



# Sephora.com Foundation Product Reviews Analysis

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# Main Questions

1. What do the reviews and information about reviewers tell us about the foundations sold at Sephora?
2. Can we predict if a person will recommend a product based on the product and the person's characteristics?
3. Can we use the review data to recreate Sephora's foundation matching quiz with more tailored questions and results?



# Overview

1

## Extract the Data

We extracted the data from two different sources: Sephora's API for the product and brand information and Bazaarvoice for the actual reviews

2

## Data Exploration and Statistical Analysis

We used visualizations and statistical tests to understand what our features tell us about the foundations and see how different features interact with each other.

3

## Predictive Modeling and Recommender System

We used Logistic Regression, KNN, and SVM to predict the whether or not a person would recommend a foundation based on their information. Now, we are working on creating a recommender system that will be a better and more detailed version of Sephora's foundation matcher quiz.



# The Data

Makeup > Face > Foundation

**FENTY BEAUTY BY RIHANNA** \$34.00  
Pro Filt'r Soft Matte Longwear Foundation  
SIZE: 1.08 oz/ 32 mL • ITEM 1925486  
★★★★☆ 11K reviews | ♥ 450K loves  
exclusive

Roll over image to zoom in

Color: 460 - for deep skin with cool and very red undertones

Matte finish Shade Finder >

Ratings & Reviews

11669 reviews

5 stars 6940  
4 stars 1748  
3 stars 1072  
2 stars 1019  
1 star 890

★★★★☆ 4.1 / 5 stars

Show reviews from my Beauty Matches

Color: All Filter Sort by: Most Helpful

Kiki1968  
Eye Color Blue  
Hair color Blonde  
Skin Tone Light  
Skin Type Oily  
Skin concerns Acne

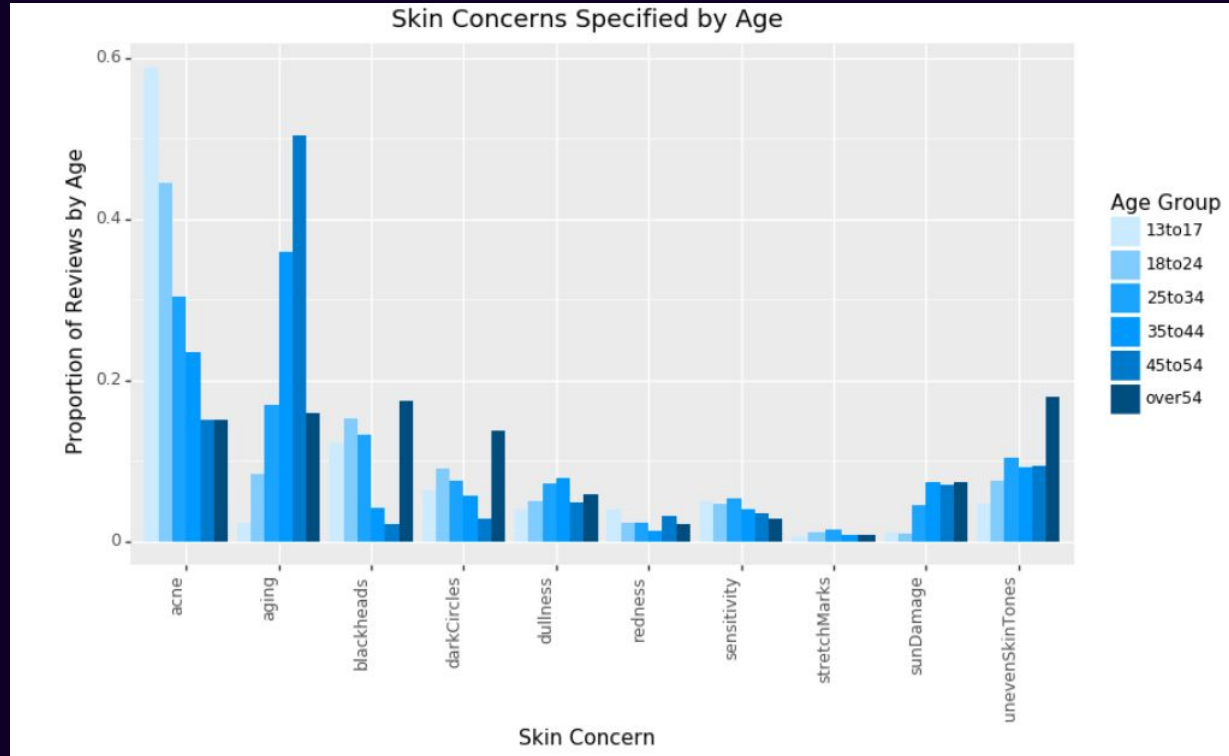
★★★★★  
Color: 140  
Love this worth your money  
✓ Recommends this product

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	brand	name	rating	skin_type	eye_color	skin_conc	incentivize	skin_tone	age	beauty_in	user_name	price	recomm
2	MAKE UP   Ultra HD li	5 combinati	green	sensitivity		medium				marissani	\$19.00 - \$	TRUE	
3	MAKE UP   Ultra HD li	3 combinati	brown	acne		medium				blueberry	\$19.00 - \$	FALSE	
4	MAKE UP   Ultra HD li	5 combinati	brown	aging		light				Cfrank28	\$19.00 - \$	TRUE	
5	MAKE UP   Ultra HD li	5 combinati	brown	acne		dark		over54		lovesperfi	\$19.00 - \$	TRUE	
6	MAKE UP   Ultra HD li	5 dry	brown	blackheads		light				marielena	\$19.00 - \$	TRUE	
7	MAKE UP   Ultra HD li	4 combinati	acne		fair					RedHairGr	\$19.00 - \$	TRUE	
8	MAKE UP   Ultra HD li	5 normal	blue	redness		light				annbrie	\$19.00 - \$	TRUE	
9	MAKE UP   Ultra HD li	4 dry	green	aging		light				abqmeg	\$19.00 - \$	TRUE	
10	MAKE UP   Ultra HD li	4 combinati	blue	aging		medium				Epeppers	\$19.00 - \$	TRUE	
11	MAKE UP   Ultra HD li	5 oily	green	acne		light				loveddf	\$19.00 - \$	TRUE	
12	MAKE UP   Ultra HD li	5 combinati	brown	acne		dark				curlyswirl	\$19.00 - \$	TRUE	
13	MAKE UP   Ultra HD li	3 combinati	brown	blackheads		medium				ItzaNailsN	\$19.00 - \$	TRUE	
14	MAKE UP   Ultra HD li	3 dry	green	acne		medium				angxs	\$19.00 - \$	FALSE	
15	MAKE UP   Ultra HD li	2 combinati	brown	acne		light				MitsiCR	\$19.00 - \$	TRUE	
16	MAKE UP   Ultra HD li	4 combinati	brown	darkCircles		dark				Tyeeeeee	\$19.00 - \$	TRUE	
17	MAKE UP   Ultra HD li	1 dry	brown	dullness		medium				LB3825	\$19.00 - \$	FALSE	
18	MAKE UP   Ultra HD li	5 dry	green	darkCircles		fair				pau1013	\$19.00 - \$	TRUE	
19	MAKE UP   Ultra HD li	4 dry	brown	aging		light				sugarbunr	\$19.00 - \$	TRUE	
20	MAKE UP   Ultra HD li	5 dry	brown	aging		dark				EvetteA	\$19.00 - \$	TRUE	
21	MAKE UP   Ultra HD li	1 combinati	blue	acne		fair				JaneEileer	\$19.00 - \$	FALSE	
22	MAKE UP   Ultra HD li	4 dry	blue	darkCircles		medium				Devs22	\$19.00 - \$	TRUE	

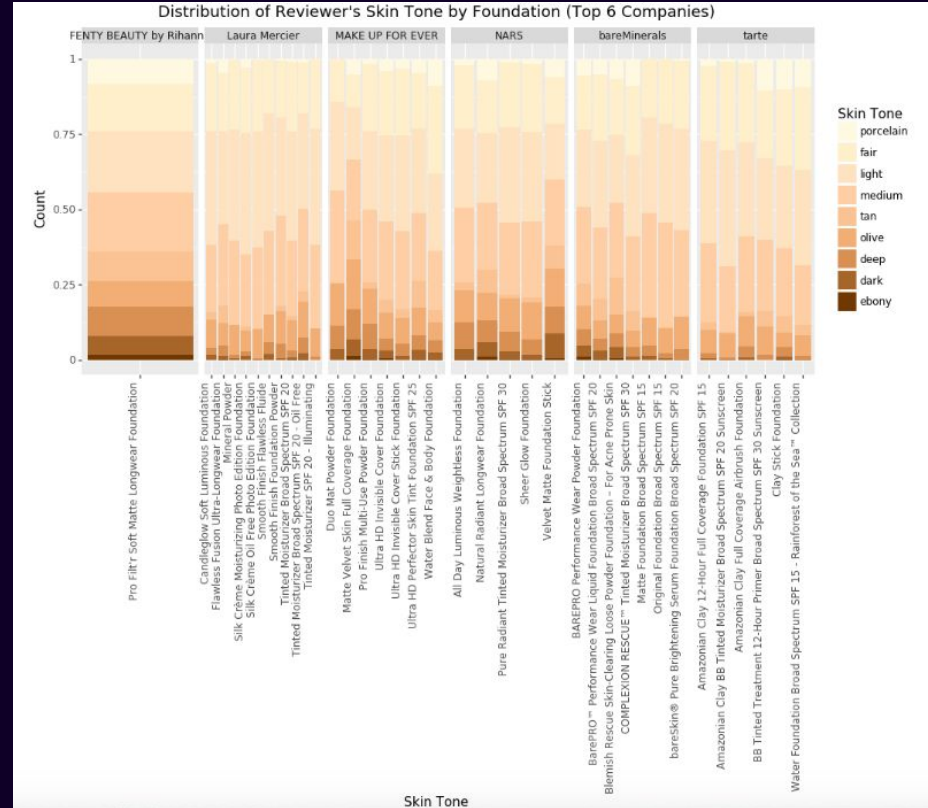
Accessed JSON for every foundation product available on Sephora.com.

Scraped product info, reviews and reviewer characteristics:  
274,750 rows  
x 27 features

# Data Exploration: Skin Concerns

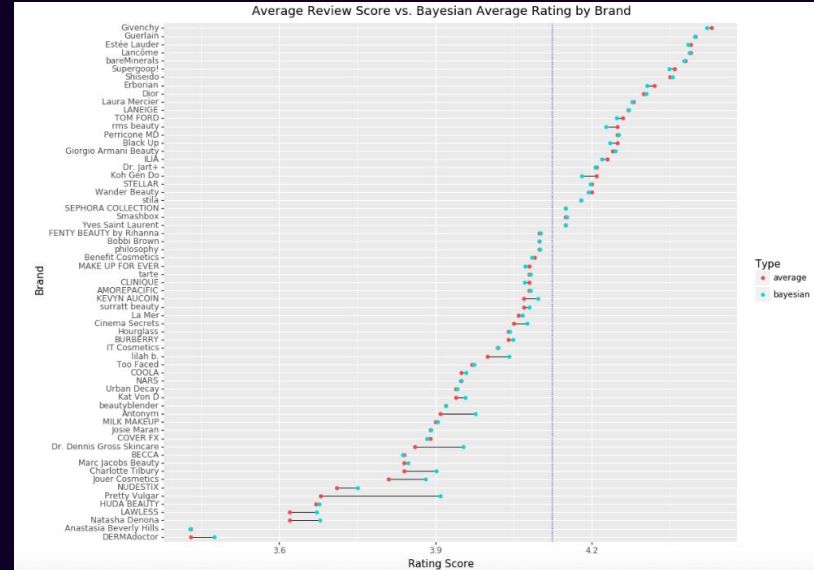
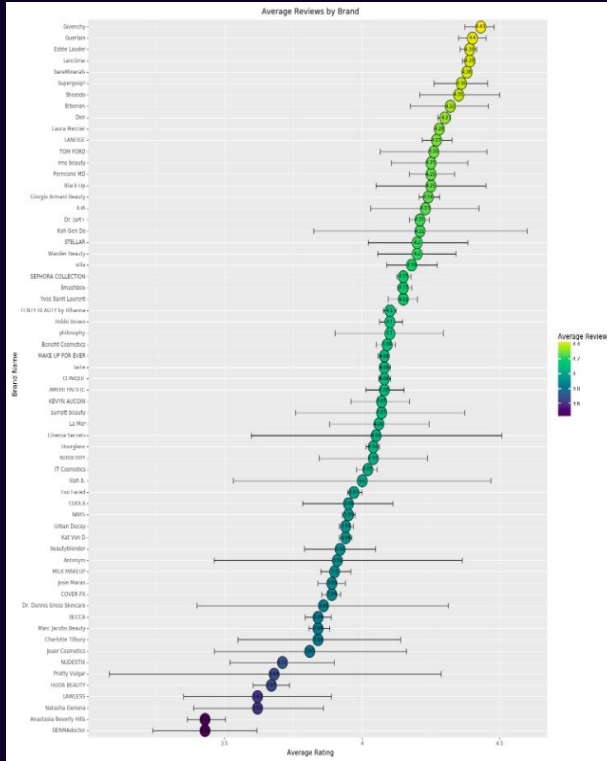


# Data Exploration: Skin Tone





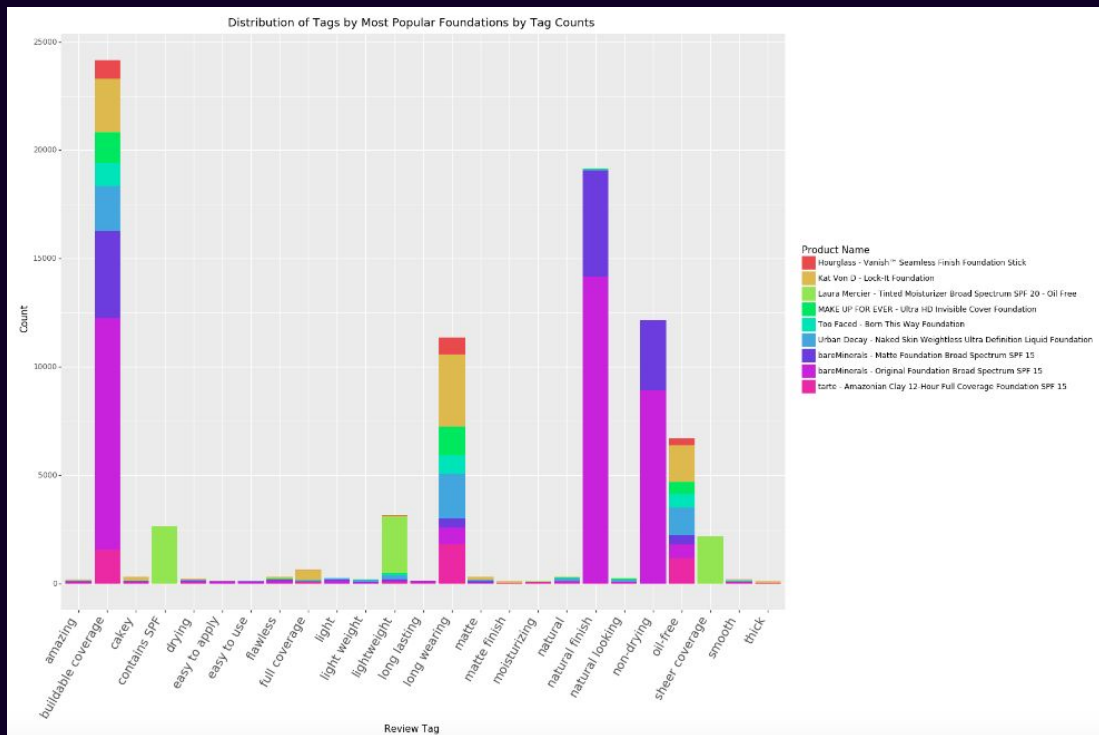
# Bayesian Average of Reviews



See how the Bayesian adjusted average moves to the global average?



# Analyzing the Tags Data



While we created word clouds for the text of reviews, we felt that the tags Bazaarvoice collects from the reviews gave a better representation because they give more information about the product. The word clouds will often give words like “awesome” and “amazing”, which are not very useful.

# Predicting User Recommendations

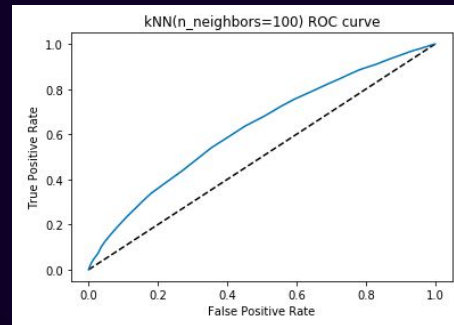
Algorithms

Logistic  
Regression

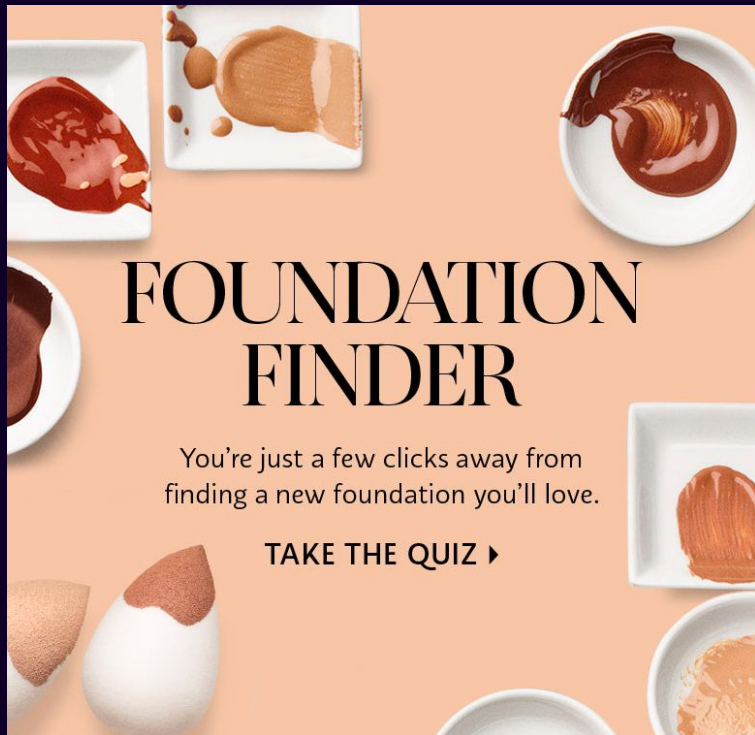
kNN

SVM

Results:  
So far, kNN has  
yielded the best  
results with a  
success rate of  
79.9%



# What's Next?



Create a new and better version of Sephora's foundation matching quiz by utilizing review information through a recommender system.



# THANKS!

Any questions?

