Chicago School Analysis

February 4, 2024

1 Title: Chicago School Analysis

The following 3 data sets have been used: Socioeconomic Indicators in Chicago:

The dataset includes six key socioeconomic indicators with public health implications and a "hardship index" for each Chicago community area spanning the years 2008 to 2012.

Chicago Public Schools:

The dataset presents comprehensive school-level performance data utilized in generating CPS School Report Cards for the 2011-2012 academic year.

Chicago Crime Data:

The dataset encompasses documented crime incidents (excluding murders, which are individually documented for each victim) in the City of Chicago spanning from 2001 to the current date, excluding the last seven days.

1.0.1 Note: The data sets can be accessed in this repository

```
[ ]: %load_ext sql #connect to database
```

1.0.2 Finding the total number of crimes recorded in the CRIME table

```
[ ]: # Rows in Crime table

%sql SELECT COUNT(*) AS TOTAL_CRIMES \
        FROM CHICAGO_CRIME_DATA
```

```
 * ibm_db_sa://mqb36773:***@dashdb-txn-sbox-yp-lon02-04.services.eu-
gb.bluemix.net:50000/BLUDB
Done.
```

```
[ ]: [(Decimal('533'),)]
```

Retrieving first 10 rows from the CRIME table

```
[ ]: %sql SELECT * FROM CHICAGO_CRIME_DATA LIMIT 10
```

```
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gb.bluemix.net:50000/BLUDB
Done.
```

```
[ ]: [(3512276, 'HK587712', datetime.datetime(2004, 8, 28, 17, 50, 56), '047XX S
      KEDZIE AVE', '890', 'THEFT', 'FROM BUILDING', 'SMALL RETAIL STORE', 'FALSE',
      'FALSE', 911, 9, 14, 58, '6', 1155838, 1873050, 2004, datetime.datetime(2018, 2,
      10, 15, 50, 1), Decimal('41.80744050'), Decimal('-87.70395585'), '(41.8074405,
      -87.703955849)'),
       (3406613, 'HK456306', datetime.datetime(2004, 6, 26, 12, 40), '009XX N CENTRAL
      PARK AVE', '820', 'THEFT', '$500 AND UNDER', 'OTHER', 'FALSE', 'FALSE', 1112,
      11, 27, 23, '6', 1152206, 1906127, 2004, datetime.datetime(2018, 2, 28, 15, 56,
      25), Decimal('41.89827996'), Decimal('-87.71640551'), '(41.898279962,
      -87.716405505)'),
       (8002131, 'HT233595', datetime.datetime(2011, 4, 4, 5, 45), '043XX S WABASH
      AVE', '820', 'THEFT', '$500 AND UNDER', 'NURSING HOME/RETIREMENT HOME', 'FALSE',
      'FALSE', 221, 2, 3, 38, '6', 1177436, 1876313, 2011, datetime.datetime(2018, 2,
      10, 15, 50, 1), Decimal('41.81593313'), Decimal('-87.62464213'), '(41.815933131,
      -87.624642127)'),
       (7903289, 'HT133522', datetime.datetime(2010, 12, 30, 16, 30), '083XX S
      KINGSTON AVE', '840', 'THEFT', 'FINANCIAL ID THEFT: OVER $300', 'RESIDENCE',
      'FALSE', 'FALSE', 423, 4, 7, 46, '6', 1194622, 1850125, 2010,
      datetime.datetime(2018, 2, 10, 15, 50, 1), Decimal('41.74366532'),
      Decimal('-87.56246276'), '(41.743665322, -87.562462756)'),
       (10402076, 'HZ138551', datetime.datetime(2016, 2, 2, 19, 30), '033XX W 66TH
      ST', '820', 'THEFT', '$500 AND UNDER', 'ALLEY', 'FALSE', 'FALSE', 831, 8, 15,
      66, '6', 1155240, 1860661, 2016, datetime.datetime(2018, 2, 10, 15, 50, 1),
      Decimal('41.77345530'), Decimal('-87.70648047'), '(41.773455295,
      -87.706480471)'),
       (7732712, 'HS540106', datetime.datetime(2010, 9, 29, 7, 59), '006XX W CHICAGO
      AVE', '810', 'THEFT', 'OVER $500', 'PARKING LOT/GARAGE(NON.RESID.)', 'FALSE',
      'FALSE', 1323, 12, 27, 24, '6', 1171668, 1905607, 2010, datetime.datetime(2018,
      2, 10, 15, 50, 1), Decimal('41.89644677'), Decimal('-87.64493868'),
      '(41.896446772, -87.644938678)'),
       (10769475, 'HZ534771', datetime.datetime(2016, 11, 30, 1, 15), '050XX N KEDZIE
      AVE', '810', 'THEFT', 'OVER $500', 'STREET', 'FALSE', 'FALSE', 1713, 17, 33, 14,
      '6', 1154133, 1933314, 2016, datetime.datetime(2018, 2, 10, 15, 50, 1),
      Decimal('41.97284491'), Decimal('-87.70860008'), '(41.972844913,
      -87.708600079)'),
       (4494340, 'HL793243', datetime.datetime(2005, 12, 16, 16, 45), '005XX E
      PERSHING RD', '860', 'THEFT', 'RETAIL THEFT', 'GROCERY FOOD STORE', 'TRUE',
      'FALSE', 213, 2, 3, 38, '6', 1180448, 1879234, 2005, datetime.datetime(2018, 2,
      28, 15, 56, 25), Decimal('41.82387989'), Decimal('-87.61350386'),
      '(41.823879885, -87.613503857)'),
       (3778925, 'HL149610', datetime.datetime(2005, 1, 28, 17, 0), '100XX S WASHTENAW
      AVE', '810', 'THEFT', 'OVER $500', 'STREET', 'FALSE', 'FALSE', 2211, 22, 19, 72,
      '6', 1160129, 1838040, 2005, datetime.datetime(2018, 2, 28, 15, 56, 25),
      Decimal('41.71128051'), Decimal('-87.68917910'), '(41.711280513,
      -87.689179097)'),
       (3324217, 'HK361551', datetime.datetime(2004, 5, 13, 14, 15), '033XX W BELMONT
      AVE', '820', 'THEFT', '$500 AND UNDER', 'SMALL RETAIL STORE', 'FALSE', 'FALSE',
```

```
1733, 17, 35, 21, '6', 1153590, 1921084, 2004, datetime.datetime(2018, 2, 28,
15, 56, 25), Decimal('41.93929582'), Decimal('-87.71092344'), '(41.939295821,
-87.710923442)')]
```

How many crimes involve an arrest?

```
[ ]: %sql SELECT COUNT(*) AS NUMBER_OF_ARRESTS \
     FROM CHICAGO_CRIME_DATA \
     WHERE ARREST = "TRUE"
```

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Done.

[ ]: [(Decimal('163'),)]

Which unique types of crimes have been recorded at GAS STATION locations?

```
[ ]: %sql SELECT DISTINCT PRIMARY_TYPE \
     FROM CHICAGO_CRIME_DATA \
     WHERE LOCATION_DESCRIPTION = 'GAS STATION'
```

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Done.

[ ]: [('CRIMINAL TRESPASS',), ('NARCOTICS',), ('ROBBERY',), ('THEFT',)]

**In the CENUS_DATA table listing all Community Areas whose names start with the
letter 'B'.**

```
[ ]: %sql SELECT COMMUNITY_AREA_NAME \
     FROM CENSUS_DATA \
     WHERE COMMUNITY_AREA_NAME LIKE 'B%'
```

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gb.bluemix.net:50000/BLUDB
Done.

[ ]: [('Belmont Cragin',),
     ('Burnside',),
     ('Brighton Park',),
     ('Bridgeport',),
     ('Beverly',)]

Which schools in Community Areas 10 to 15 are healthy school certified?

```
[ ]: %sql SELECT NAME_OF_SCHOOL \
     FROM CHICAGO_PUBLIC_SCHOOLS \
     WHERE COMMUNITY_AREA_NUMBER BETWEEN 10 AND 15 \
     AND HEALTHY_SCHOOL_CERTIFIED = 'Yes'
```

```
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gb.bluemix.net:50000/BLUDB
Done.
```

[ ]: [('Rufus M Hitch Elementary School',)]

What is the average school Safety Score?

[ ]: ```
%sql SELECT AVG(SAFETY_SCORE) AS AVERAGE \
FROM CHICAGO_PUBLIC_SCHOOLS
```

```
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gb.bluemix.net:50000/BLUDB
Done.
```

[ ]: [(Decimal('49.504873'),)]

Top 5 Community Areas by average College Enrollment [number of students]

[ ]: ```
%sql SELECT COMMUNITY_AREA_NAME, AVG(COLLEGE_ENROLLMENT) as Number_of_Students\
FROM CHICAGO_PUBLIC_SCHOOLS \
GROUP BY COMMUNITY_AREA_NAME \
ORDER BY AVG(COLLEGE_ENROLLMENT) DESC LIMIT 5
```

```
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gb.bluemix.net:50000/BLUDB
Done.
```

[ ]: [('ARCHER HEIGHTS', Decimal('2411.500000')),
    ('MONTCLARE', Decimal('1317.000000')),
    ('WEST ELSDON', Decimal('1233.333333')),
    ('BRIGHTON PARK', Decimal('1205.875000')),
    ('BELMONT CRAGIN', Decimal('1198.833333'))]

**Use a sub-query to determine which Community Area has the least value for school
Safety Score?**

[ ]: ```
%sql SELECT COMMUNITY_AREA_NAME, SAFETY_SCORE \
FROM CHICAGO_PUBLIC_SCHOOLS \
WHERE SAFETY_SCORE IN \
(SELECT MIN(SAFETY_SCORE) FROM CHICAGO_PUBLIC_SCHOOLS)
```

```
 * ibm_db_sa://mqb36773:***@dashdb-txn-sbox-yp-lon02-04.services.eu-
gb.bluemix.net:50000/BLUDB
Done.
```

[ ]: [('WASHINGTON PARK', 1)]

**Finding the Per Capita Income of the Community Area which has a school Safety
Score of 1.**

```
[ ]: %sql SELECT CD.COMMUNITY_AREA_NAME, CD.PER_CAPITA_INCOME \
     FROM CENSUS_DATA CD, CHICAGO_PUBLIC_SCHOOLS CPS \
     WHERE CD.COMMUNITY_AREA_NUMBER = CPS.COMMUNITY_AREA_NUMBER \
     AND CPS.SAFETY_SCORE = 1
```

 * ibm_db_sa://mqb36773:***@dashdb-txn-sbox-yp-lon02-04.services.eu-gb.bluemix.net:50000/BLUDB
Done.

[ ]: [('Washington Park', 13785)]

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