

CAPSTONE PROJECT - THE BATTLE OF NEIGHBORHOODS (Report)

DATA SECTION:

In order to resolve our business problem we need the data about elementary public school In Chicago. We found our dataset on [Kaggle](#), this dataset is hosted by the city of Chicago. The city has open data platform and they update their information according the amount of data that is brought in Explore the city of Chicago using Kaggle and all of the data sources available through the city of Chicago. This dataset has about 78 columns but we will not need all of them. Let's remind that we need to find an elementary school with high instruction level, high teachers score and high safety score.

After loading our dataset we have seventy-eight (78)columns and five(5) rows.

	School ID	NAME_OF_SCHOOL	Elementary, Middle, or High School	Street Address	City	State	ZIP Code	Phone Number	Link	Network Manager	...	Freshman on Track Rate %	X_COORDINATE
0	610038	Abraham Lincoln Elementary School	ES	615 W Kemper Pl	Chicago	IL	60614	(773) 534-5720	http://schoolreports.cps.edu/SchoolProgressRep...	Fullerton Elementary Network	...	NDA	1171699.458
1	610281	Adam Clayton Powell Paideia Community Academy ...	ES	7511 S South Shore Dr	Chicago	IL	60649	(773) 535-6650	http://schoolreports.cps.edu/SchoolProgressRep...	Skyway Elementary Network	...	NDA	1196129.985
2	610185	Adlai E Stevenson Elementary School	ES	8010 S Kostner Ave	Chicago	IL	60652	(773) 535-2280	http://schoolreports.cps.edu/SchoolProgressRep...	Midway Elementary Network	...	NDA	1148427.165
3	609993	Agustin Lara Elementary Academy	ES	4619 S Wolcott Ave	Chicago	IL	60609	(773) 535-4389	http://schoolreports.cps.edu/SchoolProgressRep...	Pershing Elementary Network	...	NDA	1164504.290
4	610513	Air Force Academy High School	HS	3630 S Wells St	Chicago	IL	60609	(773) 535-1590	http://schoolreports.cps.edu/SchoolProgressRep...	Southwest Side High School Network	...	91.8	1175177.622

5 rows × 78 columns

Here we can see the average of each columns in our dataset loading

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School ID                6.096818e+05
ZIP Code                 6.062973e+04
SAFETY_SCORE             4.950487e+01
Environment Score        4.776608e+01
Instruction Score         4.828850e+01
Rate of Misconducts (per 100 students) 2.108587e+01
ISAT Exceeding Math %    2.035630e+01
ISAT Exceeding Reading % 1.566702e+01
ISAT Value Add Math       6.858974e-02
ISAT Value Add Read       2.264957e-02
COLLEGE_ENROLLMENT       6.260530e+02
General Services Route    3.908481e+01
X_COORDINATE             1.163016e+06
Y_COORDINATE             1.885663e+06
Latitude                 4.184189e+01
Longitude                -8.767732e+01
COMMUNITY_AREA_NUMBER    3.770671e+01
Ward                     2.206007e+01
Police District           1.171025e+01
dtype: float64

```

This table show how many things there's in our dataset like: how many School ID that there's the average, the equation, the minimum, the maximum , of the 25%,50%,75% quantity.

	School ID	ZIP Code	SAFETY_SCORE	Environment Score	Instruction Score	Rate of Misconducts (per 100 students)	ISAT Exceeding Math %	ISAT Exceeding Reading %	ISAT Value Add Math	ISAT Value Add Read	COLLEGE_ENROLLMENT
count	566.000000	566.000000	513.000000	513.000000	513.000000	566.000000	476.000000	476.000000	468.000000	468.000000	566.000000
mean	609681.791519	60629.727915	49.504873	47.766082	48.288499	21.085886	20.356303	15.667017	0.068590	0.022650	626.053030
std	8831.060946	20.248024	20.110837	16.215584	17.417176	27.543835	16.850870	15.208361	1.041174	1.042543	44.260530
min	400018.000000	60605.000000	1.000000	1.000000	1.000000	0.000000	0.000000	0.000000	-3.500000	-5.000000	26.260530
25%	609873.250000	60618.000000	35.000000	37.000000	37.000000	4.525000	9.175000	6.100000	-0.600000	-0.600000	342.260530
50%	610052.500000	60625.000000	48.000000	47.000000	47.000000	12.250000	16.000000	10.950000	0.000000	0.000000	506.260530
75%	610212.750000	60639.000000	61.000000	58.000000	59.000000	26.975000	24.900000	19.525000	0.700000	0.625000	796.260530
max	610544.000000	60827.000000	99.000000	99.000000	99.000000	251.600000	100.000000	100.000000	3.600000	4.900000	436.260530

Among the 78 columns those we keep are:

- NAME_OF_SCHOOL
- Elementary, Middle, or High School
- SAFETY_SCORE
- Instruction Score
- Teachers Score
- Latitude
- Longitude
- COMMUNITY_AREA_NAME
- Location
- Street Address
- So we have our columns and sorted the Elementary Schools having a SAFETY_SCORE, Instruction Score, Teachers Score

:

	SAFETY_SCORE	Instruction Score	Latitude	Longitude
count	9.000000	9.000000	9.000000	9.000000
mean	95.222222	88.666667	41.892787	-87.703842
std	7.758508	11.800424	0.098582	0.043923
min	78.000000	71.000000	41.697198	-87.812091
25%	99.000000	80.000000	41.858370	-87.704655
50%	99.000000	95.000000	41.896740	-87.690298
75%	99.000000	99.000000	41.958017	-87.683179
max	99.000000	99.000000	42.009307	-87.664958

We have the dataset of our Neighborhoods to make our Clustering

	Neighborhoods	latitude	longitude
0	Lower West Side	41.854200	-87.665609
1	Avalon Park	41.745035	-87.588658
2	Mckinley Park	41.831700	-87.673664
3	Chicago Lawn	41.775033	-87.696441
4	Fuller Park	41.818089	-87.632551
...
93	Little Village	41.875562	-87.624421
94	Avondale	41.938921	-87.711168
95	Calumet Heights	41.730035	-87.579213
96	Beverly	41.718153	-87.671767
97	Wicker Park	41.907802	-87.678155

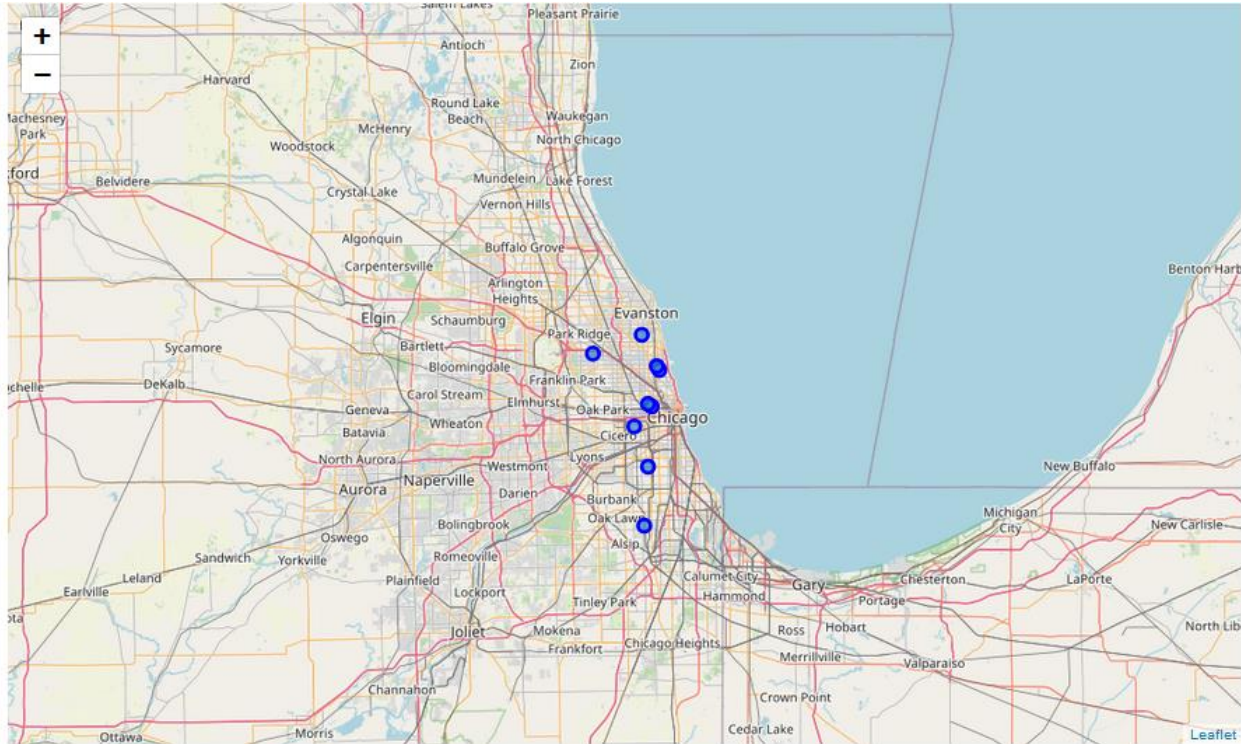
98 rows × 3 columns

We need another dataset for our School Dance so we went on foursquare to pull data on dance schools in Chicago.

	id	name	categories	referralId	hasPerk	location.address	location.lat	location.lng	location.label
0	5a7b7784b9ac383f9f6621d6	American Rhythm Center, 410 S Michigan Ave, 3R...	['id': '4bf58dd8d48988d134941735', 'name': 'D...']	v-1595106346	False	410 S Michigan Ave	41.876448	-87.624857	['label': '41.876447']
1	4ae786a5f964a52019ac21e3	Auditorium Theatre	['id': '4bf58dd8d48988d137941735', 'name': 'T...']	v-1595106346	False	50 E Congress Pkwy	41.876058	-87.625303	['label': '41.876058']
2	4c45c0e0dcd61b8d961f7d56	Chicago Youth Symphony Orchestras	['id': '4bf58dd8d48988d1f2931735', 'name': 'P...']	v-1595106346	False	410 S Michigan Ave Ste 833	41.876448	-87.624857	['label': '41.876447']
3	50175d13e4b002d58e736599	Chicago Human Rhythm Project (@ The Fine Arts	['id': '4bf58dd8d48988d134941735', 'name': 'D...']	v-1595106346	False	410 S Michigan Avenue	41.876448	-87.624857	['label': '41.876447']

We wanted to see all Elementary School in Chicago with a map

- The blue dots identify the School Elementary at Chicago



This map this map shows us all elementary schools with a high level of education and reliable security, Teachers Score.

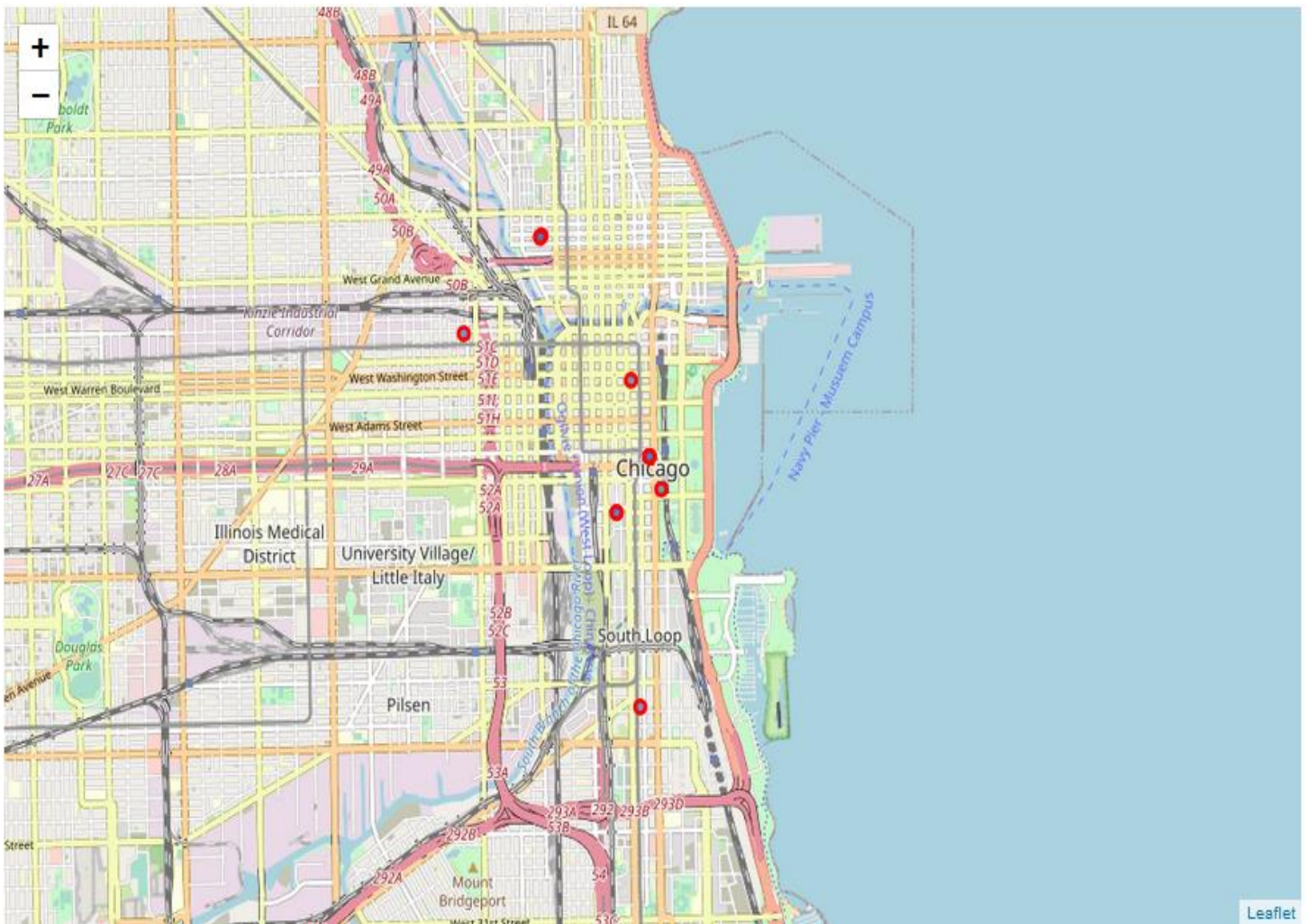
Create map of Chicago using latitude and longitude values.

For showing the map of all dance school we choose only the dance school that are in Chicago.

	name	categories	address	lat	lng
0	American Rhythm Center, 410 S Michigan Ave, 3R...	Dance Studio	410 S Michigan Ave	41.876448	-87.624857
3	Chicago Human Rhythm Project (@ The Fine Arts ...	Dance Studio	410 S Michigan Avenue	41.876448	-87.624857
4	Chicago Human Rhythm Project - American Rhythm...	Dance Studio	410 S. Michigan Avenue	41.876448	-87.624857
11	Chicago Multicultural Dance Center	Dance Studio	806 S Plymouth Ct	41.871843	-87.629103
14	Chicago Multicultural Dance Center	Dance Studio	47 W Polk St	41.871843	-87.629103
25	Chicago Dance Academy	Dance Studio	1920 S Wabash Ave	41.855942	-87.626069
26	Chicago Lindy Hop	Dance Studio	415 W Huron St	41.894485	-87.639174
27	Chicago Dance	Dance Studio	731 N Sangamon St, 3rd Floor	41.894675	-87.638915
28	Chicago Dance	Dance Studio	415 W Huron St	41.894499	-87.639189

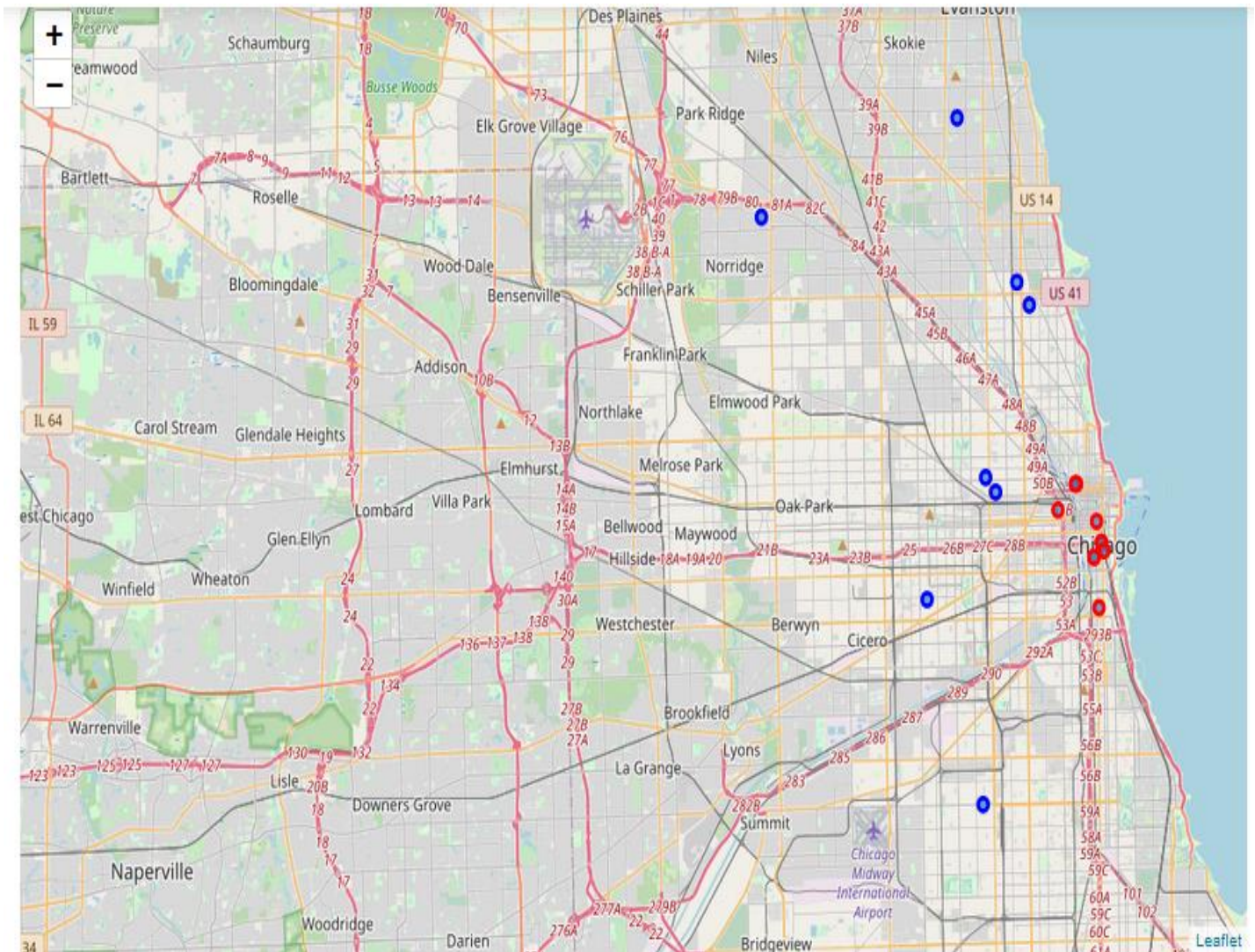
This map shows all the dance schools in Chicago.

- The red dots identify the School dance



This map shows us each point of each school either elementary school or dance school so this map shows us very well the elementary students who have a very high education and a very reliable security Teachers Score and those closest to at least one dance school we have identified are the schools of Michell Elementary School and Chopin Elementary School.

- The red dots identify the School dance
- The blue dots identify the School Elementary
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Conclusion

There are many elementary schools in Chicago about 566 elementary schools in various area communities, A GPS could guide you well or a map.

Our problem was to find a Dance School close to an Elementary School at Chicago and that the elementary school would be a good school by certain criteria such as:

- **SAFETY_SCORE**
- **Instruction Score**
- **Teachers Score**

Enough security of very competent teachers and a very high level of instruction so that the children would be literally well

After doing our analysis and research through Foursquare, Folium, Clustering and others, there are two Elementary schools with the required criteria that are located near a dance school in Chicago and their names are:

- ❖ **Michell Elementary School**
- ❖ **Chopin Elementary School**

Parents will be able to manage their time when they put their children in an elementary school with a high education score and find a **Dance School** close enough to that **Elementary School** and its **Elementary School** with high education score is good enough to take care of the students' education. Even if there are parents who will not put their children in a ready-made dance school

