

# **Supporting Plant-Based**

Helping plant-based people to find their favorite meal around?

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# PLANT-BASED DIETS



**40%** OF AMERICANS

are shifting toward eating more plant-based foods

2018 Nielson report

## PLANT BASED

Includes more foods from plant sources: vegetables, fruits, whole grains, nuts and seeds

## FLEXITARIAN

Plant based - occasionally includes eggs, dairy and meat

## VEGETARIAN

Plant based, excludes animal flesh foods

## LACTO-OVO

Vegetarian, but includes dairy and eggs

## PESCATARIAN

Vegetarian, but includes seafood

## VEGAN

No animal foods.  
Vitamin B12 needs to be included in diet

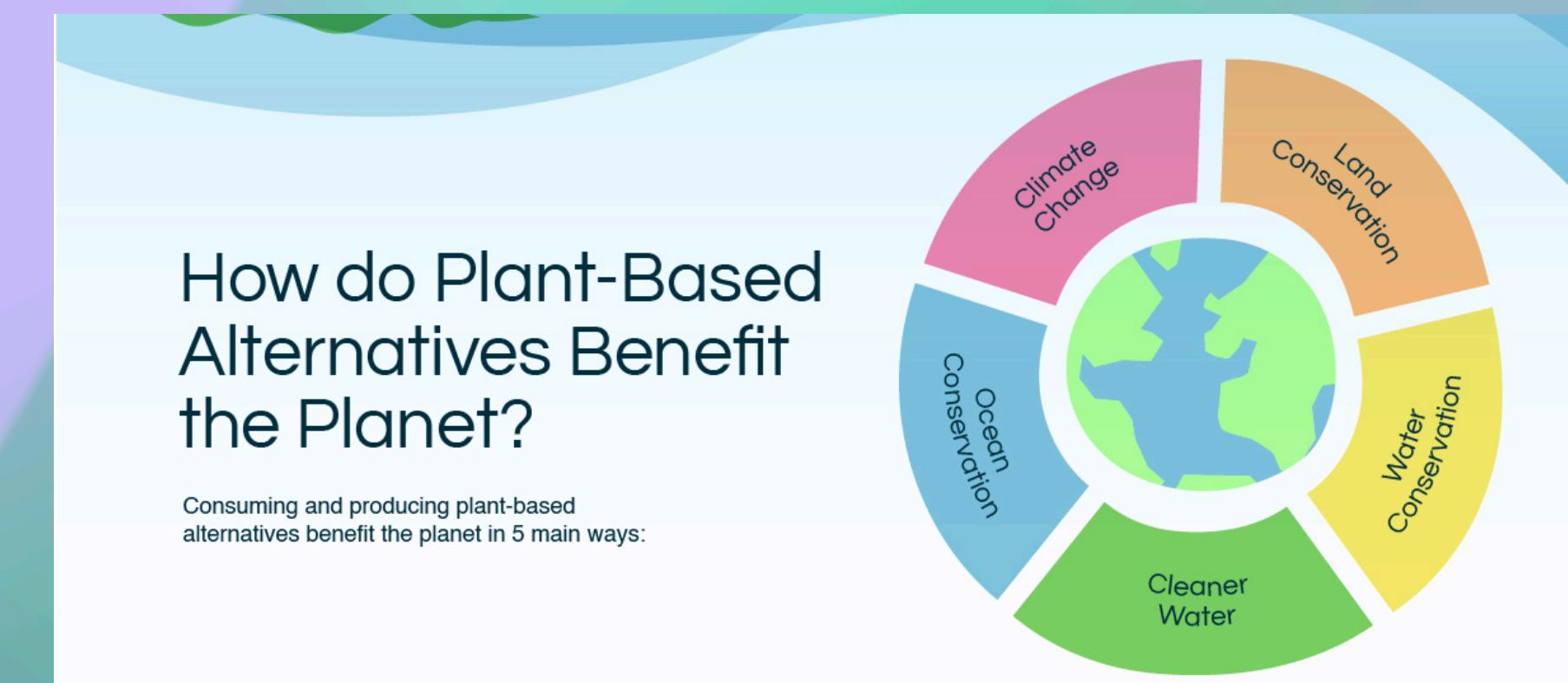
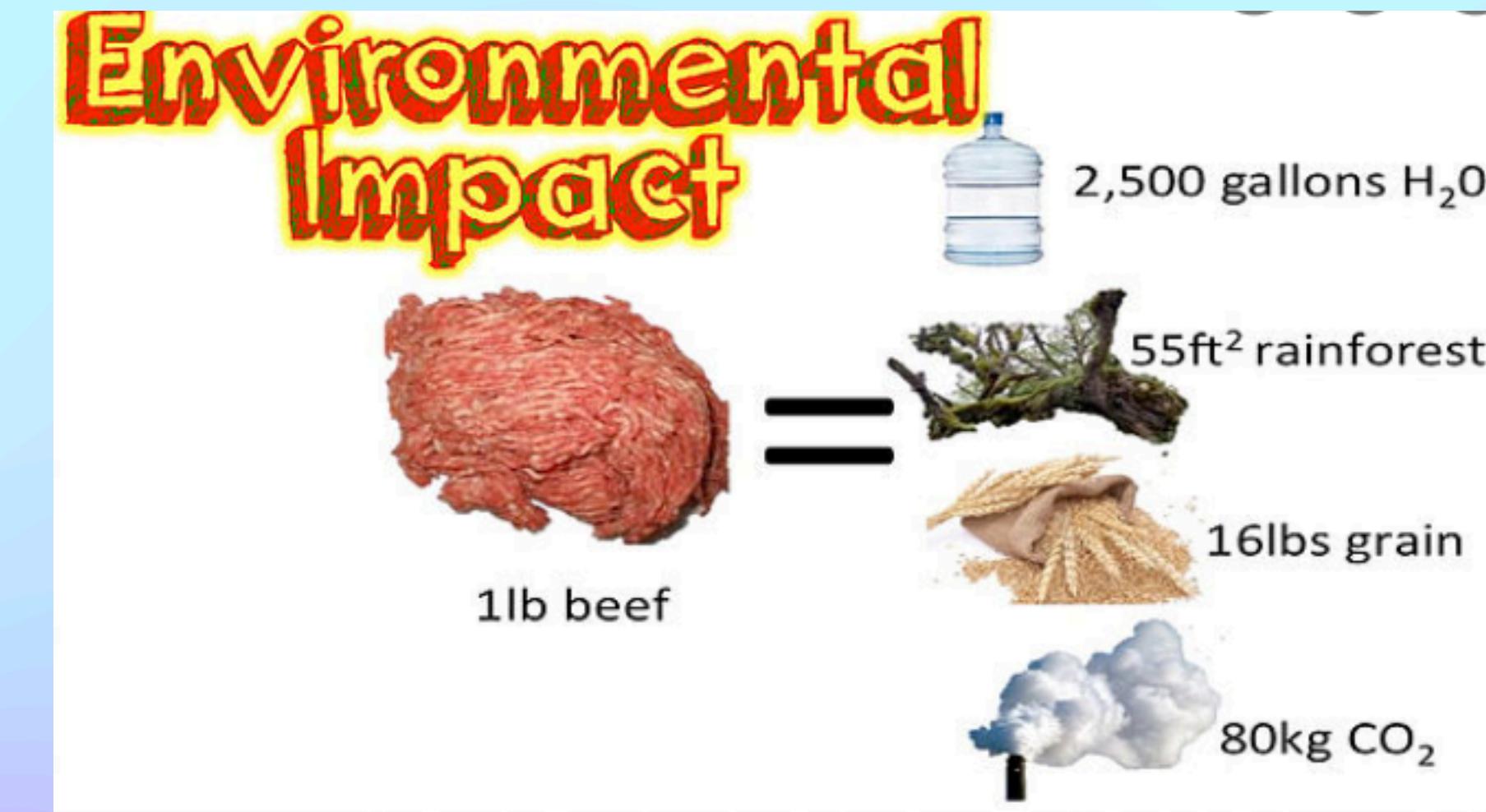
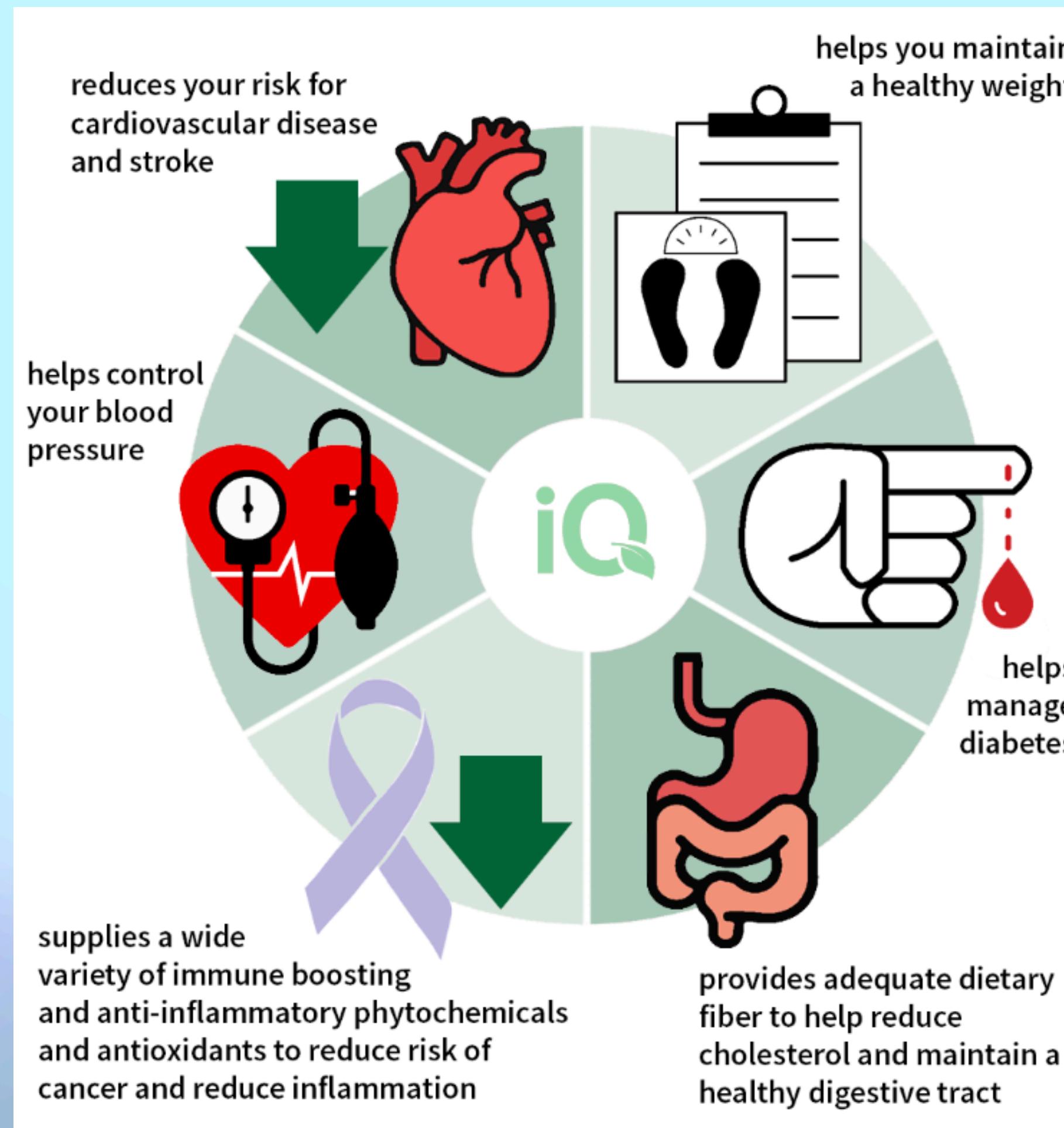


# Problem Statement

The number of people following a plant-based/vegetarian diet is increasing each year all over the world. The problem that most people new to vegetarian/plant-based diet face is the limited options of restaurants that offers vegetarian meals on their menus.

How can we use machine learning to help plant-based people to find their favorite meal around?

# PLANT-BASED DIETS



# Data Extraction:

Training, validation and testing images were extracted using google places API, including images and other places information

## Training Data

```
len(img_data)
```

3147

```
len(labels)
```

3147

## Testing Data

```
len(img_data)
```

172

```
len(labels)
```

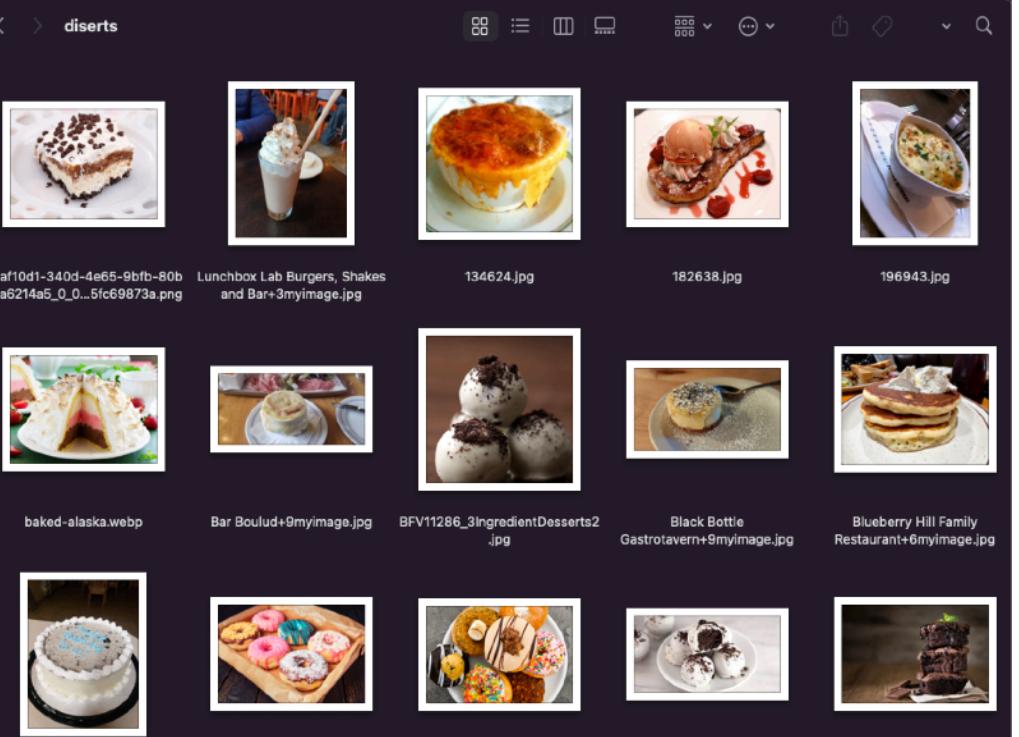
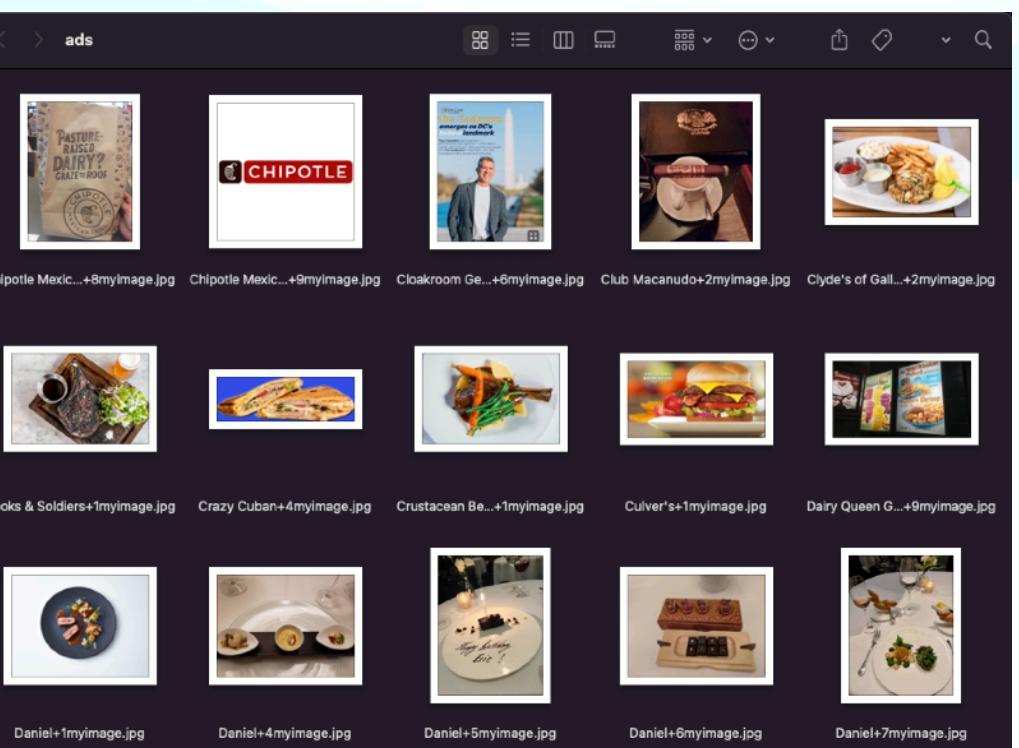
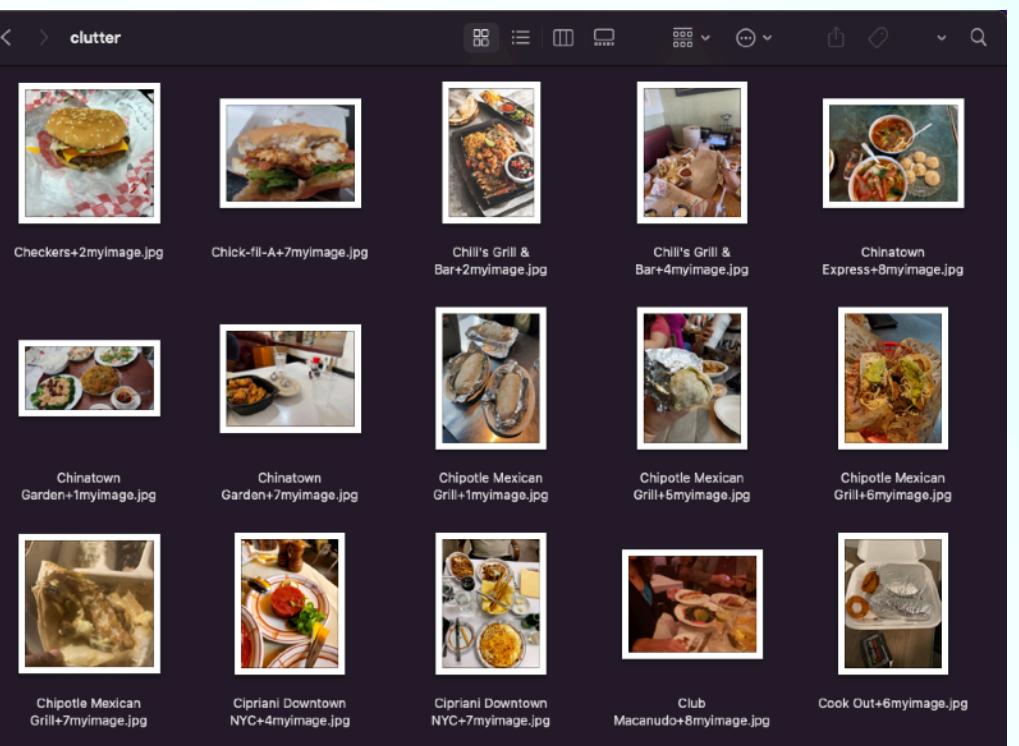
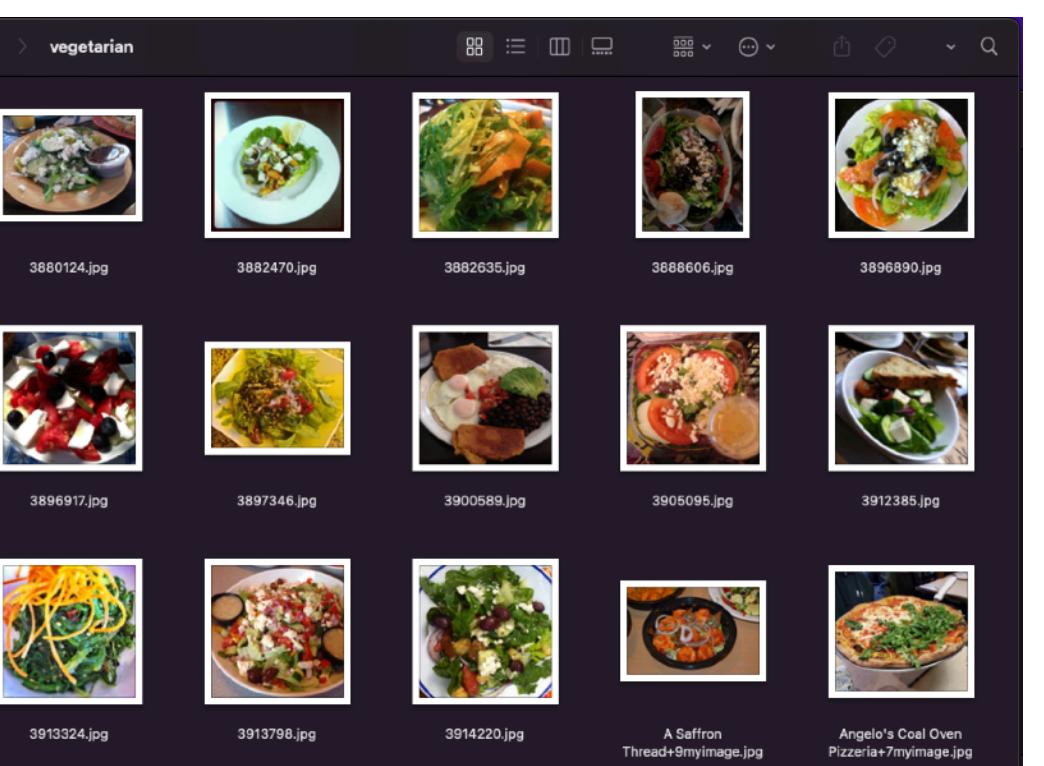
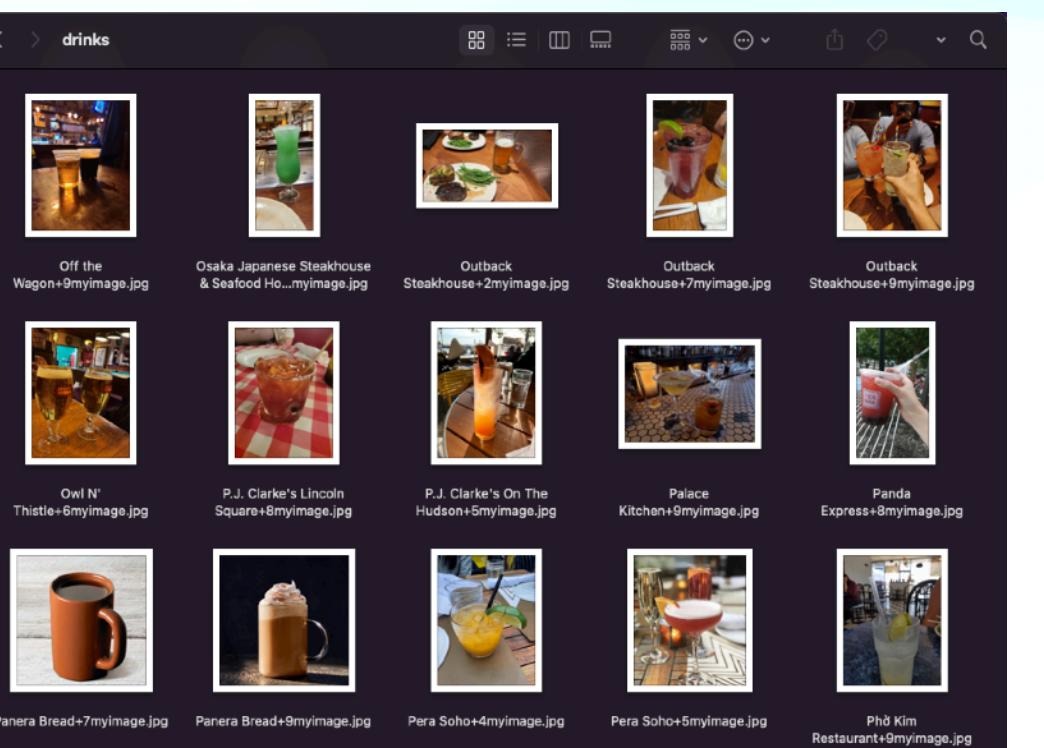
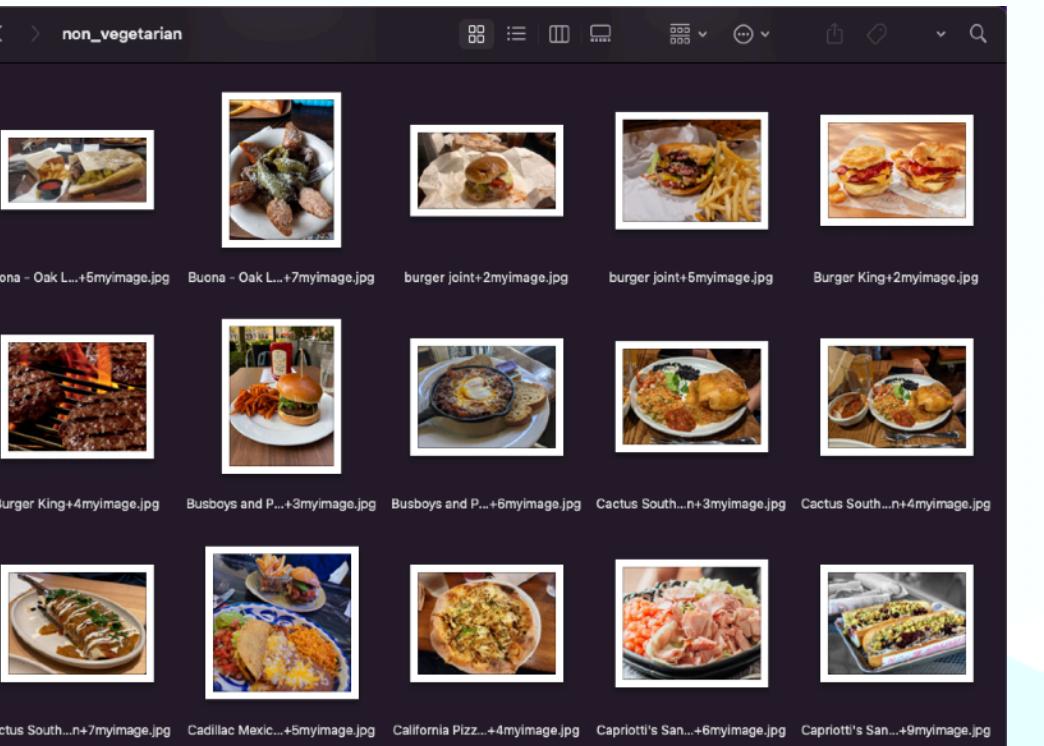
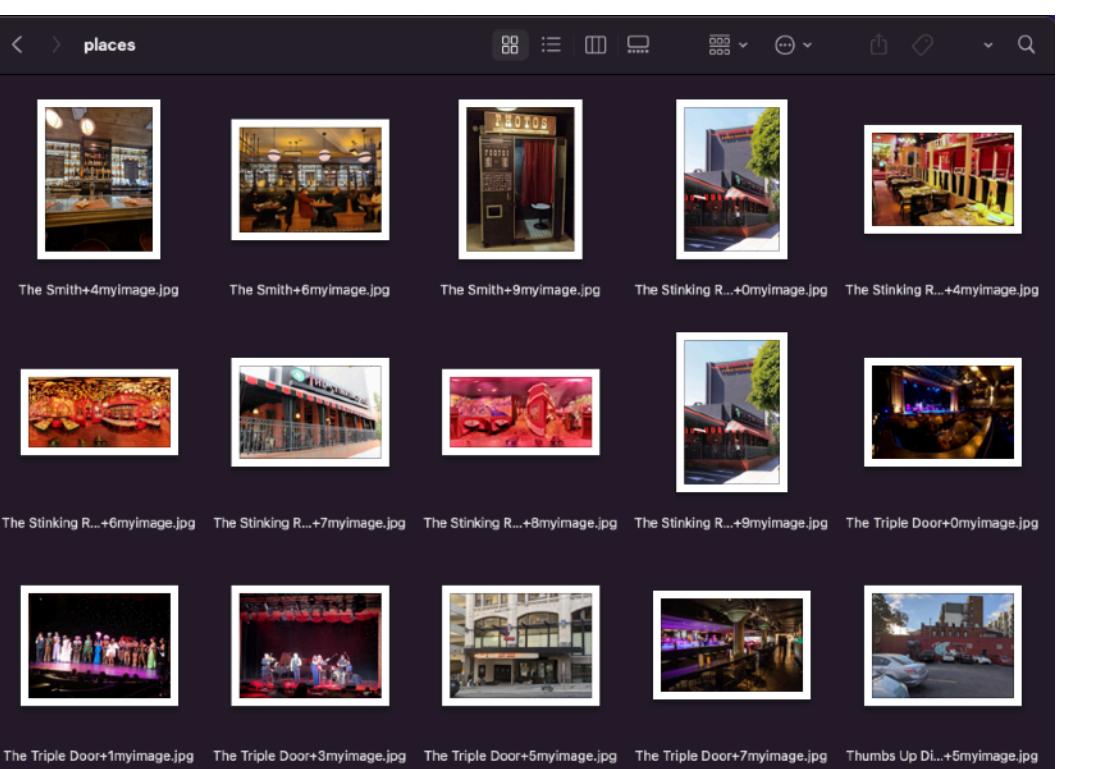
172

# Classifying Data

Manually classifying Training data 7 classes

data\_dir

```
['drinks',
 'ads',
 'vegetarian',
 'deserts',
 'places',
 'clutter',
 'non_vegetarian']
```

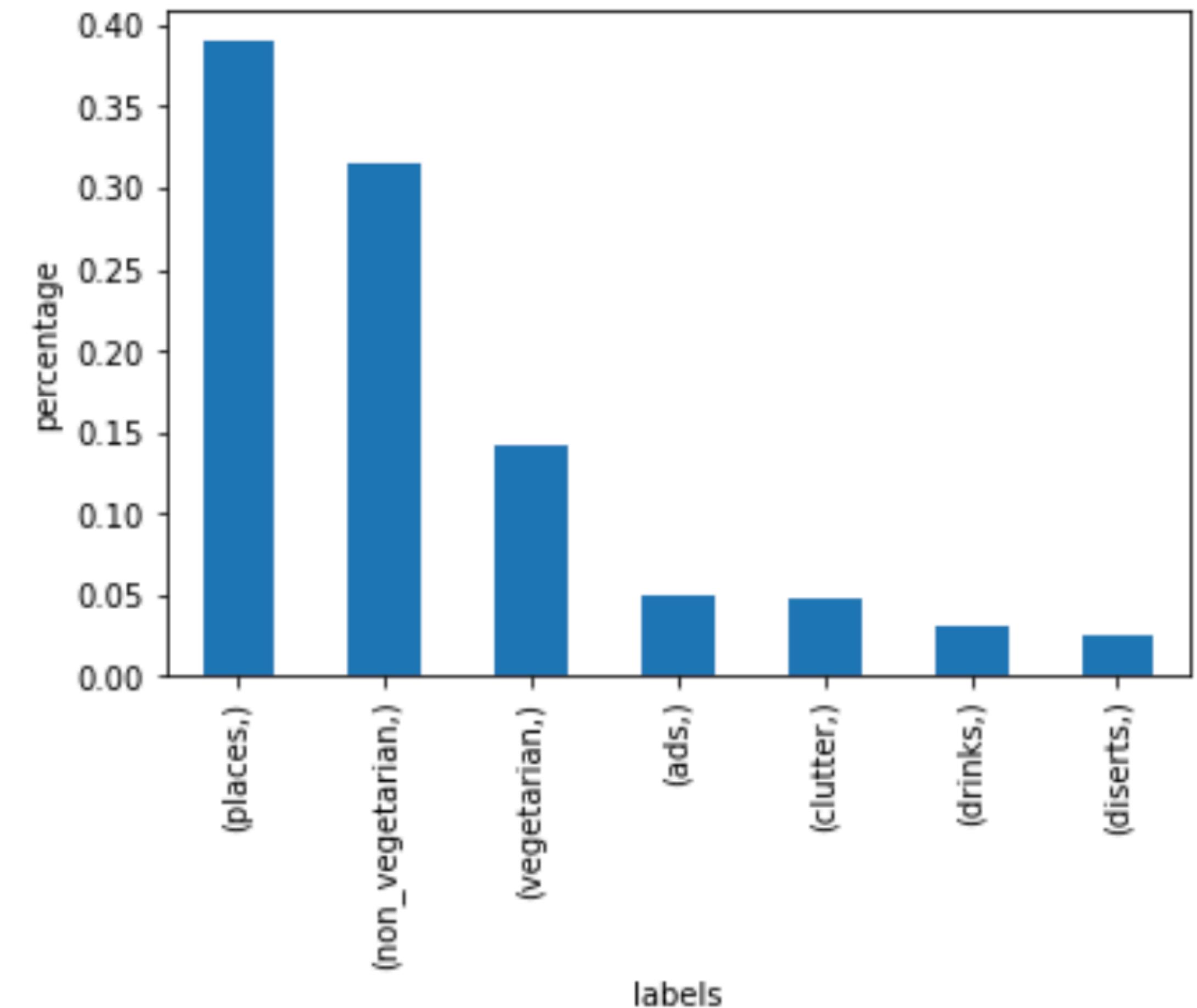


# Establishing a baseline:

```
# Checking the baseline  
pd.DataFrame(labels).value_counts(normalize=True)
```

places	0.390213
non_vegetarian	0.315539
vegetarian	0.141722
ads	0.049571
clutter	0.048300
drinks	0.029552
diserts	0.025103
dtype: float64	

Distribution of labels



# Models Used

Sequential Model

	precision	recall	f1-score	support
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vegetarian	0.50	0.24	0.32	34
non_vegetarian	0.24	0.67	0.36	24
places	0.32	0.85	0.47	26
diserts	0.50	0.14	0.21	22
drinks	0.67	0.09	0.16	22
clutter	0.25	0.05	0.08	21
ads	0.22	0.09	0.12	23
accuracy			0.31	172
macro avg	0.39	0.30	0.25	172
weighted avg	0.39	0.31	0.26	172

ResNet50

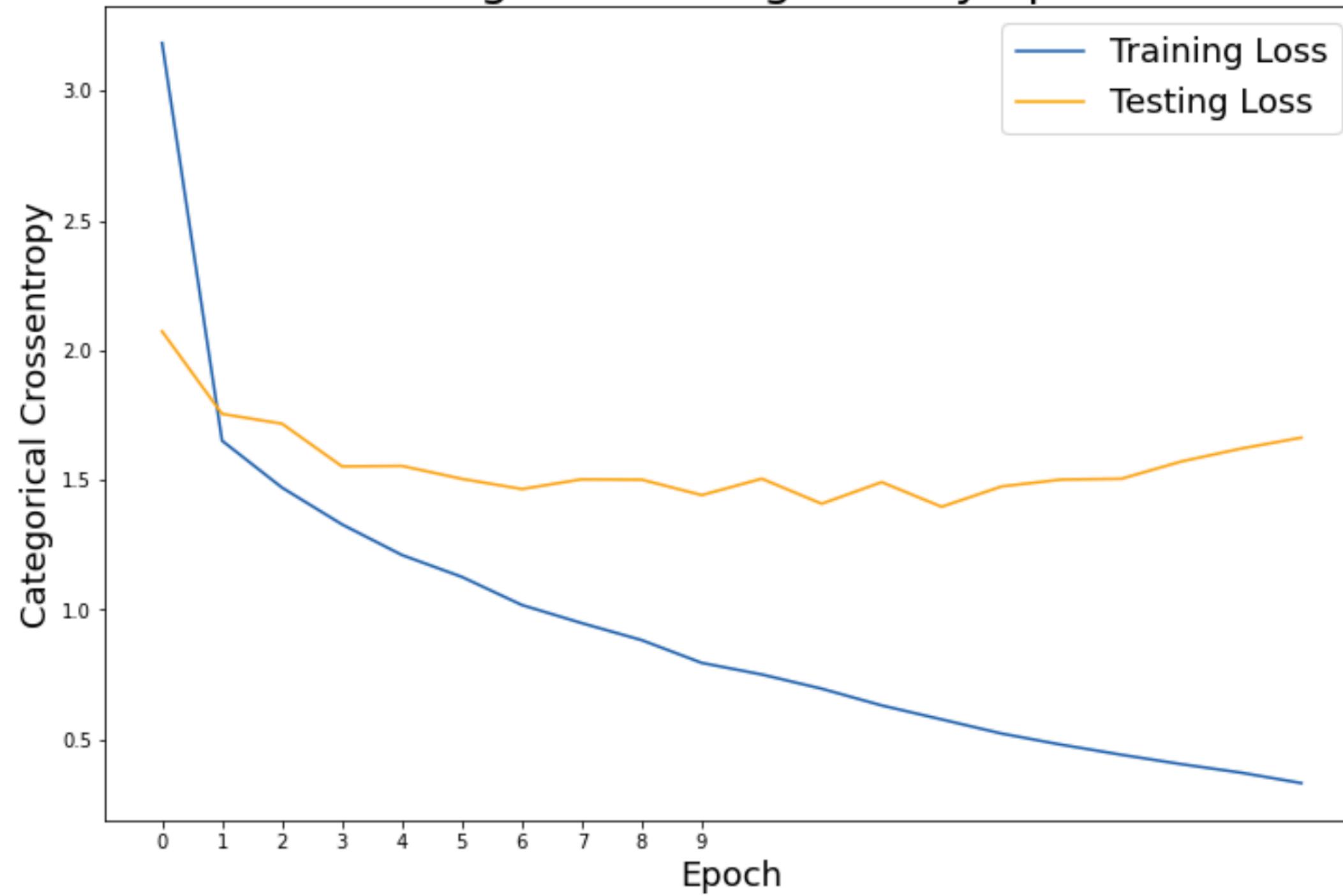
	precision	recall	f1-score	support
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vegetarian	0.88	0.62	0.72	34
non_vegetarian	0.42	0.92	0.58	24
places	0.74	0.96	0.83	26
diserts	0.92	0.55	0.69	22
drinks	0.90	0.82	0.86	22
clutter	0.67	0.19	0.30	21
ads	0.78	0.78	0.78	23
accuracy			0.70	172
macro avg	0.76	0.69	0.68	172
weighted avg	0.76	0.70	0.69	172

# Models Used

## Sequential Model

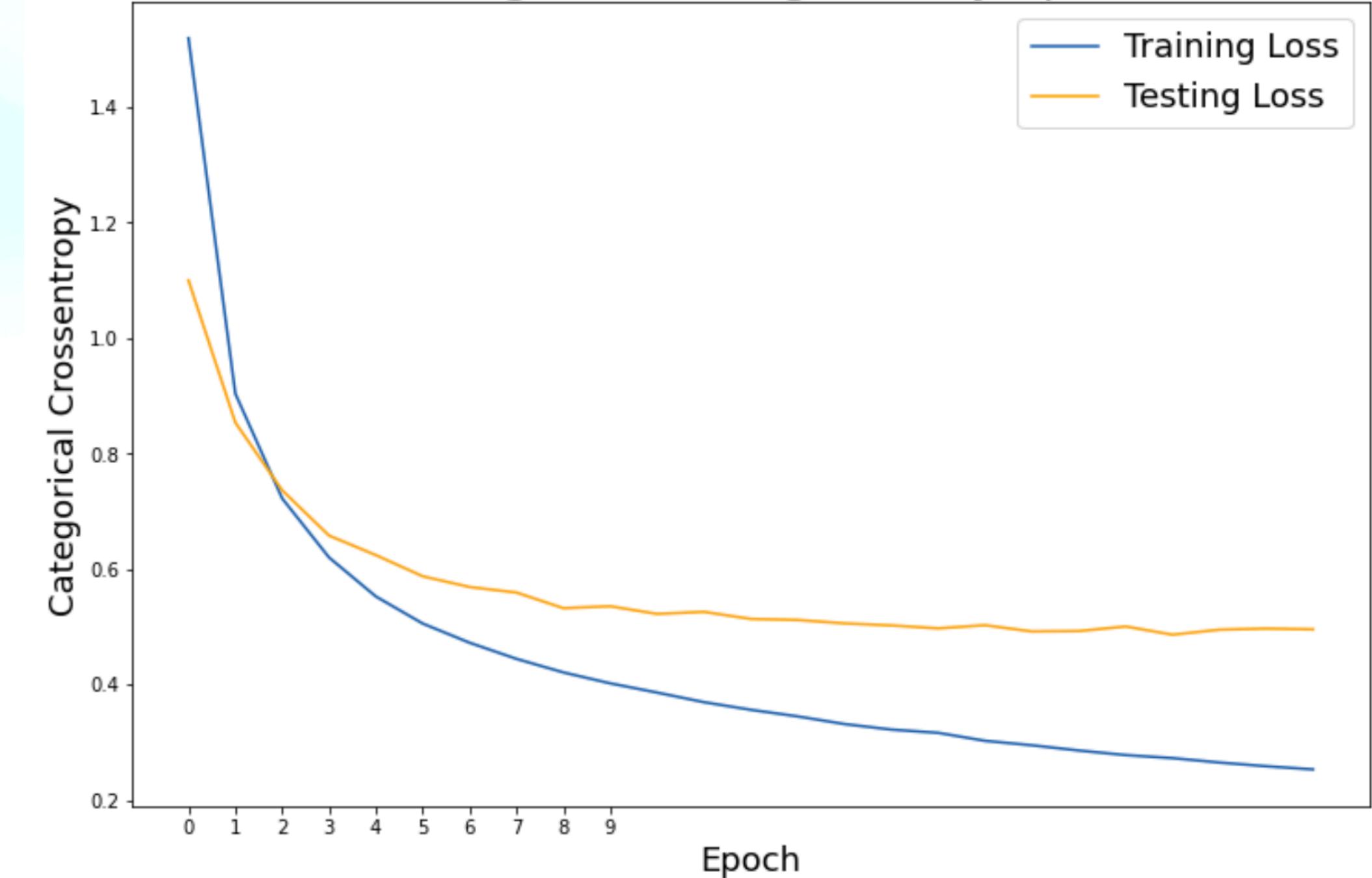
### Training and Testing Loss by Epoch



val\_loss: 1.6635 – val\_accuracy: 0.6048

## ResNet50

### Training and Testing Loss by Epoch



val\_loss: 0.4955 – val\_acc: 0.8270

# Streamlit App Demo:

A screenshot of a Streamlit application running in a web browser. The browser window has a purple header bar with icons for volume, battery, and network. The title bar shows the tab is titled "Screencast". The address bar displays the URL "edeldepssi-gplaces-classification-veg-qj2ef8.streamlitapp.com". The main content area of the app has a dark background. At the top, it says "Hello Plant-Based Lovers ❤️". Below that is a text input field labeled "Enter Location:" with the placeholder "lat,long". A "Run Model" button is located below the input field. In the bottom right corner of the app's content area, there are "Share", "Star", and "More" buttons. The bottom left of the browser window shows the text "Made with Streamlit".

# **Future Stretch:**

**Training on more training images**

**Deployment on AWS for more computing powers**

**Mobile apps**

**Business Opportunities**

**Thank you.**