

# *Biscuit or scone?*

Metis Classification Project  
By: Maxwell Wood



# Project Breakdown



*Client:*

allrecipes!

- Food social network
- Users to share recipes
- Editors check recipes for Accuracy and Uniqueness



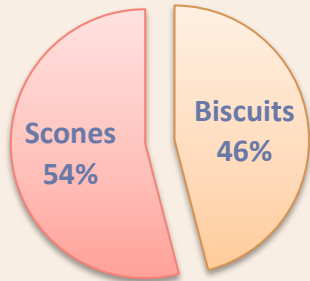
*Goal:*

- Build a classification model for recipes of biscuits and scones
- Use as proof of concept that classification models can help editors



# Data Collected

285 Recipes  
From Allrecipes.com



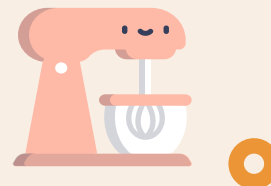
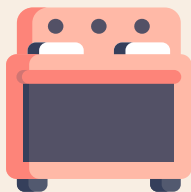
Split 60:20:20  
Train: Validation: Test

## Recipe Features:

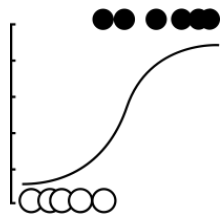
- Prep Time
- Bake Time
- Bake Temp
- Yield
- # Steps
- # Ingredients
- Calories

## Ingredient Amounts:

- Flour
- Sugar
- Salt
- Eggs
- Baking Powder
- Baking Soda
- Water
- Milk
- Buttermilk
- Cream
- Sour Cream
- Butter
- Margarine
- Shortening

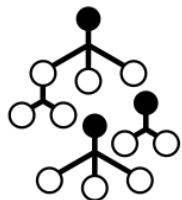


# Benchmark Models



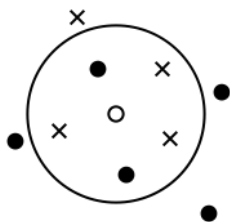
Logistic  
Regression

Train Score = **0.92**  
Val Score = **0.81**



Random  
Forest

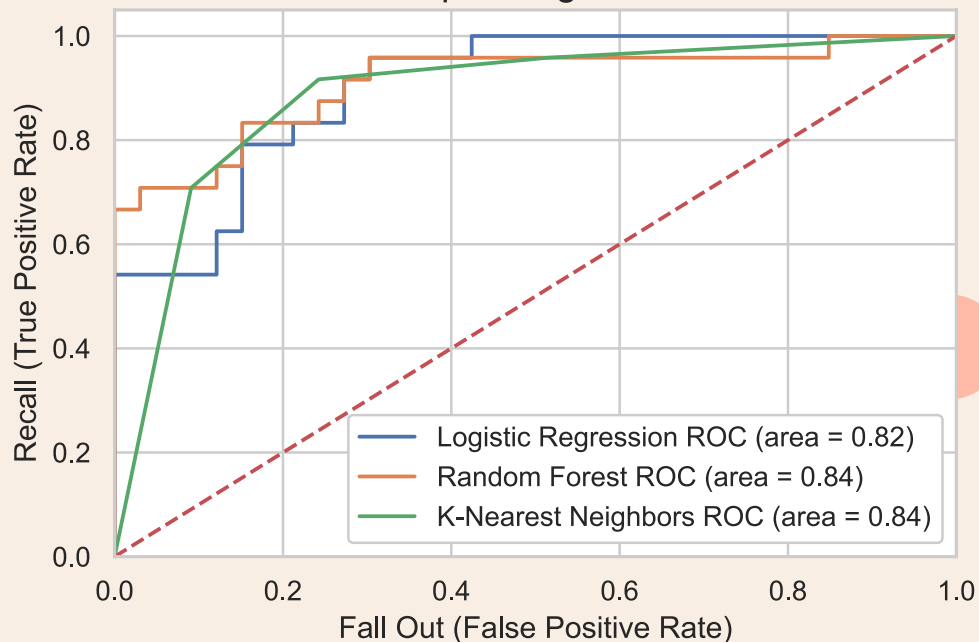
Train Score = **0.92**  
Val Score = **0.84**



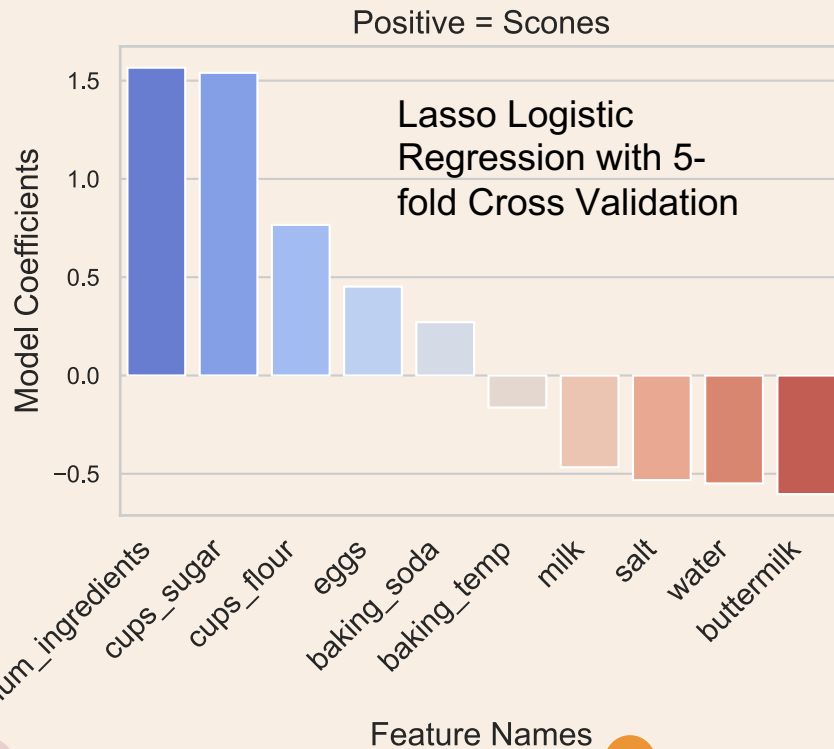
K-Nearest  
Neighbors

Train Score = **0.91**  
Val Score = **0.82**

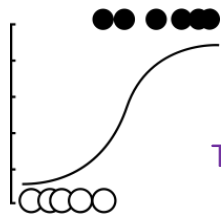
Receiver Operating Characteristic



# Lasso Feature Reduction



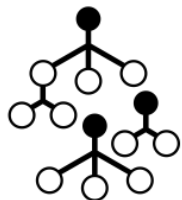
# Retrain and Vote



Logistic  
Regression

Train Score = ~~0.92~~ 0.89

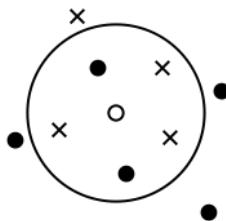
Val Score = ~~0.84~~ 0.88



Random  
Forest

Train Score = ~~0.92~~ 0.93

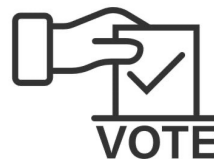
Val Score = ~~0.84~~ 0.82



K-Nearest  
Neighbors

Train Score = ~~0.94~~ 0.88

Val Score = ~~0.82~~ 0.93



Voting  
Ensemble

Train Score = 0.94

Val Score = 0.89

Test Score = 0.81

		Actual	
		Scones	Biscuits
Predicted	Scones	23	6
	Biscuits	5	23



# Misclassified Examples

## Tea Time Scones



**Karen**

★★★★☆ 11/03/2009

I found this bland and tasteless. It was a buttermilk biscuit. I even used cinnamon sugar on top instead of plain cinnamon. It didn't help much. I know scones are not supposed to be sweet, but this didn't make the cut.

## Onion Poppyseed Biscuits



**gidgette**

★★★★☆ 04/14/2012

These looked good and browned very nicely, but I did not like the texture or taste. They basically have no taste and are a bit dry.

👍 [Helpful](#) (1)

# What's Next?

## *More Data!*



Getting more recipes will help with some issues around small datasets

## *Try Boosting*



Using a boosted model could improve performance

## *Add a Class*



Adding Shortbread to distinguish could be an interesting challenge



A top-down view of various baking ingredients and tools arranged around a central text. The items include: a wooden bowl of white flour (top left), a loaf of bread in a wooden tray (top left), a carton of four brown eggs (top center), a glass pitcher of milk (top right), a large round loaf of bread (right), a bowl of cubed butter (bottom left), a loaf of bread in a wooden tray (bottom left), a wooden rolling pin (bottom center), a small bowl of wheat grains (bottom center), a wire whisk (bottom right), and a large round loaf of bread (right). The background is a light beige surface with soft shadows.

*Thank You!*



# Bakery Icon Pack

