '67.1', '54.5', 'NDA', 'NDA', 'NDA', 'NDA',  
 'NDA', 'NDA', 'NDA', 'NDA', 'NDA', 814, 36, 'NDA', '1171699.458', '1915829.428',  
 '41.92449696', '-87.64452163', 01, 'LINCOLN PARK', 43, 18, '(42.92449696, -77.64452163)'),

(102, 'Grant High School', 'HS', '300 E Kemper PB', 'Chicago', 'IL', 60614, '(990) 534-5770',  
<http://granthighschool.org>, 'Fullerton Elementary Network', 'NORTH-NORTHWEST SIDE  
 COLLABORATIVE', 'No', 'Standard', 'Not on Probation', 'Level 1', 'Yes', 'Very Strong', '99', 'Very  
 Strong', '99', 'Strong', '74', 'Strong', '66', 'Weak', '65', 'Strong', '70', 'Strong', '56', 'Average', '47',  
 '96.00%', '2.0', '96.40%', '95.80%', '80.1', '43.3', '89.6', '84.', '60.', '62.', '81.', '85.', '52', '62.', '66.',  
 '77.', '69.7', '64.4', '0.2', '0.9', 'Yellow', 'Green', '67.1', '54.5', 'NDA', 'NDA', 'NDA', 'NDA',  
 'NDA', 'NDA', 'NDA', 'NDA', 815, 37, 'NDA', '1171699.458', '1915829.428',  
 '41.92449696', '-87.64452163', 02, 'R PARK', 40, 17, '(51.92449111, -98.64452555)'),

(103, 'Washington Middle School', 'MS', '400 N Kemper PC', 'Chicago', 'IL', 60614, '(532) 534-  
 5760', <http://washingtonmiddle.org>, 'Fullerton Elementary Network', 'NORTH-NORTHWEST  
 SIDE COLLABORATIVE', 'No', 'Standard', 'Not on Probation', 'Level 1', 'Yes', 'Very Strong', '99',  
 'Very Strong', '99', 'Strong', '74', 'Strong', '66', 'Weak', '65', 'Strong', '70', 'Strong', '56', 'Average',  
 '47', '96.00%', '2.0', '96.40%', '95.80%', '80.1', '43.3', '89.6', '84.', '60.', '62.', '81.', '85.', '52', '62.',

'66.', '77.', '69.7', '64.4', '0.2', '0.9', 'Blue', 'Green', '67.1', '54.5', 'NDA', 816, 38, 'NDA', '1171699.458', '1915829.428', '41.92449696', '-87.64452163', 03, 'W PARK', 22, 16, '(71.92449222, -65.64452666)'),

(104, 'Roosevelt High School', 'HS', '500 S Kemper PD', 'Chicago', 'IL', 60614, '(228) 534-5750', '<http://roosevelthigh.org>', 'Fullerton Elementary Network', 'NORTH-NORTHWEST SIDE COLLABORATIVE', 'No', 'Standard', 'Not on Probation', 'Level 1', 'Yes', 'Very Strong', '99', 'Very Strong', '99', 'Strong', '74', 'Strong', '66', 'Weak', '65', 'Strong', '70', 'Strong', '56', 'Average', '47', '96.00%', '2.0', '96.40%', '95.80%', '80.1', '43.3', '89.6', '84.', '60.', '62.', '81.', '85.', '52', '62.', '66.', '77.', '69.7', '64.4', '0.2', '0.9', 'Green', 'Green', '67.1', '54.5', 'NDA', 817, 39, 'NDA', '1171699.458', '1915829.428', '41.92449696', '-87.64452163', 04, 'K PARK', 33, 15, '(22.9244933, -75.64452777)'),

(105, 'Kennedy High School', 'HS', '900 W Kemper PE', 'Chicago', 'IL', 60614, '(121) 534-5740', '<http://kennedyhigh.org>', 'Fullerton Elementary Network', 'NORTH-NORTHWEST SIDE COLLABORATIVE', 'No', 'Standard', 'Not on Probation', 'Level 1', 'Yes', 'Very Strong', '99', 'Very Strong', '99', 'Strong', '74', 'Strong', '66', 'Weak', '65', 'Strong', '70', 'Strong', '56', 'Average', '47', '96.00%', '2.0', '96.40%', '95.80%', '80.1', '43.3', '89.6', '84.', '60.', '62.', '81.', '85.', '52', '62.', '66.', '77.', '69.7', '64.4', '0.2', '0.9', 'Green', 'Green', '67.1', '54.5', 'NDA', 818, 40, 'NDA', '1171699.458', '1915829.428', '41.92449696', '-87.64452163', 05, 'A PARK', 55, 10, '(15.92449444, -70.64452999)'),

## **9.SQL Statements to summarize and synthesize the Business Operations**

### **Segment 1: Setting the Stage - Socioeconomic Landscape (Presented by A)**

This section focuses on understanding the socioeconomic status of different areas and identifying disparities.

#### **Queries:**

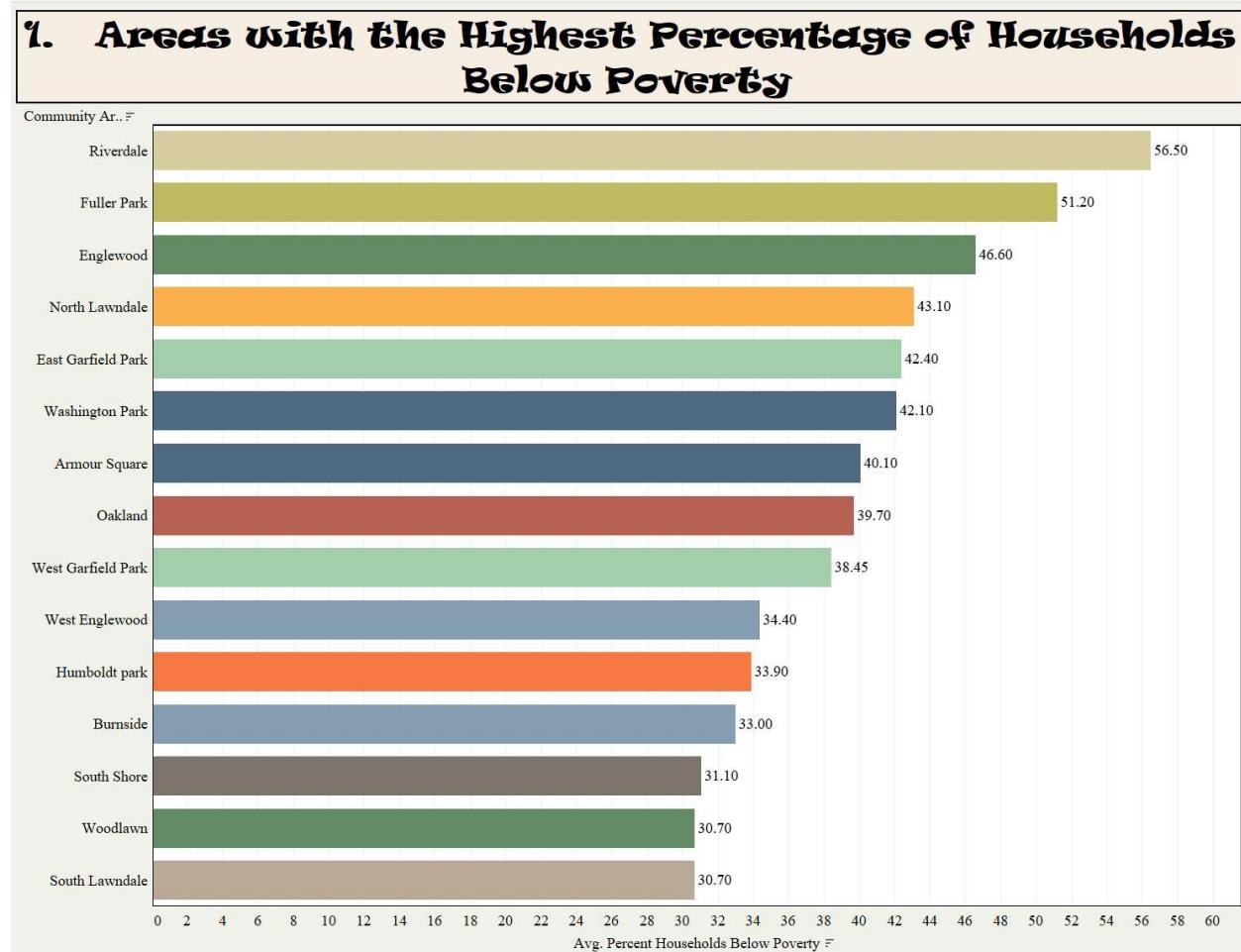
##### **1. Areas with the Highest Percentage of Households Below Poverty**

```
SELECT COMMUNITY_AREA_NUMBER, COMMUNITY_AREA_NAME,  
PERCENT_HOUSEHOLDS_BELOW_POVERTY  
FROM chicago_socioeconomic_data  
WHERE PERCENT_HOUSEHOLDS_BELOW_POVERTY > 30  
ORDER BY PERCENT_HOUSEHOLDS_BELOW_POVERTY DESC;
```

Table:

|   | COMMUNITY_AREA_NUMBER | COMMUNITY_AREA_NAME | PERCENT_HOUSEHOLDS_BELOW_POVERTY |
|---|-----------------------|---------------------|----------------------------------|
| ▶ | 54                    | Riverdale           | 56.5                             |
|   | 37                    | Fuller Park         | 51.2                             |
|   | 68                    | Englewood           | 46.6                             |
|   | 29                    | North Lawndale      | 43.1                             |
|   | 27                    | East Garfield Park  | 42.4                             |
|   | 40                    | Washington Park     | 42.1                             |
|   | 26                    | West Garfield Park  | 41.7                             |
|   | 34                    | Armour Square       | 40.1                             |
|   | 36                    | Oakland             | 39.7                             |
|   | 04                    | West Garfield Park  | 35.2                             |
|   | 67                    | West Englewood      | 34.4                             |
|   | 23                    | Humboldt park       | 33.9                             |
|   | 47                    | Burnside            | 33.0                             |
|   | 43                    | South Shore         | 31.1                             |
|   | 30                    | South Lawndale      | 30.7                             |

Visualization:



Analysis:

Riverdale as the most socioeconomically vulnerable area, with 56.5% of households below the poverty line, followed by Fuller Park (51.2%), Englewood (46.6%), and North Lawndale (43.1%). These areas, along with others like East Garfield Park (42.4%) and West Garfield Park (41.7%), exhibit concentrated poverty, requiring targeted interventions. These findings emphasize the need for focused policy measures to address the socioeconomic challenges in Chicago's most affected communities.

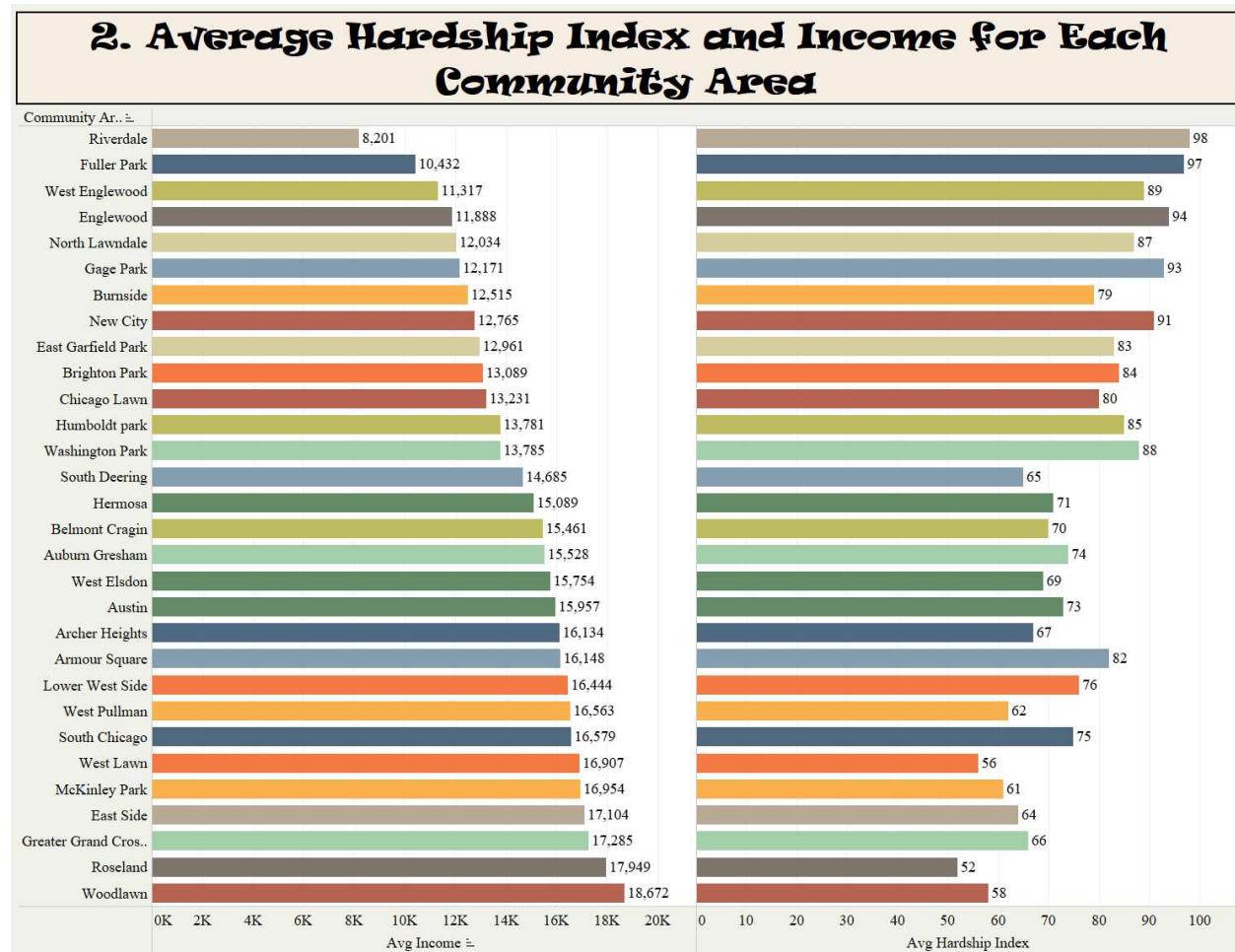
## 2. Average Hardship Index and Income for Each Community Area

```
SELECT COMMUNITY_AREA_NUMBER, COMMUNITY_AREA_NAME,
AVG(HARDSHIP_INDEX) AS avg_hardship_index, AVG(PER_CAPITA_INCOME)
AS avg_income
FROM chicago_socioeconomic_data
GROUP BY COMMUNITY_AREA_NUMBER, COMMUNITY_AREA_NAME;
```

Table:

|   | COMMUNITY_AREA_NUMBER | COMMUNITY_AREA_NAME | avg_hardship_index | avg_income |
|---|-----------------------|---------------------|--------------------|------------|
| ▶ |                       | CHICAGO             | 0                  | 28202.0000 |
|   | 01                    | Near North Side     | 5                  | 42000.0000 |
|   | 02                    | West Town           | 7                  | 39000.0000 |
|   | 03                    | South Lawndale      | 8                  | 30000.0000 |
|   | 04                    | West Garfield Park  | 9                  | 25000.0000 |
|   | 05                    | Chatham             | 6                  | 35000.0000 |
|   | 1                     | Rogers Park         | 39                 | 23939.0000 |
|   | 10                    | Norwood Park        | 21                 | 32875.0000 |
|   | 11                    | Jefferson Park      | 25                 | 27751.0000 |
|   | 12                    | Forest Glen         | 11                 | 44164.0000 |
|   | 13                    | North Park          | 33                 | 26576.0000 |
|   | 14                    | Albany Park         | 53                 | 21323.0000 |
|   | 15                    | Portage Park        | 35                 | 24336.0000 |
|   | 16                    | Irving Park         | 34                 | 27249.0000 |
|   | 17                    | Dunning             | 28                 | 26282.0000 |

Visualization:



Analysis:

There's a clear connection between the hardship index, income, and poverty levels in Chicago's community areas. For example, areas like Riverdale, Fuller Park, and Englewood stand out with the highest hardship scores 98, 97, and 89 and also have the lowest average incomes, around \$8,200 to \$11,300. These same areas also had the highest poverty rates in the earlier analysis, with Riverdale leading at 56.5%. This shows that poverty and economic challenges often go hand in hand with other hardships, like limited access to jobs, education, and resources etc, which we will discuss at length later. It's clear that these areas need targeted support to help break this cycle of disadvantage.

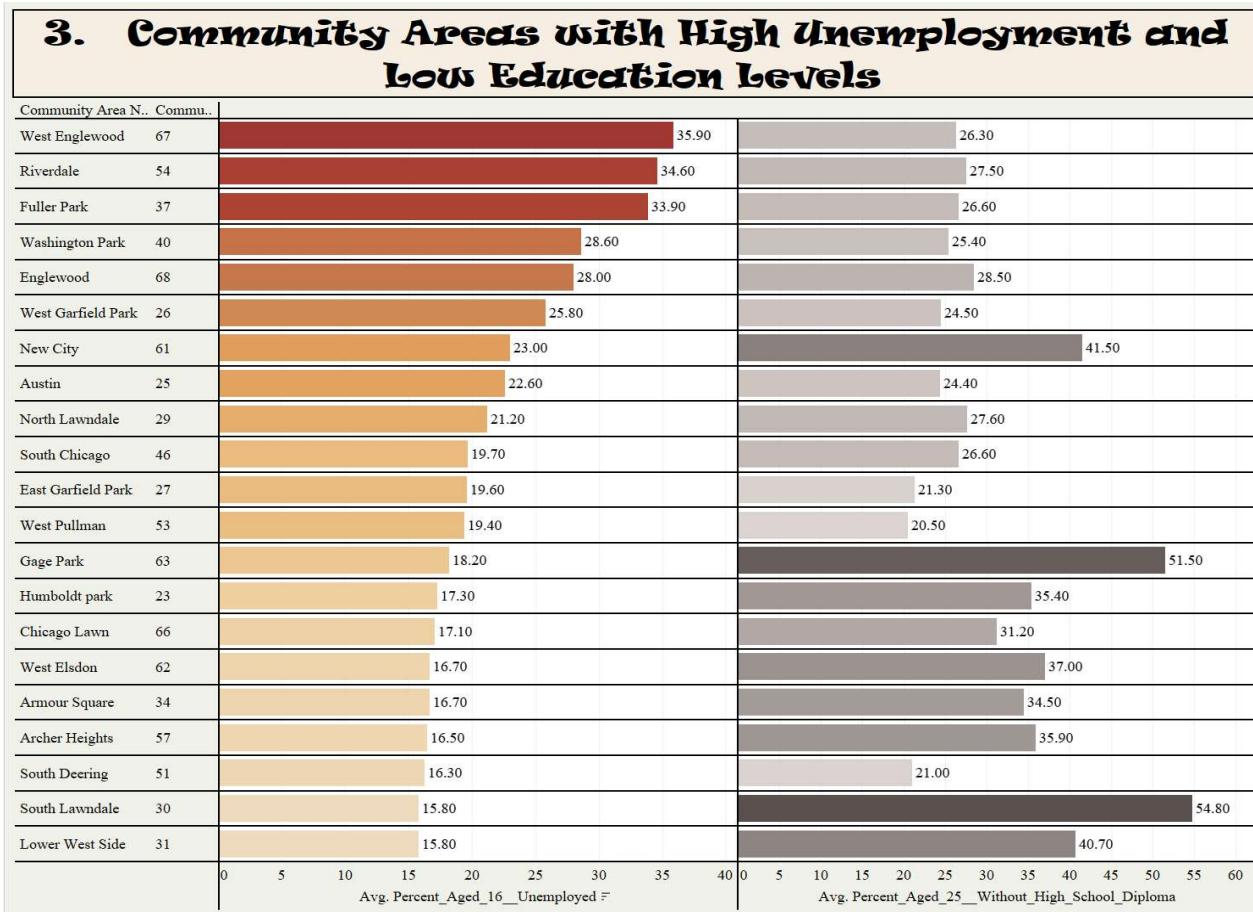
### 3. Community Areas with High Unemployment and Low Education Levels

```
SELECT COMMUNITY_AREA_NUMBER, COMMUNITY_AREA_NAME,  
PERCENT_AGED_16_UNEMPLOYED,  
PERCENT_AGED_25_WITHOUT_HIGH_SCHOOL_DIPLOMA  
  
FROM chicago_socioeconomic_data  
  
WHERE PERCENT_AGED_16_UNEMPLOYED > 15 AND  
PERCENT_AGED_25_WITHOUT_HIGH_SCHOOL_DIPLOMA > 20  
  
ORDER BY PERCENT_AGED_16_UNEMPLOYED DESC;
```

Table:

|   | COMMUNITY_AREA_NUMBER | COMMUNITY_AREA_NAME | PERCENT_AGED_16_UNEMPLOYED | PERCENT_AGED_25_WITHOUT_HIGH_SCHOOL |
|---|-----------------------|---------------------|----------------------------|-------------------------------------|
| ▶ | 67                    | West Englewood      | 35.9                       | 26.3                                |
|   | 54                    | Riverdale           | 34.6                       | 27.5                                |
|   | 37                    | Fuller Park         | 33.9                       | 26.6                                |
|   | 40                    | Washington Park     | 28.6                       | 25.4                                |
|   | 68                    | Englewood           | 28.0                       | 28.5                                |
|   | 26                    | West Garfield Park  | 25.8                       | 24.5                                |
|   | 61                    | New City            | 23.0                       | 41.5                                |
|   | 25                    | Austin              | 22.6                       | 24.4                                |
|   | 29                    | North Lawndale      | 21.2                       | 27.6                                |
|   | 46                    | South Chicago       | 19.7                       | 26.6                                |
|   | 27                    | East Garfield Park  | 19.6                       | 21.3                                |
|   | 53                    | West Pullman        | 19.4                       | 20.5                                |
|   | 63                    | Gage Park           | 18.2                       | 51.5                                |
|   | 23                    | Humboldt park       | 17.3                       | 35.4                                |

Visualization:



Analysis:

The data highlights community areas in Chicago with both high unemployment rates and low education levels, which closely align with the areas identified earlier with high hardship indices and low incomes. For instance, West Englewood, Riverdale, and Fuller Park not only have unemployment rates above 33% and significant portions of residents lacking high school diplomas (26–28%) but also rank among the highest in hardship indices and lowest in average incomes. Similarly, Englewood and North Lawndale face high unemployment and low education levels, reinforcing their broader socioeconomic challenges. These trends reveal a cycle where unemployment, limited education, and economic struggles are deeply interconnected, emphasizing the urgent need for targeted policies to improve education, job opportunities, and overall community support. We also notice some outliers where education levels are low but unemployment rate is equally low as well, for instance, New City, Gage Park and South Lawndale.

4. Trying to find the relationship between average per capita income and parent engagement score to see whether these two factor are positively or negatively related.

```

SELECT csd.COMMUNITY_AREA_NAME, AVG(Parent_Engagement_Score),
AVG(PER_CAPITA_INCOME)

FROM chicago_public_schools cps

JOIN chicago_socioeconomic_data csd ON cps.COMMUNITY_AREA_NUMBER =
csd.COMMUNITY_AREA_NUMBER

GROUP BY csd.COMMUNITY_AREA_NAME

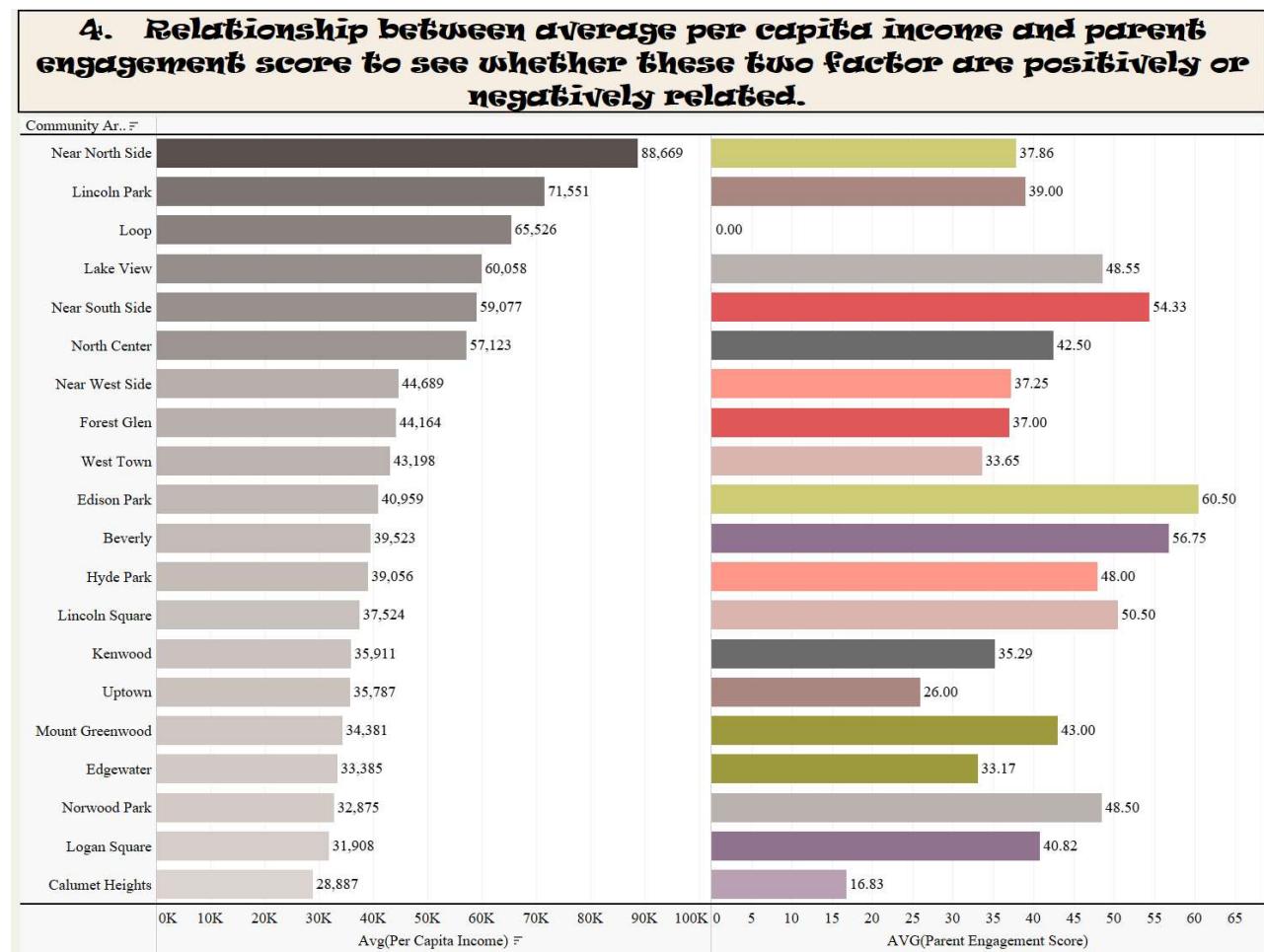
ORDER BY AVG(PER_CAPITA_INCOME) DESC LIMIT 20;

```

Table:

| COMMUNITY_AREA_NAME | Avg(Parent_Engagement_Score) | Avg(PER_CAPITA_INCOME) |
|---------------------|------------------------------|------------------------|
| Near North Side     | 37.857142857142854           | 88669.0000             |
| Lincoln Park        | 39                           | 71551.0000             |
| Loop                | 0                            | 65526.0000             |
| Lake View           | 48.54545454545455            | 60058.0000             |
| Near South Side     | 54.333333333333336           | 59077.0000             |
| North Center        | 42.5                         | 57123.0000             |
| Near West Side      | 37.25                        | 44689.0000             |
| Forest Glen         | 37                           | 44164.0000             |
| West Town           | 33.65                        | 43198.0000             |
| Edison Park         | 60.5                         | 40959.0000             |
| Beverly             | 56.75                        | 39523.0000             |
| Hyde Park           | 48                           | 39056.0000             |
| Lincoln Square      | 50.5                         | 37524.0000             |
| Kenwood             | 35.285714285714285           | 35911.0000             |
| Uptown              | 26                           | 35787.0000             |

Visualization:



Analysis:

The data shows no-conclusive-relationship between per capita income and parent engagement scores, where wealthier areas, such as Near North Side, Lincoln Park, and Loop, show higher average incomes (\$65,000–\$88,000) alongside a range of moderate to high parent engagement scores (37%–54%), where average score is 39%. In contrast, cities like Riverdale, Englewood, and Fuller Park – with low income shows moderate parent engagement score(37%).

## **Segment 2: Crime Patterns and Socioeconomic Correlations (Presented by B)**

This part analyzes crime rates and how they relate to socioeconomic factors.

### **Queries:**

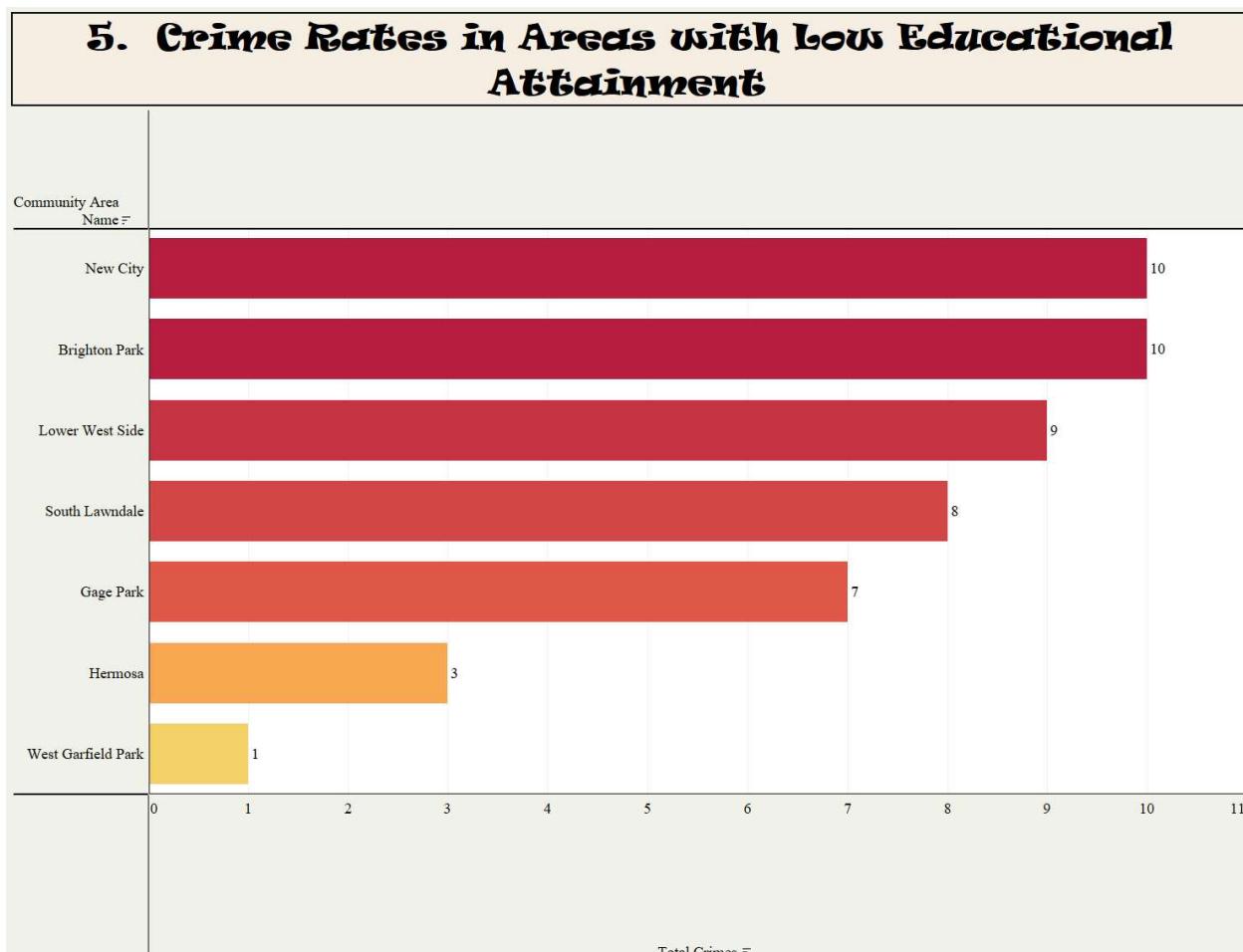
#### **5. Crime Rates in Areas with Low Educational Attainment**

```
SELECT c.COMMUNITY_AREA_NAME, COUNT(cr.CASE_NUMBER) AS  
Total_Crimes  
FROM chicago_crime cr  
JOIN chicago_socioeconomic_data c ON c.COMMUNITY_AREA_NUMBER =  
cr.COMMUNITY_AREA_NUMBER  
WHERE c.PERCENT_AGED_25_WITHOUT_HIGH_SCHOOL_DIPLOMA > 40  
GROUP BY c.COMMUNITY_AREA_NAME  
ORDER BY Total_Crimes DESC;
```

Table:

|   | COMMUNITY_AREA_NAME | Total_Crimes |
|---|---------------------|--------------|
| ▶ | Brighton Park       | 10           |
|   | New City            | 10           |
|   | Lower West Side     | 9            |
|   | South Lawndale      | 8            |
|   | Gage Park           | 7            |
|   | Hermosa             | 3            |
|   | West Garfield Park  | 1            |

Visualization:



Analysis:

This analysis explores the link between low education levels and crime rates. The query focuses on areas where more than 40% of adults lack a high school diploma. The results show that areas like Brighton Park and New City, with the highest crime counts (10 each), lead the list, followed by Lower West Side (9) and South Lawndale (8). These areas align with patterns observed earlier, where low education often accompanies high unemployment, low income, and high hardship indices. This connection suggests that educational barriers may contribute to higher crime rates, emphasizing the need for policies that improve education and create pathways to economic stability.

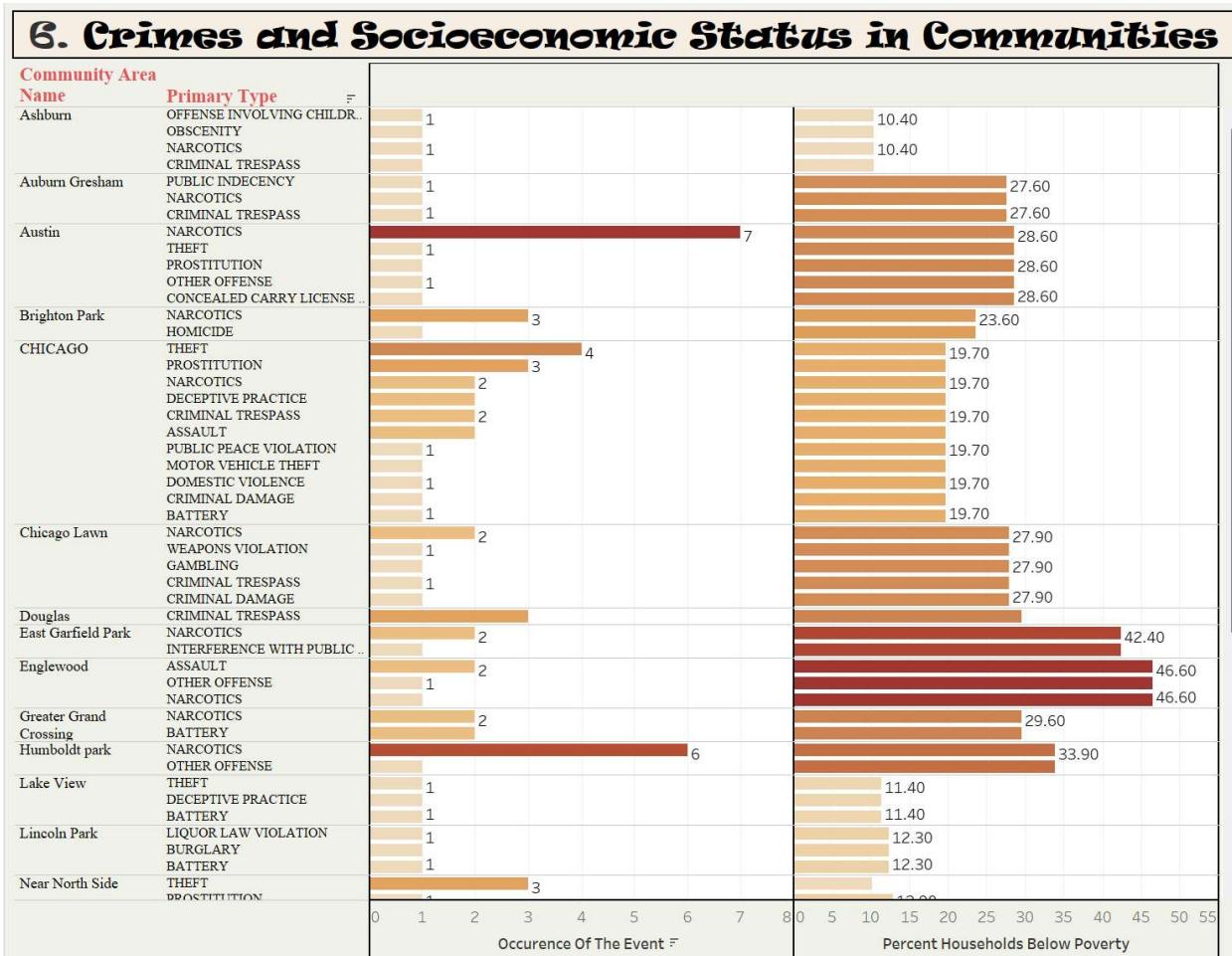
## 6. Crimes and Socioeconomic Status in Communities

```
SELECT COMMUNITY_AREA_NAME,PRIMARY_TYPE,  
COUNT(PRIMARY_TYPE) AS 'OCCURENCE OF THE EVENT',  
PERCENT_HOUSEHOLDS_BELOW_POVERTY  
FROM chicago_crime c  
JOIN chicago_socioeconomic_data s  
ON c.COMMUNITY_AREA_NUMBER = s.COMMUNITY_AREA_NUMBER  
WHERE c.ARREST = 'true'  
group by COMMUNITY_AREA_NAME, PRIMARY_TYPE  
ORDER BY COUNT(PRIMARY_TYPE) DESC;
```

Table:

| COMMUNITY_AREA_NAME | PRIMARY_TYPE      | OCCURENCE OF THE EVENT | PERCENT_HOUSEHOLDS_BELOW_POVERTY |
|---------------------|-------------------|------------------------|----------------------------------|
| Austin              | NARCOTICS         | 7                      | 28.6                             |
| Humboldt park       | NARCOTICS         | 6                      | 33.9                             |
| CHICAGO             | THEFT             | 4                      | 19.7                             |
| Uptown              | NARCOTICS         | 4                      | 24.0                             |
| Near North Side     | THEFT             | 3                      | 10.2                             |
| CHICAGO             | PROSTITUTION      | 3                      | 19.7                             |
| Douglas             | CRIMINAL TRESPASS | 3                      | 29.6                             |
| Brighton Park       | NARCOTICS         | 3                      | 23.6                             |
| North Lawndale      | NARCOTICS         | 3                      | 43.1                             |

Visualization:



Analysis:

This query reveals the intersection of crime occurrences and socioeconomic status across Chicago communities. Communities with higher poverty rates, such as North Lawndale (43.1%) and Humboldt Park (33.9%), show significant narcotics-related crimes. Similarly, Austin, with a poverty rate of 28.6%, reports the highest narcotics incidents (7). Conversely, communities like Near North Side, with a lower poverty rate (10.2%), see a mix of theft and prostitution but fewer overall.

Note : A critical limitation of this analysis is that it only accounts for crimes resulting in arrests. In low-income areas, the underreporting of crimes or lack of arrests may skew the data, potentially underestimating the actual crime prevalence.

### **Segment 3: Schools and Their Environment (Presented by C)**

This section evaluates schools, including safety, performance, and proximity to crime.

#### **Queries:**

##### **7. Identify Unsafe Areas for Students Based on Safety Scores and Crime Rates**

```
SELECT ps.Community_Area_Number, ps.NAME_OF_SCHOOL,
AVG(ps.SAFETY_SCORE) AS avg_safety_score,
COUNT(c.ID) AS total_crimes
FROM Chicago_public_schools ps
LEFT JOIN Chicago_crime c
ON ps.Community_Area_Number = c.COMMUNITY_AREA_NUMBER
GROUP BY ps.Community_Area_Number, ps.NAME_OF_SCHOOL
HAVING AVG(ps.SAFETY_SCORE) < 50 AND COUNT(c.ID) > 100;
```

Table:

|  | Community_Area_Number | NAME_OF_SCHOOL | avg_safety_score | total_crimes |
|--|-----------------------|----------------|------------------|--------------|
|--|-----------------------|----------------|------------------|--------------|

Analysis:

The analysis shows that none of the identified schools are located in areas with high crime rates. This suggests that, based on the given data, the schools are relatively safe from the perspective of crime proximity. However, it's important to note that other factors, such as internal school safety measures and community-level factors, could still influence the overall safety of the school environment.

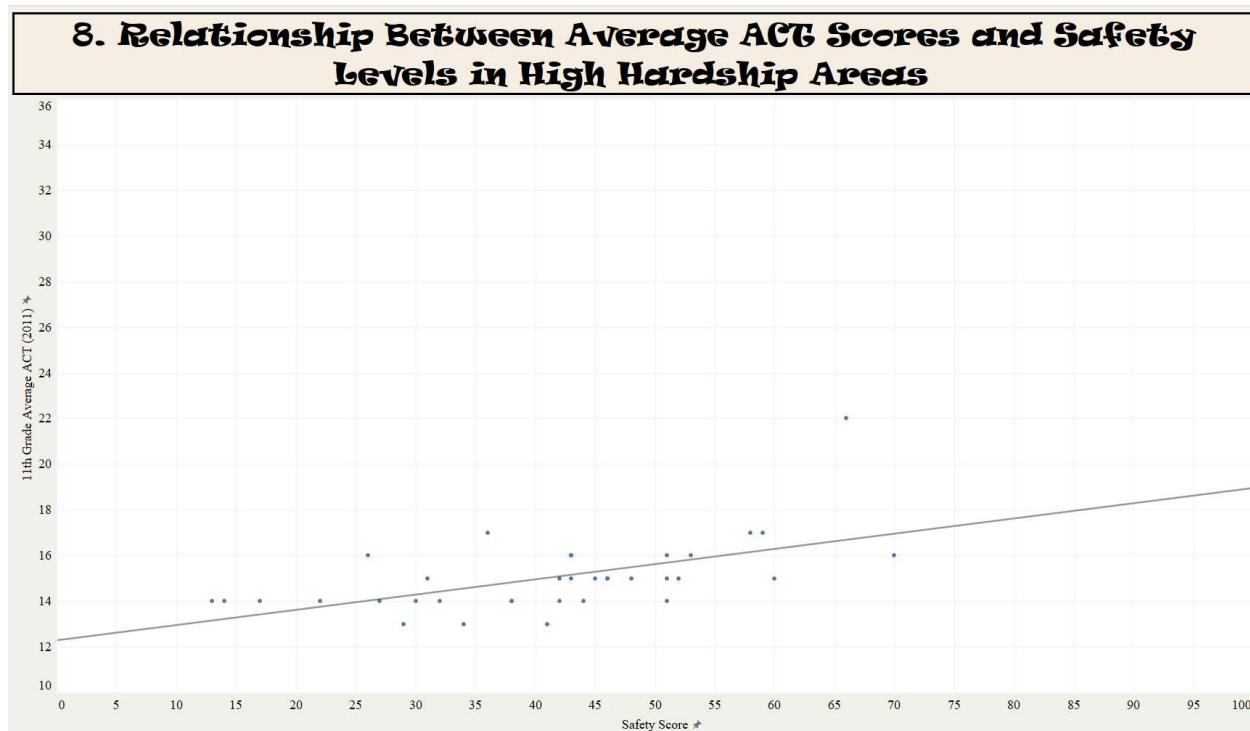
##### **8. Relationship Between Average ACT Scores and Safety Levels in High Hardship Areas**

```
SELECT `11th Grade Average ACT (2011)`, SAFETY_SCORE
FROM chicago_public_schools
WHERE COMMUNITY_AREA_NUMBER IN (SELECT
COMMUNITY_AREA_NUMBER
FROM chicago_socioeconomic_data
WHERE HARDSHIP_INDEX > 60
)
ORDER BY SAFETY_SCORE DESC;
```

Table:

| 11th Grade Average ACT<br>(2011) | SAFETY_SCORE |
|----------------------------------|--------------|
| NDA                              | 99           |
| NDA                              | 78           |
| NDA                              | 75           |
| NDA                              | 74           |
| NDA                              | 72           |
| 16.                              | 70           |
| NDA                              | 69           |
| NDA                              | 68           |
| NDA                              | 67           |
| NDA                              | 67           |
| NDA                              | 67           |
| NDA                              | 66           |
| 22.                              | 66           |

Visualization:



Analysis:

The scatter plot illustrates a positive correlation between school safety scores and 11th-grade average ACT scores in high-hardship areas. As safety scores increase, there's a general trend of higher ACT scores. This suggests that a safer school environment may contribute to improved academic performance. However, there are outliers, indicating that other factors beyond safety may influence student achievement.

- Trying to find the corresponding schools which matches the areas that have a really high poverty level, and we can then find some correlations within the schools performances.

```

SELECT School_ID,
NAME_OF_SCHOOL,csd.COMMUNITY_AREA_NAME,PERCENT_HOUSEHOLDS
_BELOW_POVERTY
FROM chicago_public_schools cps JOIN chicago_socioeconomic_data csd
ON cps.COMMUNITY_AREA_NUMBER = csd.COMMUNITY_AREA_NUMBER
WHERE PERCENT_HOUSEHOLDS_BELOW_POVERTY > 33.33
ORDER BY PERCENT_HOUSEHOLDS_BELOW_POVERTY DESC;

```

Table:

| School_ID | NAME_OF_SCHOOL                                  | COMMUNITY_AREA_NAME | PERCENT_HOUSEHOLDS_BELOW_POVERTY |
|-----------|-------------------------------------------------|---------------------|----------------------------------|
| 609760    | George Washington Carver Military Academy Hi... | Riverdale           | 56.5                             |
| 609845    | George Washington Carver Primary School         | Riverdale           | 56.5                             |
| 609848    | Ira F Aldridge Elementary School                | Riverdale           | 56.5                             |
| 610364    | William E B Dubois Elementary School            | Riverdale           | 56.5                             |
| 609987    | Thomas A Hendricks Elementary Community Aca...  | Fuller Park         | 51.2                             |
| 610114    | Francis Parkman Elementary School               | Fuller Park         | 51.2                             |
| 609707    | Paul Robeson High School                        | Englewood           | 46.6                             |
| 609768    | Hope College Preparatory High School            | Englewood           | 46.6                             |
| 609791    | Perkins Bass Elementary School                  | Englewood           | 46.6                             |
| 609793    | Nicholson Technology Academy                    | Englewood           | 46.6                             |
| 609997    | Oliver Wendell Holmes Elementary School         | Englewood           | 46.6                             |
| 610019    | Joshua D Kershaw Elementary School              | Englewood           | 46.6                             |
| 610112    | Francis W Parker Elementary Community Academy   | Englewood           | 46.6                             |
| 610173    | Jesse Sherwood Elementary School                | Englewood           | 46.6                             |
| 610222    | Daniel C Montvarth Elementary School            | Englewood           | 46.6                             |

Visualization:

**9. Corresponding schools which matches the areas that have a really high poverty level, and we can then find some correlations within the schools performances.**

|             |           |                |                |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |
|-------------|-----------|----------------|----------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Riverdale   | Englewood | Englewood      | North Lawndale | North Lawndale     | East Garfield Park |
| Riverdale   | Englewood | Englewood      | North Lawndale | North Lawndale     |                    |                    |                    |                    |                    |                    |                    |                    |                    |
| Riverdale   | Englewood | Englewood      | North Lawndale | North Lawndale     | East Garfield Park | West Garfield Park |
| Riverdale   | Englewood | Englewood      | North Lawndale | North Lawndale     | Washington Park    | Armour Square      | West               |
| Fuller Park | Englewood | Englewood      | North Lawndale | North Lawndale     | Washington Park    | Armour Square      | West Englewood     |                    |                    |                    |                    |                    |                    |
| Fuller Park | Englewood | Englewood      | North Lawndale | East Garfield Park | Washington Park    | Armour Square      | West Englewood     | Humboldt park      |                    |                    |                    |                    |                    |
| Englewood   | Englewood | Englewood      | North Lawndale | East Garfield Park | Washington Park    | West Englewood     | West Englewood     | Humboldt park      | Humboldt park      | Humboldt park      | Humboldt park      |                    |                    |
| Englewood   | Englewood | North Lawndale | North Lawndale | East Garfield Park | West Garfield Park | West Englewood     | West Englewood     | Humboldt park      | Humboldt park      | Humboldt park      | Humboldt park      |                    |                    |

Analysis:

The visualization and query results highlight schools located in high-poverty areas of Chicago. These areas include Englewood, North Lawndale, East Garfield Park, and Riverdale. This information can help identify schools that may require additional resources and support to address the challenges associated with poverty.

#### Segment 4: Cross-Domain Insights (Presented by D)

The final section integrates crime, schools, and socioeconomic factors to draw actionable conclusions.

#### Queries:

##### 10. Relationship Between Household Poverty Level and Crime Numbers

```

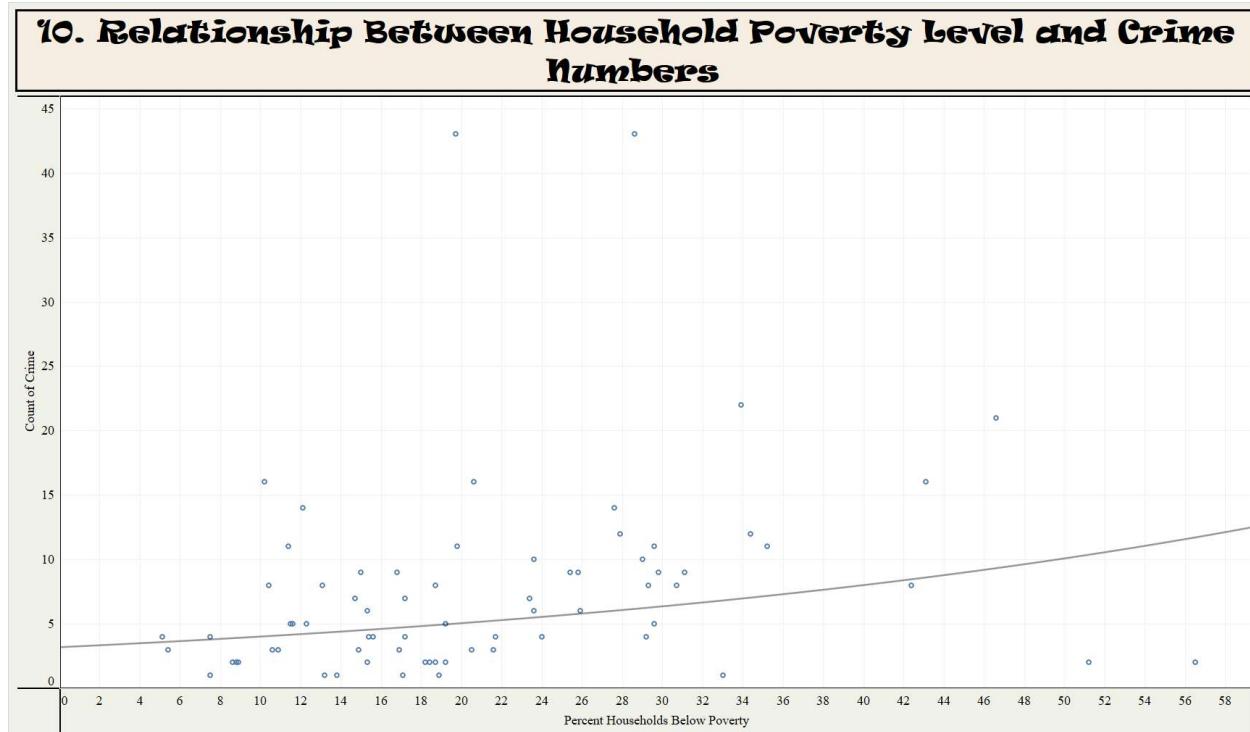
SELECT csd.COMMUNITY_AREA_NAME,
PERCENT_HOUSEHOLDS_BELOW_POVERTY, COUNT(cc.ID)
FROM chicago_crime cc
JOIN chicago_socioeconomic_data csd
ON cc.COMMUNITY_AREA_NUMBER = csd.COMMUNITY_AREA_NUMBER
GROUP BY csd.COMMUNITY_AREA_NAME
ORDER BY COUNT(cc.ID) DESC;

```

Table:

| COMMUNITY_AREA_NAME    | PERCENT_HOUSEHOLDS_BELOW_POVERTY | COUNT(cc.ID) |
|------------------------|----------------------------------|--------------|
| Austin                 | 28.6                             | 43           |
| CHICAGO                | 19.7                             | 43           |
| Humboldt Park          | 33.9                             | 22           |
| Englewood              | 46.6                             | 21           |
| Near North Side        | 10.2                             | 16           |
| North Lawndale         | 43.1                             | 16           |
| Near West Side         | 20.6                             | 16           |
| West Town              | 12.1                             | 14           |
| Auburn Gresham         | 27.6                             | 14           |
| West Englewood         | 34.4                             | 12           |
| Chicago Lawn           | 27.9                             | 12           |
| Lake View              | 11.4                             | 11           |
| Roseland               | 19.8                             | 11           |
| Greater Grand Crossing | 29.6                             | 11           |
| West Garfield Park     | 35.2                             | 11           |

Visualization:



Analysis:

The scatter plot titled "Relationship Between Household Poverty Level and Crime Numbers" shows a positive correlation between the percentage of households below the poverty line and the number of crimes in a given area. This suggests that as poverty rates increase, crime rates also tend to increase.

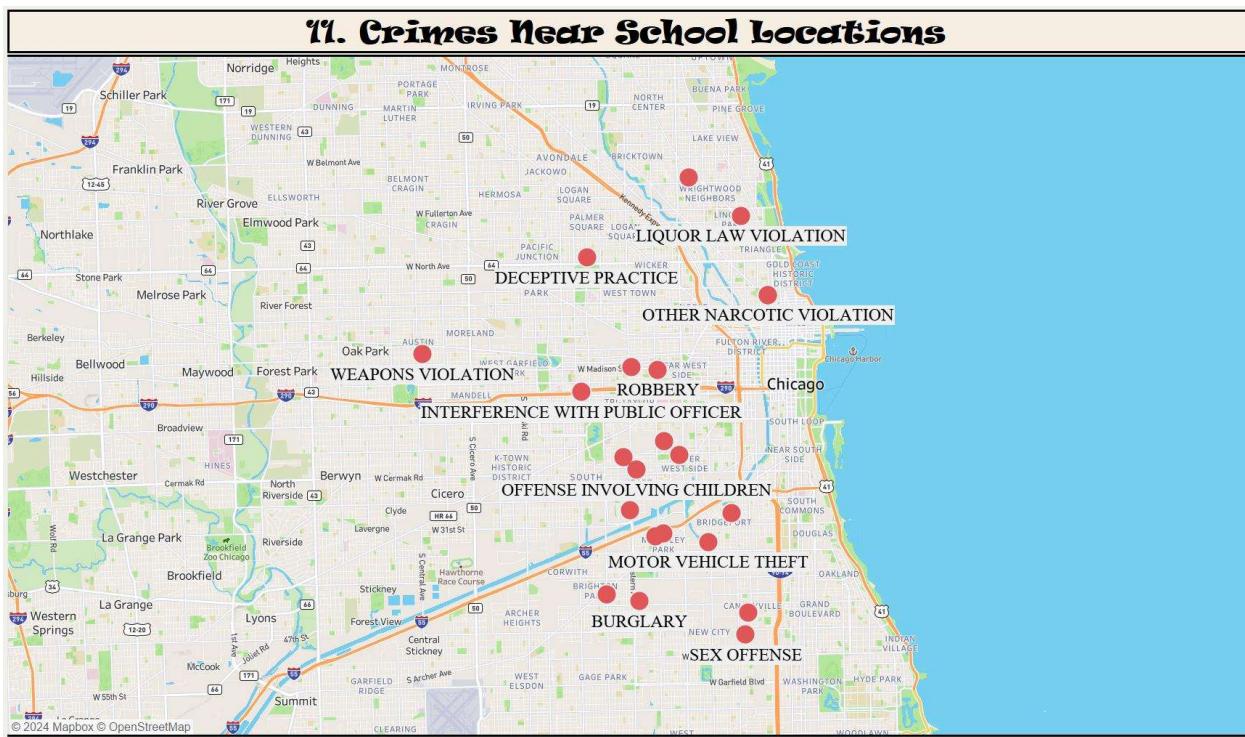
However, it's important to note that correlation does not imply causation. There may be other factors contributing to both poverty and crime, such as economic inequality, lack of educational opportunities, and social disorganization.

## 11. Crimes Near School Locations

```
SELECT c.ID AS Crime_ID, c.PRIMARY_TYPE AS Crime_Type,  
ps.NAME_OF_SCHOOL, ps.Latitude, ps.Longitude  
FROM Chicago_crime c  
JOIN Chicago_public_schools ps  
ON ABS(c.Latitude - ps.Latitude) < 0.01 AND ABS(c.Longitude - ps.Longitude) < 0.01;
```

| Crime_ID | Crime_Type           | NAME_OF_SCHOOL           | Latitude    | Longitude    |
|----------|----------------------|--------------------------|-------------|--------------|
| 6016285  | BATTERY              | Lincoln High School      | 41.92449696 | -87.64452163 |
| 3987219  | LIQUOR LAW VIOLATION | Lincoln High School      | 41.92449696 | -87.64452163 |
| 3867425  | BATTERY              | Lincoln High School      | 41.92449696 | -87.64452163 |
| 1363954  | BATTERY              | Lincoln High School      | 41.92449696 | -87.64452163 |
| 6016285  | BATTERY              | Grant High School        | 41.92449696 | -87.64452163 |
| 3987219  | LIQUOR LAW VIOLATION | Grant High School        | 41.92449696 | -87.64452163 |
| 3867425  | BATTERY              | Grant High School        | 41.92449696 | -87.64452163 |
| 1363954  | BATTERY              | Grant High School        | 41.92449696 | -87.64452163 |
| 6016285  | BATTERY              | Washington Middle School | 41.92449696 | -87.64452163 |
| 3987219  | LIQUOR LAW VIOLATION | Washington Middle School | 41.92449696 | -87.64452163 |
| 3867425  | BATTERY              | Washington Middle School | 41.92449696 | -87.64452163 |
| 1363954  | BATTERY              | Washington Middle School | 41.92449696 | -87.64452163 |
| 6016285  | BATTERY              | Roosevelt High School    | 41.92449696 | -87.64452163 |
| 3987219  | LIQUOR LAW VIOLATION | Roosevelt High School    | 41.92449696 | -87.64452163 |
| 3867425  | BATTERY              | Roosevelt High School    | 41.92449696 | -87.64452163 |

Visualization:



Analysis:

The query and visualizations reveal a complex relationship between crime, poverty, and school safety in Chicago. High-poverty areas often experience higher crime rates, and some schools are located in proximity to these areas.

The analysis suggests that certain schools may be more vulnerable to crime and require additional safety measures.

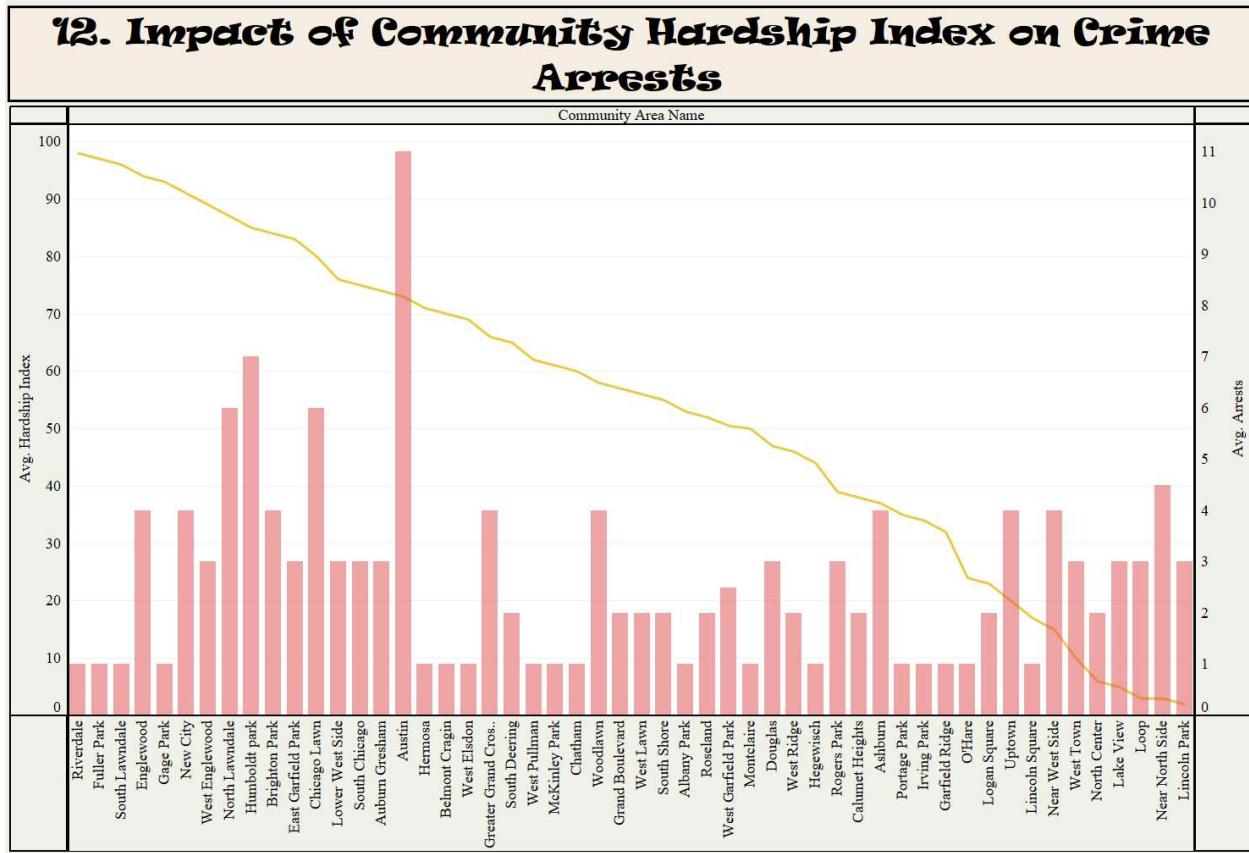
## 12. Impact of Community Hardship Index on Crime Arrests

```
SELECT s.COMMUNITY_AREA_NAME, s.HARDSHIP_INDEX, COUNT(c.ID) AS arrests
FROM chicago_socioeconomic_data s
JOIN chicago_crime c
ON s.COMMUNITY_AREA_NUMBER = c.COMMUNITY_AREA_NUMBER
WHERE c.ARREST = 'true'
GROUP BY s.COMMUNITY_AREA_NAME, s.HARDSHIP_INDEX
ORDER BY arrests DESC;
```

Table:

| COMMUNITY_AREA_NAME    | HARDSHIP_INDEX | arrests |
|------------------------|----------------|---------|
| CHICAGO                |                | 20      |
| Austin                 | 73             | 11      |
| Near North Side        | 1              | 8       |
| Humboldt Park          | 85             | 7       |
| Chicago Lawn           | 80             | 6       |
| North Lawndale         | 87             | 6       |
| Brighton Park          | 84             | 4       |
| West Garfield Park     | 92             | 4       |
| Woodlawn               | 58             | 4       |
| New City               | 91             | 4       |
| Near West Side         | 15             | 4       |
| Ashburn                | 37             | 4       |
| Uptown                 | 20             | 4       |
| Englewood              | 94             | 4       |
| Greater Grand Crossing | 66             | 4       |

Visualization:



Analysis:

The analysis reveals a negative correlation between community hardship index and arrests in Chicago. As hardship increases, arrests tend to decrease, potentially due to underreporting or resource allocation differences. However, outliers exist, suggesting other factors may influence crime rates.

### 13. Trying to find the relationship between the percentage of minorities in an area and the crime occurrence in that area.

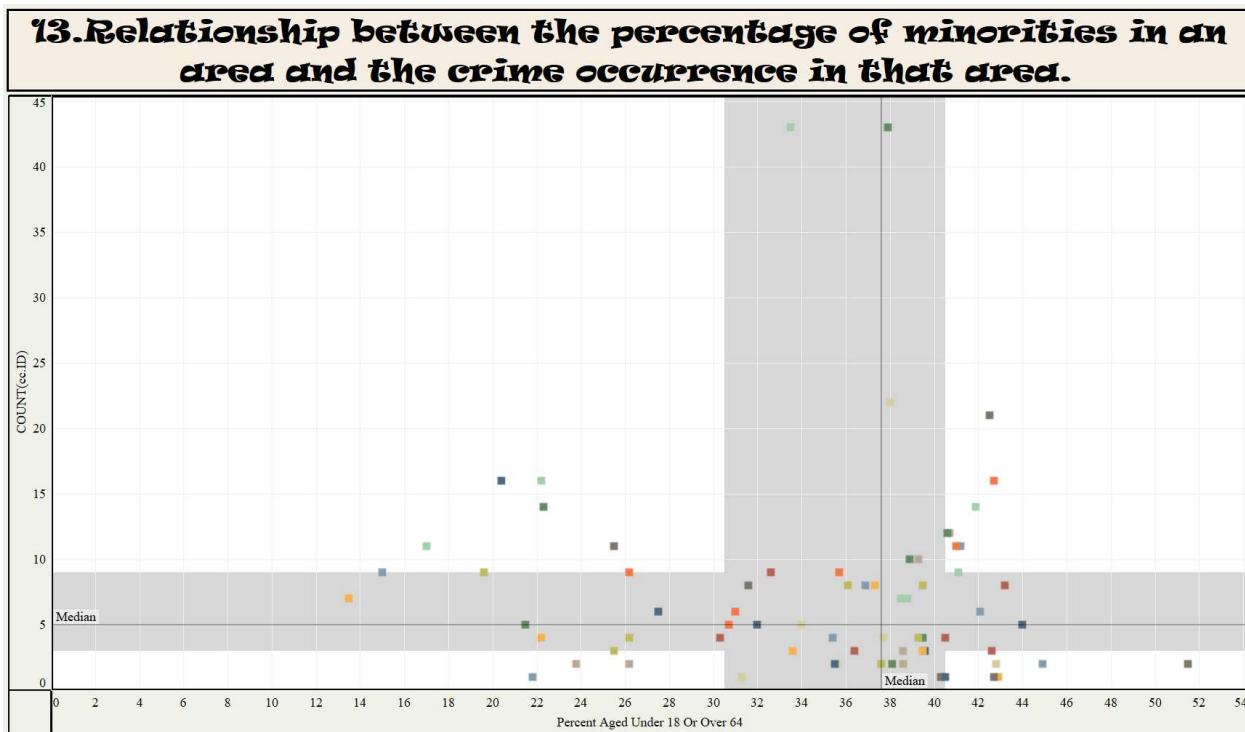
```

SELECT csd.COMMUNITY_AREA_NAME,
PERCENTAGED_UNDER_18_OR_OVER_64, COUNT(cc.ID)
FROM chicago_crime cc JOIN chicago_socioeconomic_data csd
ON cc.COMMUNITY_AREA_NUMBER = csd.COMMUNITY_AREA_NUMBER
GROUP BY csd.COMMUNITY_AREA_NAME,
PERCENTAGED_UNDER_18_OR_OVER_64
ORDER BY COUNT(cc.ID) DESC;
    
```

Table:

| COMMUNITY_AREA_NAME    | PERCENTAGEDUNDER_18_OR_OVER_64 | COUNT(cc.ID) |
|------------------------|--------------------------------|--------------|
| Austin                 | 37.9                           | 43           |
| CHICAGO                | 33.5                           | 43           |
| Humboldt Park          | 38.0                           | 22           |
| Englewood              | 42.5                           | 21           |
| Near West Side         | 22.2                           | 16           |
| North Lawndale         | 42.7                           | 16           |
| Near North Side        | 22.6                           | 15           |
| Auburn Gresham         | 41.9                           | 14           |
| West Town              | 21.7                           | 13           |
| Chicago Lawn           | 40.6                           | 12           |
| West Englewood         | 40.7                           | 12           |
| Lake View              | 17.0                           | 11           |
| Roseland               | 41.2                           | 11           |
| Greater Grand Crossing | 41.0                           | 11           |
| New City               | 38.9                           | 10           |

Visualization:



Analysis:

The SQL query and visualization explore the relationship between the percentage of minorities in a community area and the occurrence of crime. However, the visualization doesn't show a clear correlation between the two variables.

The data points are scattered across the graph, with no discernible pattern. This suggests that the percentage of minorities alone may not be a strong predictor of crime rates in these areas. Other factors, such as socioeconomic conditions, policing practices, and community dynamics, are likely to play a more significant role.

It's important to remember that correlation does not imply causation.

## **VIEWS AND PROCEDURES:**

### **Views:**

#### **View 1**

This view lists all schools certified as healthy along with their safety scores and community area information.

```
CREATE VIEW Certified_Healthy_Schools AS
SELECT s.NAME_OF SCHOOL, s.HEALTHY SCHOOL_CERTIFIED, s.SAFETY_SCORE,
e.COMMUNITY_AREA_NAME
FROM Chicago_public_schools s
JOIN Chicago_socioeconomic_data e
ON s.Community_Area_Number = e.Community_Area_Number
WHERE s.HEALTHY SCHOOL_CERTIFIED = 'Yes';
SELECT * FROM Certified_Healthy_Schools
```

|   | NAME_OF SCHOOL                             | HEALTHY SCHOOL_CERTIFIED | SAFETY_SCORE | COMMUNITY_AREA_NAME |
|---|--------------------------------------------|--------------------------|--------------|---------------------|
| ▶ | Lincoln High School                        | Yes                      | 99           | Rogers Park         |
|   | Grant High School                          | Yes                      | 99           | West Ridge          |
|   | Washington Middle School                   | Yes                      | 99           | Uptown              |
|   | Roosevelt High School                      | Yes                      | 99           | Lincoln Square      |
|   | Kennedy High School                        | Yes                      | 99           | North Center        |
|   | John C Burroughs Elementary School         | Yes                      | 50           | Brighton Park       |
|   | Manuel Perez Elementary School             | Yes                      | 45           | Lower West Side     |
|   | Nathanael Greene Elementary School         | Yes                      |              | McKinley Park       |
|   | Sharon Christa McAuliffe Elementary School | Yes                      |              | Hermosa             |
|   | Hawthorne Elementary Scholastic Academy    | Yes                      | 92           | Lake View           |
|   | Rufus M Hitch Elementary School            | Yes                      | 64           | Norwood Park        |
|   | Abraham Lincoln Elementary School          | Yes                      | 99           | Lincoln Park        |
|   | Cyrus H McCormick Elementary School        | Yes                      |              | South Lawndale      |
|   | Irma C Ruiz Elementary School              | Yes                      | 57           | Lower West Side     |
|   | Francisco I Madero Middle School           | Yes                      | 49           | South Lawndale      |

### **Significance**

- Showcases schools that meet the "healthy school" criteria, providing insights into their community environments.

## View 2

This view analyzes crime trends over time for each community area.

### Significance

- Identifies patterns in crime rates over the years.
- Useful for evaluating the effectiveness of crime prevention programs

```
CREATE VIEW Crimes_Trend_over_Years AS
SELECT Community_Area_Number, YEAR, COUNT(ID) AS Total_Crimes
FROM Chicago_crime
GROUP BY Community_Area_Number, YEAR(DATE)
ORDER BY Community_Area_Number;

SELECT * FROM Crimes_Trend_over_Years;
```

|  | Community_Area_Number | YEAR | Total_Crimes |
|--|-----------------------|------|--------------|
|  | 71                    | 2003 | 3            |
|  | 71                    | 2004 | 1            |
|  | 71                    | 2005 | 3            |
|  | 71                    | 2007 | 2            |
|  | 71                    | 2015 | 1            |
|  | 71                    | 2016 | 2            |
|  | 71                    | 2017 | 1            |
|  | 72                    | 2005 | 1            |
|  | 72                    | 2008 | 1            |
|  | 72                    | 2011 | 2            |
|  | 73                    | 2003 | 1            |
|  | 73                    | 2005 | 1            |
|  | 73                    | 2016 | 1            |
|  |                       |      |              |

## Procedures

### 1. Procedure: GetCrimesByMonth

This procedure retrieves the number of crimes for a given month and year.

DELIMITER //

```
CREATE PROCEDURE GetCrimesByMonth(IN crime_month INT, IN crime_year INT)
```

```
BEGIN
```

```
    SELECT MONTH(DATE) AS Month, YEAR(DATE) AS Year, PRIMARY_TYPE,\
```

```
        COUNT(ID) AS Crime_Count
```

```
    FROM Chicago_crime
```

```
    WHERE
```

```
        MONTH(DATE) = crime_month AND YEAR(DATE) = crime_year
```

```
    GROUP BY
```

```
    PRIMARY_TYPE;
```

```
END //
```

```
DELIMITER ;
```

```
CALL GetCrimesByMonth(05,2005);
```

| Month | Year | PRIMARY_TYPE        | Crime_Count |
|-------|------|---------------------|-------------|
| 5     | 2005 | MOTOR VEHICLE THEFT | 1           |
| 5     | 2005 | ASSAULT             | 1           |
| 5     | 2005 | BATTERY             | 2           |
| 5     | 2005 | THEFT               | 1           |
| 5     | 2005 | NARCOTICS           | 2           |

## Significance

- Quickly retrieves crime statistics for a specific month and year without writing repetitive queries.
- Useful for law enforcement agencies and analysts monitoring monthly crime trends.

## **2. Procedure: GetSchoolsBySafetyScore**

This procedure lists schools with safety scores above or below a given threshold.

DELIMITER //

```
CREATE PROCEDURE GetSchoolsBySafetyScores(IN min_score INT, IN max_score INT)
```

```
BEGIN
```

```
    SELECT NAME_OF_SCHOOL, SAFETY_SCORE, COMMUNITY_AREA_NUMBER
```

```
    FROM Chicago_public_schools
```

```
    WHERE
```

```
        SAFETY_SCORE BETWEEN min_score AND max_score
```

```
    ORDER BY
```

```
        SAFETY_SCORE DESC;
```

```
END //
```

DELIMITER ;

```
CALL GetSchoolsBySafetyScores(75,99);
```

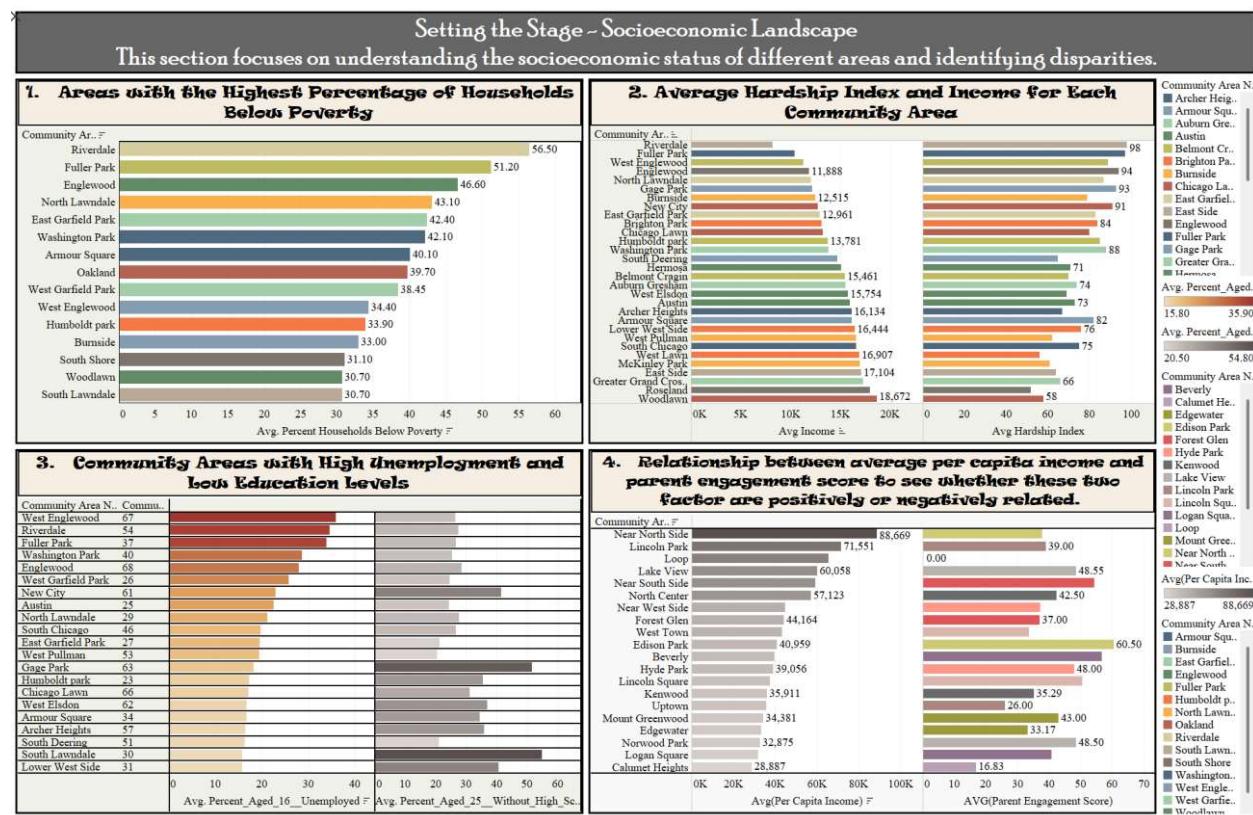
## **Significance**

- Allows filtering schools based on their safety scores, helping to identify both safe and unsafe schools.

- Useful for parents, educators, and policymakers monitoring school safety.

| NAME_OF SCHOOL                                | SAFETY_SCORE | COMMUNITY AREA NUMBER |
|-----------------------------------------------|--------------|-----------------------|
| Mary E Courtenay Elementary Language Art...   | 99           | 6                     |
| Lincoln High School                           | 99           | 1                     |
| Kennedy High School                           | 99           | 5                     |
| Roosevelt High School                         | 99           | 4                     |
| Washington Middle School                      | 99           | 3                     |
| Grant High School                             | 99           | 2                     |
| Walter Payton College Preparatory High School | 98           | 8                     |
| Edison Park Elementary School                 | 95           | 10                    |
| John J Audubon Elementary School              | 95           | 5                     |
| Whitney M Young Magnet High School            | 95           | 28                    |
| William Jones College Preparatory High School | 92           | 32                    |
| Hawthorne Elementary Scholastic Academy       | 92           | 6                     |

## DASHBOARDS , ANALYSIS AND SUMMARY:



### Socioeconomic Landscape Insights

This section focuses on understanding the economic conditions of different areas and identifying key disparities.

#### 1. Areas with the Highest Percentage of Households Below Poverty (Chart 1)

- Finding:** Riverdale (56.5%), Fuller Park (51.2%), and Englewood (46.6%) are the areas with the highest percentages of households living below the poverty line.
- Implication:** These neighborhoods are severely impacted by poverty and need targeted economic assistance and programs.

#### 2. Average Hardship Index and Income for Each Community Area (Chart 2)

- Finding:** Communities like Riverdale, Fuller Park, and North Lawndale have very high hardship indices (above 90) and low average incomes (around \$12,000–\$15,000 per year).

- **Implication:** A high hardship index highlights areas where economic struggles, poor housing, and unemployment are combined, requiring focused interventions.

### **3. Community Areas with High Unemployment and Low Education Levels (Chart 3)**

- **Finding:** West Englewood, Fuller Park, and Riverdale have the highest unemployment rates (above 40%) and the lowest education levels, with many adults lacking a high school diploma.
- **Implication:** These areas face challenges in breaking out of poverty cycles due to limited access to education and job opportunities.

### **4. Relationship Between Income and Parent Engagement (Chart 4)**

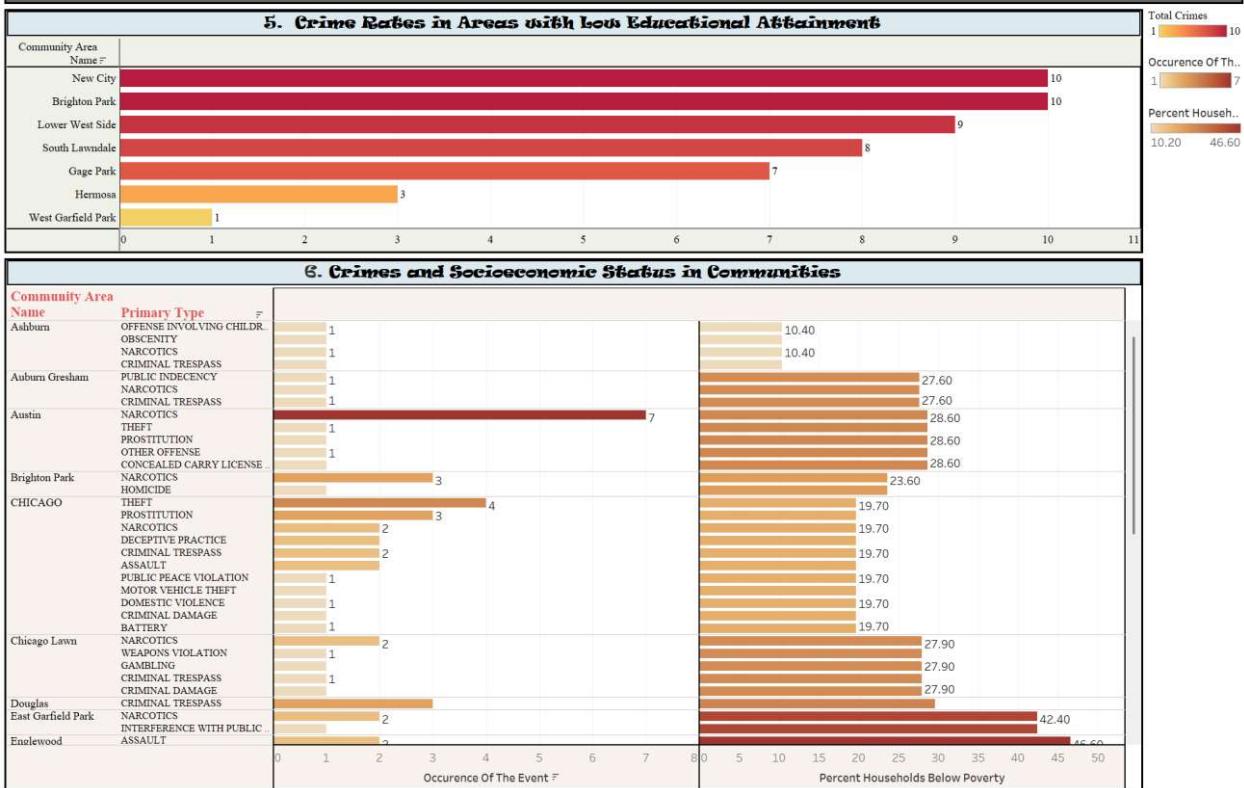
- **Finding:** Wealthier areas like Lincoln Park and Lake View have higher parent engagement in schools, while lower-income areas like Riverdale and West Englewood report very low parent involvement.
- **Implication:** Economic challenges limit parental involvement, which may affect school performance and outcomes for children in these areas.

### **SUMMARY :**

This section shows big differences in living conditions across communities. Places with more poverty, lower incomes, higher unemployment, and less education face serious problems. These issues likely lead to higher crime, poorer health, and lower quality of life.

## Segment 2: Crime Patterns and Socioeconomic Correlations

This part analyzes crime rates and how they relate to socioeconomic factors.



### 5. Crime Rates in Areas with Low Educational Attainment

- Finding:** There is a strong correlation between areas with low educational attainment and higher crime rates.
- Implication:**

This analysis explores the link between low education levels and crime rates. The query focuses on areas where more than 40% of adults lack a high school diploma. The results show that areas like Brighton Park and New City, with the highest crime counts (10 each), lead the list, followed by Lower West Side (9) and South Lawndale (8). These areas align with patterns observed earlier, where low education often accompanies high unemployment, low income, and high hardship indices. This connection suggests that educational barriers may contribute to higher crime rates, emphasizing the need for policies that improve education and create pathways to economic stability.

### 6. Crimes and Socioeconomic Status in Communities

- Finding:** The types of crimes committed vary across communities with different socioeconomic statuses.
- Implication:**

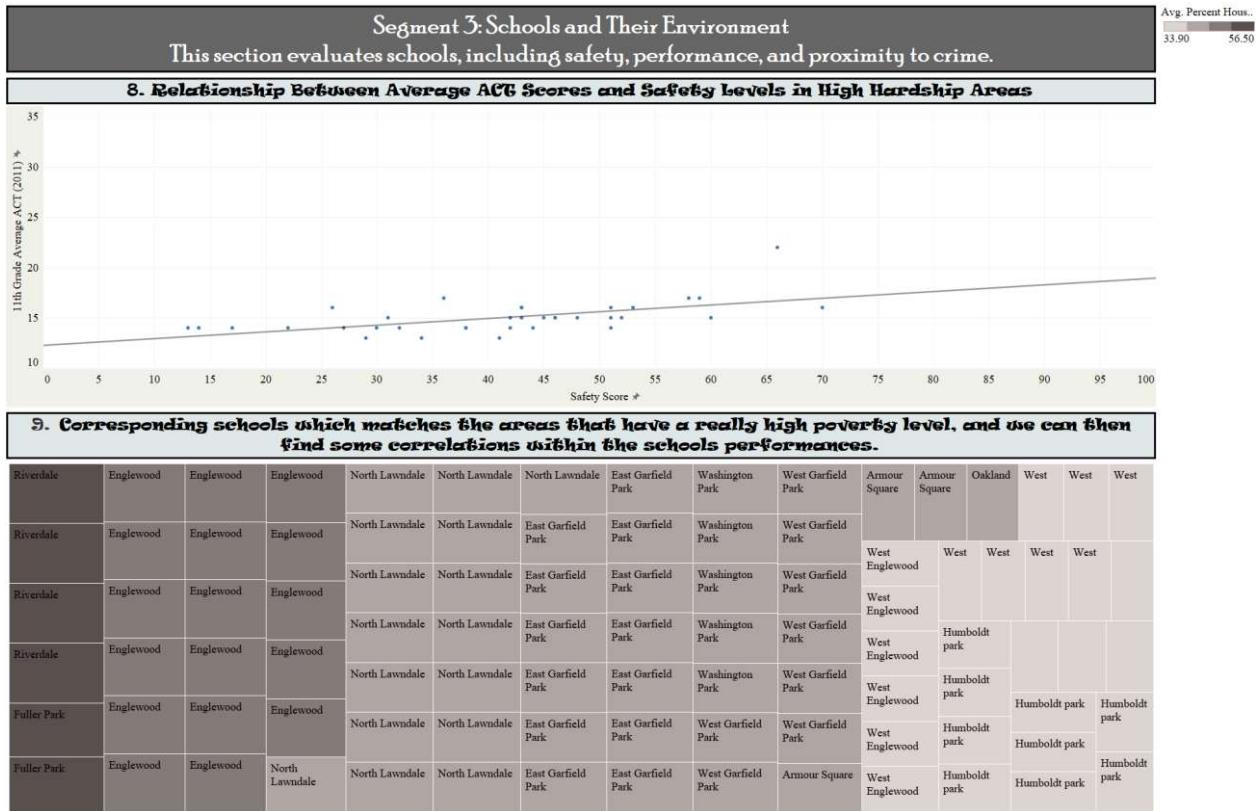
Areas with higher poverty rates tend to have higher occurrences of offenses like narcotics, theft, and assault.

Communities with lower poverty rates, like Chicago Lawn, show a higher proportion of property crimes such as criminal damage and trespass.

The distribution of crime types within communities can be quite diverse, suggesting the need for a more nuanced understanding of the factors driving crime in each area.

### **SUMMARY:**

The dashboards demonstrate a clear link between socioeconomic factors and crime rates. Areas with lower educational attainment and higher poverty levels tend to experience higher crime rates, particularly those involving violent and drug-related offenses. However, the specific types of crimes vary across communities, indicating the need for tailored crime prevention and intervention strategies.



### Segment 3: Schools and Their Environment

This segment focuses on the relationship between school performance, safety, and environmental factors.

#### 8. Relationship Between Average ACT Scores and Safety Levels in High-Hardship Areas (Chart 8)

- Finding:** Schools in safer areas tend to have higher ACT scores. Although the correlation is mild, it suggests that safety contributes positively to academic outcomes.
- Implication:** Enhancing safety in high-hardship areas could lead to better academic performance.

#### 9. Schools in High-Poverty Areas and Their Performance (Chart 9)

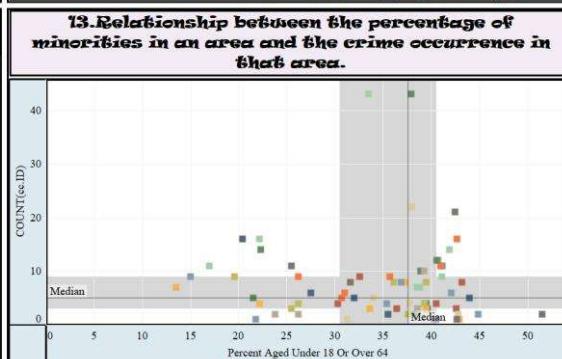
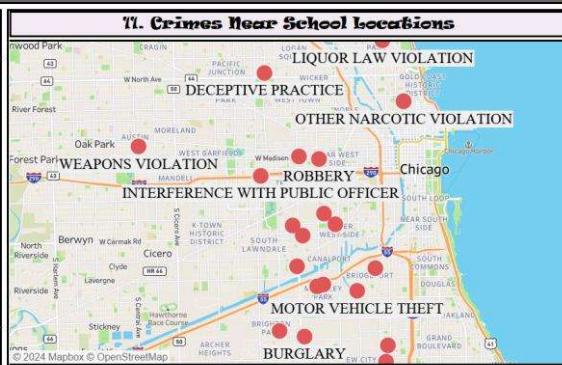
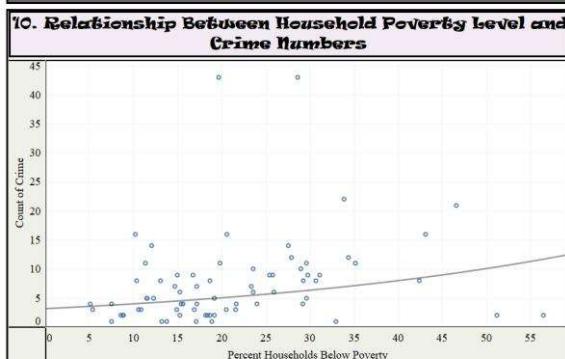
- Finding:** Schools located in areas with high poverty levels (e.g., Englewood, North Lawndale, West Garfield Park) struggle with performance issues.
- Implication:** Correlations between poverty and school performance emphasize the need for targeted educational resources and programs in these areas.

### SUMMARY:

This section highlights the importance of school safety in promoting academic achievement, particularly in high-hardship areas. Schools located in safer environments tend to have better academic outcomes. However, other factors, such as socioeconomic disparities and access to quality education, likely play a role in influencing school performance.

## Segment 4: Cross-Domain Insights

The final section integrates crime, schools, and socioeconomic factors to draw actionable conclusions.



## Segment 4: Cross-Domain Insights

This section integrates poverty, school proximity, and crime data to identify patterns.

### 10. Relationship Between Household Poverty Level and Crime Numbers (Chart 10)

- Finding:** There is a positive correlation between the percentage of households below the poverty line and the count of crimes. Areas with higher poverty levels generally report higher crime rates.
- Implication:** Socioeconomic factors, particularly poverty, significantly influence crime prevalence.

### 11. Crimes Near School Locations (Chart 11)

- Finding:** Crimes such as robbery, narcotics violations, and burglary cluster near schools. The map highlights specific high-crime areas.
- Implication:** The proximity of crimes to schools raises safety concerns for students, potentially impacting their academic performance and well-being.

### 12. Impact of Community Hardship Index on Crime Arrests (Chart 12)

- Finding:** Communities with **lower** hardship indices tend to have **more** arrests, indicating a complex relationship between socioeconomic factors and criminal activity.

- **Implication:** Interventions addressing the specific needs of low-hardship communities, such as improving law enforcement strategies or addressing underlying social issues, could potentially impact arrest rates.

### **13. Relationship Between Minority Percentage and Crime Occurrence (Chart 13)**

- **Finding:** Areas with higher percentages of minority populations show varying crime occurrences. However, other factors like poverty and hardship may confound this relationship.
- **Implication:** Minority populations may face systemic challenges, but detailed multivariable analysis is needed to draw precise conclusions.

#### **SUMMARY:**

This segment underscores the complex relationship between crime, poverty, community hardship, and demographics. While poverty and hardship appear to be strong predictors of crime, the distribution of specific crime types suggests a need for a more nuanced understanding. The lack of a clear correlation between minority demographics and crime rates highlights the importance of considering multiple factors when analyzing crime patterns.