Project: Consumer Review and Trends Analysis of Alternative Protein Dairy Company (VioLife)

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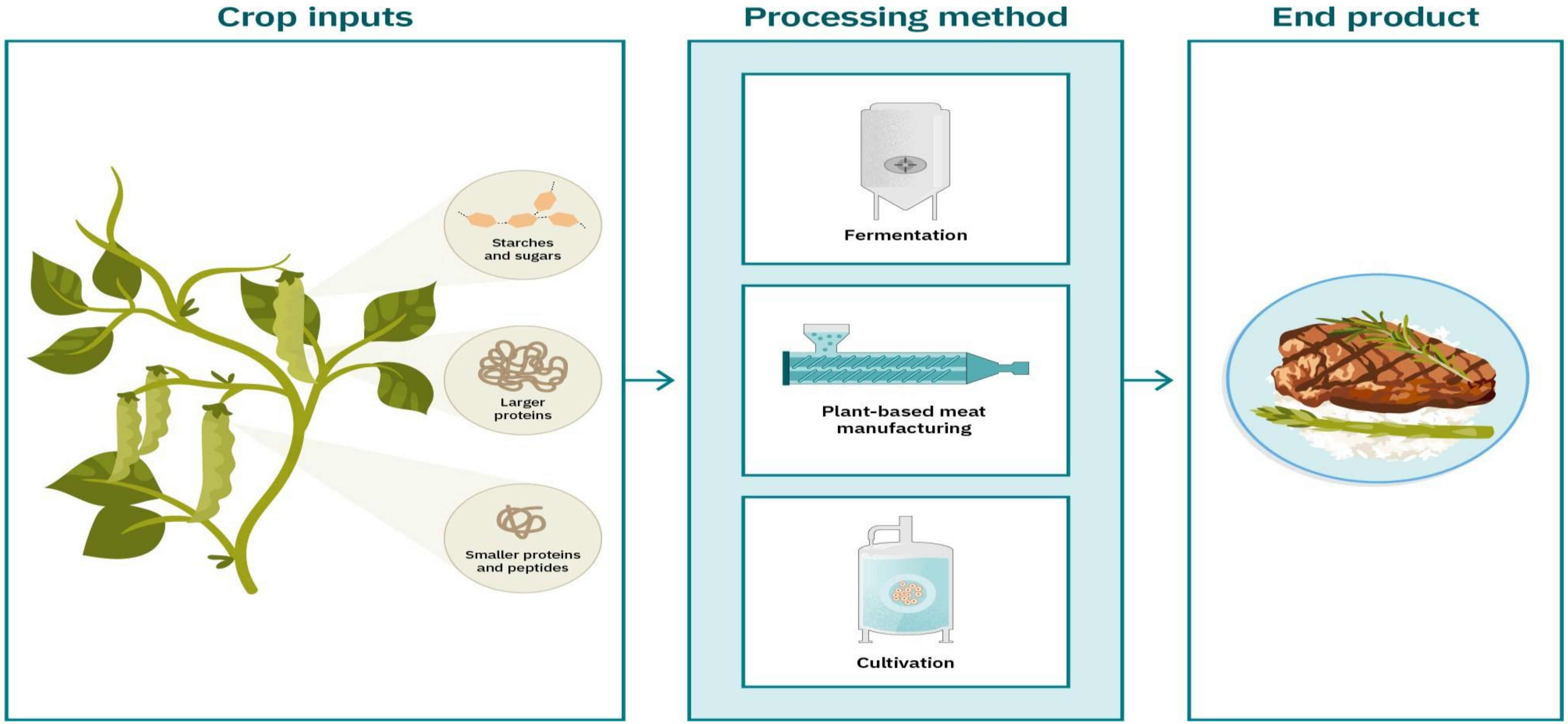
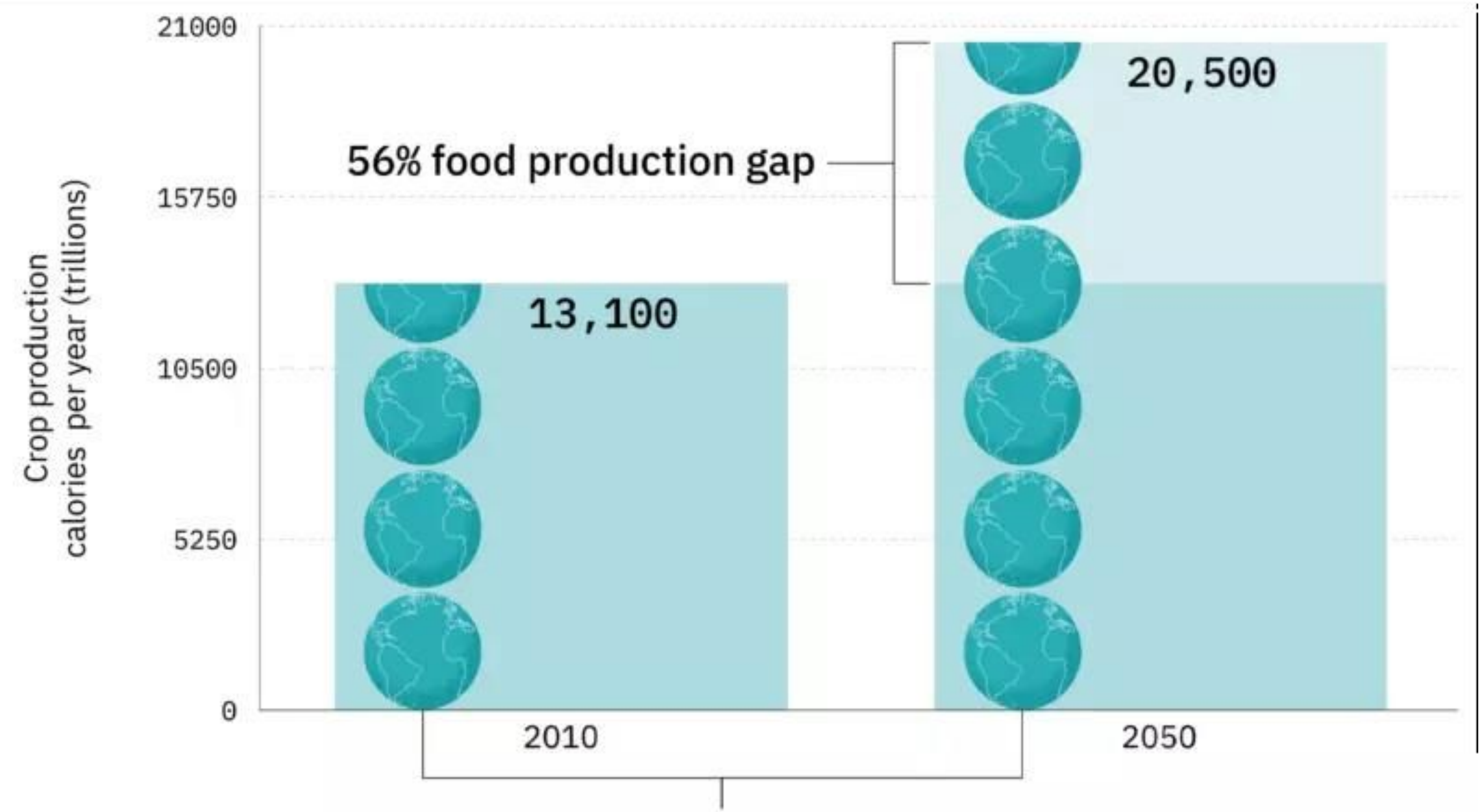
12-08-2024

Alternative Protein!

Type of Products

- Plant Based
- Precision fermentation
- Cell cultivated

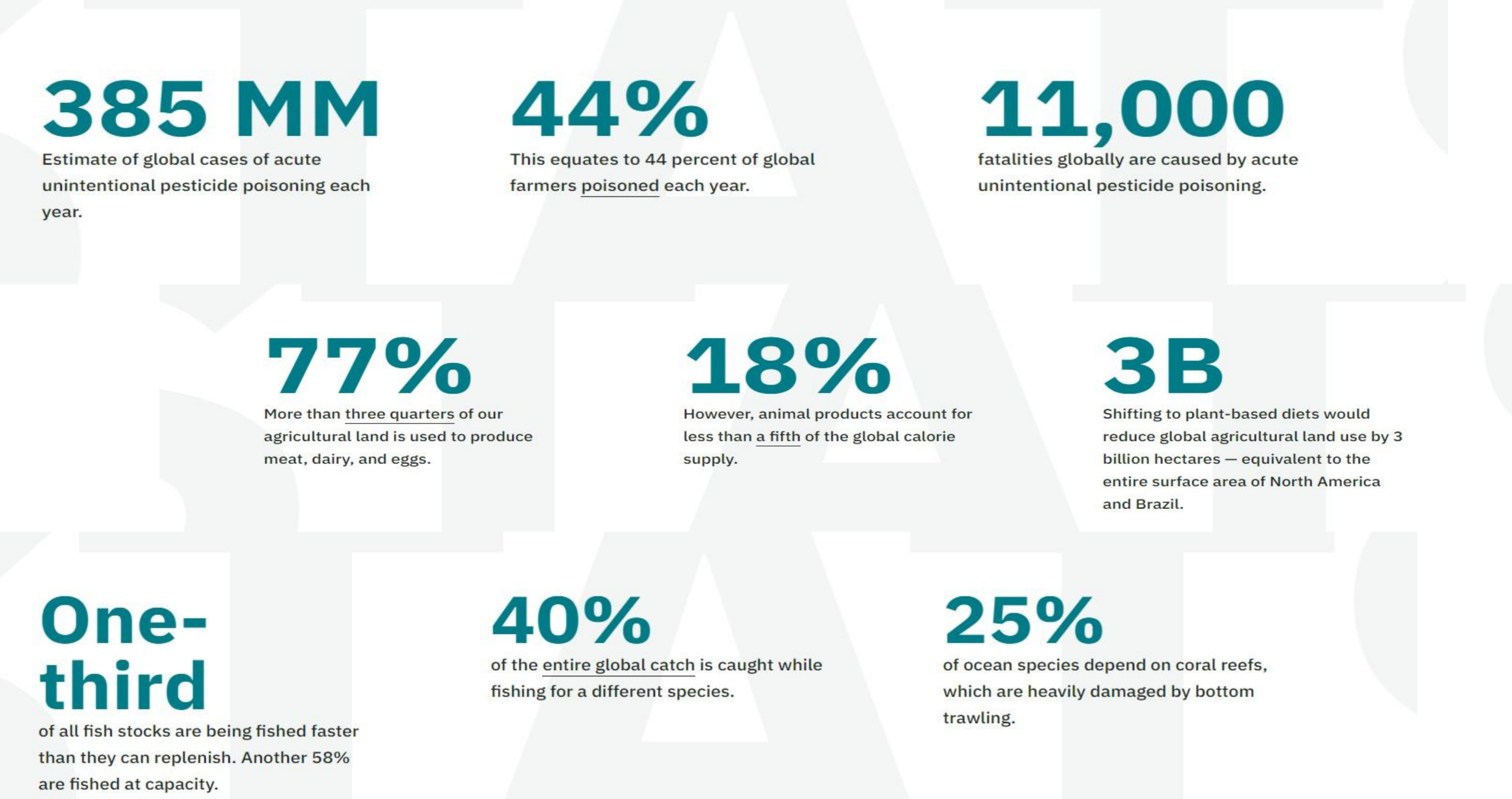




How many Earths it would take to feed every human (meeting US dietary guidelines) with conventional meat production

Includes all crops intended for direct human consumption, animal feed, industrial uses, seeds, and biofuels. Symbols represent the number of earths needed to provide sufficient food if all countries adopted the current U.S. dietary guidelines.

Source: WRI analysis based on FAO (2019a); UNDESA (2017); and Alexandratos and Bruinsma (2012)



385 MM

Estimate of global cases of acute unintentional pesticide poisoning each year.

44%

This equates to 44 percent of global farmers poisoned each year.

11,000

fatalities globally are caused by acute unintentional pesticide poisoning.

77%

More than three quarters of our agricultural land is used to produce meat, dairy, and eggs.

18%

However, animal products account for less than a fifth of the global calorie supply.

3B

Shifting to plant-based diets would reduce global agricultural land use by 3 billion hectares — equivalent to the entire surface area of North America and Brazil.

One-third

of all fish stocks are being fished faster than they can replenish. Another 58% are fished at capacity.

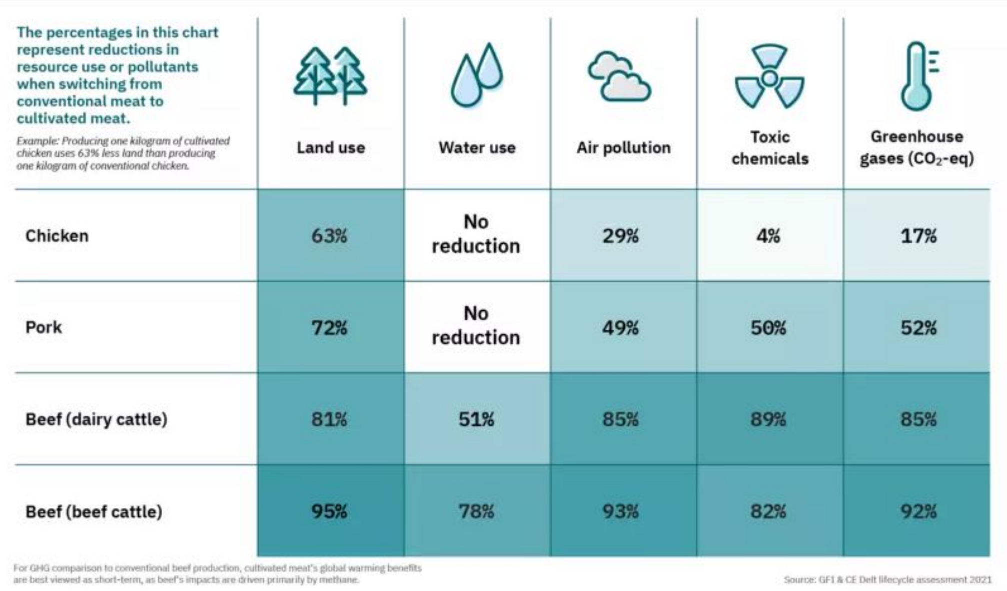
40%

of the entire global catch is caught while fishing for a different species.

25%

of ocean species depend on coral reefs, which are heavily damaged by bottom trawling.

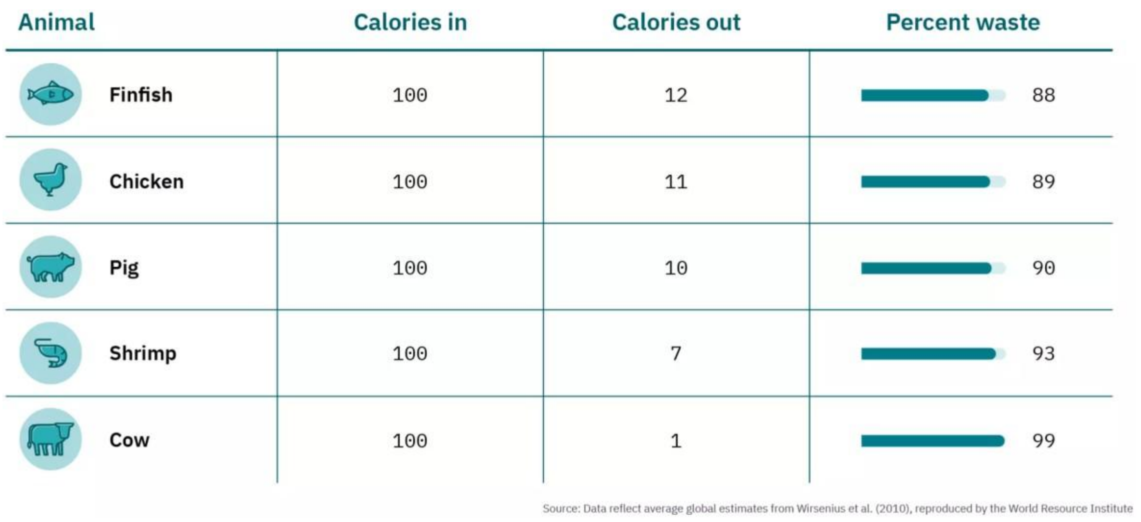
Sustainability Parameter



The percentages in this chart represent reductions in resource use or pollutants when switching from conventional meat to cultivated meat. *Example: Producing one kilogram of cultivated chicken uses 63% less land than producing one kilogram of conventional chicken.*	Land use	Water use	Air pollution	Toxic chemicals	Greenhouse gases (CO_2-eq)
Chicken	63%	No reduction	29%	4%	17%
Pork	72%	No reduction	49%	50%	52%
Beef (dairy cattle)	81%	51%	85%	89%	85%
Beef (beef cattle)	95%	78%	93%	82%	92%

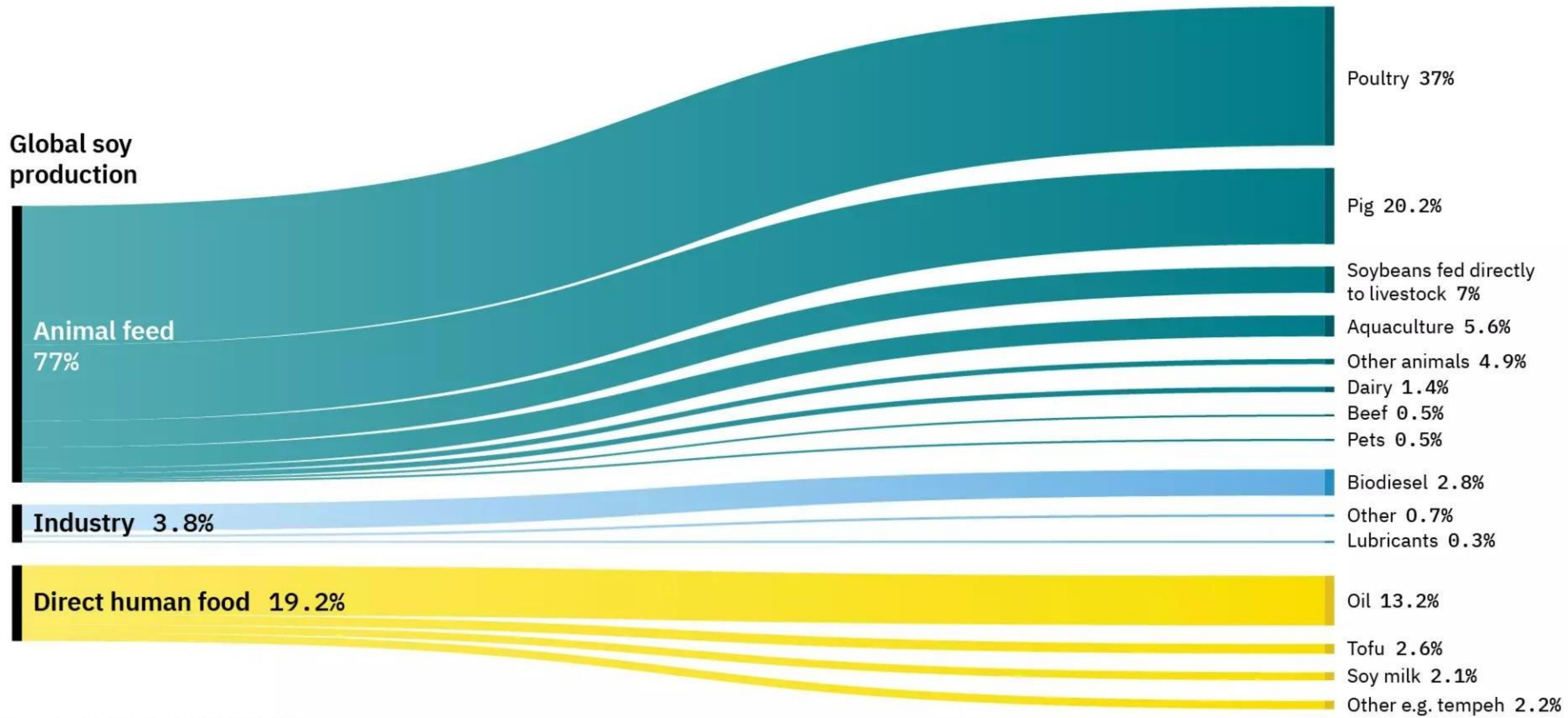
For GHG comparison to conventional beef production, cultivated meat's global warming benefits are best viewed as short-term, as beef's impacts are driven primarily by methane.

Source: GFI & CE Delt lifecycle assessment 2021



Animal	Calories in	Calories out	Percent waste
Finfish	100	12	88
Chicken	100	11	89
Pig	100	10	90
Shrimp	100	7	93
Cow	100	1	99

Source: Data reflect average global estimates from Wirsenius et al. (2010), reproduced by the World Resource Institute

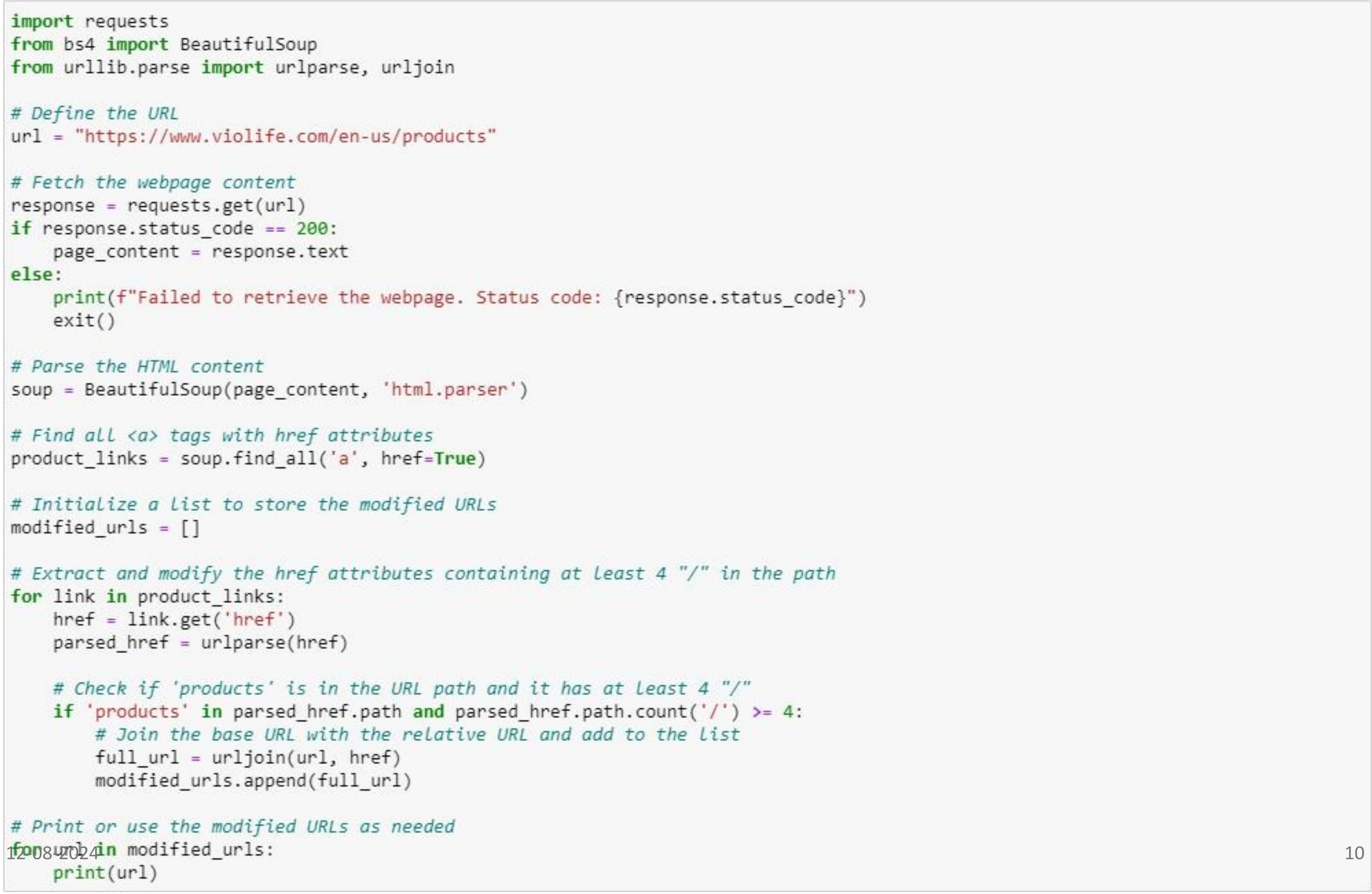


Source: Our World in Data (OWID) 2017-2019

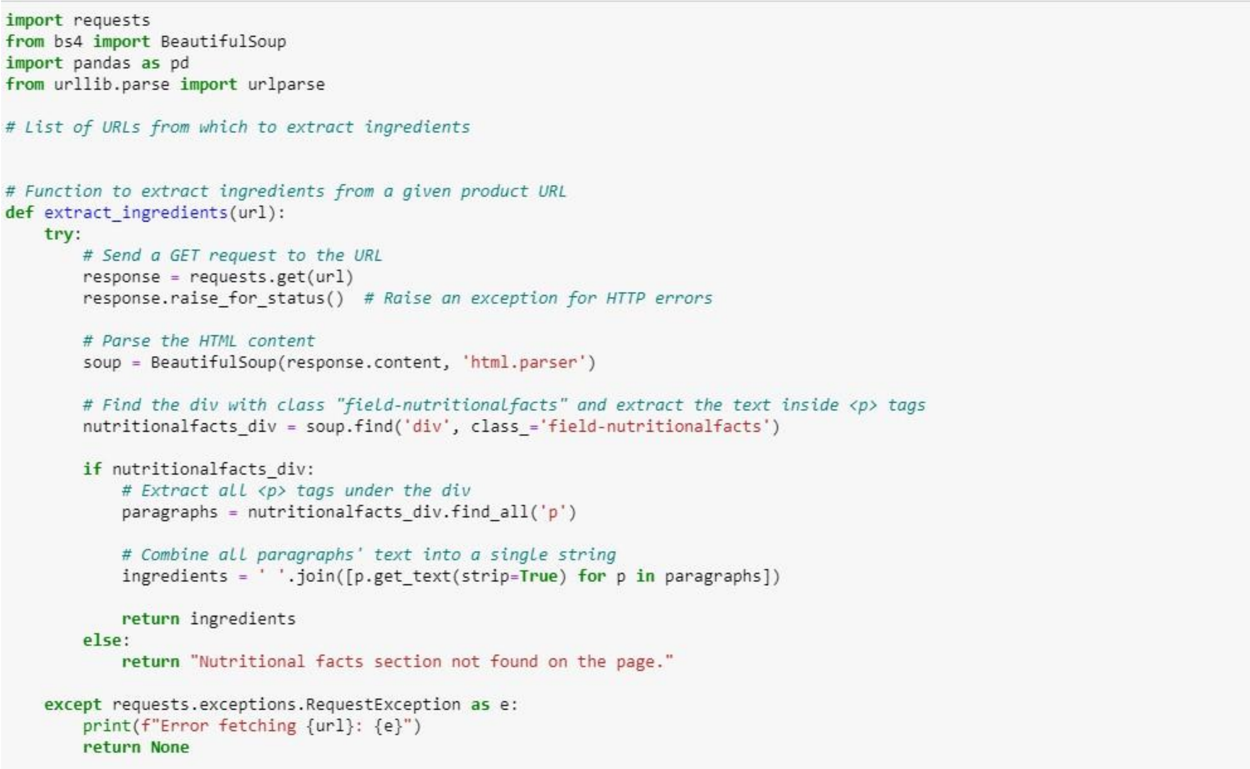
Alternative Protein

The theory of change for alternative proteins analogizes to renewable energy and electric vehicles: Just as we need to change how energy is produced and vehicles are powered, we need to change how meat is made.

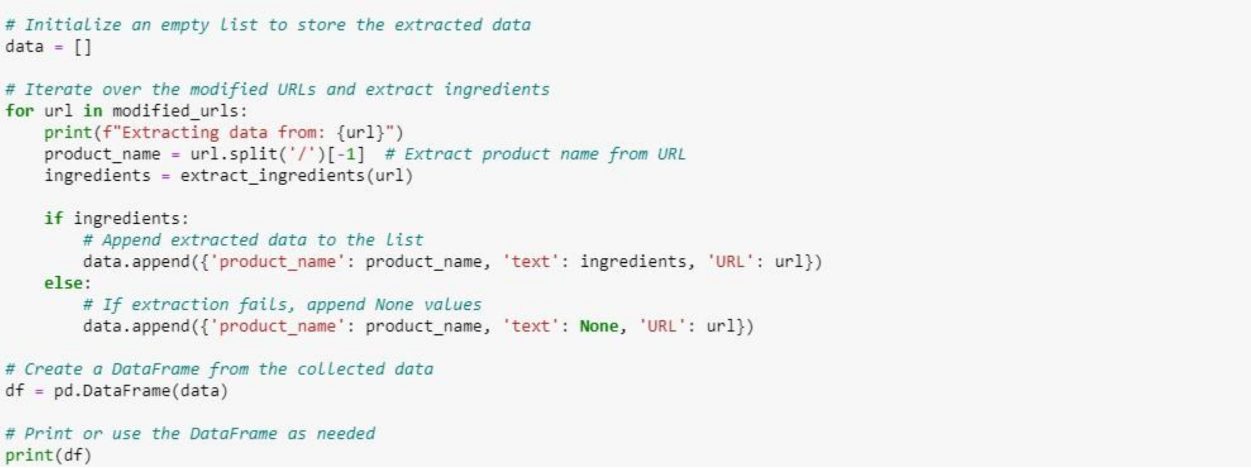
Violife
100% Dairy Free



```python
import requests
from bs4 import BeautifulSoup
from urllib.parse import urlparse, urljoin

# Define the URL
url = "https://www.violife.com/en-us/products"

# Fetch the webpage content
response = requests.get(url)
if response.status_code == 200:
    page_content = response.text
else:
    print(f"Failed to retrieve the webpage. Status code: {response.status_code}")
    exit()

# Parse the HTML content
soup = BeautifulSoup(page_content, 'html.parser')

# Find all <a> tags with href attributes
product_links = soup.find_all('a', href=True)

# Initialize a list to store the modified URLs
modified_urls = []

# Extract and modify the href attributes containing at least 4 "/" in the path
for link in product_links:
    href = link.get('href')
    parsed_href = urlparse(href)

    # Check if 'products' is in the URL path and it has at least 4 "/"
    if 'products' in parsed_href.path and parsed_href.path.count('/') >= 4:
        # Join the base URL with the relative URL and add to the list
        full_url = urljoin(url, href)
        modified_urls.append(full_url)

# Print or use the modified URLs as needed
for url in modified_urls:
    print(url)
```

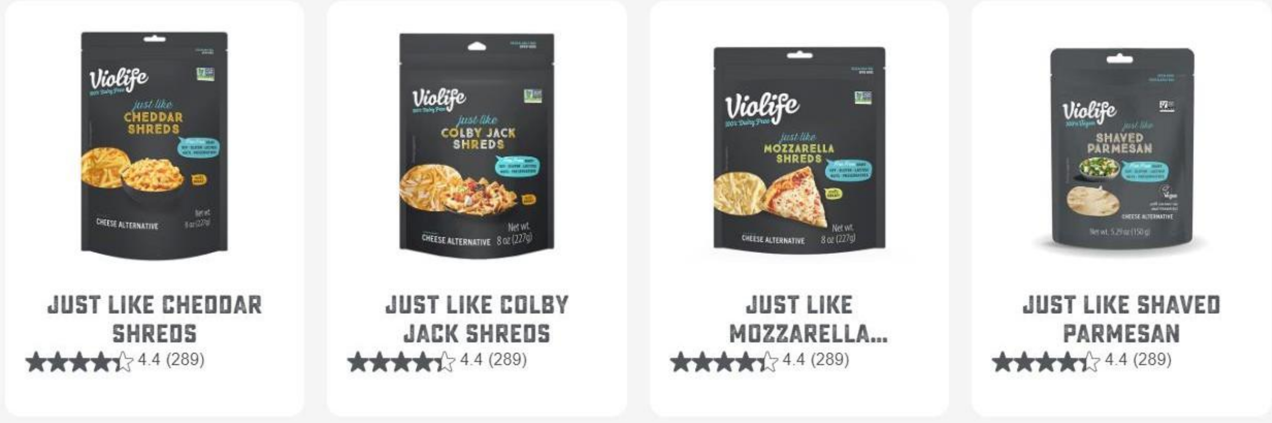


```python
import requests
from bs4 import BeautifulSoup
import pandas as pd
from urllib.parse import urlparse

# List of URLs from which to extract ingredients


# Function to extract ingredients from a given product URL
def extract_ingredients(url):
    try:
        # Send a GET request to the URL
        response = requests.get(url)
        response.raise_for_status()  # Raise an exception for HTTP errors

        # Parse the HTML content
        soup = BeautifulSoup(response.content, 'html.parser')

        # Find the div with class "field-nutritionalfacts" and extract the text inside <p> tags
        nutritionalfacts_div = soup.find('div', class_='field-nutritionalfacts')

        if nutritionalfacts_div:
            # Extract all <p> tags under the div
            paragraphs = nutritionalfacts_div.find_all('p')

            # Combine all paragraphs' text into a single string
            ingredients = ' '.join([p.get_text(strip=True) for p in paragraphs])

            return ingredients
        else:
            return "Nutritional facts section not found on the page."

    except requests.exceptions.RequestException as e:
        print(f"Error fetching {url}: {e}")
        return None
```



```python
# Initialize an empty list to store the extracted data
data = []

# Iterate over the modified URLs and extract ingredients
for url in modified_urls:
    print(f"Extracting data from: {url}")
    product_name = url.split('/')[-1]  # Extract product name from URL
    ingredients = extract_ingredients(url)

    if ingredients:
        # Append extracted data to the list
        data.append({'product_name': product_name, 'text': ingredients, 'URL': url})
    else:
        # If extraction fails, append None values
        data.append({'product_name': product_name, 'text': None, 'URL': url})

# Create a DataFrame from the collected data
df = pd.DataFrame(data)

# Print or use the DataFrame as needed
print(df)
```

Ingredients list extraction

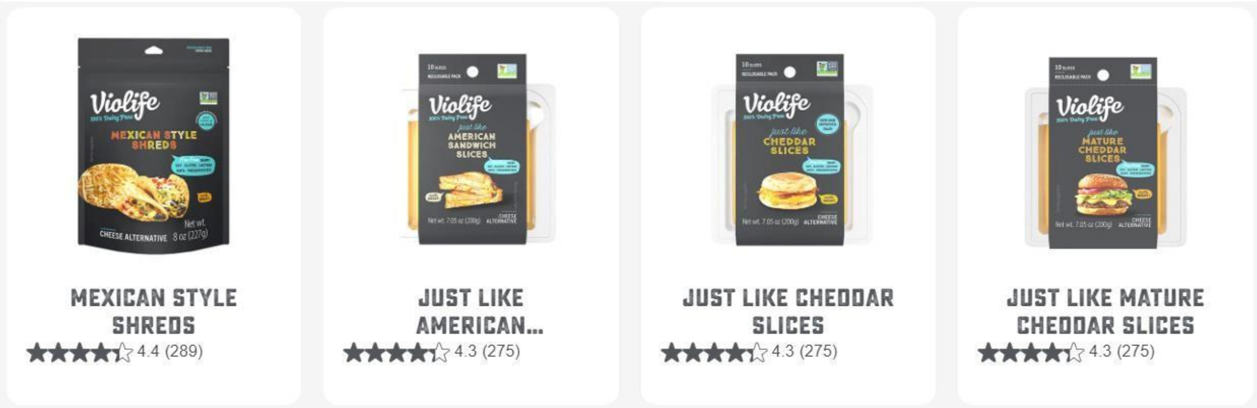


JUST LIKE CHEDDAR SHREDS
★★★★☆ 4.4 (289)

JUST LIKE COLBY JACK SHREDS
★★★★☆ 4.4 (289)

JUST LIKE MOZZARELLA...
★★★★☆ 4.4 (289)

JUST LIKE SHAVED PARMESAN
★★★★☆ 4.4 (289)

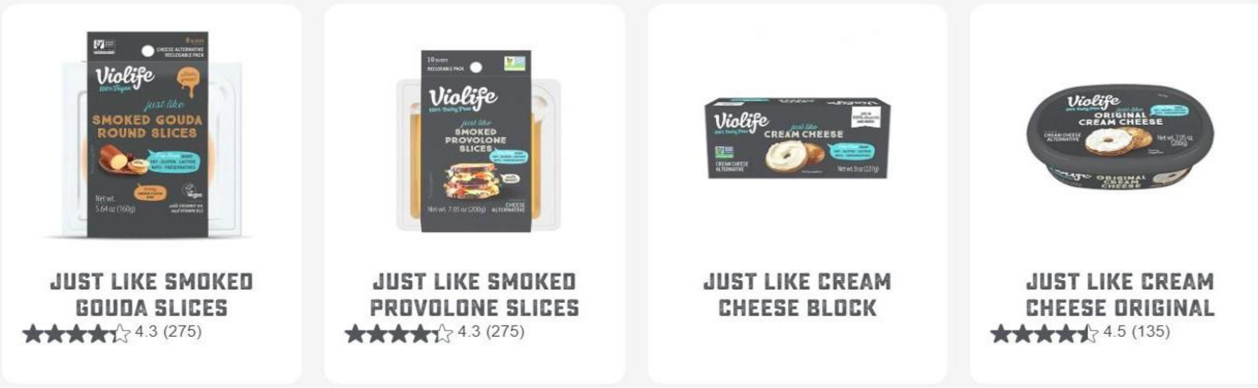


MEXICAN STYLE SHREDS
★★★★☆ 4.4 (289)

JUST LIKE AMERICAN...
★★★★☆ 4.3 (275)

JUST LIKE CHEDDAR SLICES
★★★★☆ 4.3 (275)

JUST LIKE MATURE CHEDDAR SLICES
★★★★☆ 4.3 (275)

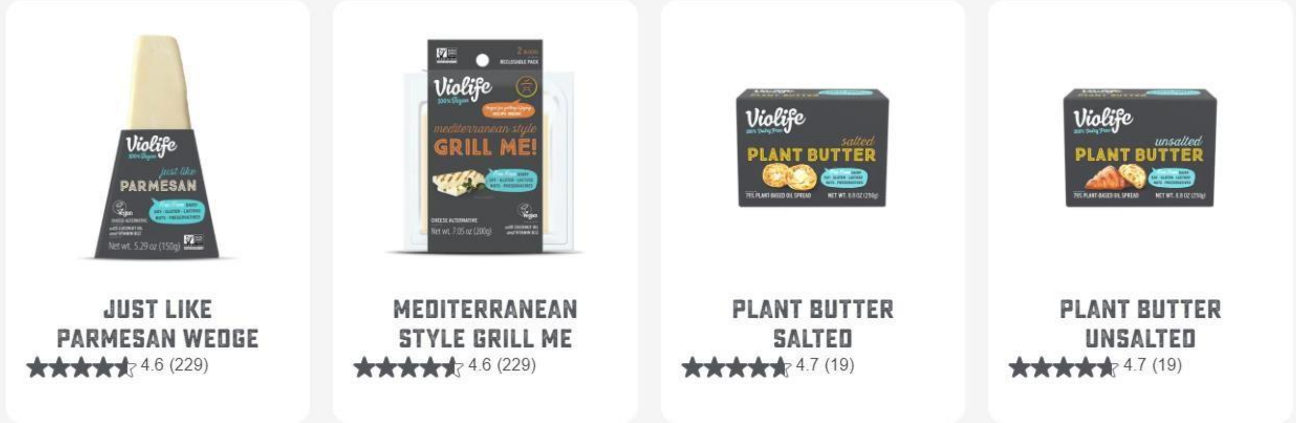


JUST LIKE SMOKED GOUDA SLICES
★★★★☆ 4.3 (275)

JUST LIKE SMOKED PROVOLONE SLICES
★★★★☆ 4.3 (275)

JUST LIKE CREAM CHEESE BLOCK

JUST LIKE CREAM CHEESE ORIGINAL
★★★★☆ 4.5 (135)

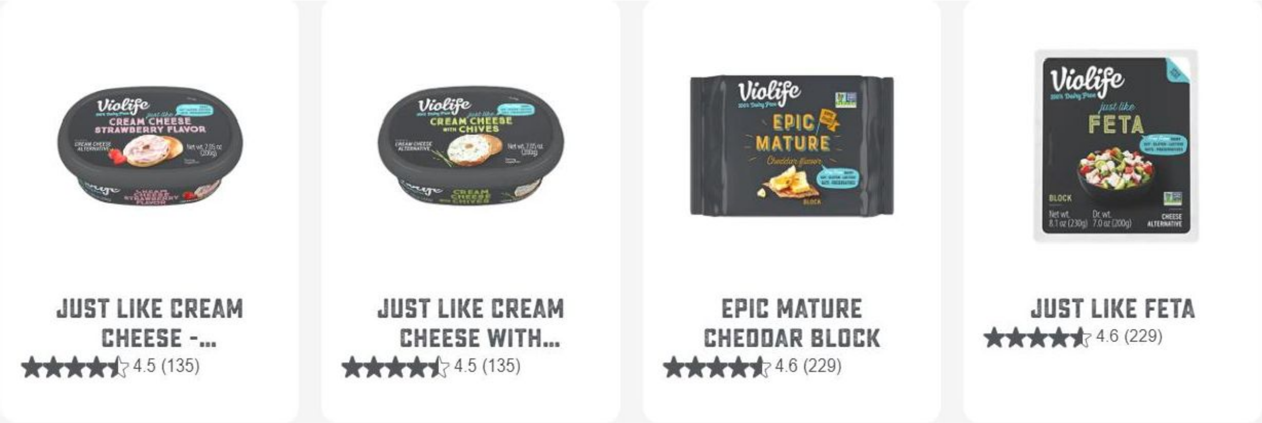


JUST LIKE PARMESAN WEDGE
★★★★★ 4.6 (229)

MEDITERRANEAN STYLE GRILL ME
★★★★★ 4.6 (229)

PLANT BUTTER SALTED
★★★★★ 4.7 (19)

PLANT BUTTER UNSALTED
★★★★★ 4.7 (19)

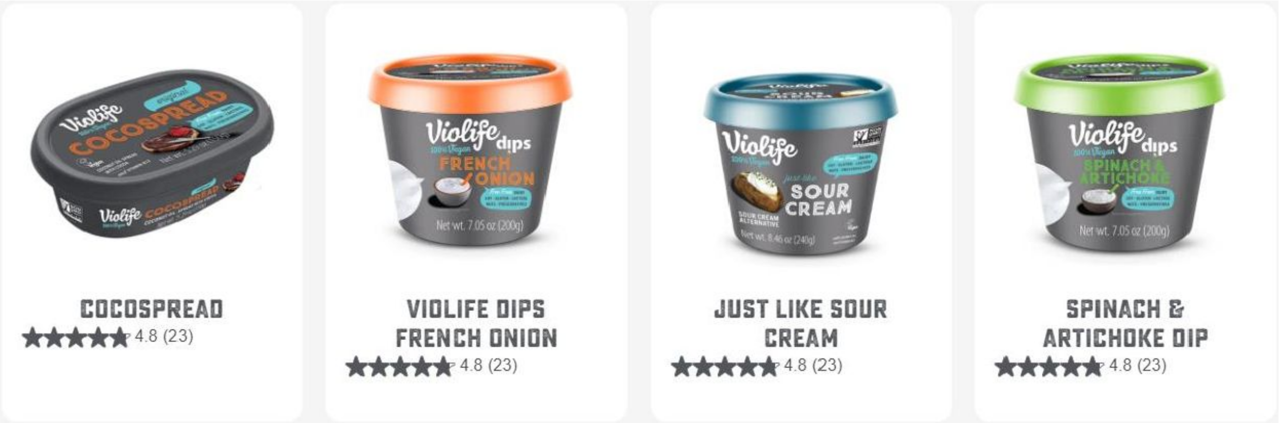


JUST LIKE CREAM CHEESE -...
★★★★☆ 4.5 (135)

JUST LIKE CREAM CHEESE WITH...
★★★★☆ 4.5 (135)

EPIC MATURE CHEDDAR BLOCK
★★★★★ 4.6 (229)

JUST LIKE FETA
★★★★★ 4.6 (229)



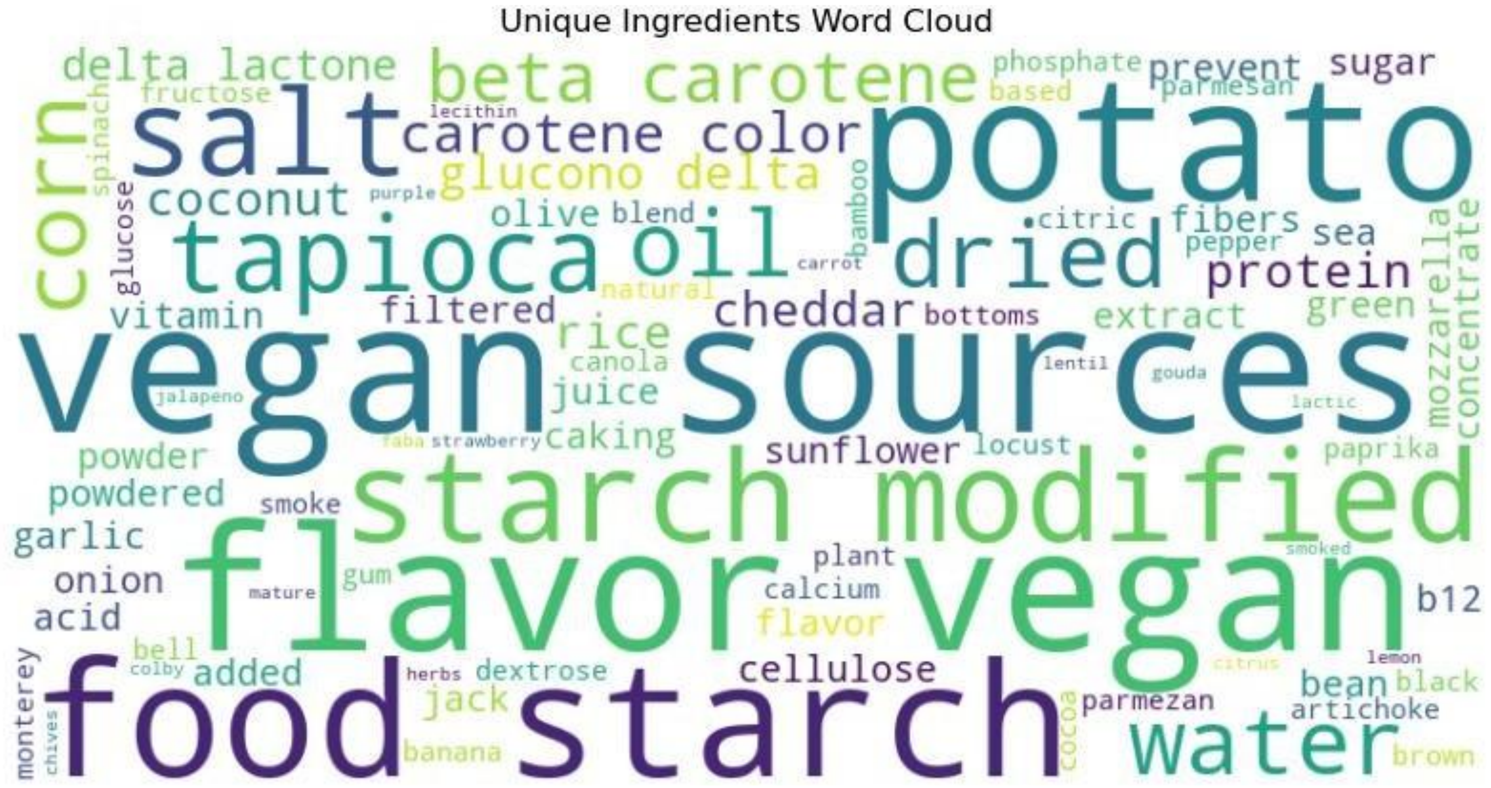
COCOSPREAD
★★★★★ 4.8 (23)

VIOLIFE DIPS FRENCH ONION
★★★★★ 4.8 (23)

JUST LIKE SOUR CREAM
★★★★★ 4.8 (23)

SPINACH & ARTICHOKE DIP
★★★★★ 4.8 (23)

Ingredients Word Cloud



Most common co-occurrence of ingredients:

Combination	Occurrence
Filtered Water, Coconut Oil, Salt (Sea Salt), Olive Extract, Vitamin B12.	17
Filtered Water, Potato Starch, Salt (Sea Salt), Olive Extract, Vitamin B12.	13
Coconut Oil, Potato Starch, Salt (Sea Salt), Olive Extract, Vitamin B12.	13
Filtered Water, Coconut Oil, Potato Starch, Salt (Sea Salt), Olive Extract	12
Filtered Water, Coconut Oil, Potato Starch, Salt (Sea Salt), Vitamin B12.	12
Filtered Water, Coconut Oil, Potato Starch, Olive Extract, Vitamin B12.	12
Filtered Water, Coconut Oil, Lactic Acid, Olive Extract, Vitamin B12.	8
Coconut Oil, Salt (Sea Salt), Lactic Acid, Olive Extract, Vitamin B12.	8
Filtered Water, Salt (Sea Salt), Flavor (Vegan Sources), Olive Extract, Vitamin B12.	8
Filtered Water, Coconut Oil, Salt (Sea Salt), Lactic Acid, Olive Extract	7

Potato Starch

Lactic Acid

Olive Extract

Salt (Sea Salt)

Coconut Oil

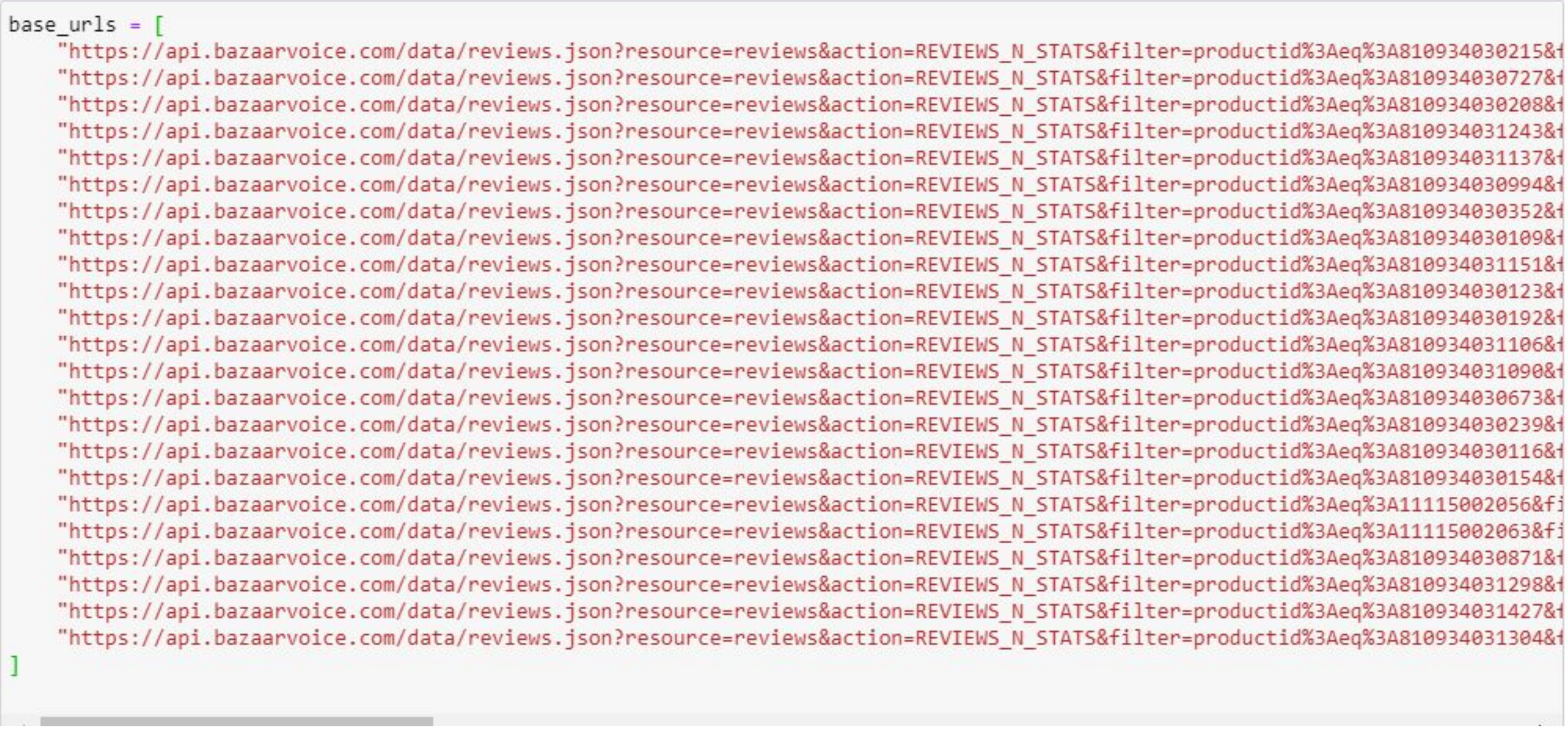
Filtered Water

Vitamin B12

Data extraction from JSON:

Sample URL:

https://api.bazaarvoice.com/data/reviews.json?resource=reviewsCaction=REVIEWS_N_STATSCfilter=productid%3Aeq%3A810934030215Cfilter=contentlocale%3Aeq%3Aen%2Cen_US%2Cen_USCfilter=isratingsonly%3Aeq%3AfalseCfilter_reviews=contentlocale%3Aeq%3Aen%2Cen_US%2Cen_USCinclude=authors%2Cproducts%2CcommentsCfilteredstats=reviewsCStats=ReviewsClimit=8Coffset=0Climit_comments=3Csort=relevancy%3Aa1Cpasskey=cai9ncltco5gMbDmZrHMbvX13qdrB0vHB1wFdEhtVvwOMCapiversion=5.5Cdisplaycode=16816-en_us



```
base_urls = [
    "https://api.bazaarvoice.com/data/reviews.json?resource=reviews&action=REVIEWS_N_STATS&filter=productid%3Aeq%3A810934030215&f
    "https://api.bazaarvoice.com/data/reviews.json?resource=reviews&action=REVIEWS_N_STATS&filter=productid%3Aeq%3A810934030727&f
    "https://api.bazaarvoice.com/data/reviews.json?resource=reviews&action=REVIEWS_N_STATS&filter=productid%3Aeq%3A810934030208&f
    "https://api.bazaarvoice.com/data/reviews.json?resource=reviews&action=REVIEWS_N_STATS&filter=productid%3Aeq%3A810934031243&f
    "https://api.bazaarvoice.com/data/reviews.json?resource=reviews&action=REVIEWS_N_STATS&filter=productid%3Aeq%3A810934031137&f
    "https://api.bazaarvoice.com/data/reviews.json?resource=reviews&action=REVIEWS_N_STATS&filter=productid%3Aeq%3A810934030994&f
    "https://api.bazaarvoice.com/data/reviews.json?resource=reviews&action=REVIEWS_N_STATS&filter=productid%3Aeq%3A810934030352&f
    "https://api.bazaarvoice.com/data/reviews.json?resource=reviews&action=REVIEWS_N_STATS&filter=productid%3Aeq%3A810934030109&f
    "https://api.bazaarvoice.com/data/reviews.json?resource=reviews&action=REVIEWS_N_STATS&filter=productid%3Aeq%3A810934031151&f
    "https://api.bazaarvoice.com/data/reviews.json?resource=reviews&action=REVIEWS_N_STATS&filter=productid%3Aeq%3A810934030123&f
    "https://api.bazaarvoice.com/data/reviews.json?resource=reviews&action=REVIEWS_N_STATS&filter=productid%3Aeq%3A810934030192&f
    "https://api.bazaarvoice.com/data/reviews.json?resource=reviews&action=REVIEWS_N_STATS&filter=productid%3Aeq%3A810934031106&f
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    "https://api.bazaarvoice.com/data/reviews.json?resource=reviews&action=REVIEWS_N_STATS&filter=productid%3Aeq%3A1115002063&fi
    "https://api.bazaarvoice.com/data/reviews.json?resource=reviews&action=REVIEWS_N_STATS&filter=productid%3Aeq%3A810934030871&f
    "https://api.bazaarvoice.com/data/reviews.json?resource=reviews&action=REVIEWS_N_STATS&filter=productid%3Aeq%3A810934031298&f
    "https://api.bazaarvoice.com/data/reviews.json?resource=reviews&action=REVIEWS_N_STATS&filter=productid%3Aeq%3A810934031427&f
    "https://api.bazaarvoice.com/data/reviews.json?resource=reviews&action=REVIEWS_N_STATS&filter=productid%3Aeq%3A810934031304&f
]
```
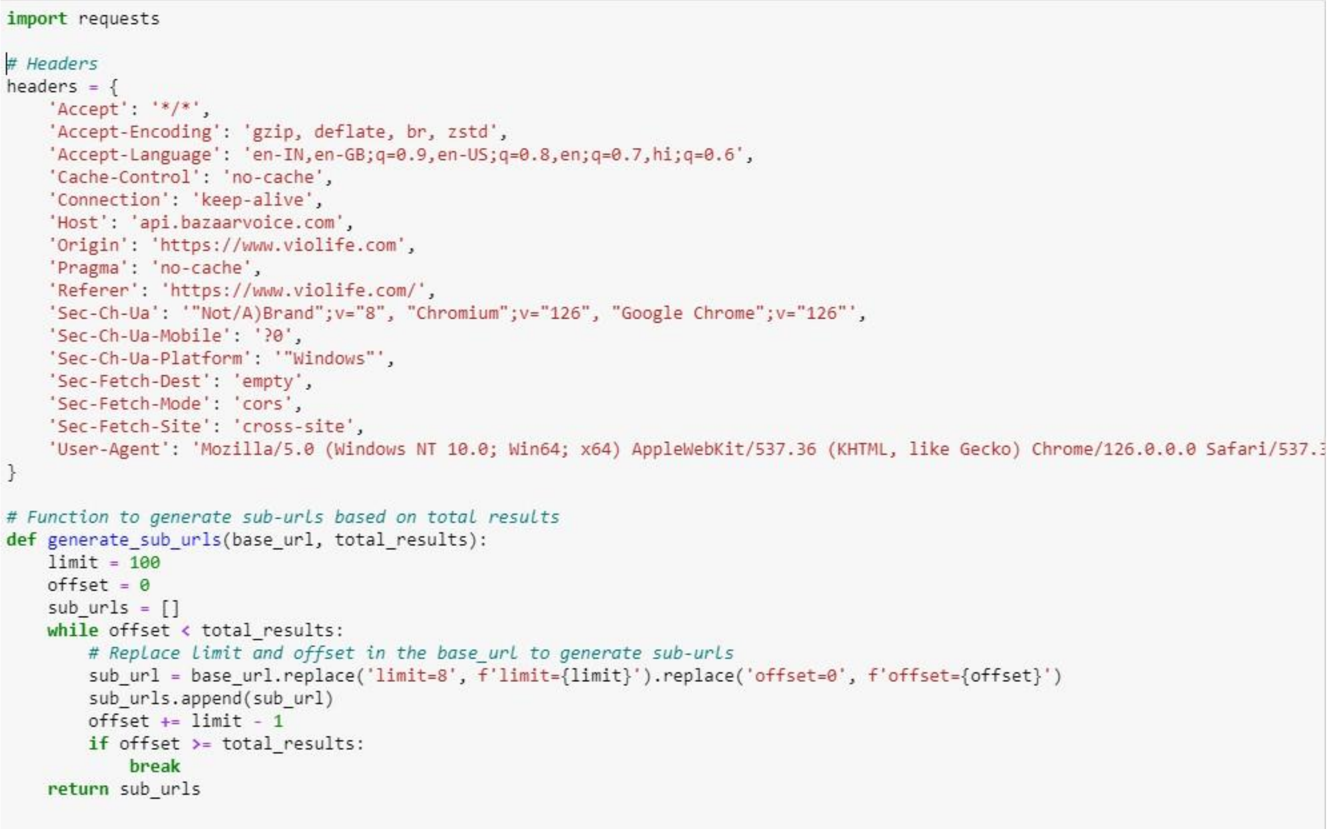
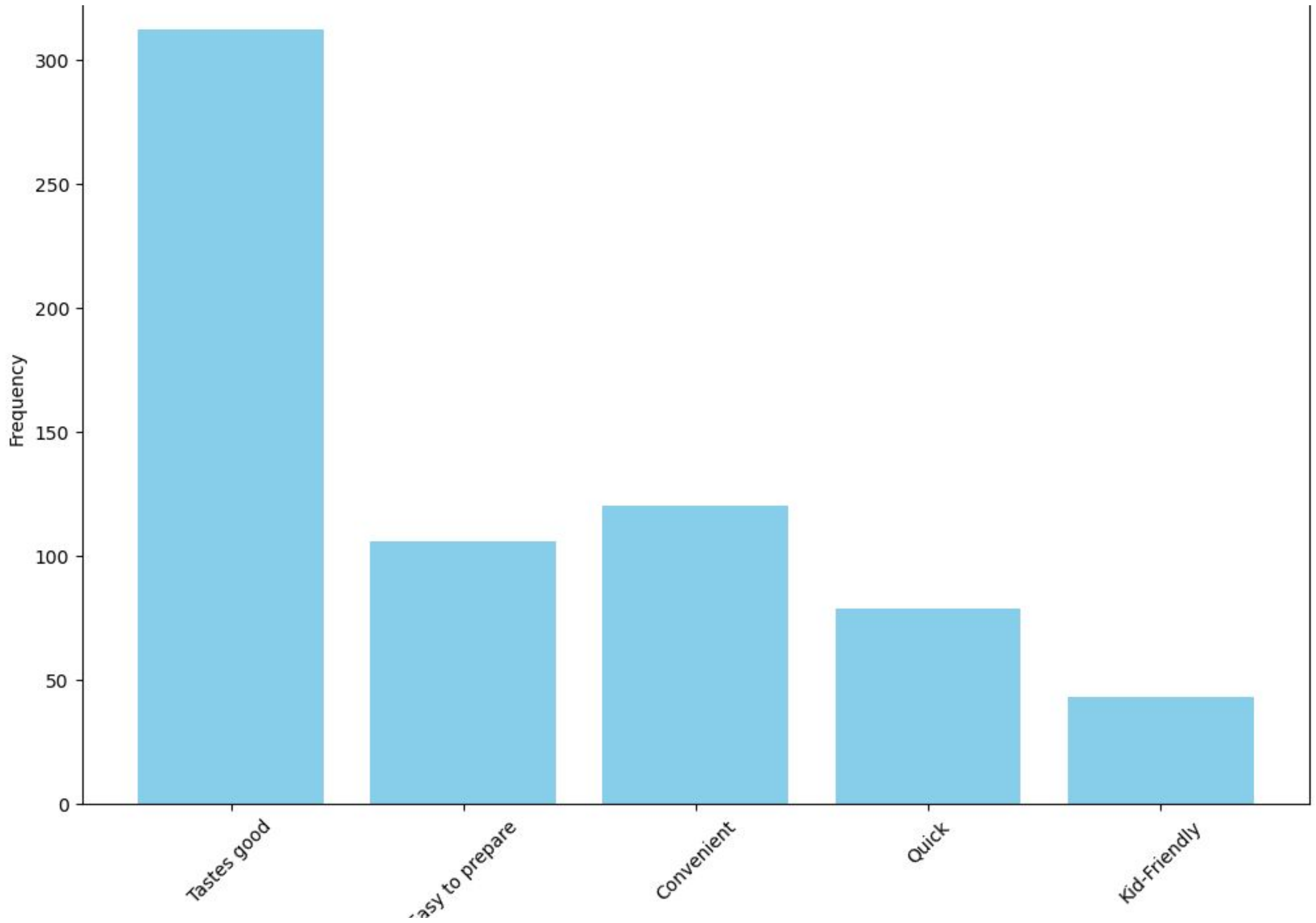

Way forward

- Loop for extracting all review by dynamically change the off-set and limit parameters

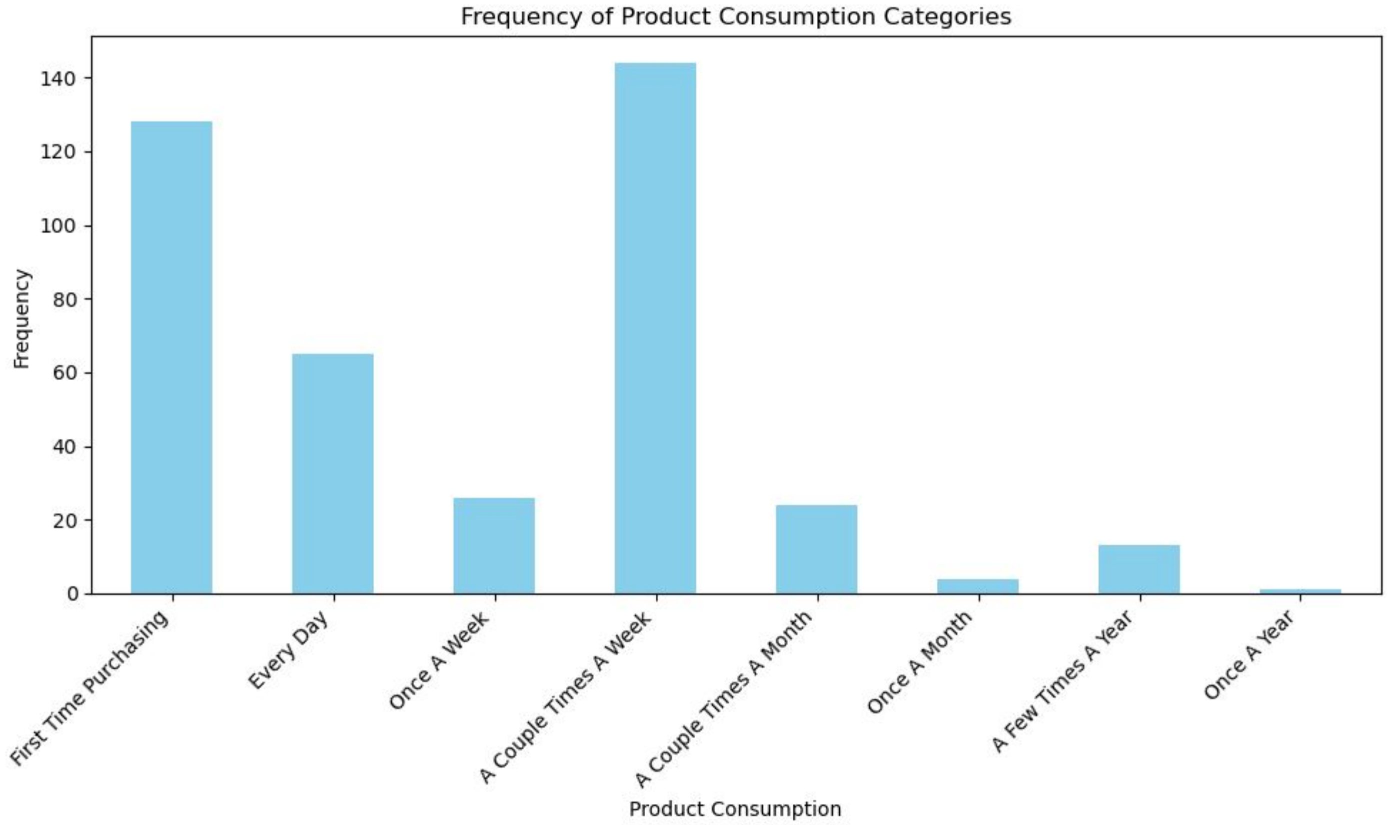


```
import requests

# Headers
headers = {
    'Accept': '*/*',
    'Accept-Encoding': 'gzip, deflate, br, zstd',
    'Accept-Language': 'en-IN,en-GB;q=0.9,en-US;q=0.8,en;q=0.7,hi;q=0.6',
    'Cache-Control': 'no-cache',
    'Connection': 'keep-alive',
    'Host': 'api.bazaarvoice.com',
    'Origin': 'https://www.violife.com',
    'Pragma': 'no-cache',
    'Referer': 'https://www.violife.com/',
    'Sec-Ch-Ua': '"Not/A)Brand";v="8", "Chromium";v="126", "Google Chrome";v="126"',
    'Sec-Ch-Ua-Mobile': '?0',
    'Sec-Ch-Ua-Platform': '"Windows"',
    'Sec-Fetch-Dest': 'empty',
    'Sec-Fetch-Mode': 'cors',
    'Sec-Fetch-Site': 'cross-site',
    'User-Agent': 'Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/126.0.0.0 Safari/537.3
}

# Function to generate sub-urls based on total results
def generate_sub_urls(base_url, total_results):
    limit = 100
    offset = 0
    sub_urls = []
    while offset < total_results:
        # Replace limit and offset in the base_url to generate sub-urls
        sub_url = base_url.replace('limit=8', f'limit={limit}').replace('offset=0', f'offset={offset}')
        sub_urls.append(sub_url)
        offset += limit - 1
        if offset >= total_results:
            break
    return sub_urls
```

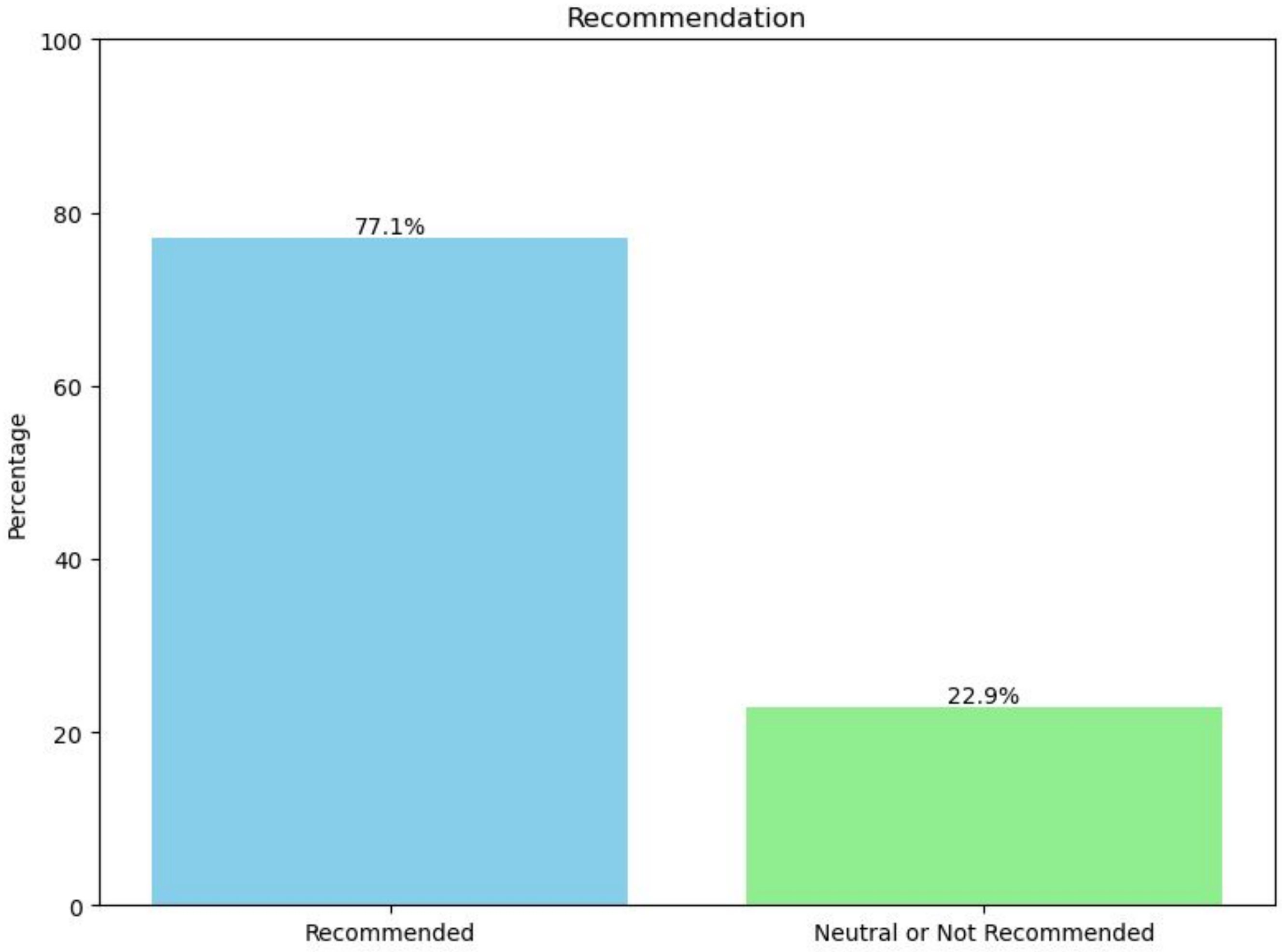
Key Drivers:


Frequency
0
50
100
150
200
250
300
Tastes good
Easy to prepare
Convenient
Quick
Kid-Friendly

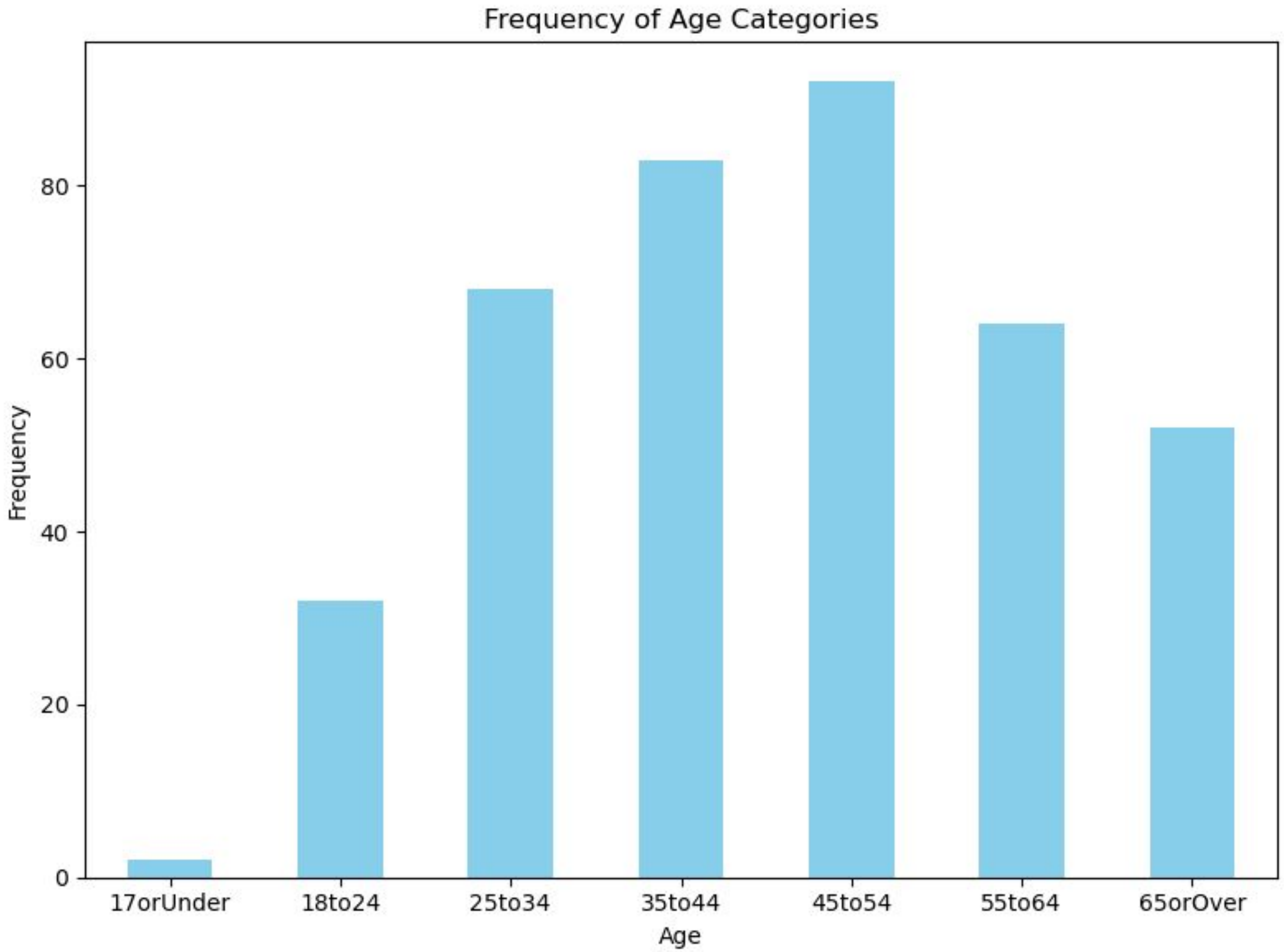
Buying Frequency:



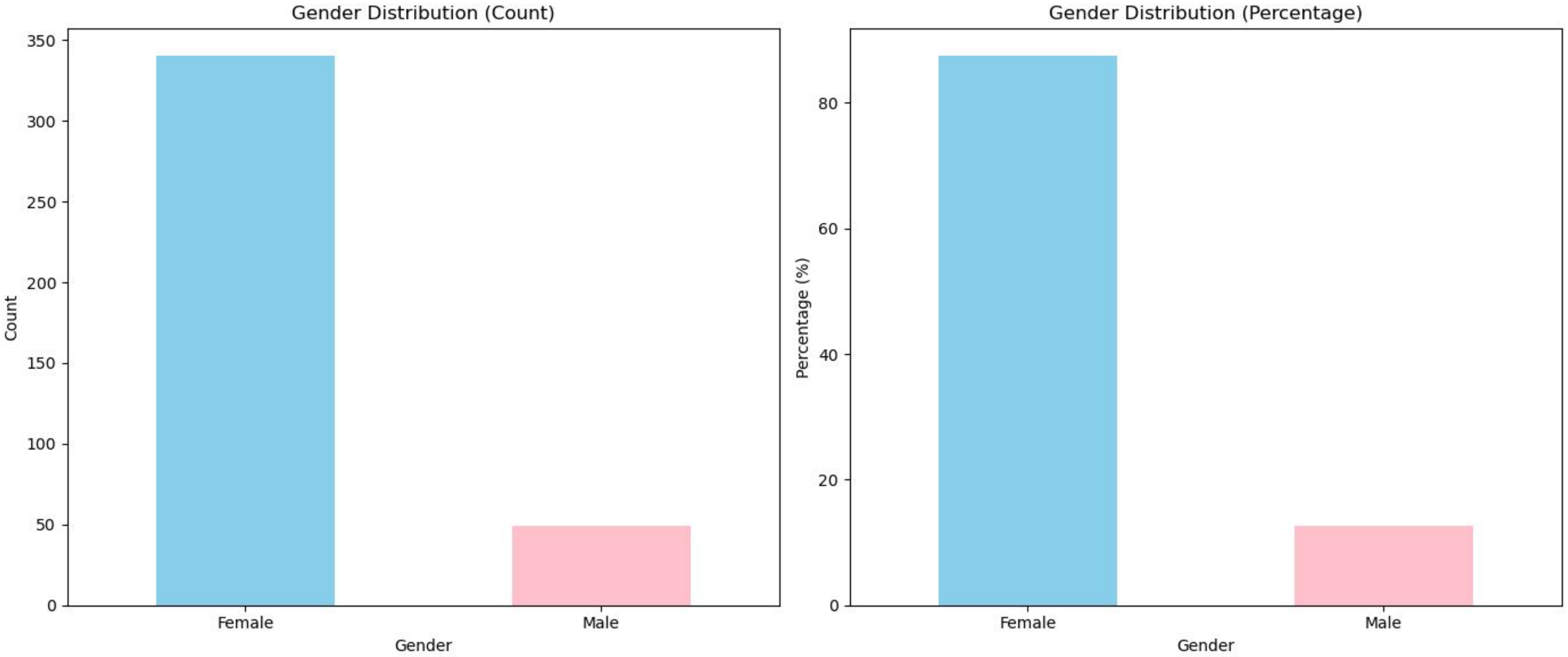
Recommendation:



Age Distribution :



Gender Distribution:

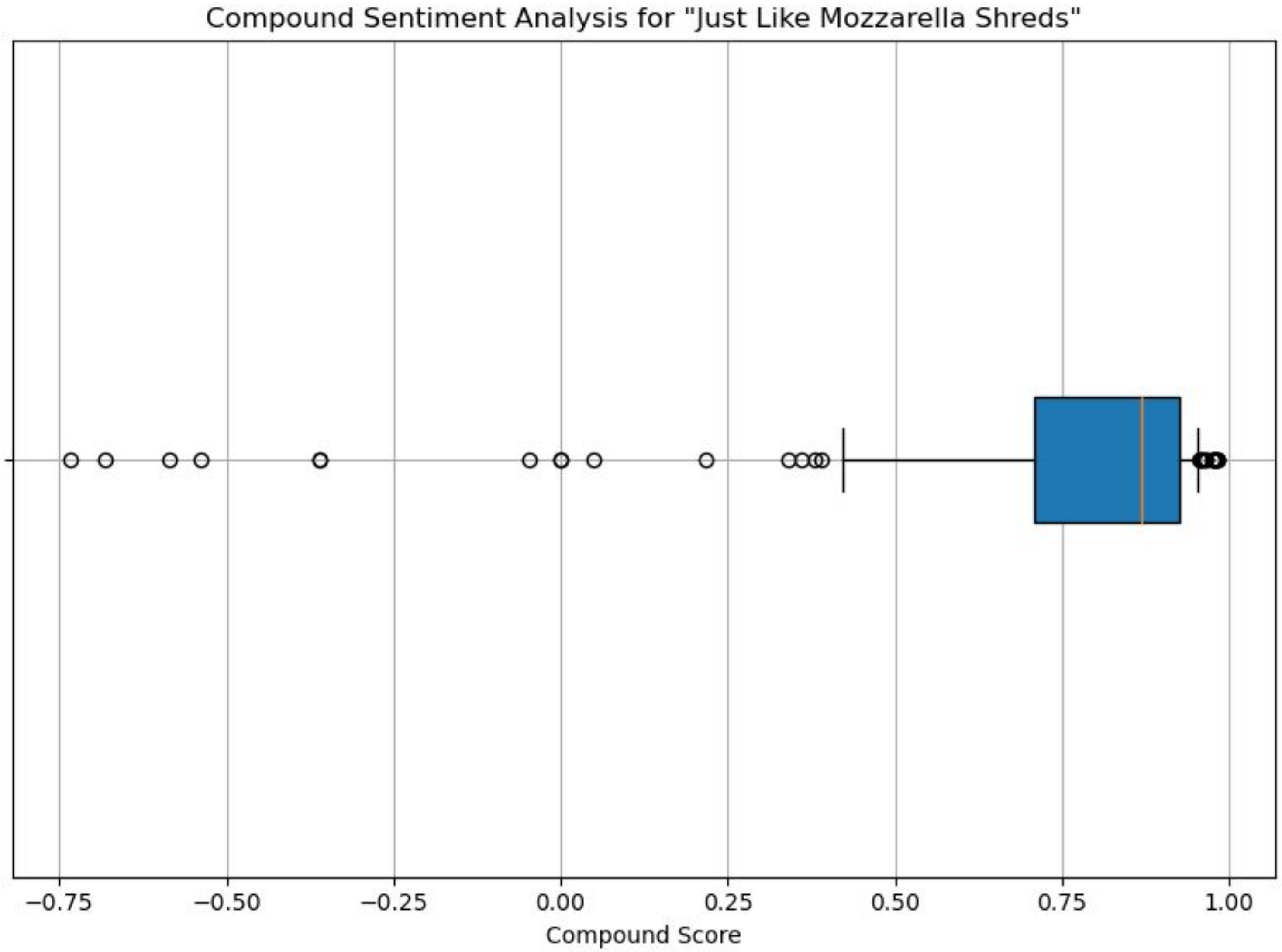


Review Comment Score:

```
from
vaderSentiment.vaderSentiment
import
SentimentIntensityAnalyzer
```

Output:

```
{
  'neg’: x,
  'neu’: y,
  'pos’: z,
  'compound’: k
}
```



Outlier review analysis:

Positive:

'Tasted more like Parmesan than mozzarella but good overall. Texture was good and not gummy- had a solid bite. With enough heat applied it melts nicely too! My BF is a fan as well and he’s a big dairy person ;) we love this line!'

"One of the best vegan cheeze products! Minimal ingredients and IT MELTS. It's so good on pizza - it's our no.1 use for it and I believe Pizza Pizza uses it as their dairy free alternative to mozzarella. It is a little pricey at about $5 a package, but it's enough for about 2 large sized pizzas at our house. Overall I'd definitely recommend it to anyone not eating dairy.
P.S. I love dairy cheese and find this product delicious! Violife Just Like Mozzarella Shreds“

Negative:

'I purchased a bag 2 weeks ago. It had the expiration date of Nov 3, 2021. It had been unopened since purchased until this morning. Before tearing the seal to open I noticed blue green coloring on product. See pictures for references. Needless to say I had to toss it for fear of it making me sick. I will definitely not be purchasing this brand again. I will go back to purchasing from Daiya.'

"Bought the shredded mozzarella to put on pizza. Expiration date says December '23, and here it is July - and it's already bad. Overwhelming smell of blue cheese upon opening the bag, and can see obvious mold. For the amount of $$ this costs, I would expect the exp date to be accurate. Will buy other vegan cheese brands from now on. Do not recommend.“

Neutral:

"I tried this because it was less expensive than Daiya. Now I know why it's cheaper. I can't rave enough about Daiya and will never buy another brand."

THANKYOU

ANY QUESTIONS?

Bibliography
:

All graphs were created using the Python Matplotlib library.

Images were sourced from GFI or PowerPoint resources.