# Reliance Financial

# Review Text Analysis



10th Jan 2022 T.Yamada

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## Purpose

In this study, I used review texts from various web services to capture customer interests and sentiments throughout the year and for each competitor using NLP methodology, Natural Language Processing which I learned at Hult Busines School. This study is utterly personal curiosity oriented; therefore, the data is limited only from open-source data, and insights are also limited.

## Premise

For analysis, I used customer review text, user account name, and posted date from Google, Zillow, and Yelp. Also, to compare the findings between competitors, I collected Better.com and Jvmlending data from the same data source. Collecting review data were processed by using a web scraping service which is implemented in google chrome. The service creates excel/ CSV datasheet by programming a scraping sequence for each web service.

I aggregated all information in one excel sheet for running R analysis, which has 2,756 rows / 5 col. The col has consisted of site(website), company(competitors), date, and text(review). I erased wholly duplicated reviews and usernames over the web service to keep the data sheet reliable. Google and Zillow contain blank review text, 14 and 436 respectively, but blank review erased them in the NLP process for the same reason.

The word "lucky" showed up very often through the analyzing process, and it sometimes prevented me from finding the points; therefore, in some analyses, I excluded this word on purpose.
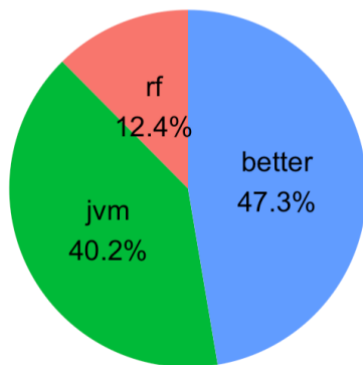
## Point

1.  Reliance Financials' review number is the lowest of the three competitors.
2.  Reliance Financial clients prefer using google. Zillow is the least.
3.  Reliance Financial review relies on google and yelp.
4.  Yelp got the wordiest reviews within other web services.
5.  "process" is the most critical factor for the mortgage business.
6.  Enhancing human resources will be essential. Business heavily relies on "lucky."
7.  Better->Mortgage, Jvm->Lending business
8.  In 2019, the market still not matured
9.  Event in 2012
10. 75% of the review have positive sentiment in the market.
11. Reliance Financial has the highest positive ratio.
12. Yelp reviews might contain important business insights.
13. The event in 2012 should be studied.
14. Reliance Financial has been keeping about 80% positive word ratio.
15. Reliance Financial reviews have a particular connection with "surprise" sentiment.
16. Yelp review may not be biased.
17. Reliance Financial is successful with its primary business, "refinance." And particularly organized "team" work and "easy" process is evaluated clients especially like its fast response for questions.

Analysis-Dataset

Reviews for all companies



Review per Company
(2740 reviews)



Review Overview Competitor

| Website | Reviews |
|---------|---------|
| Google | 980 |
| Yelp | 703 |
| Zillow | 1057 |

*rf: Reliance Financial

**1.    Review per Company: Reliance Financials' review number is the lowest of the three competitors.**

The created data set contains 2286 individual reviews from Google, Zillow, and Yelp. Better and Jvm has 47% and 40% share, and Reliance Financial has 12% review share. It shows Better, and JVM is the more mature player in the mortgage rocker market.
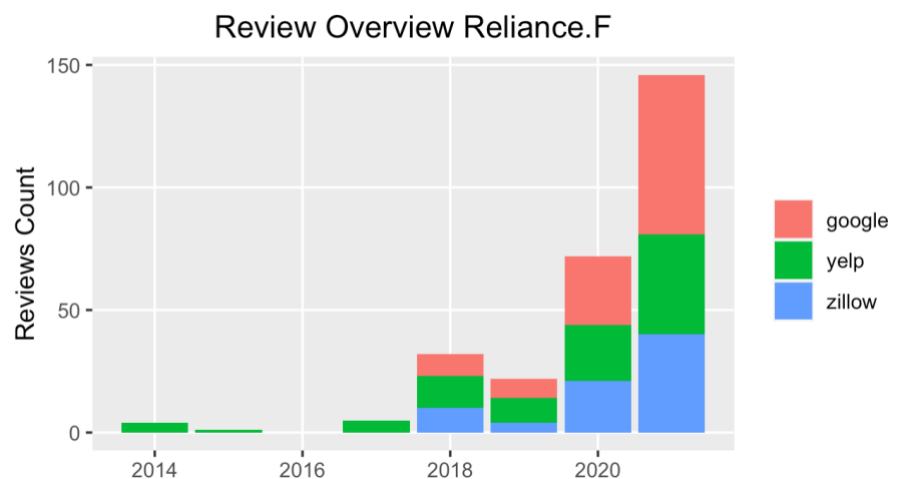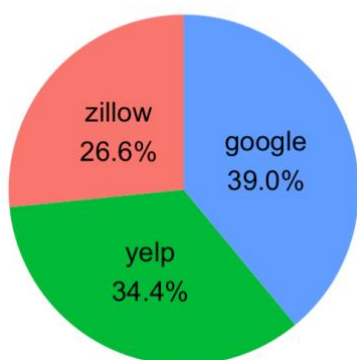
**2.    Review Overview Competitor: Reliance Financial clients prefer using google. Zillow is the least.**

People started using Yelp in the first several years; however, from 2015, Zillow started increasing the review number. 2018 to 2022, Google is the most common review interface clients use.
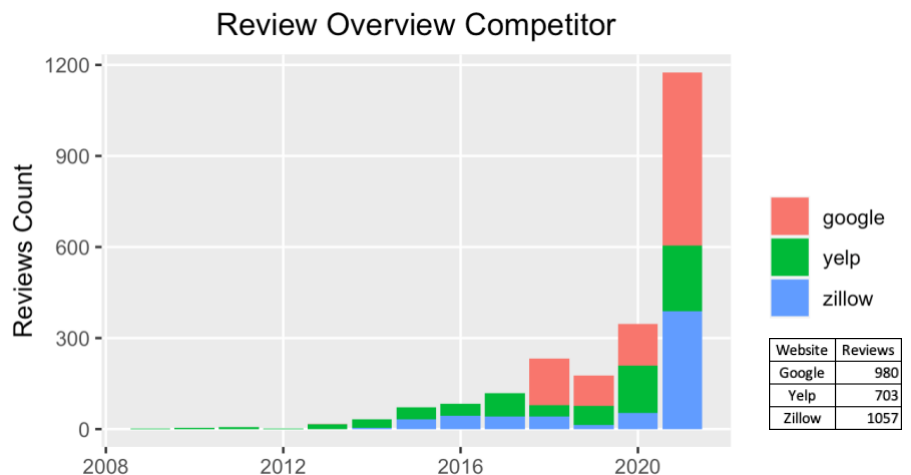
Reviews for Reliance Financial



Review per Website
(total:282 reviews)



Review Overview Reliance.F

**3.    Review per Website: & Review Overview: Reliance. F: Reliance Financial review relies on google and yelp.**

Most Reliance Financial clients use Google and Yelp to share reviews, and Zillow is following.

The review count bar graph shows, Reliance Financial started using Yelp as a client communication tool in 2014. In 2016, the review sunk to zero once; however, it raised again, and in 2021, the review count marked around 150. The review number is still far less than other competitors, as shown in the above "Review per Company" graph.

Analysis-Word Count

Word count for competitor

| company | site | num_words |
|---------|------|-----------|
| better | yelp | 38815 |
| jvm | yelp | 34419 |
| better | google | 32008 |
| jvm | google | 24909 |
| better | zillow | 14214 |
| rf | yelp | 12360 |
| rf | google | 11887 |
| jvm | zillow | 11398 |
| rf | zillow | 5726 |


Frequent Word Among Competitor
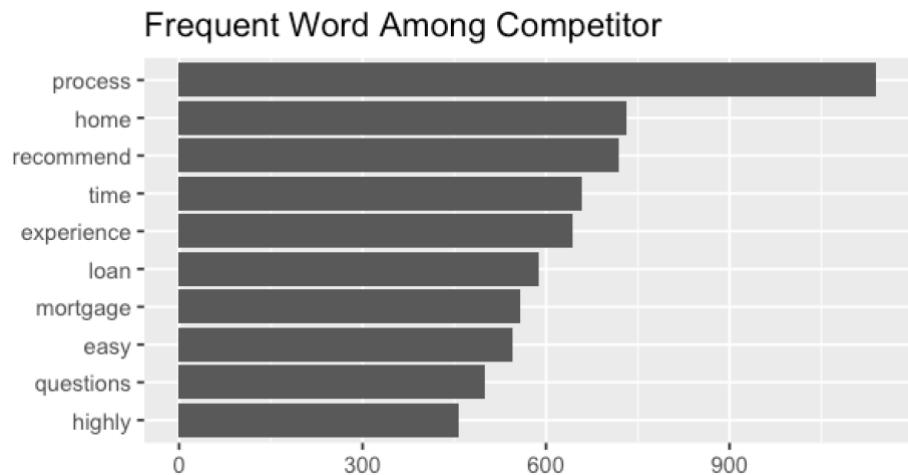
**4.    Word count for competitor: Yelp got the wordiest reviews within other web services.**

This list shows how many words are used for reviews by each client on which website. Yelp is the second most revied website for all competitors; however, if we see the word count, yelp got more words than Google. This means a client who uploads review in yelp write longer and precise sentences compared with Google.

**5.    Fewquent Word Among Competitor: "process" is the most critical factor for the mortgage business.**

The most frequently used word is "process," which seems clients in the mortgage industry mentioned and interested in its business "process." I guessed "ratio," "handling," "charge," or "interest" would be mentioned a lot in the review; however, a word like "experience, "time," and "questions" are heavily used. Considering most of all reviews, close to 99% of reviews were rated as five stars, satisfied clients are looking at its short time process, and they tend to think it comes from matured experience, furthermore looking at the response time for the question.

**6.    Frequent Word Reliance.F: Enhancing human resources will be essential. Business heavily relies on "lucky."**

Most of the frequent words are the same as the competitors; however, "lucky" comes first. Considering Lucky is the president of this company, the client has a very positive impression of his service. On the other hand, Reliance Financial heavily relies on president Luck's performance. If aiming for further growth, the hirelying skilled employee or education for the existing resource will be necessary.


Frequent Word Reliance.F
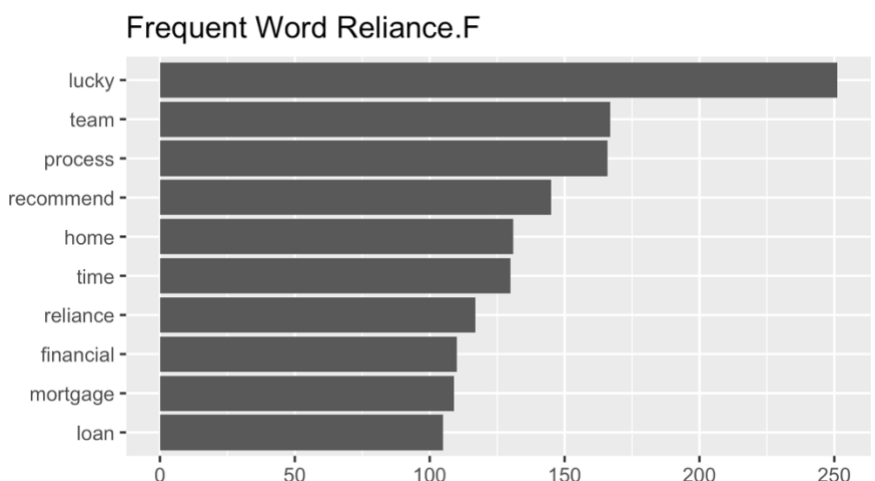
## Popular Words by Company
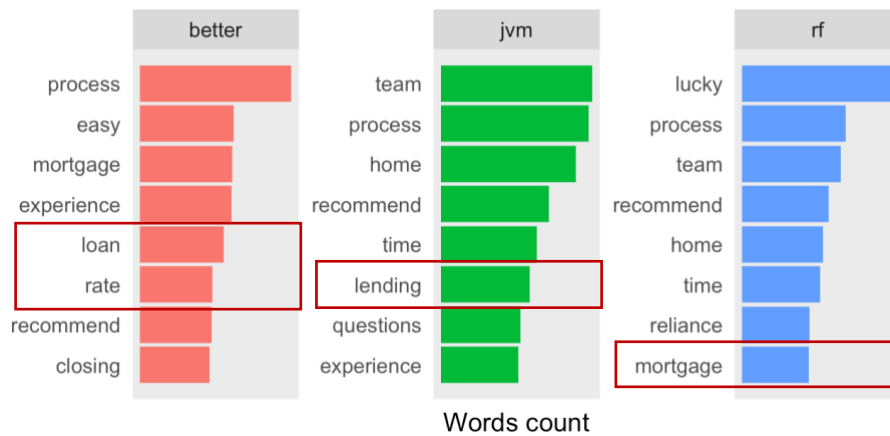


### 7. Popular Words by Company: Better->Mortgage, Jvm->Lending business

All competitors commonly have the word "process" in 1st, or 2nd place, except each company, has unique distinct words in a frequency lineup. Better have the "loan" and" rate" as frequent words, which indicates Better is providing mortgage service with better loan and interest ratio. If Reliance Financial benchmarks their business, Reliance Financial should start studying from knowing this point. Jvm seems to have strongness for lending business more than other companies. This tells their business model focuses on lending services, unlike Reliance Financial. Reliance Financial got the word "mortgage" as a frequent word that shows business color. However, simultaneously, the words "lucky" and "reliance" comes top, meaning clients buy service because of president Lucky's presence and company name. This is not bad but still lets us feel the company is right on the way of growth.

TF_IDF is a method of NLP analysis that identifies the distinct word which is used many times in fewer reviews.
These words were not particularly used a lot. However, few clients used the word persistent in specific reviews. Therefore it is meaningful to dig out hidden keywords.
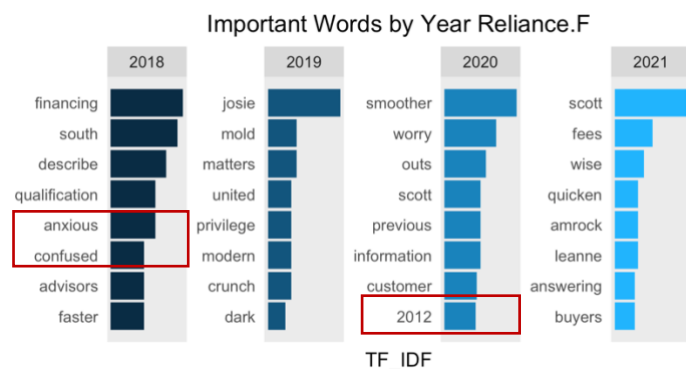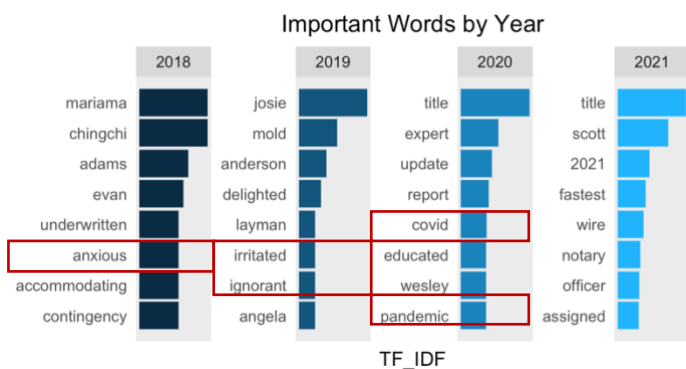


### 8. Important Woeds by Year: In 2019, market still not matured.

It shows different words for all competitors through the years. Through the years, we can see names. This means the client mentioned their accountant. In 2018-2019, we saw some negative words in lists "irritated" ignorant," indicating some unsuccessful businesses. 2020 people said about covid.



### 9. Imprtant Woeds by Year Reliance Financial: Event in 2012

In 2018, like as above, some clients expressed negative expressions seems the business was not much stable. In 2020, while other competitors' clients mentioned covid, some specific reviews mentioned "2012." Need to know what happened in 2012 for Reliance Financial or market if it provides some insight for business or not.

Analysis- Sentiment

NRC analysis is one of the sentiment analysis methods. It allows us to relate the sentiment words like "positive," "trust," or "anticipation" to the word which is used in reviews. For example, if the client uses the word "accurate" in the review, NRC associates "accurate" with the sentiment word "trust." NRC has ten sentiment words.
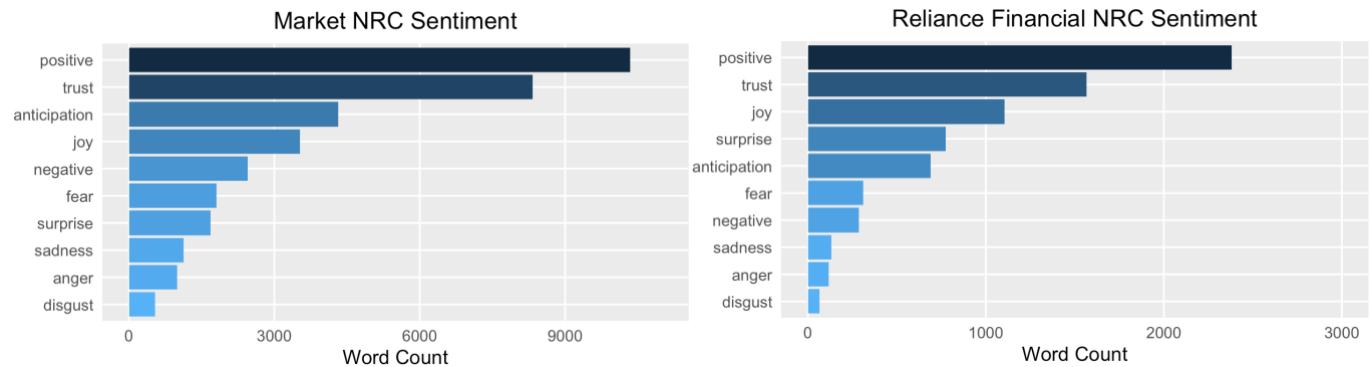


**10. Market NRC Sentiment: 75% of the review have positive sentiment in the market.**

anticipation, and joy come next. Negative words also exist however they are less than 75% of total words. It can indicate that all competitors performed very well, and it is challenging to make differentiation and bad feeling customers do not upload a review.

Reliance Financial NRC Sentiment: shows quite an identical figure.

Bing Analysis is one of the NLP analysis methods to classify each word into a binary category, negative and positive. For example, "accurate" will be counted as a positive category word. Accumulating positive and negative counts, we could see the reviewer has overall positive or negative feelings.
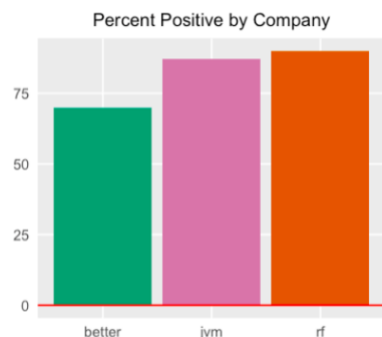


**11. Percent Positive by Company: Reliance Financial has the highest positive ratio.**

The graph shows Better has the less positive score and Reliance Financial has the highest positive score. Since Better has about four times more reviews than Reliance Financial does, we can not say Reliance Financial client reviews are more positive than Better. However, Jvm has almost the same number of reviews, and its positive score is higher than Better, so Jvm business seems to be less stressful for clients, but it should be noted that Better seems to focus on loan business Jvm does lending service. Their business core is not the same.    *p5 Popular Words by Company:

**12. Percent Positive by Website: Yelp reviews might contain important business insights.**

Zillow and google show about 80% positive for the total words in reviews. However, yelp shows the lowest, around 70% positive. It simply indicates that yelp has a relatively more negative word ratio, and people judge the service slightly severer. If the provider studies the failure, yelp will be the first to check.

Percent Positive Over Time



Percent Positive Over Time Reliance.F
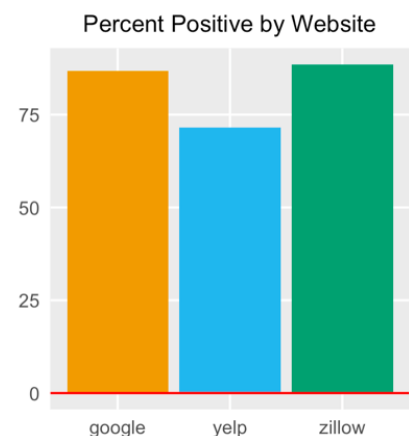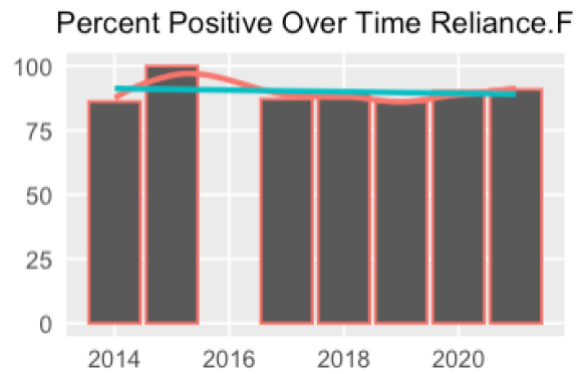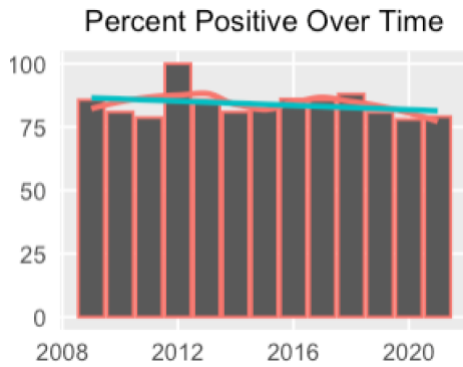
**13.  Percent Positive Over Time: The event in 2012 should be studied.**

It represents the positive ratio shift of the market, including all competitors. The word sentiment is decreasing moderately. We can see a positive peak in 2012. It is mentioned in P5 "Important Words by Year Reliance. F:" part. It seems to be the event that people mentioned in 2020 will be about positive things. The event could make some successful business things in 2020; therefore, it is worth checking.

**14.  Percent Positive Over Time Reliance.F: Reliance Financial has been keeping about 80% positive word ratio.**

The positive ratio for Reliance Financial keeps its level over time. There is a blank in 2016, but no review was uploaded to the target websites.

**Relationship Between Mood and Company**
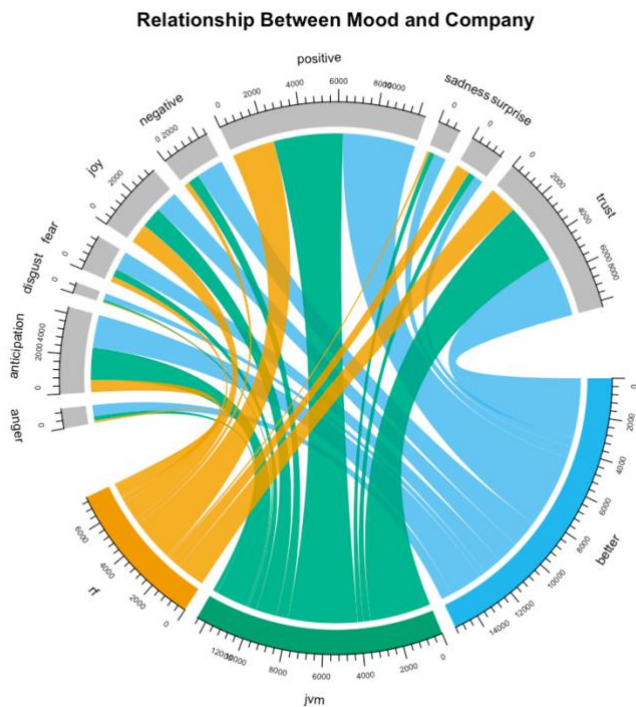


**15.** **Relationship Between Mood and Company: Reliance Financial reviews have a particular connection with "surprise" sentiment.**

This shows the words and sentiment relationship for each company. The sentiment and word relations are almost similar, but Reliance Financial shows the highest surprise sentiment. Clients will be positively surprised for some reason. Surprising means the client got unexpected value-form Reliance Financial. If we could clarify what makes people surprised, it would be a hint to get new clients.

**Relationship Between Mood and Website**
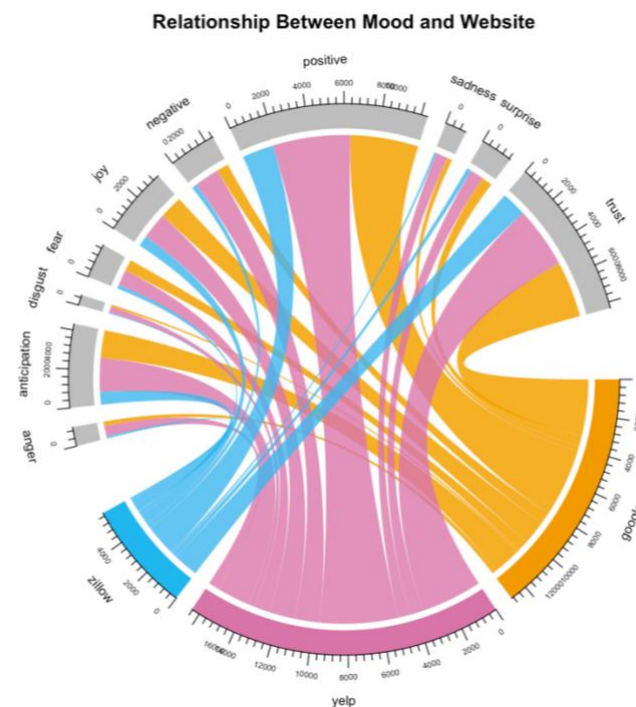


**16.** **Relationship Between Mood and Website: Yelp review may not be biased.**

Google and Zillow contain words mostly connected to the positive sentiments; however, yelp word sentiment is well distributed. It shows relatively more negative sentiment words; therefore, this supports P6 "Percent Positive by Website:" that the client is writing very honestly here.

*note:

In the "Relationship Between Mood and Website:" graph, Zillow's word count is shown less than google and yelp despite Zillow having the biggest review size. This is because Zillow contains 436 blank reviews, and also the NRC analysis could label the sentiment to only 1272 distinct words. It is 22% of the total word 5769; therefore, there are a good amount of words that we can not label the sentiment.

Reviews Found In Lexicons

| lexicon | lex_match_words | words_in_reviews | match_ratio |
|---------|-----------------|------------------|-------------|
| AFINN | 683 | 5769 | 0.1183914 |
| bing | 1043 | 5769 | 0.1807939 |
| nrc | 1272 | 5769 | 0.2204888 |

| Website | Reviews |
|---------|---------|
| Google | 980 |
| Yelp | 703 |
| Zillow | 1057 |

8

Pairwise Correlation Reliance.F

**17. Pairwise Collection Reliance.F: Reliance Financial is successful with its primary business, "refinance." And particularly organized "team" work and "easy" process is evaluated clients especially like its fast response for questions.**

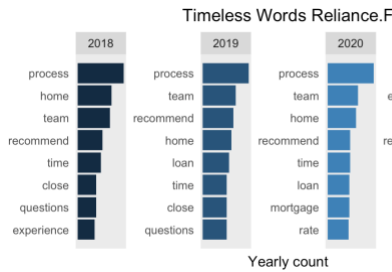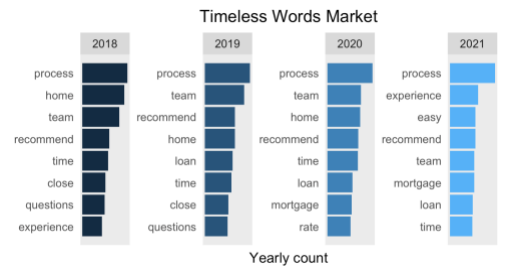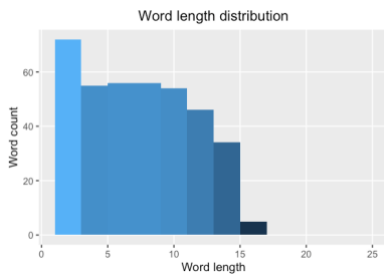I picked up four curious keywords and looked at seven strongly correlated words for each keyword.

Experience: Clients seem to be satisfied with the "refinancing" experience. This means Reliance Financial's primary business is successful.

Process: It seems clients think A nicely organized "team does reliance Financial business," and its process is "easy." If the business is done by a well-organized team, increasing the skilled member will be crucial for growing the business.

Recommend: recommend is correlated mostly with "highly." Nothing to mention about it. "process" is placing a higher position of correlation; therefore, keeping the quality of the business process while growing the company size will be a key to staying customer satisfied.

Time: "questions" and "answer" show a higher correlation with the word "time." Clients are very satisfied with a quick answer to questions. The immediate response to the customer's questions will make the customer feel safe, and this will be a key to making a difference between competitors.

## Other Visual Analysis:


Word length distribution




Timeless Words Market


Timeless Words Reliance.F


Important Words using TF-IDF by Company Level
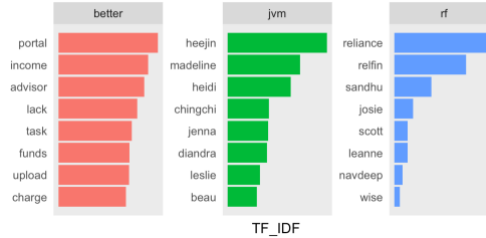

Relationship Between Website and Year


Market NRC Sentiment


Reliance Financial NRC Sentiment


Market Bing Sentiment


Reliance Financial Bing Sentiment


Polarity by Company


Percent Positive by Company


Polarity by Website


Percent Positive by Website


Porality Over Time


Percent Positive Over Time


Porality Over Time Reliance.F


Percent Positive Over Time Reliance.F


Relationship Between Mood and Year


Relationship Between Mood and Company


Relationship Between Mood and Website


Sentiment Positive by Year-Quarter


NRC Sentiment Company Analysis

## NRC Sentiment Website Analysis



## Pairwise Count



## Pairwise Count: Reliance Financial



## Pairwise Correlation



## Pairwise Correlation: Reliance Financial