Dish Detective

NYC Restaurant Inspection Analysis

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Why?

Open portal that can foster collaboration between inspection officers, restaurant owners, regulators to improve diner's experience and ultimately the protect public health.

Objectives

- Understand how restaurant violation results have changed over the years and across seasons.
- Violation codes and their relationship with factors like cuisine type, borough, season.
- Discover patterns across a restaurant chains.

Dataset

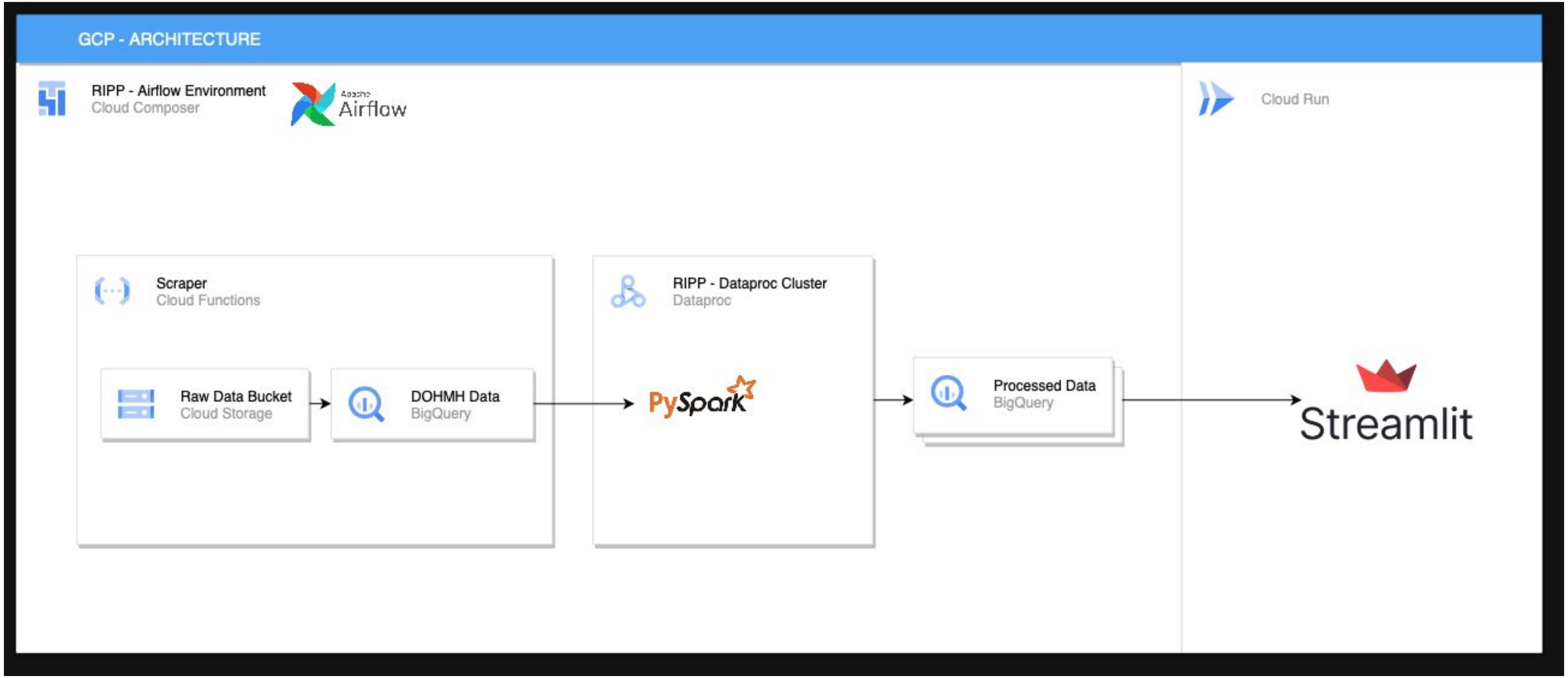
DOHMH New York City Restaurant Inspection Results:

- Inspection results for restaurants across NYC
- Source: NYC Open Data
- ~210K rows, 27 columns
- API endpoint available

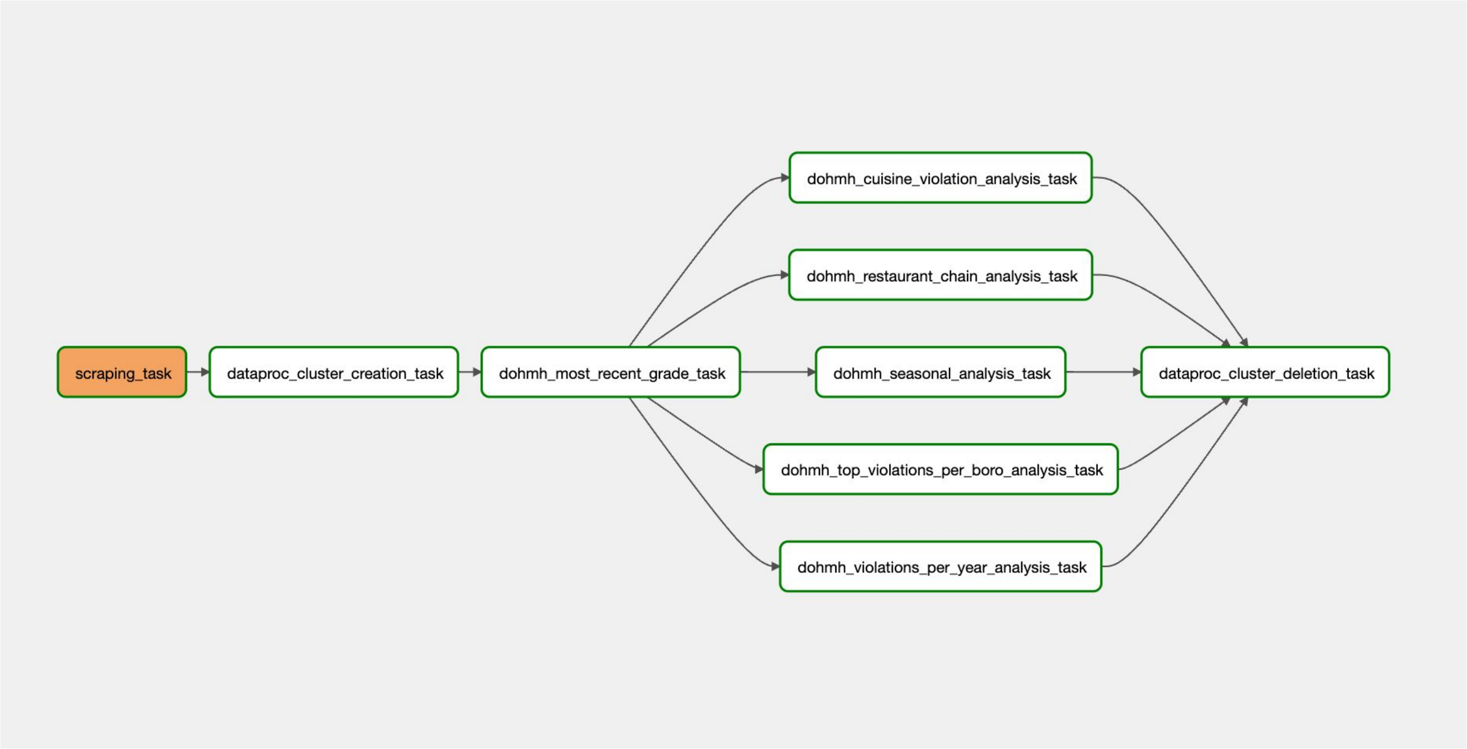
Keys points to note:

- *Conditional* temporal analysis is allowed.
- Violation codes, scores & grades(may) are assigned after inspection.
- API record limit of 50K per request (Requires Pagination)

Architecture



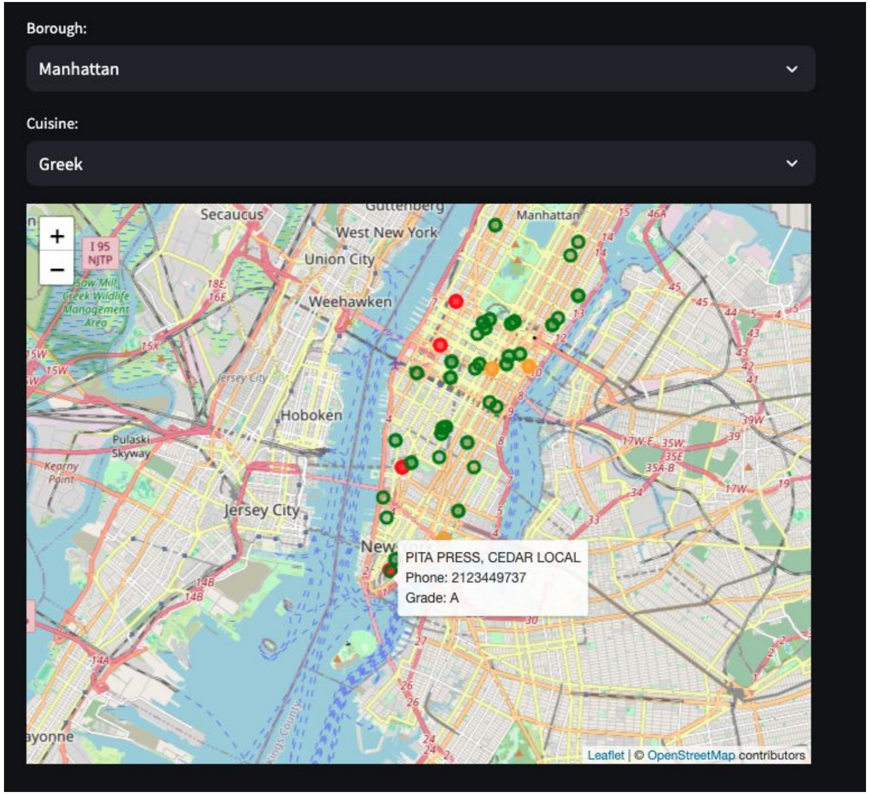
Airflow DAG


scraping_task
dataproc_cluster_creation_task
dohmh_most_recent_grade_task
dohmh_cuisine_violation_analysis_task
dohmh_restaurant_chain_analysis_task
dohmh_seasonal_analysis_task
dohmh_top_violations_per_boro_analysis_task
dohmh_violations_per_year_analysis_task
dataproc_cluster_deletion_task

Analysis

Geospatial analysis of the most recent grade given to a restaurant.

- Find the most recent inspection results for each restaurant based and filter using instructions defined by NYC Open Data (such as score value, type of instruction and grade allowed).
- Using this ‘most_recent_letter_grade’ dataframe build a map using ‘folium’
- ‘Most_recent_letter_grade’ is used as the reference dataframe for all future analysis.



Borough: Manhattan

Cuisine: Greek

PITA PRESS, CEDAR LOCAL
Phone: 2123449737
Grade: A

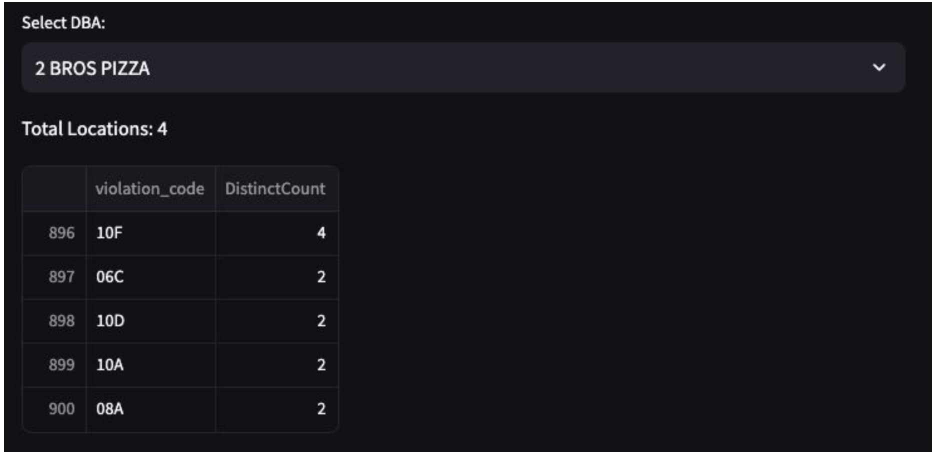
Analysis

Restaurant chain analysis

- Chain-Specific Data Collection

- Compiling data for each restaurant chain (DBA) to analyze inspection patterns across multiple locations.

- Violation Code Frequency per Chain Assessing which violation codes were inspected and how frequently they occurred across various locations within each restaurant chain



Select DBA:

2 BROS PIZZA

Total Locations: 4

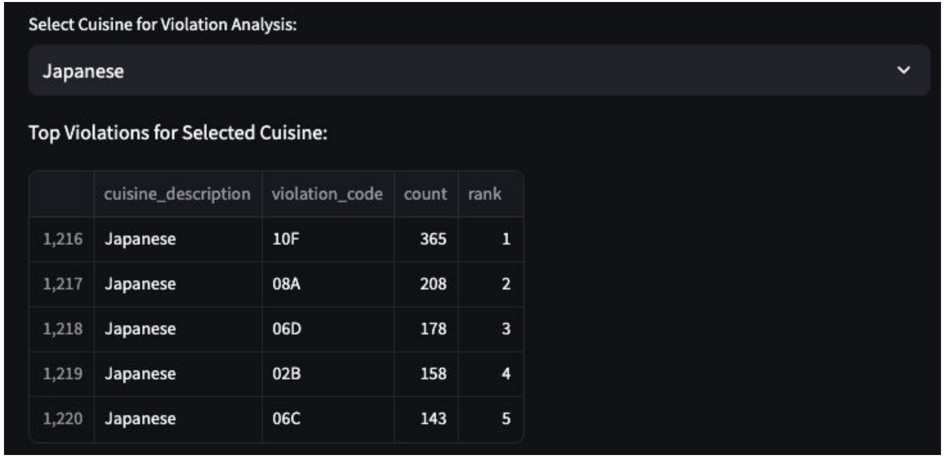
	violation_code	DistinctCount
896	10F	4
897	06C	2
898	10D	2
899	10A	2
900	08A	2

Analysis

Ranking top 5 violation codes across different cuisines

- Quantifying occurrences for each specific violation code across different cuisine types, providing insights into the frequency of particular violations.

- Ranking violations for cach cuisine to identify most common health code infractions for cuisine type



Select Cuisine for Violation Analysis:

Japanese

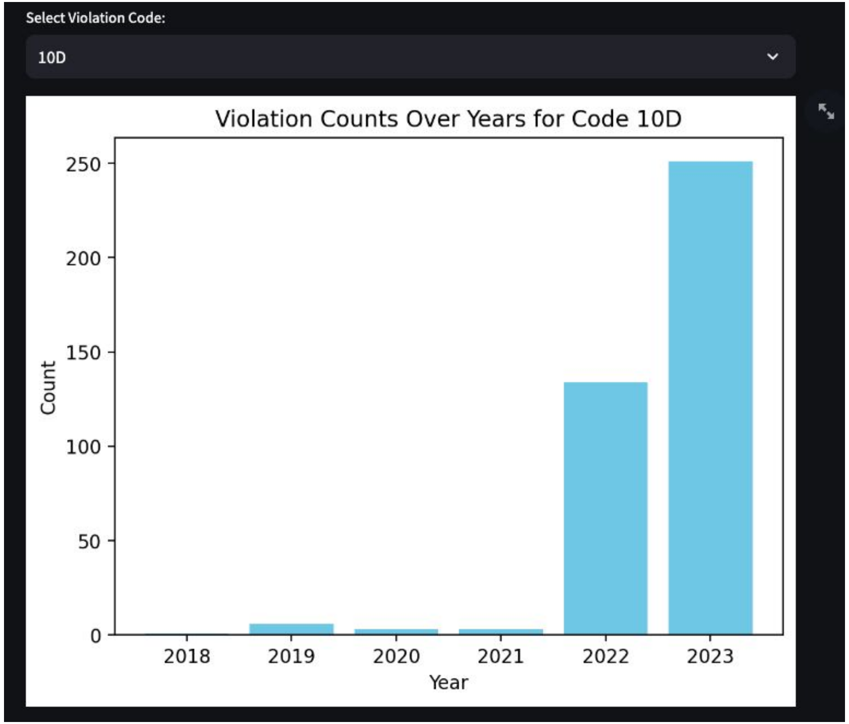
Top Violations for Selected Cuisine:

	cuisine_description	violation_code	count	rank
1,216	Japanese	10F	365	1
1,217	Japanese	08A	208	2
1,218	Japanese	06D	178	3
1,219	Japanese	02B	158	4
1,220	Japanese	06C	143	5

Analysis

Tracking trends across years for violation code

- Grouping data by violation code and inspection year
- Calculating the total number of occurrences for each violation code in each year

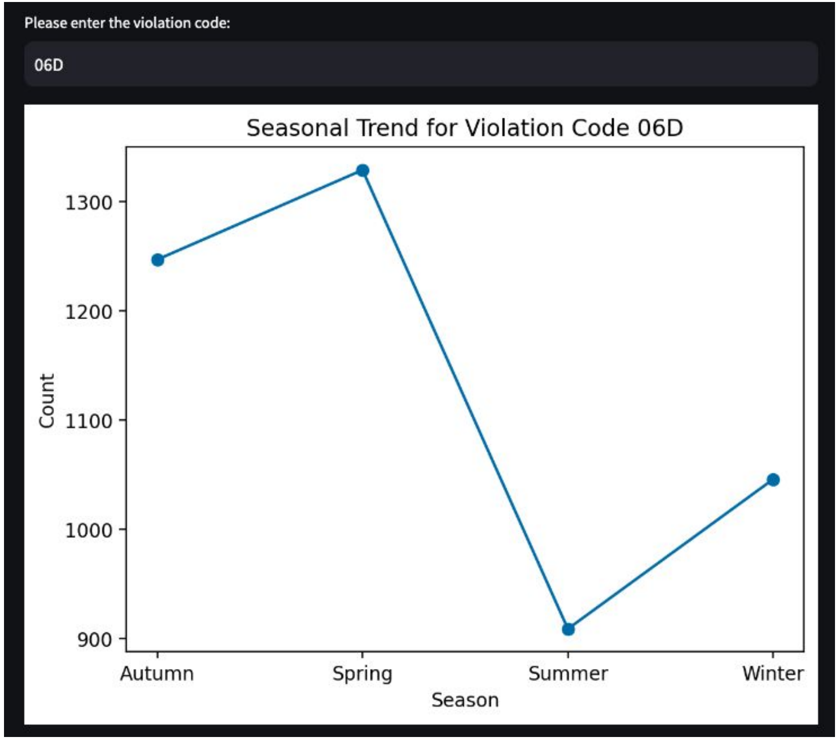

Select Violation Code:

10D

Analysis

Seasonal trends across violations

- Categorizing months to seasons - Winter, Spring, Summer, and Autumn.
- Categorization is applied to through a User Defined Function (UDF), adding a "SEASON" column to the dataset, which maps each inspection month to its corresponding season.
- Finally group by season for the entered violation code.



Please enter the violation code:

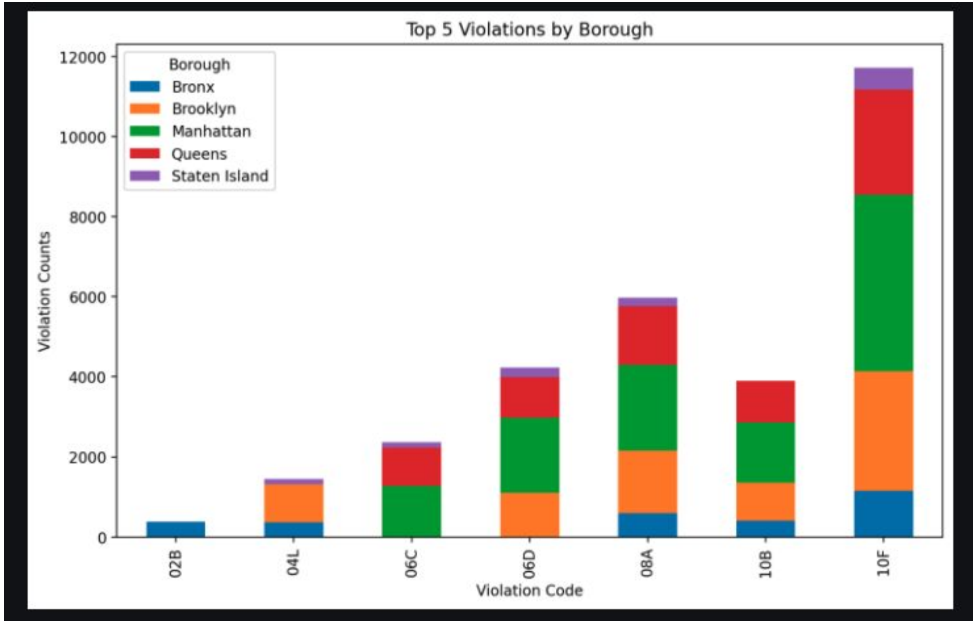
06D

Analysis

Identifying top five violations across Boroughs

- Grouping by violation code and borough.

- Window function to rank the top five most common violations partitioned by borough.



Demo

https://dishdetective-lkdh4wts6q-ue.a.run.app/

Future enhancements

1. Build fault tolerance into the pipeline.

2. Consider using different file formats (Parquet?) for archiving data.

3. Continued scrapping will allow us to build a unified historical data warehouse.

4. Address stop words within DBA and handle cuisine misclassification in source data such as ‘Pizza’ instead of ‘Italian’.

Thank you!

Q&A