



HappyOurs

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1. Introduction and Motivation

At HappyOurs, we understand that finding the perfect bar or pub can be a daunting task, especially with all the options available on platforms like Google Maps and Yelp. That's why we developed the HappyOurs application - to help people find the perfect bar or pub for their needs, quickly and easily.

Our application uses advanced filters to recommend bars and pubs based on the user's criteria, such as price, vibe, and type of drink. We also only show the closest options in the results, so users don't have to sift through a long list of irrelevant choices like they might on other platforms.

We want to make it easy for people to find the perfect place to unwind and have a good time, without the hassle of scrolling through endless search results or settling for a less-than-ideal location. With HappyOurs, users can trust that they'll find the bar or pub that truly meets their needs and preferences.

2. Data Scraping

Method:

- We initially attempted to use Yelp's public dataset of reviews to analyze and extract relevant data for the app. However, upon querying the data for metro cities such as New York, we found that there was no data available, and that the dataset was not focused and therefore not useful for the project.
- As a result, we decided to request a different dataset called YelpNYC from a different source. After multiple requests, we were able to obtain the dataset and begin working with it.
- Using Python and various libraries such as geopy and scrapy, we wrote code to scrape the Yelp website for total reviews and create scores based on occurrences of keywords such as "college", "date", "beer", and "wine". We also retrieved address and image information for each bar.

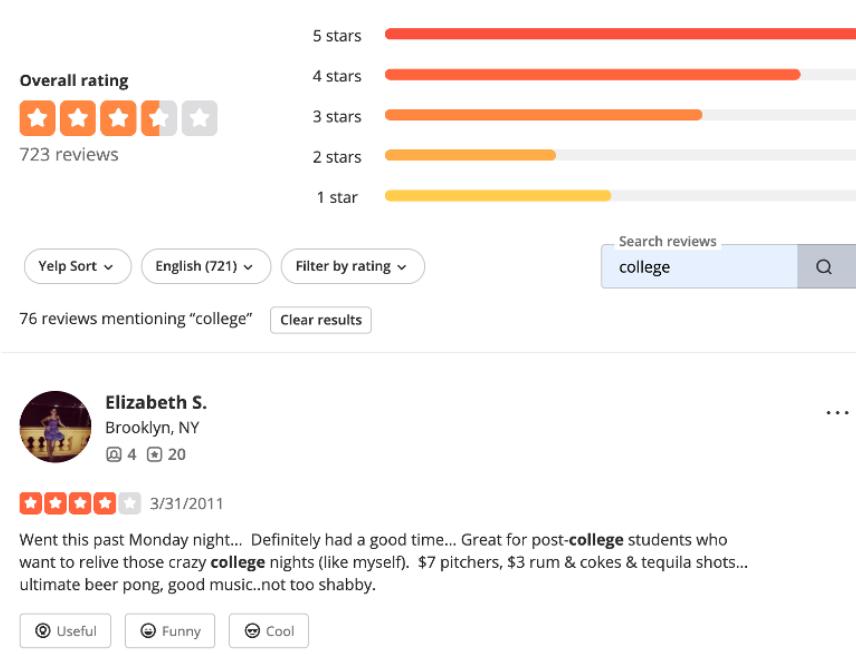


Figure 1: Example of the manual data scraping for word "college". There were 76 occurrences of the word "college" out of the 723 total reviews.

Problems Encountered:

- Due to the dataset being collected prior to the COVID-19 pandemic, we had to remove many rows from the dataset because the locations were closed. We also had to drop rows that were missing important information.
- The data scraping process took approximately 30 seconds per establishment, with us creating 5 sessions for each place. In total, the process took around 6 hours to complete.
- We encountered captcha issues that had to be resolved during the data scraping process.

BusinessID	Name	Location	reviewCount	rating	categories	address	hours	Goodfor	AcceptsCreditCards	Atmosphere	Goodfor Group	PricingRange	TakesReservations	Delivery	Takeway	WaiterService	OutdoorSeating	WiFi	Goodfor	Alcohol	Reservations	Ambience	HistTV	Caters	WheelchairAc	website	phoneNumber	ReviewCount
14799484	Press Lounge	Midtown	163	3.5	Nightlife	Bur-453 10th Ave	Sun-Sat 5 pm - 1 am Vtues	Garage, Street	Yes	\$55	Yes	No	No	Yes	Yes	Yes	Yes	Full Bar	Average	Yes	Romantic, Trendy, Upscale	No	Yes	http://www.yelp.com/biz/14799484	13	1		
14800000	Bar & Kitchen	Midtown	245	3.5	Nightlife	Bur-453 10th Ave	Sun-Sat 5 pm - 1 am Vtues	Garage, Street	Yes	\$55	Yes	No	No	Yes	Yes	No	Free	Dinner	Full Bar	Yes	Yes	Yes	Yes	http://www.yelp.com/biz/14800000	357	1		
1480051625	Off the Wagon	Midtown	152	3	Restaurants	150H Madison Ave	Mon-Fri 2 pm No	Street	Casual	Yes	\$5	No	No	No	Yes	No	No	Late Night	Full Bar	Yes	Yes	No	Yes	Yes	http://www.yelp.com/biz/1480051625	26	1	
5451979195	P.J. Clarke's	Midtown	366	3.5	Restaurants	953 3rd Ave	Mon-Fri 11:30 pm	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Dinner	Full Bar	Loud	Casual	Yes	No	Yes	http://yelp.com/biz/5451979195	56	1	
1480179441	Hut Midtown	Midtown	308	3.5	Nightlife	Bur-109 W 54th St	Mon-Fri 5 pm	Street	Casual	Yes	\$55	Yes	Yes	Yes	Yes	No	No	Lunch, Dinner	Full Bar	Average	Yes	Yes	No	Yes	http://www.yelp.com/biz/1480179441	13	1	
1480200000	Urban Tap	Midtown	142	3.5	Nightlife	Bur-109 W 54th St	Mon-Fri 5 pm	Street	Casual	Yes	\$55	Yes	Yes	Yes	Yes	No	No	Lunch, Dinner	Full Bar	Average	Yes	Yes	No	Yes	http://www.yelp.com/biz/1480200000	22	1	
1480200402	Smalls	West	89	4.5	Nightlife	Bur-138 W 23rd St	Between 5th & 6th Aves	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch, Dinner	Full Bar	Loud	Casual	Yes	No	No	http://www.yelp.com/biz/1480200402	12	1	
1480233234	Jake's Saloon	West	59	3	Nightlife	Bur-138 W 23rd St	Between 5th & 6th Aves	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch, Dinner	Full Bar	Average	Yes	Yes	Yes	Yes	http://www.yelp.com/biz/1480233234	9	1	
1480233234	Bar & Kitchen	West	14	3.5	Nightlife	Bur-138 W 23rd St	Between 5th & 6th Aves	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch, Dinner	Full Bar	Average	Yes	Yes	Yes	Yes	http://www.yelp.com/biz/1480233234	1	1	
1480233234	McDermott's	West	772	4	Nightlife	Bur-138 W 23rd St	Between 5th & 6th Aves	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Beer & Wine	Full Bar	Loud	Divey	No	No	No	http://www.yelp.com/biz/1480233234	55	1	
1480443776	The Dubliner	Midtown	75	3	Restaurants	45 Stone St	Between Court & No	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch, Dinner	Full Bar	Average	Casual	Yes	No	Yes	http://www.yelp.com/biz/1480443776	4	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
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1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350	Biggards Pub	Midtown	30	3	Nightlife	Bur-210 W 35th St	Mon-Sat 11 am - 4 am	Street	Casual	Yes	\$5	Yes	Yes	Yes	Yes	No	No	Lunch	Full Bar	Quiet	Casual	Yes	Yes	Yes	http://www.yelp.com/biz/1480450350	28	1	
1480450350																												



Figure 2: Example of the YelpNYC dataset.

restaurantID	name	location	reviewCount	rating	categories	address	Hours	GoodforKids
nCH7SR7qXuC	Press Lounge	Press Lounge	163	3,5	Nightlife, Bar	653 11th Ave	Mon-Tue, Sun 5 pm - 1 am	W
FCI5446Rovk:	Lavo	Lavo - Midtown	245	3,5	Nightlife, Bar	39 E 58th St	(Mon-Wed, Su No	
tR46H5rE6Z5i	Off The Wago	Off The Wago	352	3	Restaurants,	109 MacDoug	Mon-Fri 2 pm	No
54SrQVhGca	P.J. Clarke's	P.J. Clarke's -	366	3,5	Restaurants,	915 3rd Ave	(Mon-Sun 11:30	No
RrYu2qfIS9Mj	Flute Midtown	Flute Midtown	108	3,5	Nightlife, Bar	205 W 54th S	Mon-Wed, Sun 5 pm - 2 am	
o3l8CicsNgu1	Beckett's Bar	Beckett's Bar	80	2,5	Nightlife, Bar	81 Pearl St	(b Mon-Wed 11	No
RbxKUN14O2_	Smalls	Smalls - West	89	4,5	Nightlife, Bar	183 W 10th St	(between 4th	No
A6rMNYsQ3A	Jake's Saloon	Jake's Saloon	59	3	Nightlife, Bar	206 W 23rd St	(between 7th Ave & 8th Av	
#NAME?	The Irish Punt	The Irish Punt	18	3	Restaurants,	40 Exchange Pl	Lobby 1 New	No
QArou07Cml	McSorley's Ol	McSorley's Ol	772	4	Nightlife, Bar	15 E 7th St	(b Mon-Sat 11 am - 1 am	Sun 1
81419r4-K5TYc	The Dubliner	The Dubliner	75	3	Restaurants,	45 Stone St	(between Coen	No
BoUb4Bj6SiXj	Blaggards Pub	Blaggards Pub	35	3	Nightlife, Bar	210 W 35th S	Mon-Sun 11 am - 4 am	
BDM5Mu5Rode	The Red Lion	The Red Lion	106	3,5	Restaurants,	151 Bleeker	Mon-Fri 11 ar	No
wLvcFB3tbvu	Burp Castle	Burp Castle - I	335	4	Nightlife, Bar	41 E 7th St	(b Mon-Thu 5 pm - 12 am	Fri 5
2LRg0VOK1iGi	Peculiar Pub	Peculiar Pub -	229	3,5	Nightlife, Bar	145 Bleeker	Mon-Wed 5 p	No
yM61f4KvO8t	Ace Bar	Ace Bar - East	207	3,5	Nightlife, Bar	531 E 5th St	(Mon-Fri 3 pm - 4 am	Sat-Su
5mqqqLQB7t	d.b.a.	d.b.a. - East V	315	3,5	Nightlife, Bar	41 1st Ave	(b Mon-Sun 1 pm - 4 am	
bEloKDe-QVk	Frying Pan	Frying Pan - N	663	4	Nightlife, Bar	Pier 66 Maritime New York	NY 10001	
hdGpiXES_d4i	Wine:30	Wine:30 - Mid	226	4	Nightlife, Bar	41 E 30th St	(Mon-Sun 11 a	No
v1eclReSMU	The Skinny	The Skinny - l	121	3,5	Nightlife, Bar	174 Orchard S	Mon-Sat 5 pm - 4 am	Sun 8
P3NfoMbj_yo	ApothV@ke	ApothV@ke -	563	4	Nightlife, Bar	9 Doyers St	(t Mon-Sat 6:30 pm - 2 am	Sun
IlvXlBTC9-Yy3	Dorrian's Red	Dorrian's Red	96	2,5	Nightlife, Bar	1616 2nd Ave	New York, NY	No
R5j5pETY00shf	Dos Caminos	Dos Caminos	358	3	Restaurants,	475 W Broadway	(between No	
nIVVqx1qXm	Bar Veloce	Bar Veloce - E	111	3,5	Nightlife, Bar	175 2nd Ave	(Mon-Sun 5 pr	No

Figure 3: For the scraping process, we used only the restaurantID field and name field.

Result:

- The final output of the data scraping process was a dataset of 4500 bars in NYC.

Figure 4: The results in the columns of the scraping were concatenated to the existing YelpNYC.

The new columns are: `totalReviews`, `picturesLinksArray`, `collegeScore`, `dateScore`, `wineScore`, `beerScore`, `longitude`, `latitude`, and `fullAddress`.



3. Scoring

We scored each bar with 4 scores for the MVP - College, Date, Wine, Beer. When we scraped the yelp data, we divided the occurrence of the respective keyword by the total number of reviews.

Ex : if there were 74 occurrences for "college" from 200 reviews, the score would be 0.38

As part of the development of the HappyOurs app, we implemented a scoring system to help users find the most suitable establishments for their needs. For the MVP (minimum viable product) of the app, we decided to focus on four specific keywords: "college", "date", "wine", and "beer".

To calculate the scores for each bar, we used the data that we had scraped from the Yelp website. Specifically, we counted the number of occurrences of each keyword in the reviews of each bar, and then divided this number by the total number of reviews for the bar. For example, if a bar had 74 occurrences of the word "college" in its 200 reviews, the score for this keyword would be 0.38 (74 / 200).

We used this scoring system to provide users with an idea of how popular each bar was for certain activities, such as college outings or romantic dates. This allowed users to quickly and easily find establishments that matched their interests and preferences.

To calculate the final score for each bar, we summed the scores for the keywords selected by the user and multiplied the result by 100. This provided a simple and easy-to-understand score that users could use to compare different bars and make a decision about which one was the most suitable for their needs.

For example, if a user selected the keywords "college", "date", and "wine", and a particular bar had scores of 0.38, 0.25, and 0.50 for these keywords, respectively, the final score for the bar would be calculated as follows:

$$\text{Final Score} = (0.38 + 0.25 + 0.50) * 100 = 113$$

This final score could then be used to rank the bars and help the user find the most suitable establishment.

4. Uploading to Firebase

The next step is to take the csv data generated by the previous steps to the firestore database within Firebase. Most of the data was sent as a script, except for location which was stored specifically as a geohash to allow for better querying on the application side by location. We converted the location we got from step 3 to a firestore geopoint object.

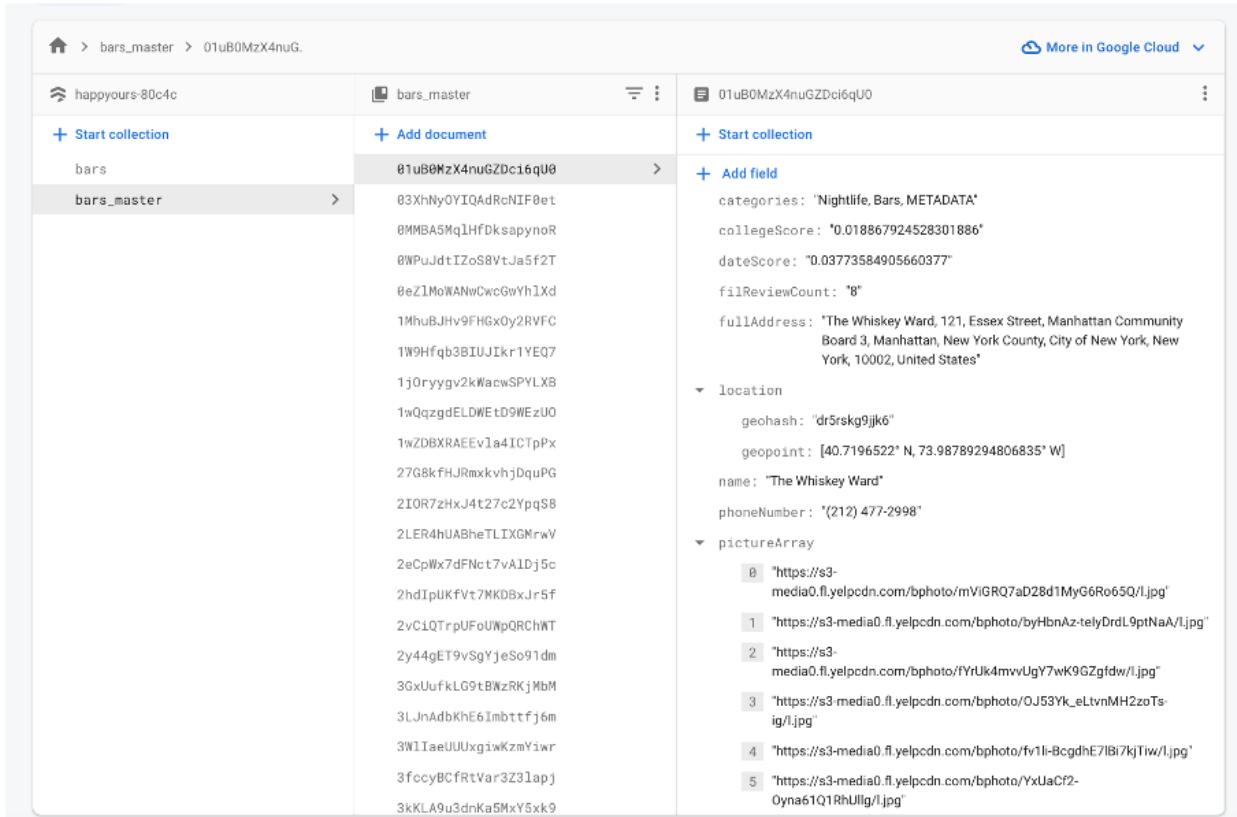
We also had to store the images as an array of strings of links.

In order to make the data collected and processed in the previous steps available to the HappyOurs app, we needed to store it in a secure and easily accessible way. To accomplish this, we decided to use the Firebase Firestore database.

The Firestore database is a flexible, scalable, and NoSQL cloud database that allows developers to store, retrieve, and manage data for their apps. It offers real-time synchronization and offline support, making it an ideal choice for mobile applications like HappyOurs.

To upload the data to the Firestore database, we used a script that reads the data from a CSV file and then writes it to the database using the `firebase_admin` and `google.cloud` libraries. Most of the data was sent to the database as is, but the location data was stored specifically as a geohash to allow for better querying on the application side by location. Additionally, we had to convert the location data to a Firestore GeoPoint object and store the images as an array of strings containing links to the images.

Overall, this process was essential for making the data collected and processed in the previous steps available to the HappyOurs app and enabling users to find the most suitable establishments for their needs.



The screenshot shows the Firebase Firestore interface. On the left, there's a navigation bar with a home icon, followed by 'bars_master' and '01uB0MzX4nuG...'. Below this is a list of documents under the 'bars' collection, with 'bars_master' highlighted. In the center, a specific document is selected: '01uB0MzX4nuGZDci6qU0'. This document contains the following data:

```

{
  "categories": "Nightlife, Bars, METADATA",
  "collegeScore": "0.018867924528301886",
  "dateScore": "0.03773584905660377",
  "fillReviewCount": "8",
  "fullAddress": "The Whiskey Ward, 121, Essex Street, Manhattan Community Board 3, Manhattan, New York County, City of New York, New York, 10002, United States",
  "location": {
    "geohash": "dr5rskg9jjk6",
    "geopoint": "[40.7196522° N, 73.98789294806835° W]",
    "name": "The Whiskey Ward",
    "phoneNumber": "(212) 477-2998"
  },
  "pictureArray": [
    "https://s3-media0.fl.yelpcdn.com/bphoto/mVjGRQ7aD28d1MyG6Ro65Q/l.jpg",
    "https://s3-media0.fl.yelpcdn.com/bphoto/byHbnAz-telyDrdL9ptNaA/l.jpg",
    "https://s3-media0.fl.yelpcdn.com/bphoto/fYrUk4mvvUgY7wK9GZgfdw/l.jpg",
    "https://s3-media0.fl.yelpcdn.com/bphoto/OJ3Yk_eLtvnMH2zoTsig/l.jpg",
    "https://s3-media0.fl.yelpcdn.com/bphoto/fv1l-BcgdhE7Ibi7kjTiw/l.jpg",
    "https://s3-media0.fl.yelpcdn.com/bphoto/YxUaCf2-Oyna61Q1RhUlg/l.jpg"
  ]
}

```

Figure 5: This is an example of imported bars into collection in Firebase (the id is restaurantID).



5. App Development

The HappyOurs app is a mobile application developed using Flutter, a mobile app development framework, and the Firebase platform, which provides authentication, data storage, and server-side integration.

The app made use of various Flutter packages to enhance its functionality, including packages for geolocation, address searching, state management, image carousels, speech recognition, and URL launching.

Flutter

The mobile application HappyOurs was developed using Flutter, a mobile app development framework created by Google. Flutter allows for the creation of natively compiled applications for mobile, web, and desktop from a single codebase. This was a key factor in the decision to use Flutter as it allows for easy maintenance and updates to the app across all platforms.

In addition to Flutter, the HappyOurs app also made use of a number of Flutter packages to enhance its functionality. These included `firebase_core`, `cloud_firestore`, and `firebase_auth` for integration with the Firebase platform and `google_sign_in` for user authentication.

For improved UI, we used `overlay_support` for creating overlays in the app, `pin_code_fields` for better OTP entry, `geocoding` and `address_search_field` packages for searching and displaying addresses on the map respectively.

The app also utilized the `geoflutterfire` and `geolocator` packages for geolocation functionality. The `flutter_riverpod` package was used for managing app state, and the `carousel_slider` and `speech_to_text` packages were used for implementing image carousels and speech recognition functionality, respectively. The `url_launcher` package was used for launching Google Maps directions in the app.

GeoFlutterFire

The `geoflutterfire` package allows you to perform queries on data stored in the Firebase Firestore database based on its geographical location. This is done by storing the data in the form of geohashes, which are strings that represent a specific geographic location.

By using geohashes, you can query the Firestore database for data within a specific range, rather than querying for all data and filtering it on the client side. This can be more efficient and cost-effective, as it reduces the number of reads required from the database.

For example, if a user of the HappyOurs app wants to find drinking establishments within a certain radius of their current location, the app can use the `geoflutterfire` package to query the Firestore database for geohashes within the specified range, rather than querying for all data



and filtering it on the client side. This can help to improve the performance and scalability of the app, especially if the database contains a large amount of data.

Firebase

For the backend, the HappyOurs app utilized the Firebase platform, which provided a range of offerings including authentication, Firestore for data storage, and the Admin SDK for server-side integration. These offerings allowed for secure user authentication, data management, and integration with other systems, making it an integral part of the development of the HappyOurs app. The geoflutterfire package was also used to efficiently query the Firestore database for data based on geographical location, using geohashes to reduce the number of reads required from the database.

One of the benefits of using Firebase for the backend of the HappyOurs app is that it offers a number of its services for free, including the Firestore database. This allowed the team to launch a minimum viable product (MVP) without incurring any upfront costs, and to scale up as needed as the app grows in popularity. By using the geoflutterfire package to efficiently query the Firestore database, the team was able to minimize the number of reads required, further reducing the costs of using Firebase's services.



App Screenshots

The screenshots show the app's search and filtering process. The first screen shows the main search bar at 212e, Manhattan, New York, with a placeholder "What are you looking for tonight?". Below it are sections for "Set your vibe" (College, Romantic, Dance Floor, Affordable; Conversation Friendly, Outdoor, Pet - Friendly, Premium) and "Drink type" (Beer, Wine, Cocktails, Others). The second screen shows the same search parameters and adds a "Price range" slider. The third screen displays search results for "Off The Wagon" and "The Immigrant", each with a thumbnail image, distance (1362 yards and 349.0 yards), and operating hours.

6. Future Steps

In the future, we plan to take the following steps to further improve and expand the capabilities of our app:

1. Expand the vibe and drink selection by adding more options beyond the current categories of "college," "date," "beer," and "wine." We will do this by scraping more data and adding the respective filters that allows users to specify the type of atmosphere they are looking for, such as a conversation-friendly bar or a game-vibe nightclub, as well as the type of drinks they are interested in, such as craft beers, cocktails, or hard liquor. This will allow customers to find the type of atmosphere and beverages that best suit their preferences.
2. Implement price filtering to allow users to specify a budget and only see bars and drinks that fall within their price range. This can be a useful feature for customers who are looking to stay within a specific budget and want to ensure that they are getting the best value for their money.



3. Implement menu scraping to provide users with a comprehensive list of all the options available at a particular location. This can be especially useful for customers who are looking for a specific type of drink or food item and want to know what is available before they visit a particular bar.
4. Add happy hour information to help customers save money and find the best deals. Happy hour specials and discounts are often an important factor for customers when deciding where to go for a drink, and by providing this information in the app, we can help customers save money and find the best deals.
5. Create a "favorite bars" playlist feature that allows users to save their favorite bars and access them easily in the future. This can be especially useful for people who visit the same places frequently and want to be able to quickly access their favorite bars without having to search through the app.
6. Develop a "live mood" feature that shows the current atmosphere and vibe at a particular bar in real-time. This can be useful for customers who are looking for a specific type of atmosphere and want to know what to expect before they arrive.
7. Allow users to leave reviews and ratings for different bars as well as update existing information, providing customers with valuable insights and recommendations from other people who have visited the same places. Crowd-sourced information can be a valuable addition to your app, as it allows customers to see what other people have experienced at a particular location and make more informed decisions about where to go for a drink.