



RESTAURANT

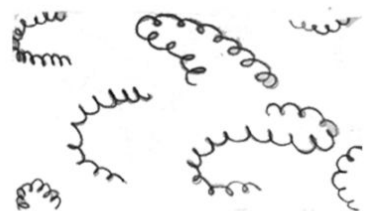
*****FINDER*****

FOR
CELIACS/GLUTEN-FREE

About Celiacs Disease



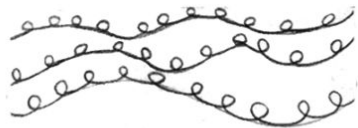
- **Gluten** is a **protein** found in various species of wheat that when it comes in contact with water creates an elastic material that make baked product taste so good.
- **Celiacs** is a **genetic autoimmune disorder** where antibodies attack the gluten protein in the bowels after consumption, which can cause mild to severe gastrointestinal irritation and many other effects such as **diarrhoea, anaemia, abdominal distention, lymphocytic thyroiditis**, and later **osteoporosis** and **cancer**
- It is **not an allergy** or **intolerance**, both of which can ingest small quantities of gluten without serious effect and can increase or decrease through one's life.
- Celiacs is **diagnosed by medical biopsy** and only **1-2% of the population** suffer it.
- Often it is carried from childhood but can trigger later in life as an adult.



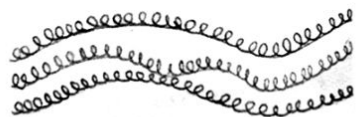
Happy little dry gluten molecules



Joining together when water added



Stretching out when kneaded



Relaxed gluten chains after resting



Relaxed pasta dough

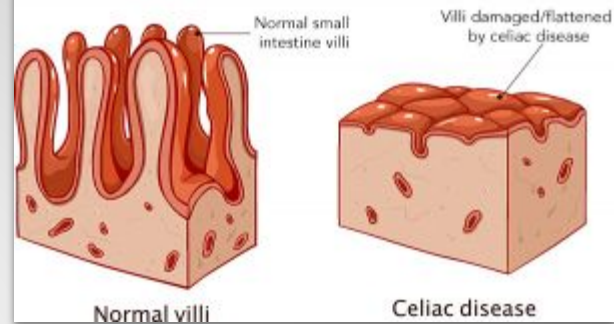


Folding stretches out the gluten strands making the pasta silkier

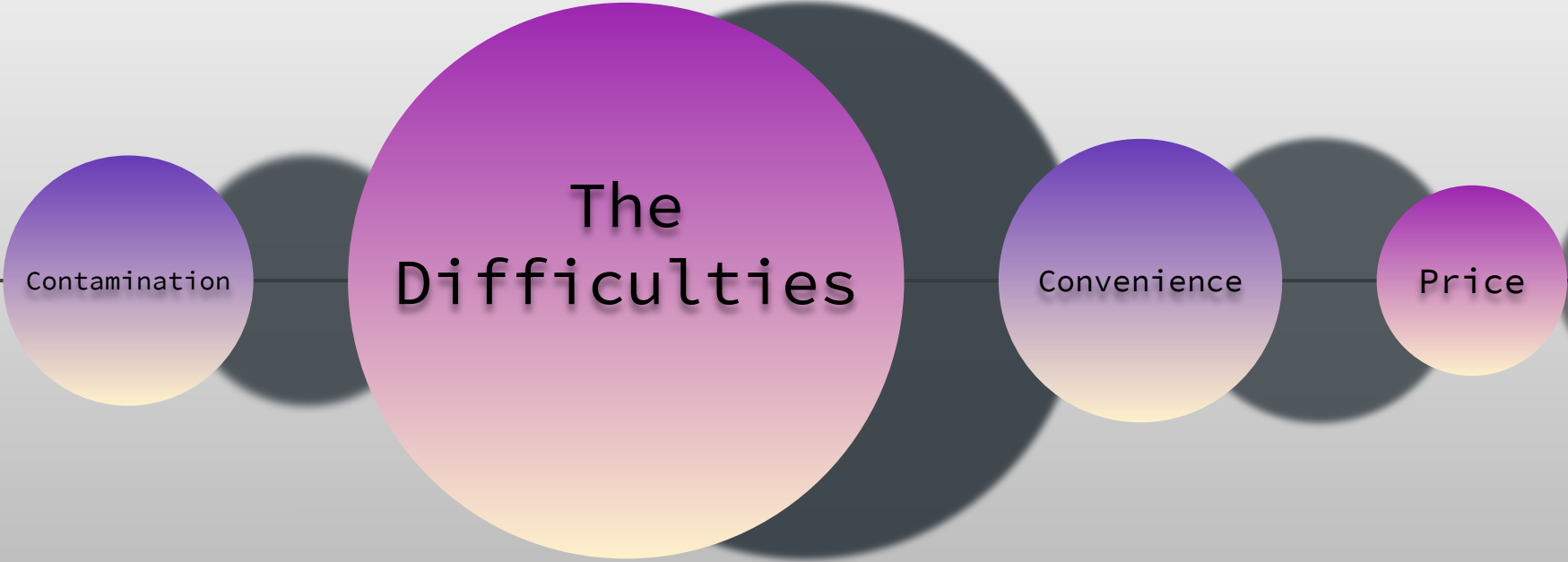
left: illustration of gluten protein's coil shape that give bread dough its elasticity.

right,below: The small intestine's villi (finger-like projections) that deteriorate due to a person's immune response to gluten when they suffer from Celiacs.

Lining of the small intestine



Concerns & Doubts When Eating-Out



Contamination

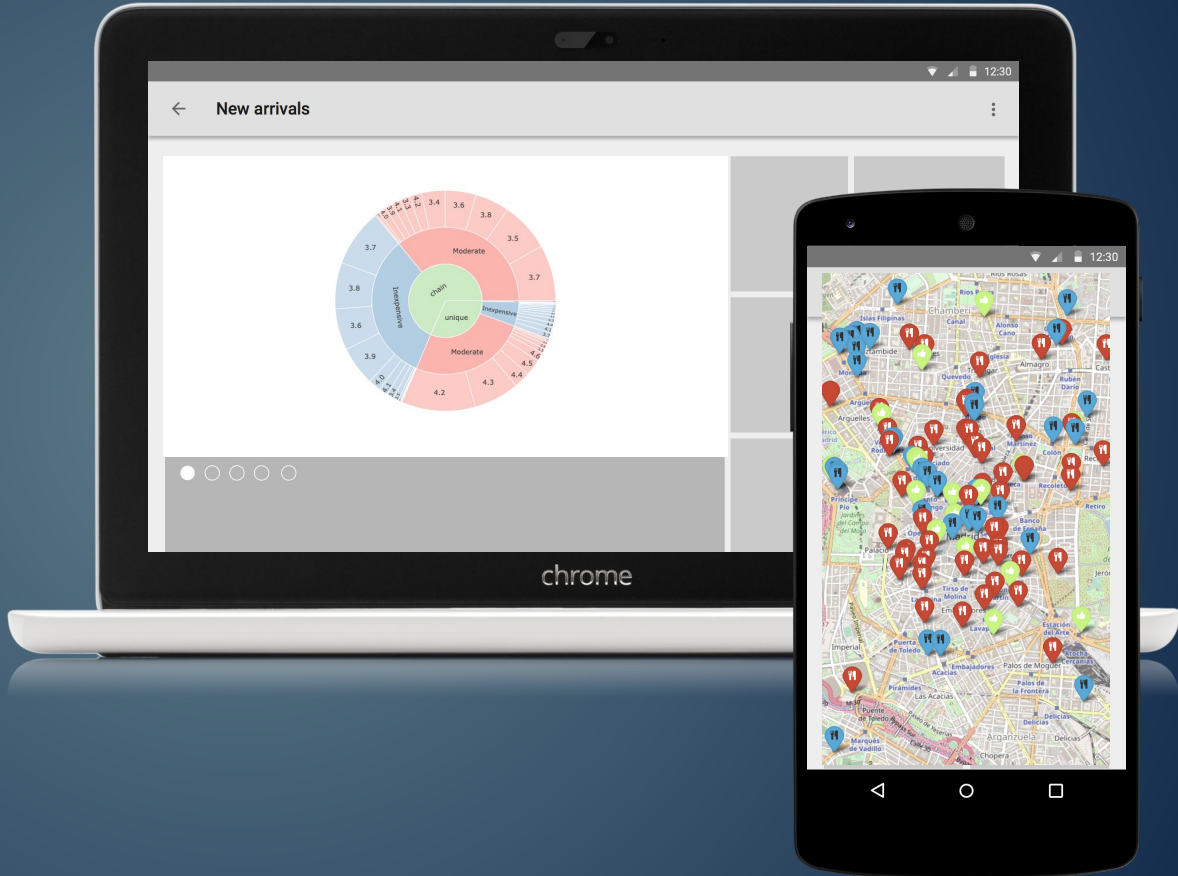
The
Difficulties

Convenience

Price

1. Finding Data

- A simple Google Map Search for Gluten-Free restaurants and yielded **20** locations.
- Using **BeautifulSoup** to **scrape** data from other Celiac-dedicated websites we increased our results to around **300** locales.
- Then, more information was extracted about all the locations we found with a **Google API Request**.



2. Pre-Processing Data

- Select the precise **keys** containing the information of interest from **API Request** results.
- Create a **pandas DataFrame** from the selected information.
- Various rounds of **cleaning** and adjusting information to make the data **suitable for mapping and graphing**.



3. Visualizing Data

- **Folium** was used to create the map and **Markers** were placed using geographic information in **DataFrame**.
- **LayerControl** and **FeatureGroup** provided more selective toggling and **popups** and **tooltips** provided info at each **Marker**.
- Passed a **GeoJSON** set of coordinates through **Choropleth** to define the neighborhoods of Madrid.
- Using a **Plotly Sunburst** graphic we were able to clearly demonstrate the relation b/w many aspects at once.

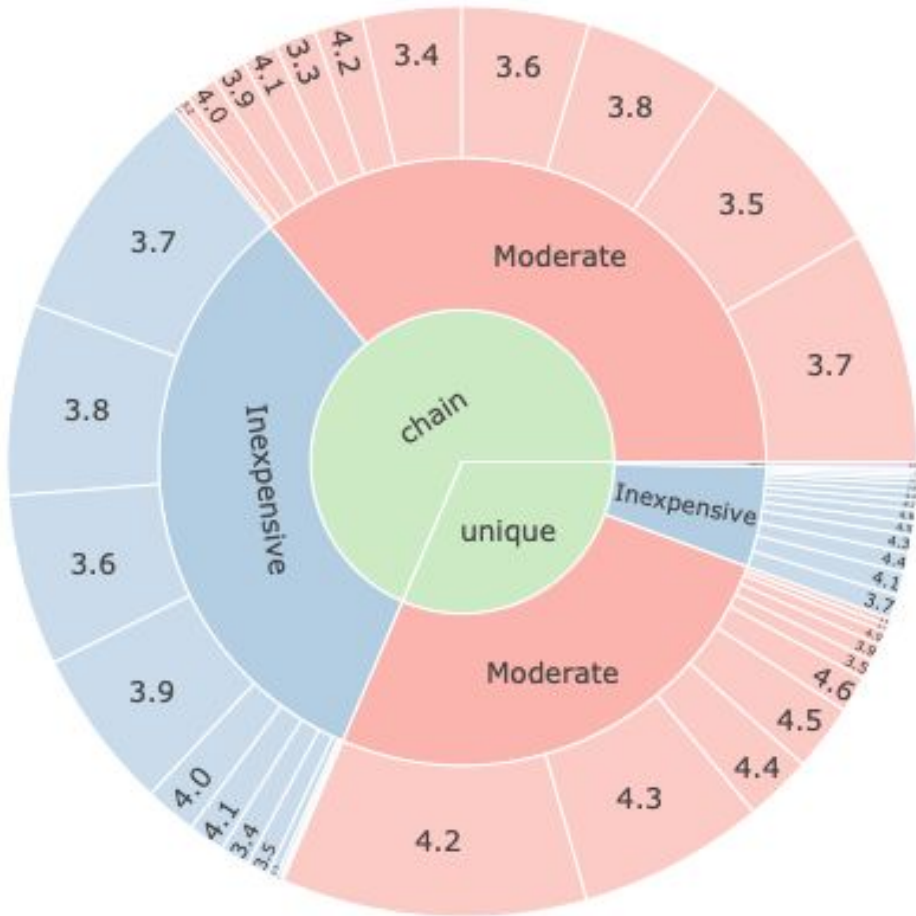
Cross-Reference Graph

In the pie chart we see a comparison of the type of business(chain, unique), price_level(moderate,inexpensive), ratings(outer-circle), and the number of user ratings(size).

chain	price_level	
chain	Inexpensive	84
	Moderate	67
	Unknown	2
unique	Expensive	1
	Inexpensive	25
	Moderate	45
	Unknown	58

Distribution of prices

In the chart above, we have very few inexpensive options that are not chain restaurants. We are also missing information about prices for 58 unique locations.



Improvements/Next Steps

1. Create richer information in the popups, including photos, correct street address, reviews...
2. Connect a Flask API to a MongoDB in order to access and enter data like reviews.
3. Modify search results based on your location or selected location.

