Exploring Chicago Park District Movies in the Parks 2018 Dataset

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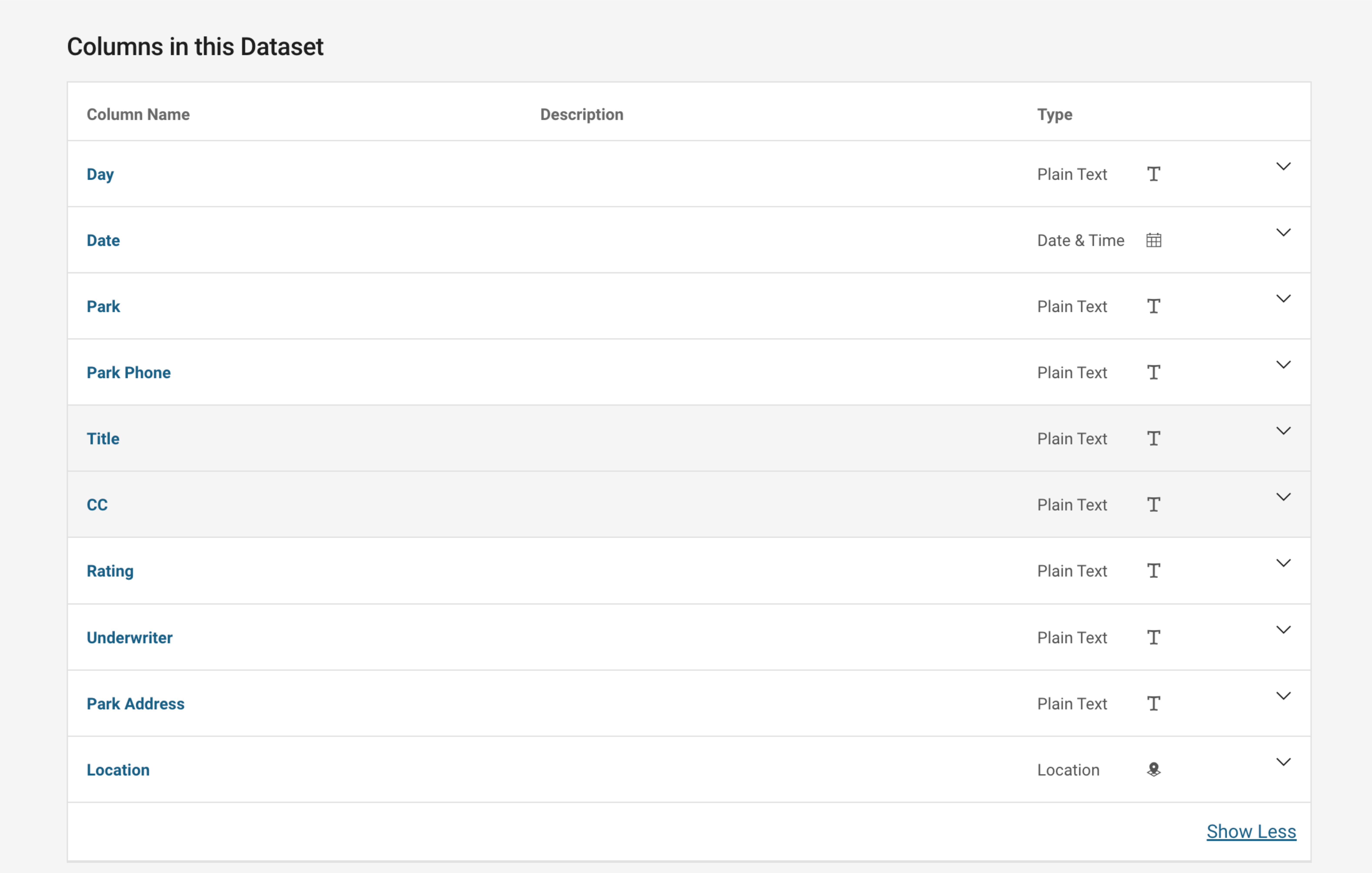
Group#9

Dataset Introduction

- Try to choose Real-world data, but not like TPCH .
- Chicago Park District Movies in the Parks 2018](https://data.cityofchicago.org/Events/Chicago-Park-District-Movies-in-the-Parks-2018/e2v8-k3us)

Rows	Columns	Each Row	Format
221	10	Movie	TSV

Dataset Details



Columns in this Dataset

Column Name	Description	Type
Day		Plain Text
Date		Date & Time
Park		Plain Text
Park Phone		Plain Text
Title		Plain Text
CC		Plain Text
Rating		Plain Text
Underwriter		Plain Text
Park Address		Plain Text
Location		Location

Explore the datasets and caveats

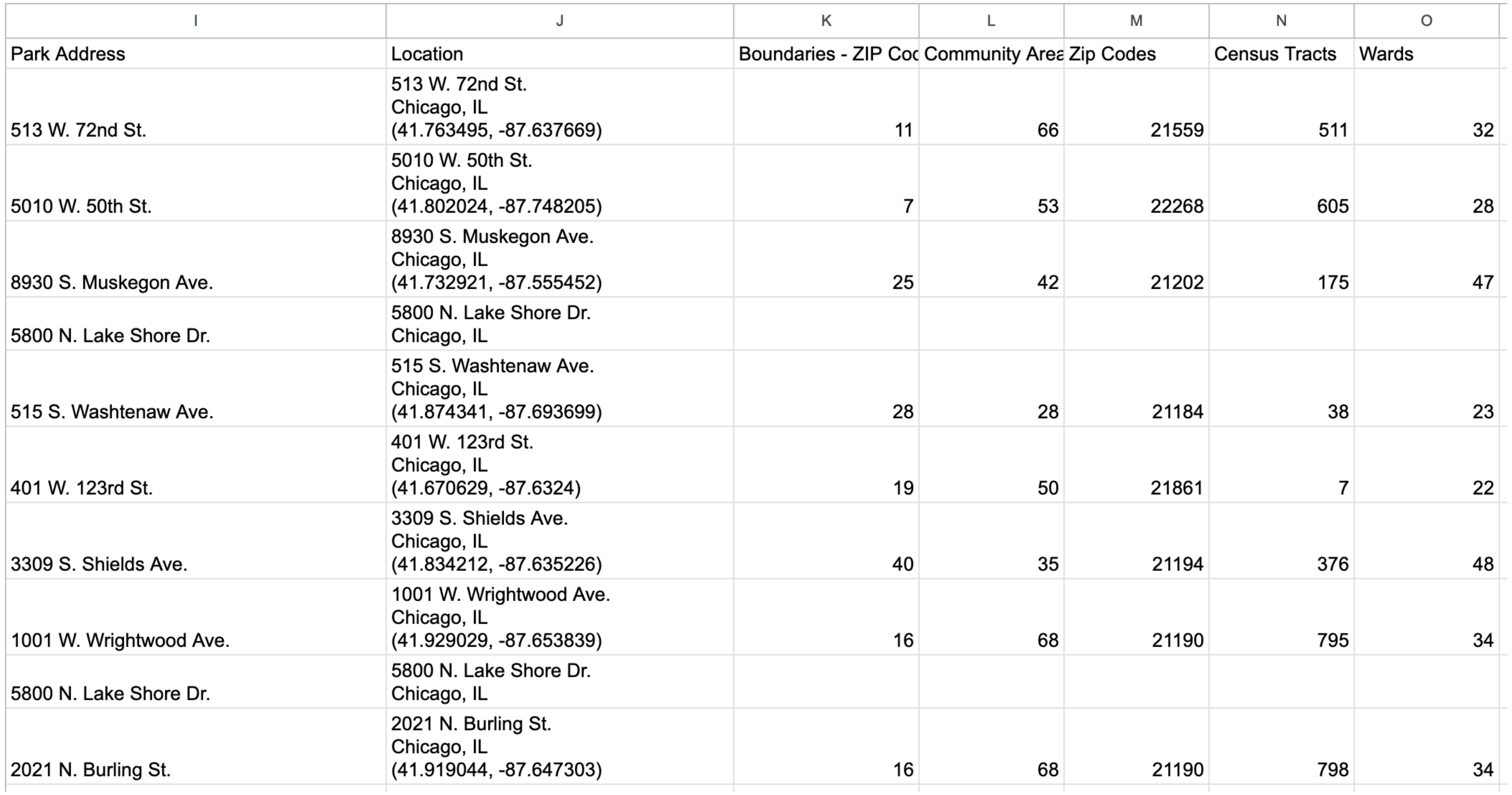
- Compact view: Show the dataset as a simple table
- Detail view: this view shows data distributions for each column
- Column view: this view shows more statistics about each column, but not the actual data in the spreadsheet
- Plot data: Try plot Location on OpenStreetMap
- Check FD: write python code to check FD columns.
- Project pdf: https://github.com/IITTeaching/cs520-f23-group-9/blob/main/vizier_Final_Assignment/Vizier-final-pdm.pdf

Data Quality Problems

- Missing values
- Duplicate text
- Useless columns

Overcoming Data Quality Problems

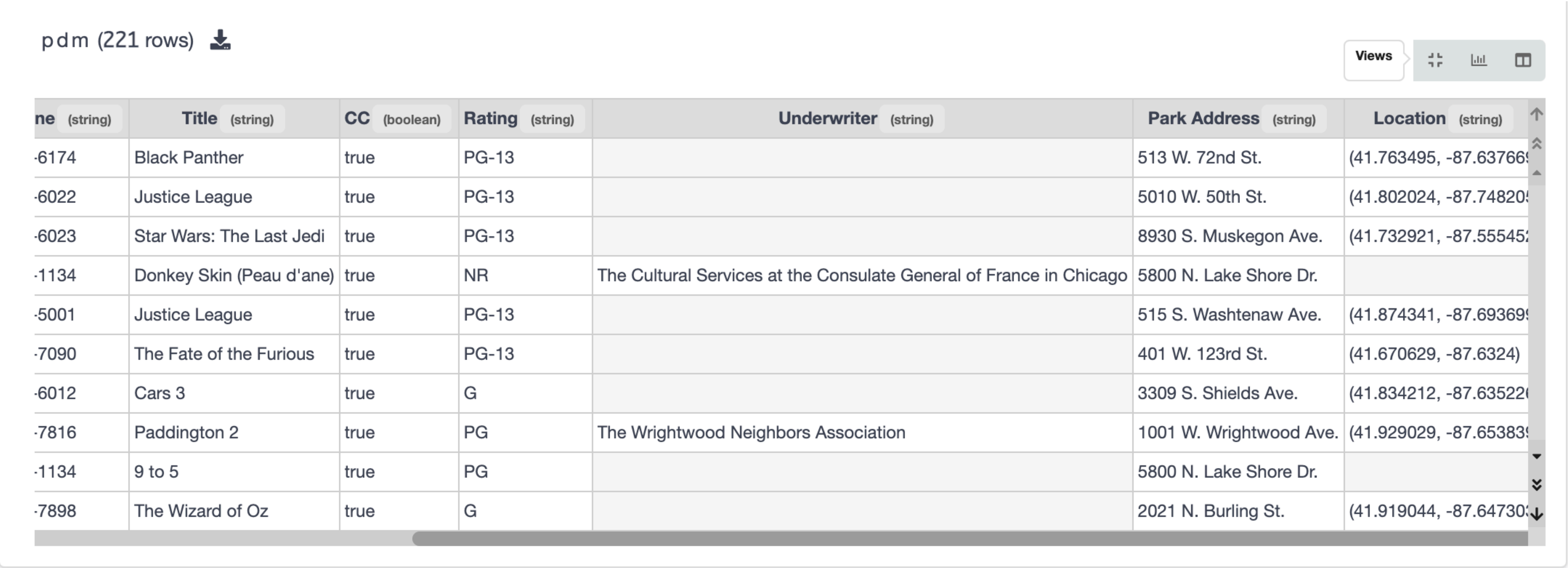
- Issue-1 : remove useless columns



I	J	K	L	M	N	O
Park Address	Location	Boundaries - ZIP Coc	Community Area	Zip Codes	Census Tracts	Wards
513 W. 72nd St.	513 W. 72nd St. Chicago, IL (41.763495, -87.637669)	11	66	21559	511	32
5010 W. 50th St.	5010 W. 50th St. Chicago, IL (41.802024, -87.748205)	7	53	22268	605	28
8930 S. Muskegon Ave.	8930 S. Muskegon Ave. Chicago, IL (41.732921, -87.555452)	25	42	21202	175	47
5800 N. Lake Shore Dr.	5800 N. Lake Shore Dr. Chicago, IL					
515 S. Washtenaw Ave.	515 S. Washtenaw Ave. Chicago, IL (41.874341, -87.693699)	28	28	21184	38	23
401 W. 123rd St.	401 W. 123rd St. Chicago, IL (41.670629, -87.6324)	19	50	21861	7	22
3309 S. Shields Ave.	3309 S. Shields Ave. Chicago, IL (41.834212, -87.635226)	40	35	21194	376	48
1001 W. Wrightwood Ave.	1001 W. Wrightwood Ave. Chicago, IL (41.929029, -87.653839)	16	68	21190	795	34
5800 N. Lake Shore Dr.	5800 N. Lake Shore Dr. Chicago, IL					
2021 N. Burling St.	2021 N. Burling St. Chicago, IL (41.919044, -87.647303)	16	68	21190	798	34

Overcoming Data Quality Problems

- Issue-2: Remove the duplicate information in the Location column and retain the latitude and longitude.

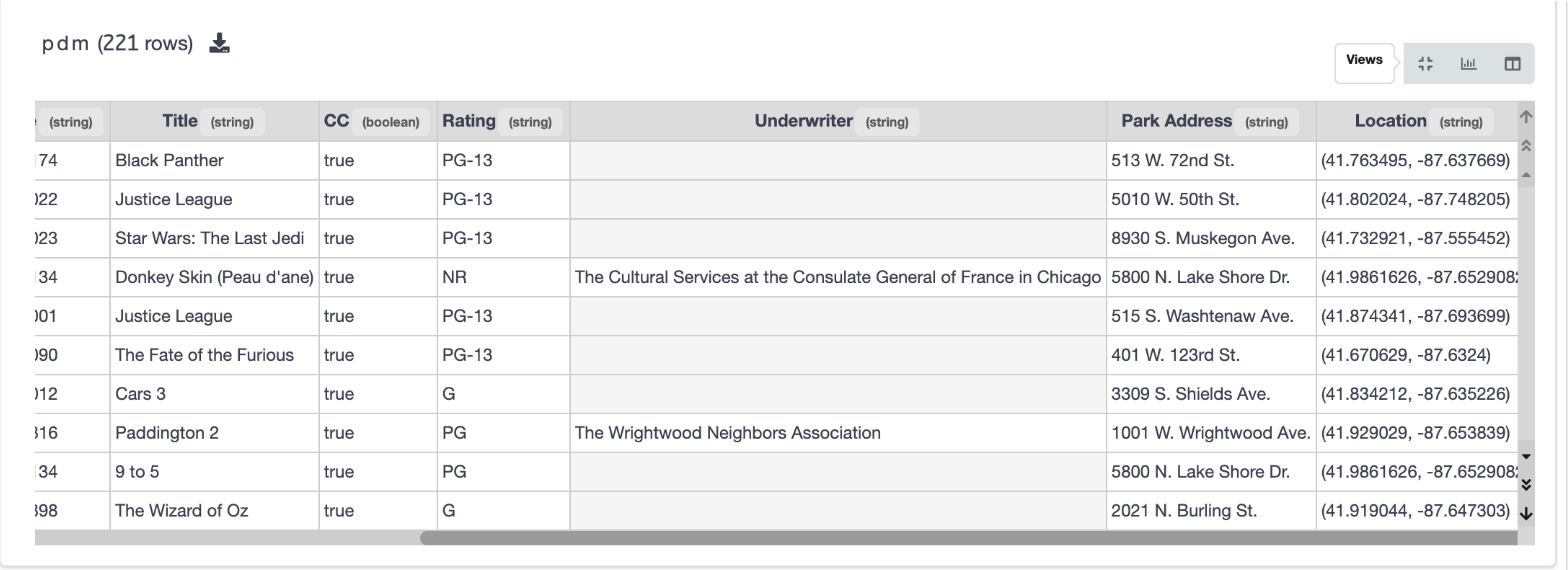


pdm (221 rows)

ne (string)	Title (string)	CC (boolean)	Rating (string)	Underwriter (string)	Park Address (string)	Location (string)
-6174	Black Panther	true	PG-13		513 W. 72nd St.	(41.763495, -87.63766
-6022	Justice League	true	PG-13		5010 W. 50th St.	(41.802024, -87.74820
-6023	Star Wars: The Last Jedi	true	PG-13		8930 S. Muskegon Ave.	(41.732921, -87.55545
-1134	Donkey Skin (Peau d'ane)	true	NR	The Cultural Services at the Consulate General of France in Chicago	5800 N. Lake Shore Dr.	
-5001	Justice League	true	PG-13		515 S. Washtenaw Ave.	(41.874341, -87.69369
-7090	The Fate of the Furious	true	PG-13		401 W. 123rd St.	(41.670629, -87.6324)
-6012	Cars 3	true	G		3309 S. Shields Ave.	(41.834212, -87.63522
-7816	Paddington 2	true	PG	The Wrightwood Neighbors Association	1001 W. Wrightwood Ave.	(41.929029, -87.65383
-1134	9 to 5	true	PG		5800 N. Lake Shore Dr.	
-7898	The Wizard of Oz	true	G		2021 N. Burling St.	(41.919044, -87.64730

Overcoming Data Quality Problems

- issue-3: Find the rows with missing values and use the Google API query address to populate the latitude and longitude

- 

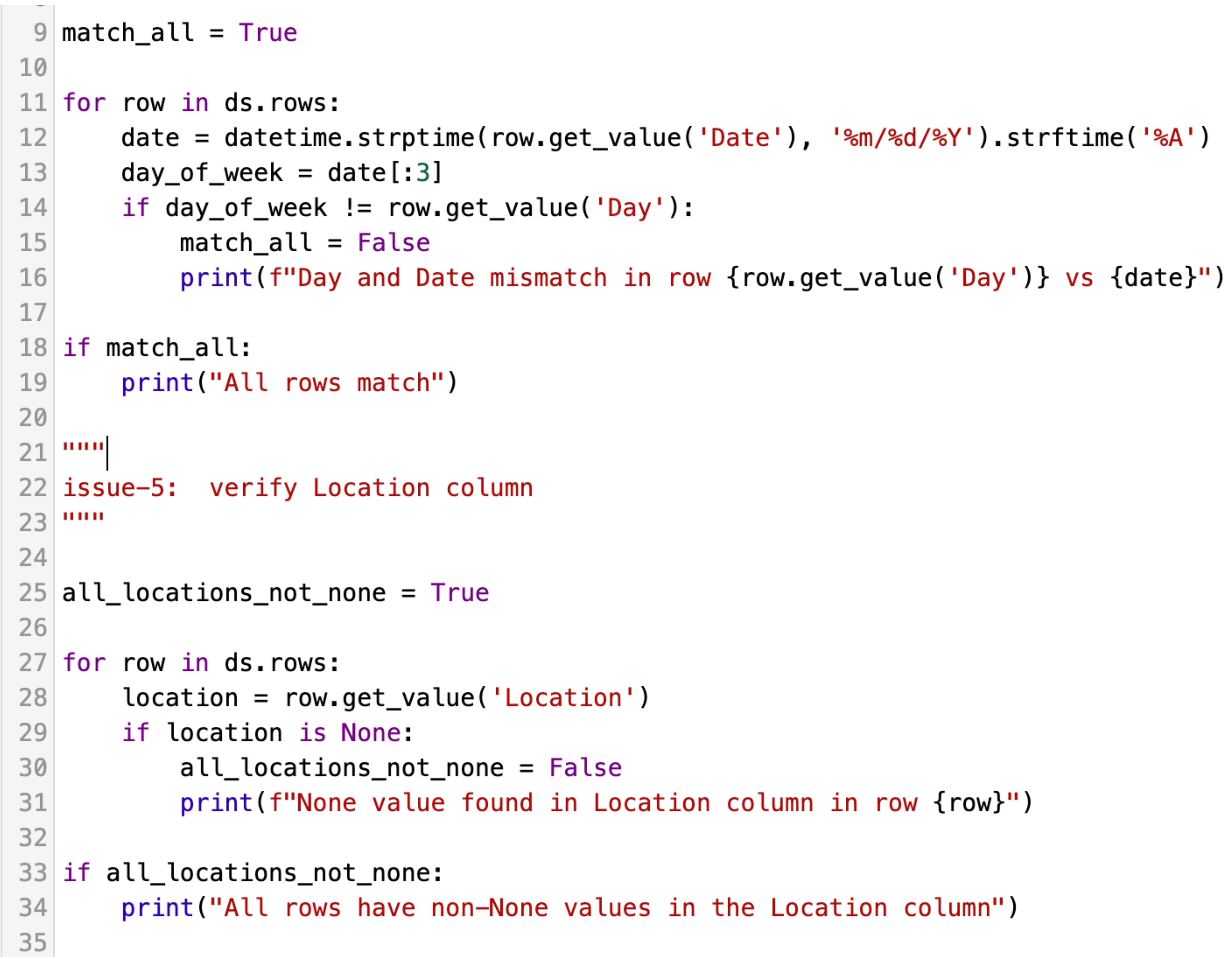
pdm (221 rows)

(string)	Title (string)	CC (boolean)	Rating (string)	Underwriter (string)	Park Address (string)	Location (string)
74	Black Panther	true	PG-13		513 W. 72nd St.	(41.763495, -87.637669)
22	Justice League	true	PG-13		5010 W. 50th St.	(41.802024, -87.748205)
23	Star Wars: The Last Jedi	true	PG-13		8930 S. Muskegon Ave.	(41.732921, -87.555452)
34	Donkey Skin (Peau d'ane)	true	NR	The Cultural Services at the Consulate General of France in Chicago	5800 N. Lake Shore Dr.	(41.9861626, -87.652908
01	Justice League	true	PG-13		515 S. Washtenaw Ave.	(41.874341, -87.693699)
90	The Fate of the Furious	true	PG-13		401 W. 123rd St.	(41.670629, -87.6324)
12	Cars 3	true	G		3309 S. Shields Ave.	(41.834212, -87.635226)
16	Paddington 2	true	PG	The Wrightwood Neighbors Association	1001 W. Wrightwood Ave.	(41.929029, -87.653839)
34	9 to 5	true	PG		5800 N. Lake Shore Dr.	(41.9861626, -87.652908
98	The Wizard of Oz	true	G		2021 N. Burling St.	(41.919044, -87.647303)

Overcoming Data Quality Problems

- verify time and day of the week column

- verify Location column



```python
match_all = True

for row in ds.rows:
    date = datetime.strptime(row.get_value('Date'), '%m/%d/%Y').strftime('%A')
    day_of_week = date[:3]
    if day_of_week != row.get_value('Day'):
        match_all = False
        print(f"Day and Date mismatch in row {row.get_value('Day')} vs {date}")

if match_all:
    print("All rows match")

"""
issue-5:  verify Location column
"""

all_locations_not_none = True

for row in ds.rows:
    location = row.get_value('Location')
    if location is None:
        all_locations_not_none = False
        print(f"None value found in Location column in row {row}")

if all_locations_not_none:
    print("All rows have non-None values in the Location column")
```

Challenges

Row 53 run google api:

https://maps.googleapis.com/maps/api/geocode/json?address='8050 S. Chapel.'&key={api_key}

return ZERO_RESULTS.

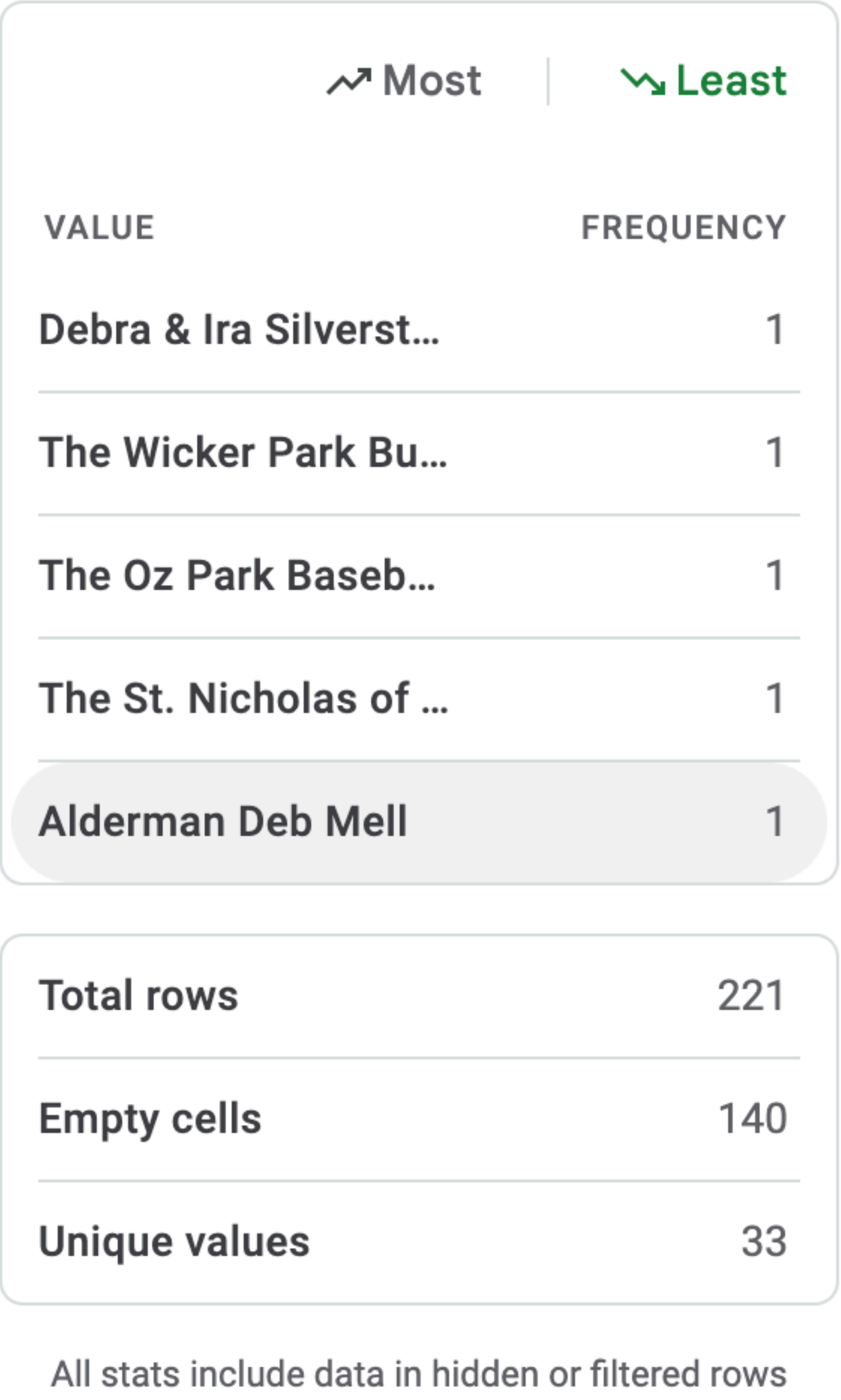
But we already know this place is at Chicago, IL. Then fix Park Address field of this row. Then update request to:

api_url = https://maps.googleapis.com/maps/api/geocode/json?address={park_address}, Chicago, IL&key={api_key}

this get the right result.

Challenges

- Underwriter column:
  - Total 221 rows
  - 140 empty cells
  - 33 unique values
- For Underwriter column: we can not fix missing values by some algorithm, because it’s meaningless.
- So leave it as it is.



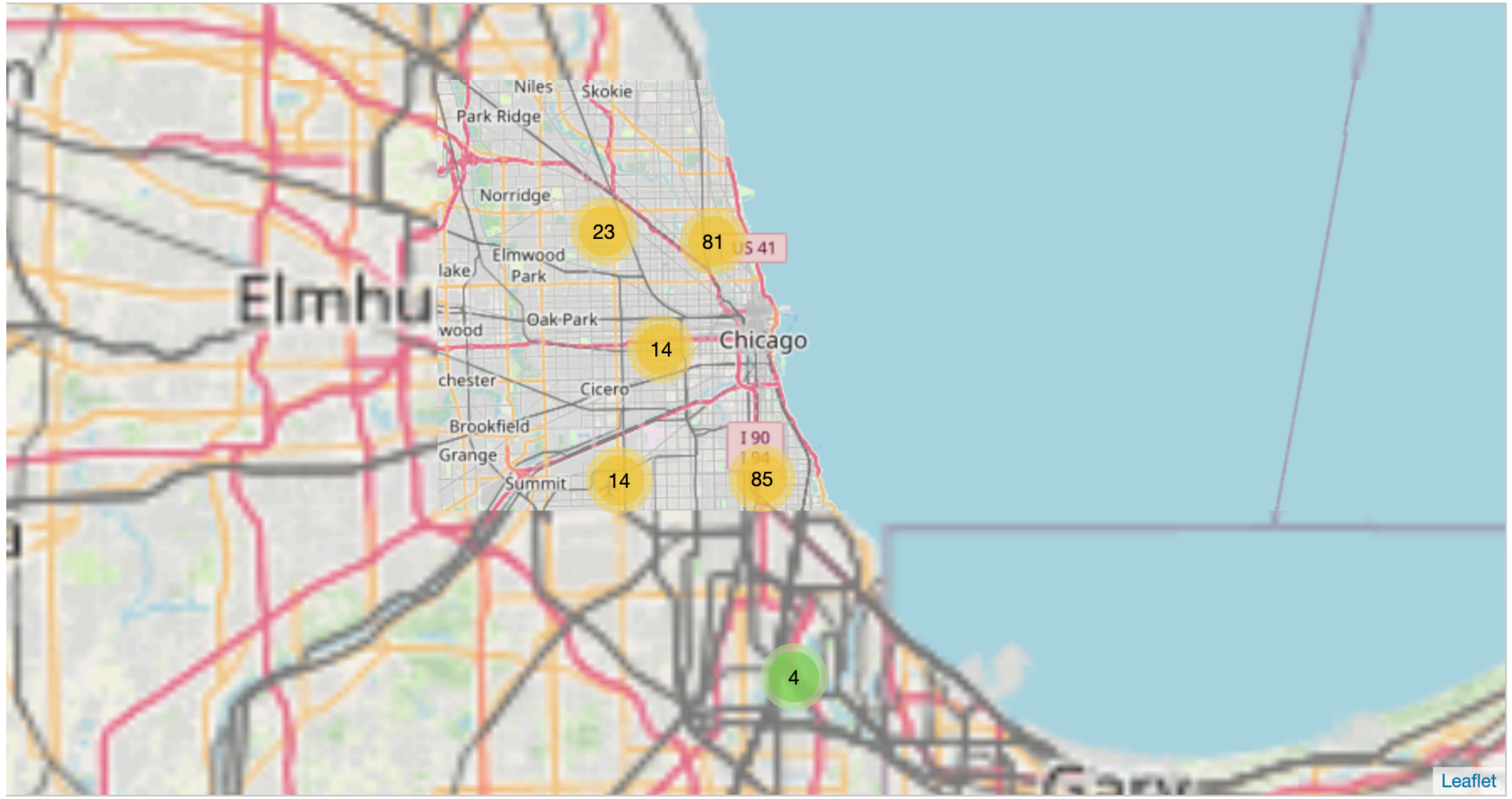
VALUE	FREQUENCY
Debra & Ira Silverst…	1
The Wicker Park Bu…	1
The Oz Park Baseb…	1
The St. Nicholas of …	1
Alderman Deb Mell	1

Total rows	221
Empty cells	140
Unique values	33

All stats include data in hidden or filtered rows

Visualization

- After clean data, then can Plot Data on Map


Niles
Skokie
Park Ridge
Norridge
23
81
US 41
Elmwood Park
lake
Elmhu
wood
Oak Park
14
Chicago
chester
Cicero
Brookfield
Grange
I 90
Summit
14
85
4
Gary
Leaflet