

Assignment 3 Option 2

Assignment 3

For some reason the code does not copy and paste correctly into this doc. I have absolutely zero idea why.

Hi there! How can I assist you today?

the columns are review_id author_id product_id rating is_recommended helpfulness total_feedback_count total_neg_feedback_count total_pos_feedback_count submission_date review_text review_title Pos Neu Neg But Compound ReviewTextChars and the file directory is "C:/Users/Alex/Desktop/reviews_with_vader.csv" can you Do longer reviews express more positive sentiments? o Plot a histogram of review length (in characters) and calculate the mean. What is considered a long review? What is considered a short review? o Calculate VADER scores on the review texts. o What are the average VADER scores for the one-star reviews, long versus short reviews? o Is the difference statistically significant? o What are the average VADER scores for the five-star reviews, long versus short reviews? o Is the difference statistically significant? o In other words, replicate the Demo and include your own write-up (short paragraphs are fine) to show you understand what the demo does.

ChatGPT

To address your questions, we'll perform several steps using the provided data and analysis techniques:

1. Histogram of Review Length:

- First, we'll load the data from the CSV file located at "C:/Users/Alex/Desktop/reviews_with_vader.csv".
- We'll calculate the length (number of characters) of each review text.
- Plot a histogram of the review lengths to visualize the distribution.
- Calculate the mean review length to determine what is considered a long versus a short review.

2. VADER Sentiment Analysis:

- Use the VADER (Valence Aware Dictionary and sEntiment Reasoner) tool to calculate sentiment scores (positive, neutral, negative) for each review text in the dataset.
- VADER scores range from -1 (most negative) to +1 (most positive), indicating the sentiment expressed in each review.

3. Analyzing VADER Scores:

- Segment the reviews based on their star ratings (one-star and five-star).
- Compare the average VADER scores between long and short reviews for one-star and five-star ratings.
- Use statistical tests (e.g., t-test) to determine if the differences in sentiment scores between long and short reviews are statistically significant.

Steps to Perform the Analysis:

1. Load and Explore the Data

- Read the CSV file into a DataFrame.
- Check the structure of the data and review the columns.

2. Review Length Analysis

- Calculate the length of each review text (number of characters).
- Plot a histogram of review lengths.
- Compute the mean review length to define what constitutes a long or short review (e.g., using the 75th percentile as a cutoff).

3. VADER Sentiment Analysis

- Apply VADER sentiment analysis to the review texts to obtain sentiment scores.
- Extract VADER scores (positive, neutral, negative) for each review.

4. Compare Sentiment Scores

- Segment reviews by star rating (one-star and five-star).
- Split reviews into long and short categories based on review length.
- Calculate the average VADER scores for one-star and five-star reviews in both long and short categories.

5. Statistical Testing

- Use statistical tests (e.g., t-test) to assess whether the differences in sentiment scores between long and short reviews are statistically significant for one-star and five-star ratings.

Replicating and Interpreting Results:

We will replicate these steps, analyze the findings, and provide a write-up summarizing the relationship between review length and sentiment expressed in one-star versus five-star reviews. This analysis will enable us to determine if longer reviews tend to express more positive sentiments and how review length impacts sentiment based on the star rating of the product.

Let's begin by loading the data and performing the necessary calculations and analyses.

can you write code in r to do that

ChatGPT

Certainly! Below is an example of how you can perform the analysis described using R. We'll use the **tidyverse** package for data manipulation and visualization, as well as the **tidytext** package for sentiment analysis using VADER.

First, make sure you have the necessary packages installed:

R

Copy code

"tidyverse"

"tidytext"

Now, let's proceed with the code:

R

Copy code

"C:/Users/Alex/Desktop/reviews_with_vader.csv"

"skyblue"

"black"

"Review Length (Characters)"

"Frequency"

100

0.75

"Long" "Short"

"afinn"

"word"

sum

"review_id"

1

5

Reviews:"

"Average VADER Scores for One-Star

"Average VADER Scores for Five-Star Reviews:"

"Statistical Test (One-Star Reviews):"

In this code:

- We first load the required libraries (**tidyverse** and **tidytext**).

- Then, we read the CSV file containing the review data.
- We calculate the length of each review text and plot a histogram of review lengths.
- Next, we perform sentiment analysis using VADER by extracting sentiment scores for each review.
- We compare the average VADER scores for one-star and five-star reviews based on review length categories (long and short).
- Finally, we conduct a statistical test (e.g., t-test) to determine if the differences in sentiment scores between long and short reviews are statistically significant.

Please adjust the code as needed based on your specific data structure and analysis requirements. This example provides a framework for performing the described analysis using R. Feel free to modify and expand upon it to suit your needs!

Install the textdata package to access this dataset.

ChatGPT

It looks like you mentioned installing the "textdata" package to access the dataset. However, in the provided code example, we actually used the "tidyverse" and "tidytext" packages for data manipulation, visualization, and text analysis with VADER sentiment scoring.

To perform the analysis outlined in the previous response, you'll primarily need the following packages:

1. **tidyverse**: A collection of R packages (including dplyr, ggplot2, tidyr, etc.) for data manipulation and visualization.
2. **tidytext**: A package that provides functions for text mining and analysis, including tokenization, sentiment analysis, and text visualization.

Here's how you can install and load these packages:

R

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```
"tidytext" "tidyverse"
```

After installing and loading these packages, you can proceed with the analysis steps provided earlier, which include reading the CSV file, calculating review lengths, conducting sentiment analysis with VADER, and comparing sentiment scores between different categories of reviews.

Feel free to reach out if you have any further questions or if there's anything else I can assist you with!

Error: The textdata package is required to download the AFINN lexicon. Install the textdata package to access this dataset.

ChatGPT

It appears that you're encountering an error related to the "textdata" package when trying to access the AFINN lexicon for sentiment analysis in R. The AFINN lexicon is used by the `get_sentiments("afinn")` function from the `tidytext` package to assign sentiment scores to words in the text data.

To resolve this issue and access the AFINN lexicon, you can follow these steps:

1. **Install the textdata Package:** The `textdata` package is a dependency required by the `tidytext` package to download external datasets such as the AFINN lexicon. You can install it using the following command:

R

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```
"textdata"
```

2. **Load the textdata Package:** After installing the `textdata` package, load it along with the other required packages (`tidyverse` and `tidytext`):

R

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3. **Re-run the Sentiment Analysis:** Once the `textdata` package is installed and loaded, you should be able to perform sentiment analysis using the AFINN lexicon without encountering the previous error. Here's a recap of the relevant code snippet for sentiment analysis:

R

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```
"afinn"      "word"
sum          "review_id"
```

This code snippet tokenizes the review texts, removes stop words, matches words with sentiment scores from the AFINN lexicon, and calculates a sentiment score for each review.

After ensuring that the `textdata` package is installed and loaded, you should be able to proceed with the sentiment analysis using VADER as described in the previous response.

Please give this approach a try, and let me know if you encounter any further issues or if there's anything else I can assist you with!

with the same directory and collums as before in r find if L’Occitane versus La Mer, which brand has more positive reviewer sentiments? o Plot word clouds and compare reviews of high ratings with those of low ratings. What are customers satisfied about? What are customers complaining about? o Do certain types of customers (e.g., skin type, eye color) provide higher ratings for these products?

ChatGPT

To analyze and compare reviewer sentiments for L’Occitane versus La Mer based on the provided dataset in R, we'll perform several steps including sentiment analysis, word cloud visualization, and exploring customer demographics in relation to product ratings. Here's a detailed approach to accomplish these tasks:

1. Load and Prepare the Data

R
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"C:/Users/Alex/Desktop/reviews_with_vader.csv"

2. Sentiment Analysis and Brand Comparison

R
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"word" "review_id" "L'Occitane" "La Mer" "afinn" sum

3. Word Cloud Visualization

R
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"wordcloud" 4 2 function 100 100 c 3 0.5 8 "Dark2" "Word Cloud - High-Rated Reviews" "Word Cloud - Low-Rated Reviews"

4. Exploring Customer Demographics and Ratings

R
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TRUE

Summary and Further Analysis

- **Brand Comparison:** The `brand_sentiments` dataframe will show the average sentiment scores for L'Occitane and La Mer. Higher sentiment scores indicate more positive reviewer sentiments towards a brand.
- **Word Clouds:** Word clouds generated for high-rated and low-rated reviews will highlight common words used by customers when expressing satisfaction or complaints about the products.
- **Customer Demographics:** Analyzing customer demographics (e.g., skin type, eye color) in relation to ratings can provide insights into whether certain customer segments tend to rate products higher or lower.

You can customize and expand upon these analyses based on specific columns and features available in your dataset. Adjust the column names (`SkinType`, `EyeColor`, etc.) and other parameters as needed to suit your dataset structure.

Feel free to adapt the provided code snippets and explore further analyses such as sentiment trend over time, topic modeling, or sentiment correlation with other variables. If you have specific questions or need further assistance, please let me know!

can you combine all of that info

ChatGPT

Certainly! Let's combine the analyses into a comprehensive script that performs sentiment analysis, compares brand sentiments, generates word clouds for high-rated and low-rated reviews, and explores customer demographics in relation to product ratings. This script will integrate all the steps and provide insights into reviewer sentiments and customer characteristics for L'Occitane and La Mer products.

Full Script for Comprehensive Analysis

R
Copy code

"C:/Users/Alex/Desktop/reviews_with_vader.csv"



Summary of Analysis Steps:

1. Data Loading and Sentiment Analysis:

- Load the dataset and perform sentiment analysis using VADER to calculate sentiment scores for each review.

2. Brand Sentiment Comparison:

- Compare average sentiment scores for L'Occitane and La Mer to determine which brand has more positive reviewer sentiments.

3. Word Cloud Visualization:

- Generate word clouds for high-rated and low-rated reviews to visualize common words associated with satisfaction and complaints.

4. Customer Demographics Analysis:

- Analyze customer demographics (e.g., skin type, eye color) in relation to product ratings to identify any patterns or preferences among different customer segments.

Feel free to run this script in your R environment after adjusting the file path (**file_path**) and column names (**SkinType**, **EyeColor**, etc.) based on your dataset structure. This comprehensive analysis integrates various steps to provide insights into reviewer sentiments, brand comparisons, and customer characteristics related to L'Occitane and La Mer products.

If you have any questions or need further assistance with the analysis, please let me know! I'm here to help.

Error in `group\_by()` : ! Must group by variables found in `.data`. Column `SkinType` is not found. Column `EyeColor` is not found.

ChatGPT

It appears that the columns **SkinType** and **EyeColor** (or similar demographic variables) are not present in your dataset, which caused the error during the customer demographics analysis. To address this issue, you'll need to identify the correct column names representing customer demographics in your dataset and update the analysis accordingly.

Here's how you can modify the customer demographics analysis based on the available columns in your dataset:

Updated Customer Demographics Analysis

1. **Identify Customer Demographic Variables:** Review the column names in your dataset to identify the variables that represent customer demographics such as skin type, eye color, age group, etc.
2. **Update the Analysis:** Replace the placeholder column names (**SkinType**, **EyeColor**) with the actual column names from your dataset that contain customer demographic information.

Example (assuming SkinType and EyeColor are actual column names):

R

Copy code

```
TRUE  
"Average Ratings by Customer Demographics:"
```

In the above code snippet, replace **SkinType** and **EyeColor** with the correct column names from your dataset that specify customer demographics. For example, if your dataset contains columns like **skin_type** and **eye_color**, you would modify the **group_by()** function accordingly:

R

Copy code

```
TRUE  
"Average Ratings by Customer  
Demographics:"
```

Make sure to adjust the column names (**skin_type**, **eye_color**, etc.) to match the specific variables in your dataset that describe customer demographics. Once you've updated the analysis

with the correct column names, you should be able to perform the customer demographics analysis successfully.

If you're unsure about the column names or encounter any issues, please provide more details about your dataset (e.g., a sample of column names) so that I can assist you further in adapting the analysis appropriately. Feel free to reach out with any questions or clarifications!

a. How many unique reviewers gave 1-, 2-, 3-, 4, or 5-stars to the La'Mer product? To the L'Occitane product? Did Gen AI give you the correct answer (verify with SQL, which you should have done previously already)?

Yes ChatGPT 4 gave me the correct answer and it was better than what I created so I ended up going back and changing my original work.

a. Does negativity bias exist in luxury products? If you need some pointers to start, consider replicating the class slides.

Yes, it does, it's extremely obvious to see this for one very simple thing, and this is that people care more about negative value vs positive value added. In luxury goods since they are such a high price people expect high value from the item but if the items get slanders with bad reviews, it could tank the entire brand, kind of what happened to GUCCI where bad reviews caused the company to be forced to sell in the late 1900s.

0. (Replication + Extension) Can you develop a new product with the help of Gen A.I.?

Yes, it most certainly can create a new product but it's kind of must be in a field that already has been worked on. For example, if you asked it to create a new kind of hammer it probably could come up with something but if you asked it to create a spaceship that would fly the speed of light to the sun, it would probably explode and not give anything back. Since it is trained on data if its never been done before there isn't any data for the AI to be trained on so it can only make a assumption of what will happen.

0. Your own exploration.

create a new type of hammer for me

ChatGPT

Certainly! Let's design a unique and innovative type of hammer:

Name: TurboStrike Hammer

Key Features:

- 1. Adjustable Impact Settings:** The TurboStrike Hammer comes with adjustable impact settings that allow users to control the force of each strike. Whether you need a light tap or a powerful blow, you can adjust the settings to suit different tasks and materials.
- 2. Built-in LED Light:** Integrated LED lights illuminate the striking area, providing enhanced visibility and precision in low-light conditions or tight spaces. This feature ensures accurate hammering without shadows or glare.

3. **Shock Absorption Technology:** The handle of the TurboStrike Hammer incorporates advanced shock absorption technology, reducing vibrations and minimizing strain on the user's hand and arm during prolonged use.
4. **Interchangeable Heads:** The hammer features interchangeable heads, allowing users to quickly switch between different hammering surfaces (e.g., flat, pointed, rubber) for versatility in various applications without needing multiple tools.
5. **Digital Impact Counter:** A digital impact counter records the number of hammer strikes, providing valuable data for project tracking and maintenance schedules. This feature is especially useful in professional settings.
6. **Integrated Nail Starter:** A built-in nail starter on the side of the hammer head helps position and hold nails in place, making it easier to start hammering accurately and efficiently.

Materials and Design:

The TurboStrike Hammer is crafted from lightweight yet durable materials, such as high-strength composite for the handle and a hardened steel alloy for the hammer head. The ergonomic design ensures optimal balance and comfort during use, reducing fatigue and improving control.

Target Audience:

This innovative hammer is ideal for both DIY enthusiasts and professional craftsmen who value efficiency, precision, and versatility in their tools. It's suitable for a wide range of applications, including woodworking, metalworking, construction, and home improvement projects.

Benefits:

- Increases productivity and accuracy with adjustable impact settings and LED lighting.
- Reduces user fatigue and strain with shock absorption technology and ergonomic design.
- Enhances versatility and convenience with interchangeable heads and integrated features like the nail starter and digital impact counter.

The TurboStrike Hammer represents a leap forward in hammer design, combining cutting-edge technology with practical features to empower users and streamline their work processes.