

The background of the slide is a light blue color with a repeating pattern of various tropical fruits and plants. The pattern includes slices of watermelon, papaya, lime, and orange, as well as whole coconuts, green leaves, and small white flowers. The central text is contained within a white, cloud-like shape.

# *Avoiding negative restaurant reviews.*

FOOD SERVICE INC.  
Gurunadh Parinandi  
December 4, 2020

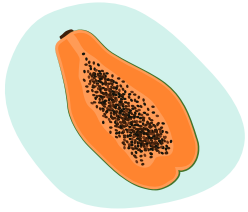
# Negative Review Examples:

“went drive thru practically food thrown us drive thru lady hurry rush fact hurry forgot give us drinks realized still sitting opened window horrible customer service service horrible atmosphere horrible coffee horrible everything overpriced.”

“actually wanted give zero star worst customer service gta placed order advance also wait eternity food food arrived also cold close average indian restaurants.”

“horrible unclean rancid foul odors unkempt poor service restaurant nearly empty cashier even look say hello husband stood hungrily grinning counter unacceptable.”

# Table of Contents



## **Purpose**

Why are we doing this study?



## **Workflow**

How are we gathering the info.



## **Results**



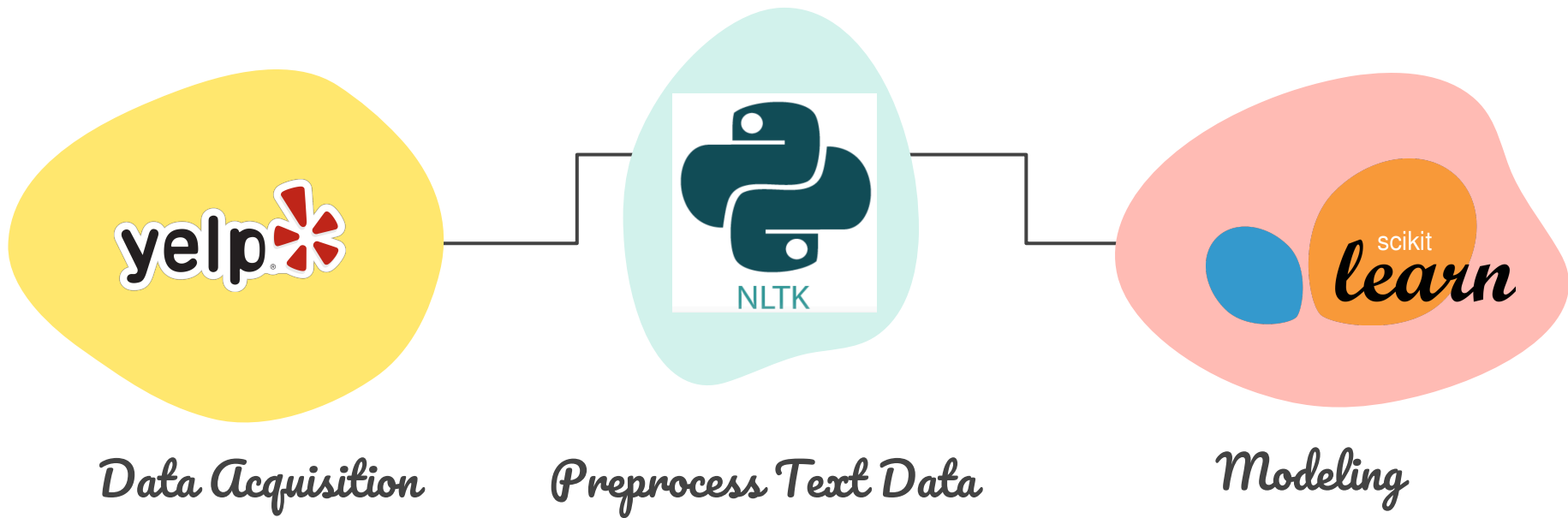
## **Next Steps**

# Purpose:

- Restaurants can lose up to \$180,000/yr. due to Negative Reviews.
- Risk Reduction.
- Negative reviews reduce average rating of restaurant.



# Workflow



# Words to avoid and harness in service!

Most Negative Sentiment:

token	log_reg_coefficient
rude	-0.875258
worst	-0.802721
terrible	-0.751990
bland	-0.699271
horrible	-0.695633
slow	-0.687595
cold	-0.658370
asked	-0.606134
decent	-0.587078
expect	-0.542036

Most Positive Sentiment:

token	log_reg_coefficient
thank	0.615939
perfect	0.638241
delicious	0.687156
great	0.696150
awesome	0.719477
loved	0.754182
best	0.852886
excellent	0.857179
favorite	0.875300
love	0.875726

# Word Examples:

## BAD:

" food ok not happy service waitresses name rihanna something rude got order wrong seem care *suspect spit sauce*"

"one specific thing made buffet horrible accumulation everything less average quality plenty options none flavorful hot worth filling others commented dessert section worthwhile us everything tasted unthawed stale side asian section probably best offerings still fairly bland worst part going grab slice pizza station someone placed tongs directly top pizza hand germs direct contact food two workers right think disgusting would discarded slices husband left unsatisfied stomachs looked forward second dinner would hours later much better establishment."

## GOOD:

"placed st order today pleased order friendly best customer service dealt since moving valley thank awesome order green chili shredded beef burrito cheese quesadilla side beans chips salsa side sour cream worth wait wait order."

# Confusion Matrix - Test Set

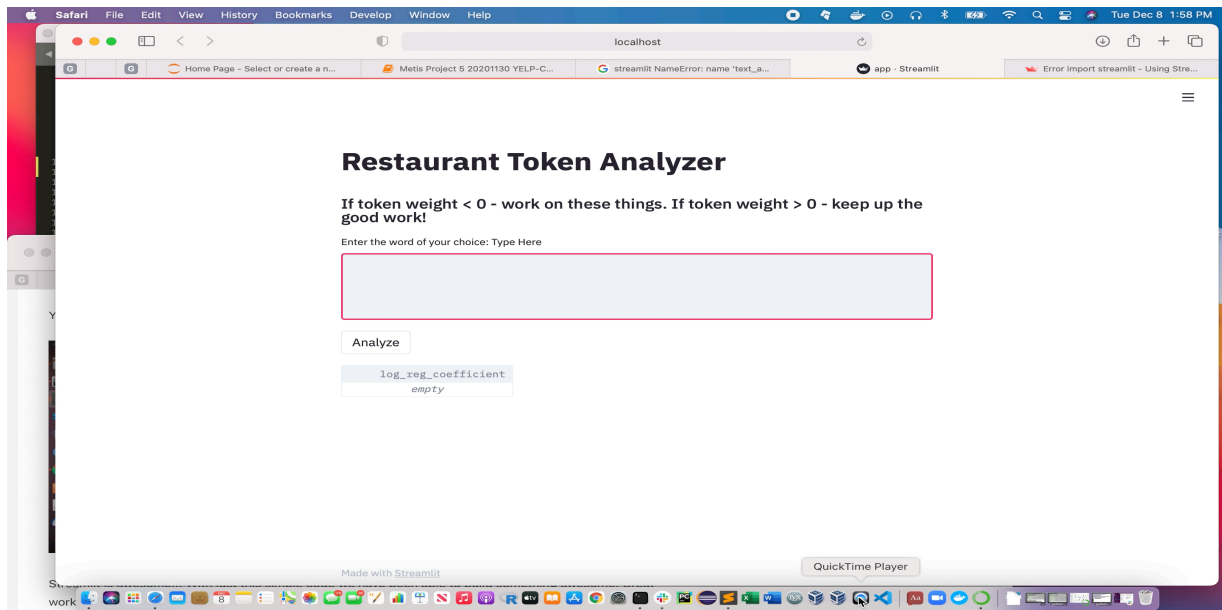
1001 examples in Test Set.

Final Logistic Regression Model confusion matrix

	Negative Review	Positive Review
Negative Review	217 TN	103 FP
Positive Review	58 FN	623 TP



# Streamlit App for Restaurants



## Recommendations:

- Provide exemplary customer service.
  - *Rude, Slow, Terrible.*
- Management interaction with customers.
- Offer Promotions to our customers.




## Next Steps:

1. Increase number of samples used in modeling to 80 million.
2. Restaurant by Restaurant case study.
3. Scrape other sources for restaurant reviews.
  - Figured out how to scrape the Grubhub reviews and ratings using Google Puppeteer and Javacript for one restaurant (Thai Spoon – Chicago).



The background is a repeating pattern of various tropical fruits and foliage. It includes slices of watermelon with red flesh and green rinds, halves of papaya showing orange flesh and black seeds, whole and sliced lemons, coconuts, and small yellow flowers with green leaves. A large, light blue, cloud-like shape is centered on the page, serving as a backdrop for the text.

*Thank  
You!*

The background is a repeating pattern of various tropical fruits and foliage. It includes slices of watermelon with red flesh and green rinds, halves of purple dragonfruit with white flesh and black seeds, halves of orange papaya with black seeds, green lime slices, yellow lemon slices, coconuts, and white tropical flowers with green leaves. A large, light blue, cloud-like shape is centered on the page, containing the word "Appendix" in a dark grey, cursive font.

# Appendix

# Model Results-Logistic Regression

Test Results.

Negative: 1,2,3 stars Positive: 4,5 stars

1001 Test Reviews

CONFUSION MATRIX:

	NEGATIVE	POSITIVE
NEGATIVE	217 (TN)	103 (FP)
POSITIVE	58 (FN)	623 (TP)

ACCURACY: 0.84

F1: 0.89

RECALL: 0.91

PRECISION: 0.86

OPTIMIZED PARAMETERS (grid\_search cv), scoring='roc-auc':  
penalty='l2',C=0.1,class\_weight={0: 1, 1: 1},solver='newton-cg'