CUSTOMER RETENTION AND SENTIMENT FORECASTING. (AMAZON REVIEW DATA)
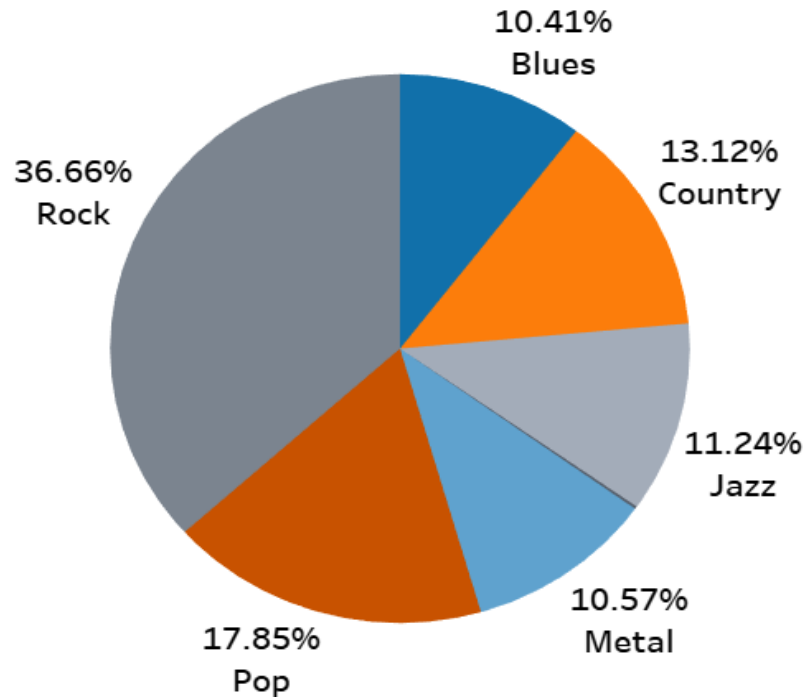
By: Ganesh Chandu,

Shruti Sharma,

Soham Kulkarni

BUSINESS PERSPECTIVE:

- To Find Customer Retention Through Reviews Of Data

- To Predict How Frequently A Particular Category Of Customer Would Shop In Future.

- Customer Retention can be achieved by identifying :

  → Products that have more customer frequency.

  → Brands that are generating more sales.

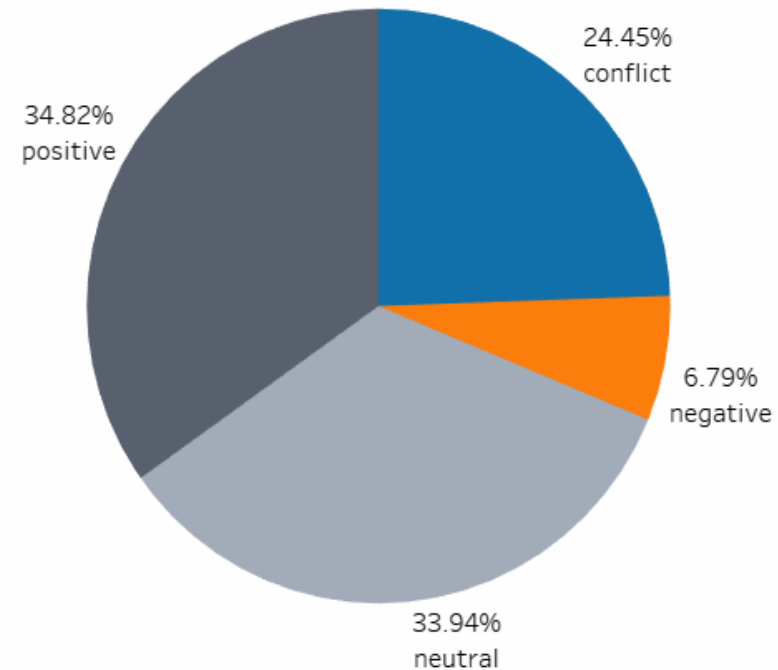# OVERVIEW OF CD'S AND VINYL GENRES

Proportion of genres.

- 10.41% Blues
- 13.12% Country
- 11.24% Jazz
- 10.57% Metal
- 17.85% Pop
- 36.66% Rock

Proportion of sentiments.

- 24.45% conflict
- 6.79% negative
- 33.94% neutral
- 34.82% positive

Maximum proportion:
- Rock

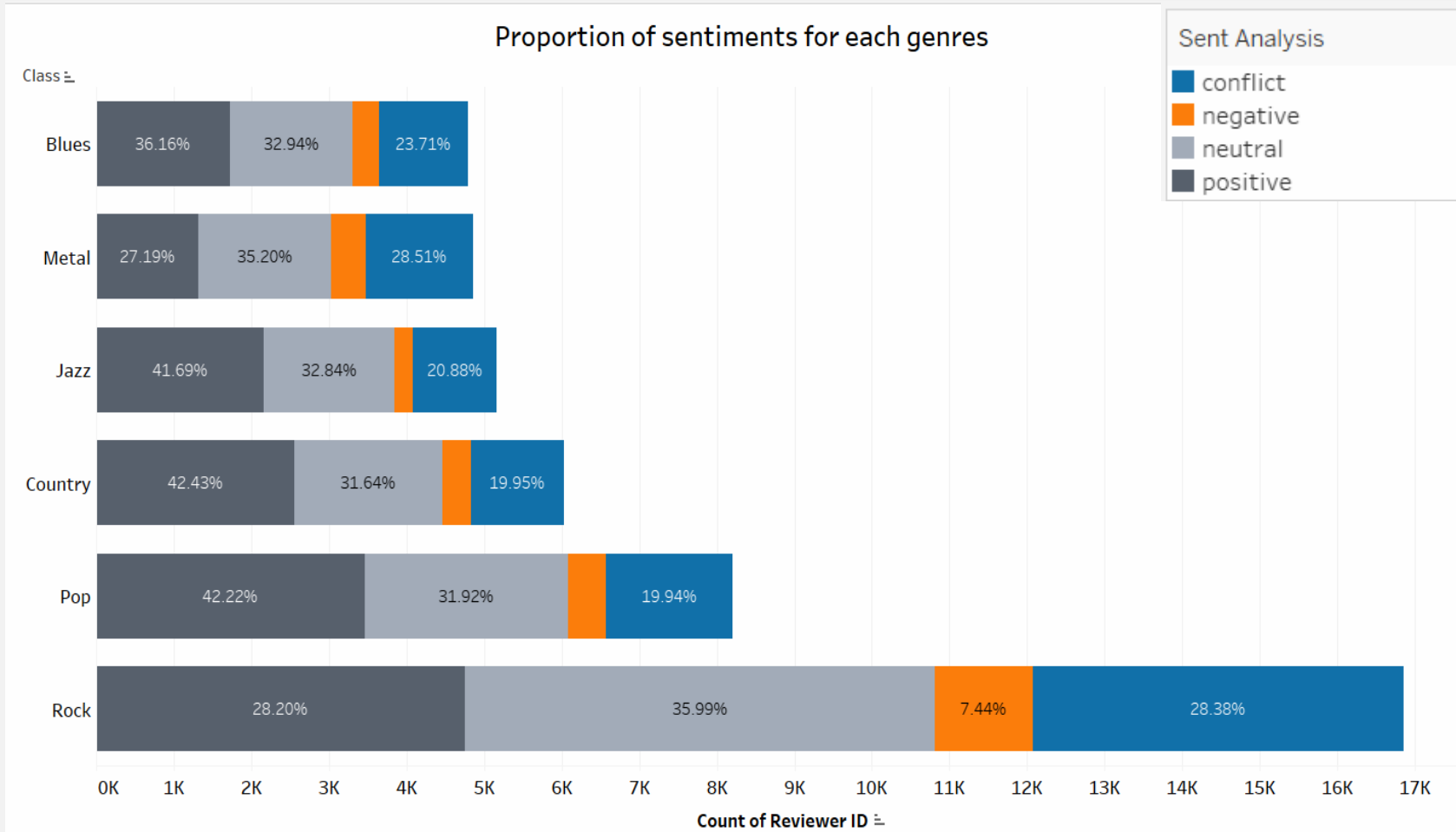**Least proportion :**
- Blues

Maximum proportion :
- Positive
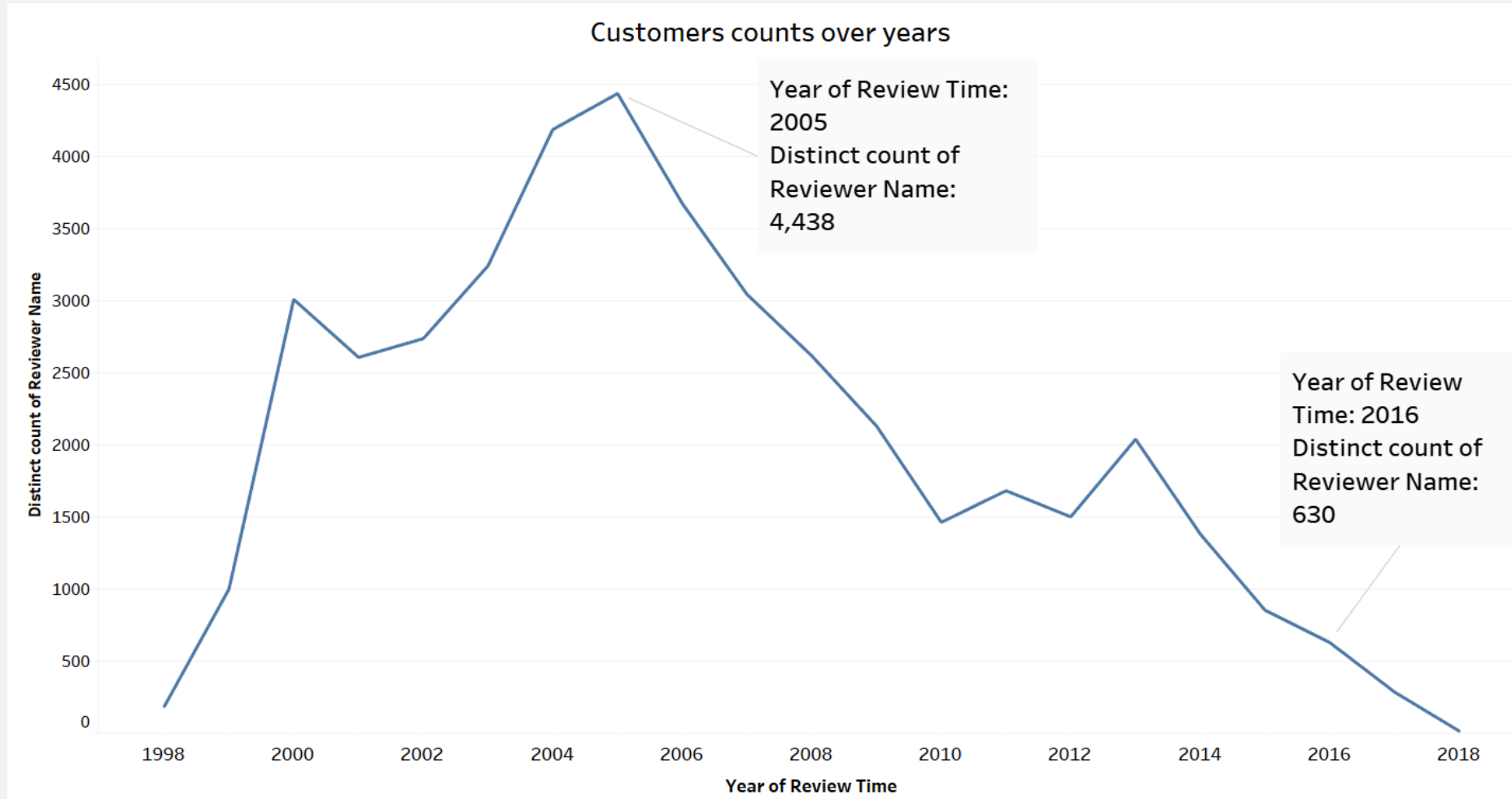
Least proportion :
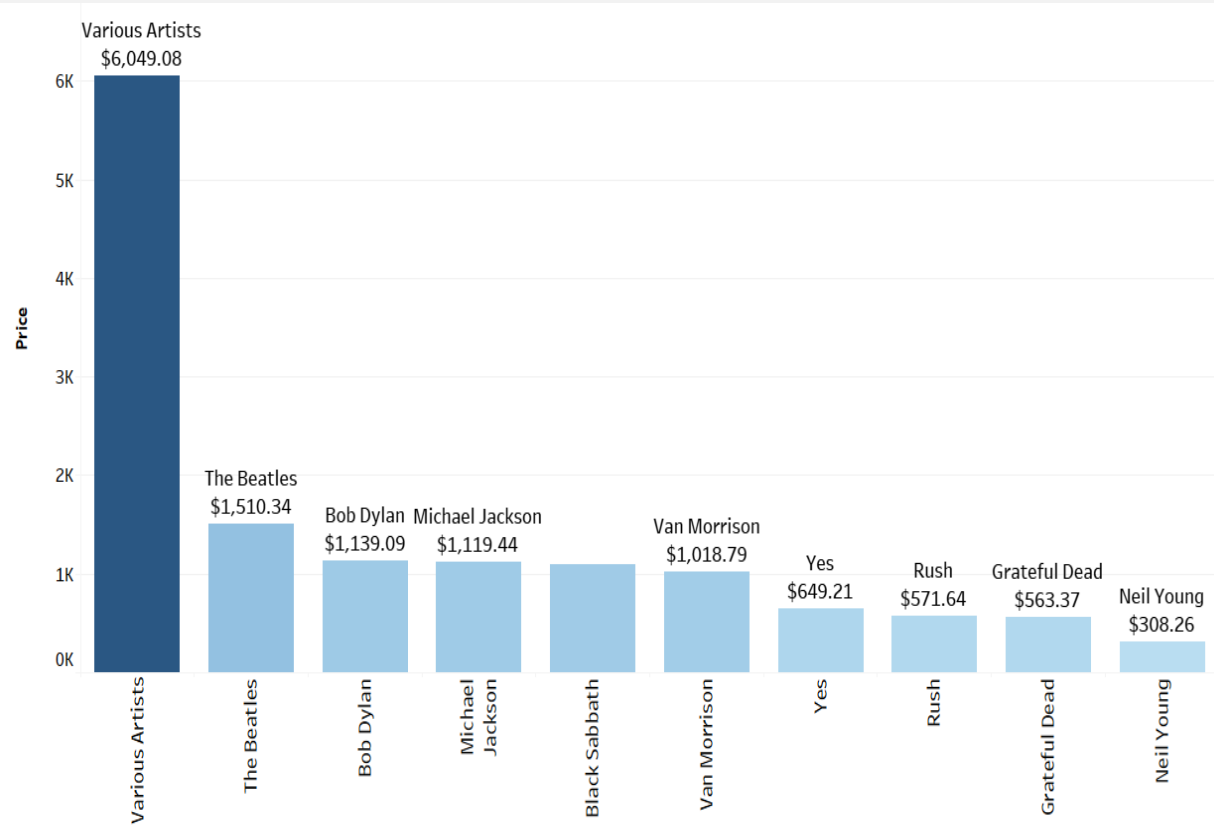- Negative

PROPORTION OF SENTIMENTS FOR EACH GENRES

- More **Neutral** Reviews
  → Metal, Rock

- More **Positive** Reviews
  → Blues, Jazz, Country & Pop

CUSTOMER RETENTION OVER THE YEARS

Customers counts over years

Year of Review Time: 2005
Distinct count of Reviewer Name: 4,438

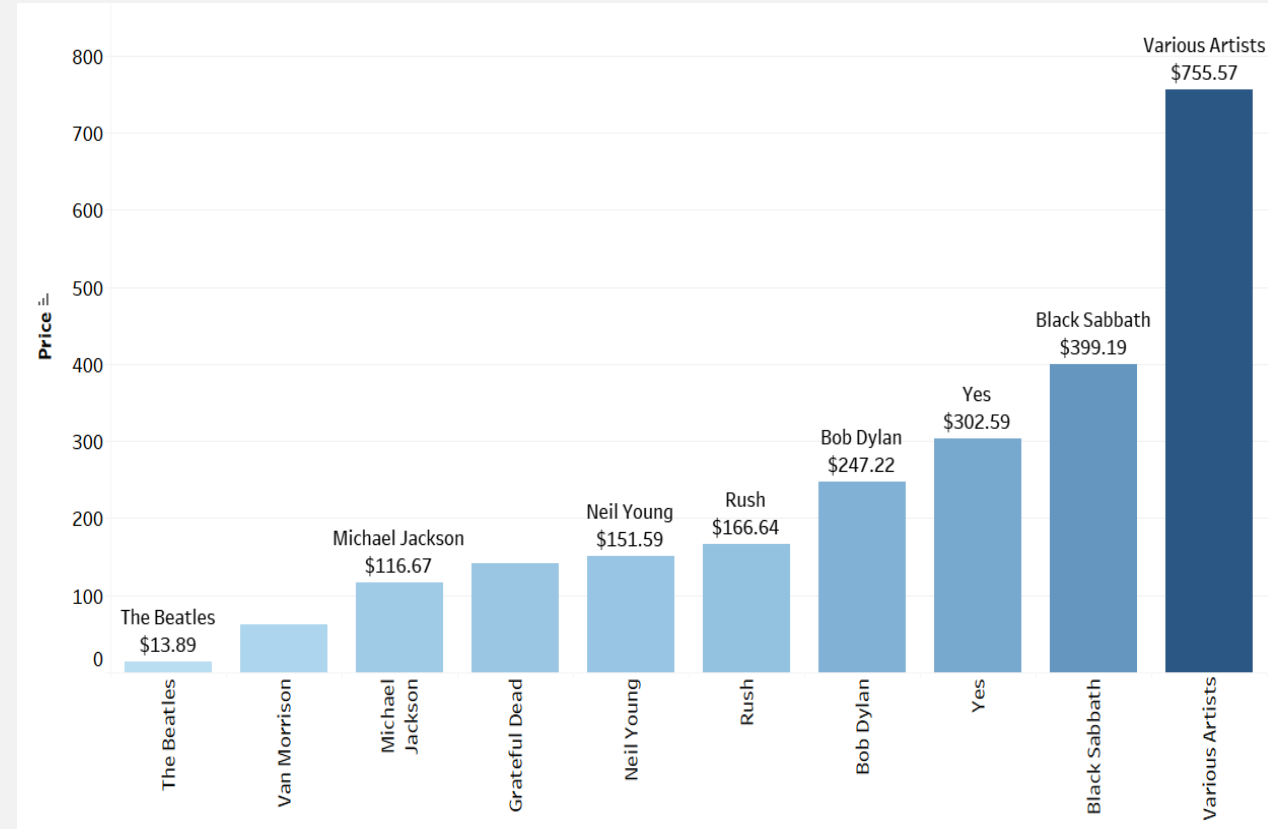Year of Review Time: 2016
Distinct count of Reviewer Name: 630

- There is a decline in number of customers every year since 2005, even though there is a slight rise in 2011 and 2013.
- Digital platforms and Boom of internet are one of the reasons for the decline in customers.
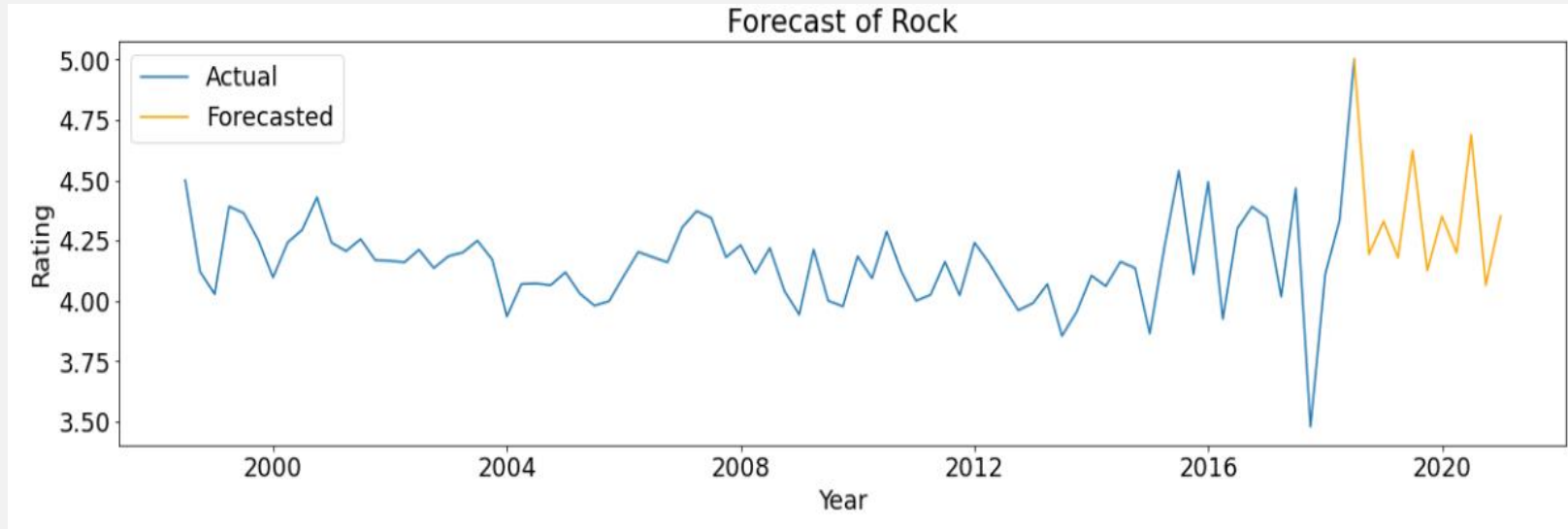
TOP 10 BRANDS WITH POSITIVE REVIEWS
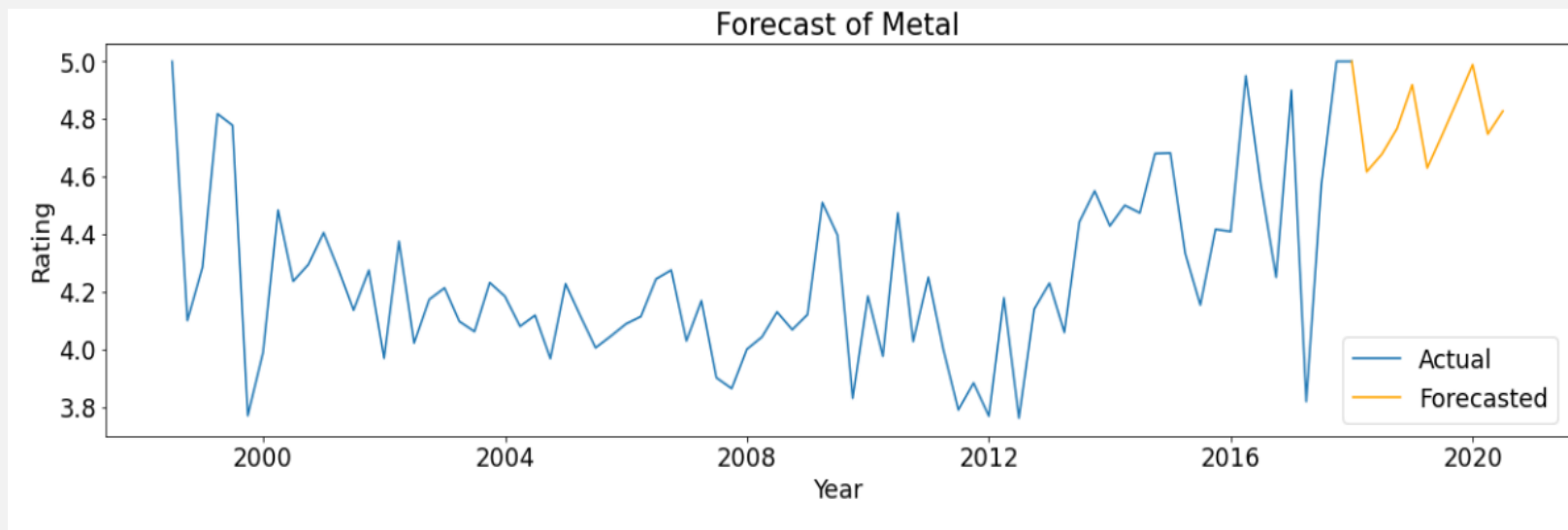
TOP 10 BRANDS WITH NEGATIVE REVIEWS

- Various artists and The Beatles are generating more revenues among Brands.
- Van Morrison and Grateful Dead are the Brands with less revenues and also negative reviews.
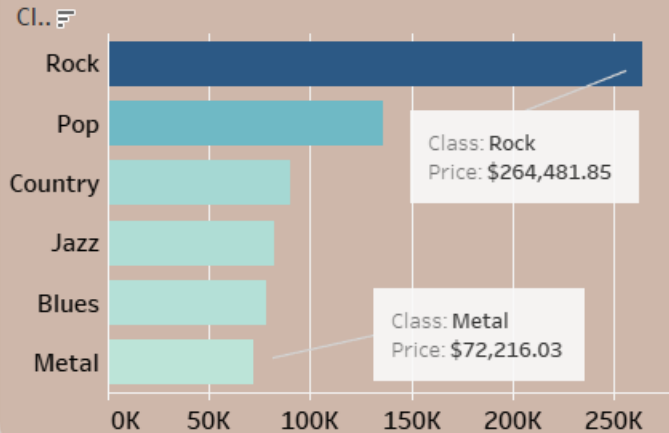
PREDICTIONS ON RATINGS.

Forecast of Rock

Forecast of Metal

Ratings for upcoming 10 quarters for Metal and Rock genre -

- For Metal genre: Ratings→ 4.6 to 4.9 .
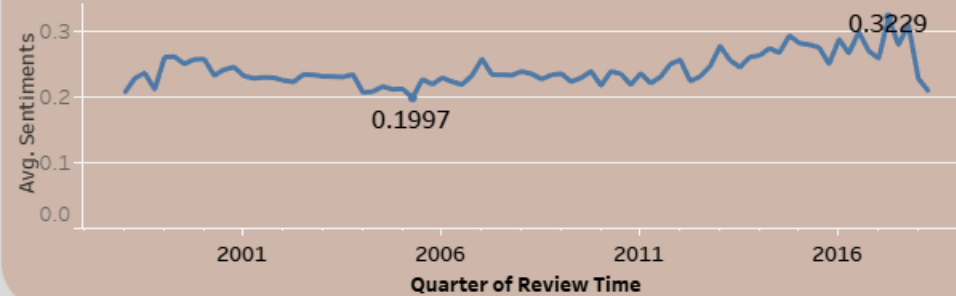
- For Rock genre: Ratings → 4.1 to 5 .

CD'S AND VINYL DASHBOARD :-
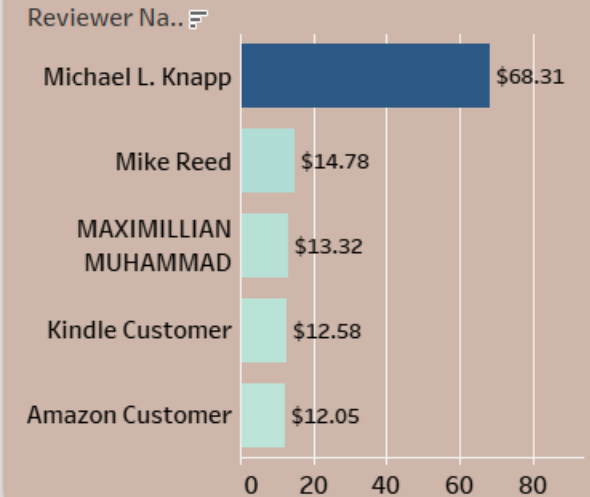https://public.tableau.com/views/final1_16782542855150/Dashboard2?:language=en-US&:display_count=n&:origin=viz_share_link

OVERVIEW OF MAGAZINE SUBSCRIPTIONS GENRES

Proportion of genres.

- Science & Technology 12.38%
- Entertainment 23.12%
- Fashion 15.81%
- Lifestyle 27.98%
- Professional 26.63%

Proportion of sentiments.

- 12.02% conflict
- 10.30% negative
- 17.91% neutral
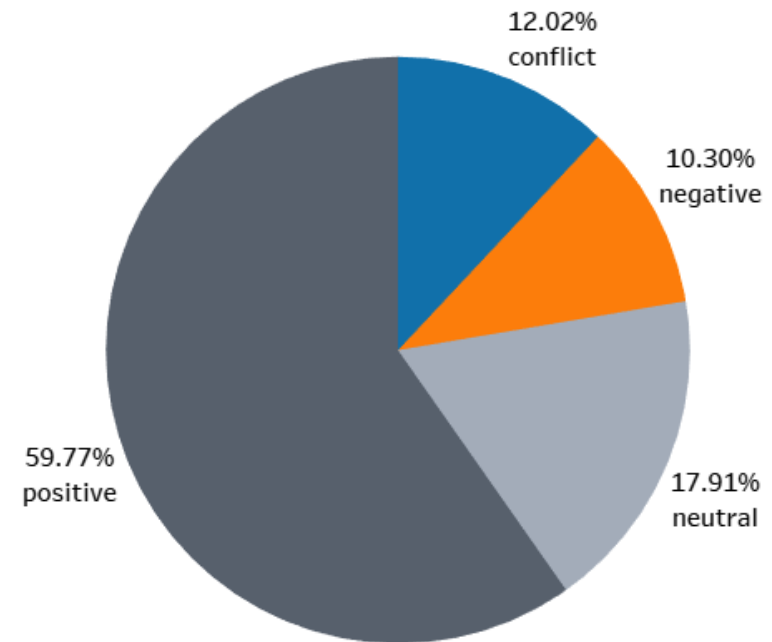- 59.77% positive
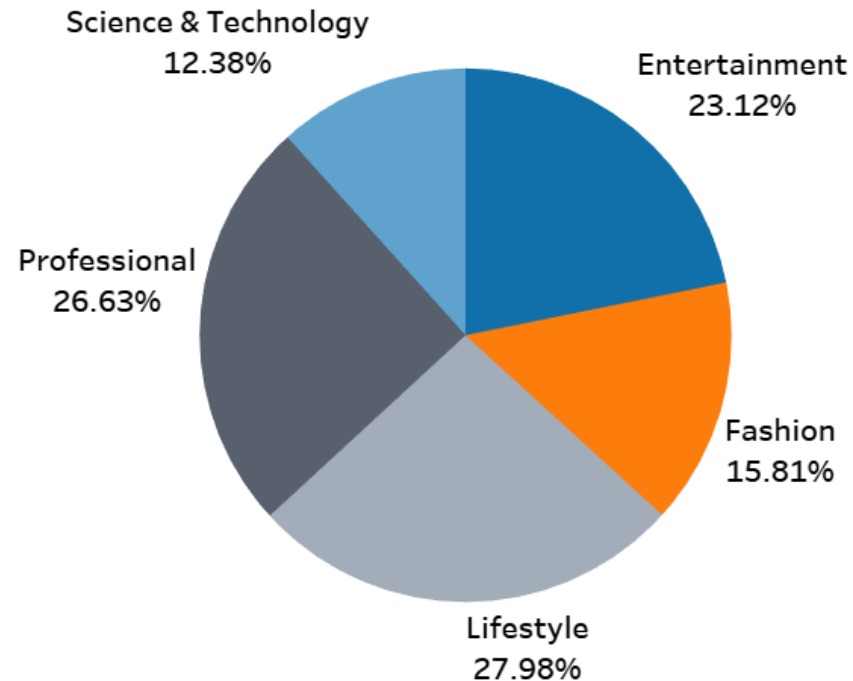
Maximum proportion :
- Lifestyle

Least proportion :
- Science & technology

Maximum proportion :
- Positive

Least proportion :
- Negative

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PROPORTION OF SENTIMENTS FOR EACH GENRES
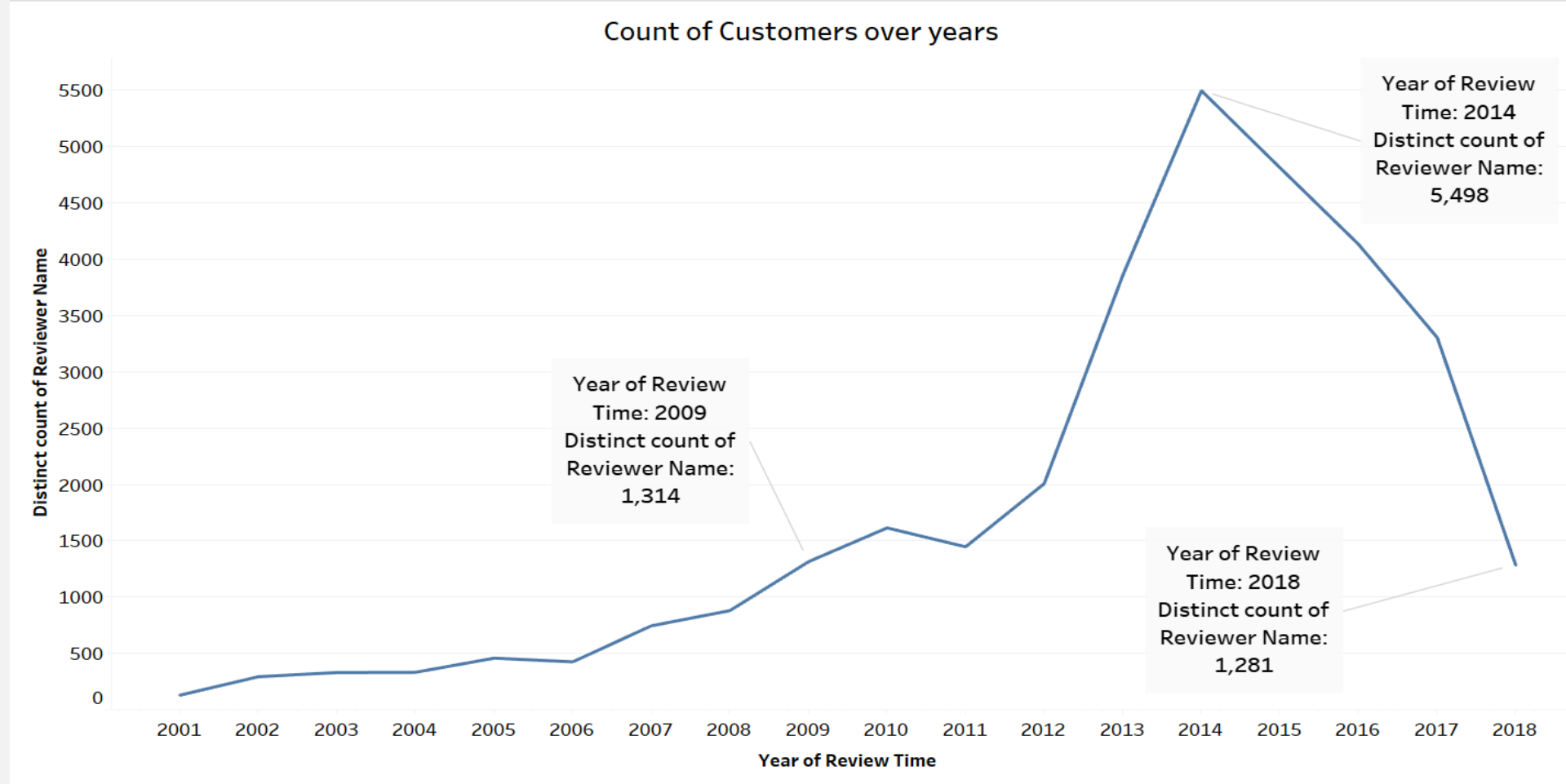

Proportion of sentiments for each genres

- Positive Reviews
  - → Each genre has more than 50%

Count of Customers over years

- There is a fall in number of customers after 2014.
- Introduction of podcasts , Digital platforms and Social media boom are one of the reasons for the decline in customers.

TOP 10 BRANDS WITH POSITIVE REVIEWS
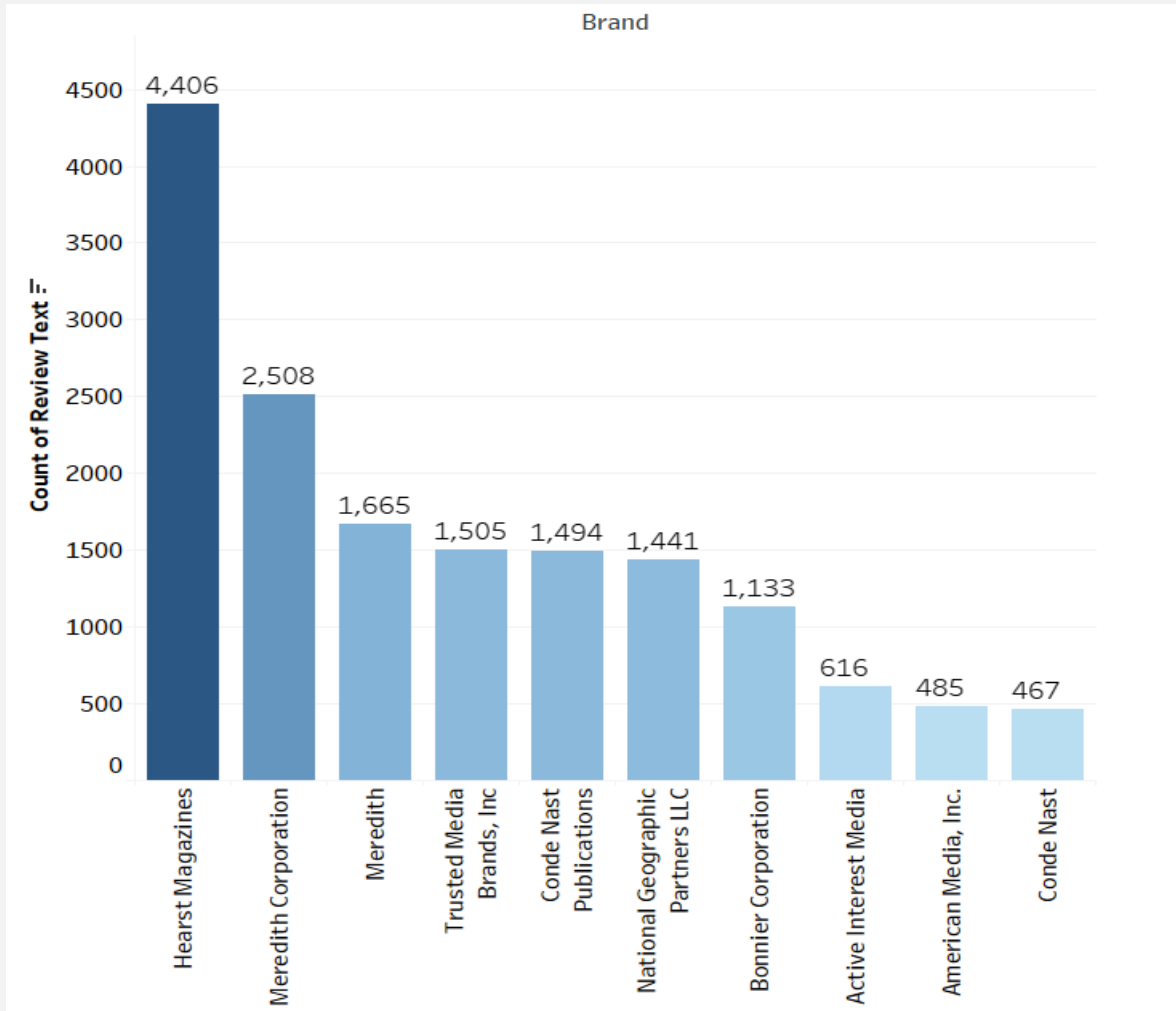
TOP 10 BRANDS WITH NEGATIVE REVIEWS

- Hearst Magazines and Meredith Corporation are the brands to focus on as they have more positive reviews and also considerable negative reviews.

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PREDICTIONS ON RATINGS.

Forecast of Life-Style

Forecast of Professional

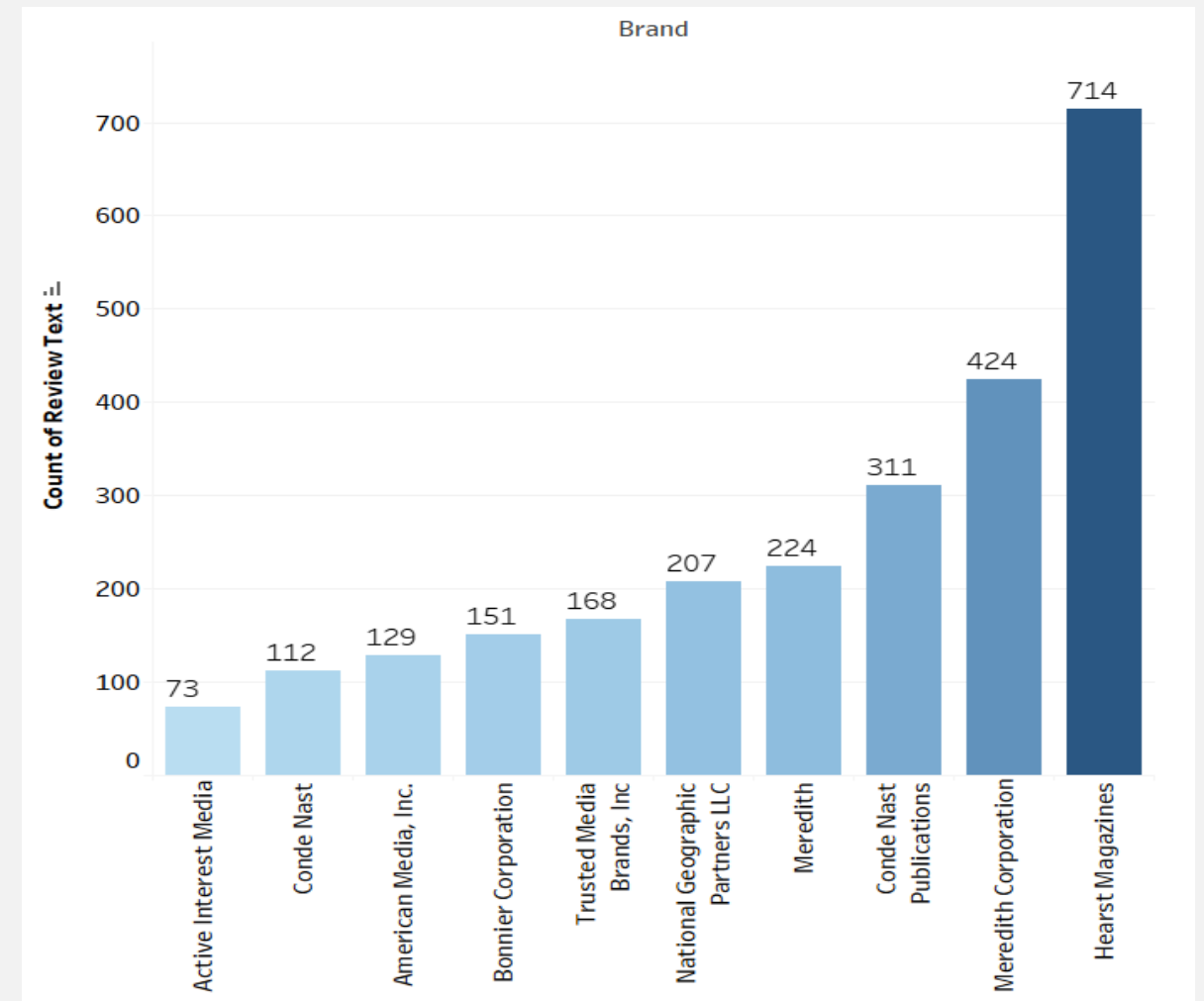**Ratings for upcoming 10 quarters for Life-Style and Professional genre-**

- For Professional genre Ratings → 4.0 to 4.3
- For Life Style genre Ratings → 3.8 to 4.6 .

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MAGAZINE SUBSCRIPTION DASHBOARD :-

https://public.tableau.com/views/final2_16782594104320/Dashboard2?:language=en-US&publish=yes&:display_count=n&:origin=viz_share_link

TECHNICAL PERSPECTIVE:

- Sentiment Analysis :
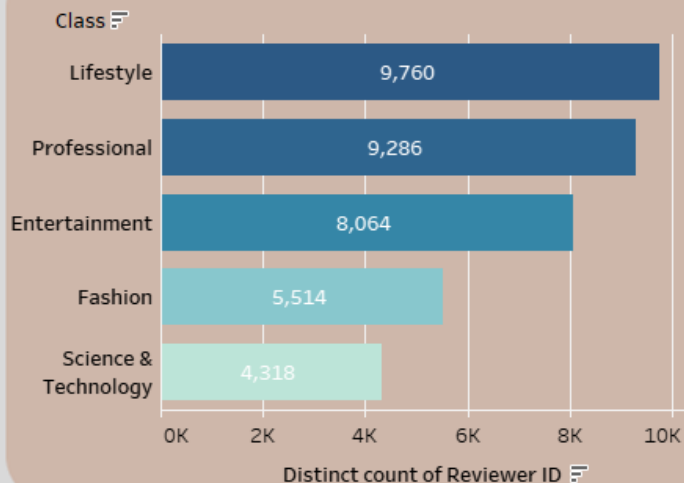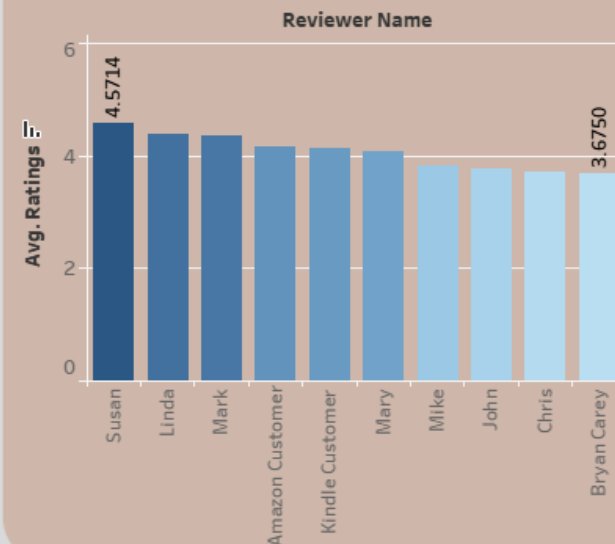
  Text Blob – Polarity

- Machine Learning:

  Classification on sentiment

CD'S AND VINYL REVIEWS

	Model	Accuracy	F1_score
0	Decision Tree Classifier	0.51	0.51
1	Multinomial NB	0.48	0.59
2	Random Forest Classifier	0.45	0.60

MAGAZINE REVIEWS

	F1-Score	Accuracy
KNearestClassifier	0.656280	0.641818
DecisionTreeClassifier	0.688000	0.689000
RandomForestClassifier	0.732087	0.722818

For both cd's and vinyl data and Magazine reviews Random forest classifier performing better.

- Time Series:
  ARMA   -- Data Stationary
  SARIMA – Data Not Stationary

CD'S AND VINYL REVIEWS

	Genre	Model	Mean_squared_error	Root_mean_squared_error
0	Pop	ARMA	0.057723	0.240256
1	Rock	SARIMA	0.077735	0.278810
2	Jazz	ARMA	0.031944	0.178729
3	Country	ARMA	0.024927	0.157884
4	Blues	ARMA	0.097176	0.311731
5	Metal	SARIMA	0.120882	0.347680

MAGAZINE REVIEWS

	Type	Model	Mean_squared_error	Root_mean_squared_error
0	Professional	SARIMA	0.018375	0.135555
1	Life-Style	SARIMA	0.052857	0.229906
2	Fashion	ARMA	0.014898	0.122057
3	Entertainment	ARMA	0.020333	0.142595
4	Science & Technology	ARMA	0.189977	0.435863

CONCLUSION

	Cd's and vinyl	Magazines subscription
Rise in Ratings for next 10 quarters	Pop , Metal and Rock	professional and Life-style
No much change in Ratings for next 10 quarters	Jazz and Blues	Entertainment
Fall in Ratings for next 10 quarters	Country	Fashion , Science & technology
Brands to focus	Various Artists , The Beatles	Hearst Magazines and Meredith Corporation

- **Van Morrison** and **Grateful Dead** are the brands consisting of more negative reviews and generating less revenues.

- **Pop** , **Rock** and **Metal** in Music cd's & **Professional** and **Life-style** magazines stock to be maintained more as they have a rise in predicted future ratings.

- **Country** music cd's , **Fashion** and **Science & technology** magazines stock should be maintained less as they have a fall in predicted future ratings.

- Digitalization is affecting both cd's and magazines sectors.

- Magazine companies should think of going digitalized and can collaborate with Amazon kindle.

- Providing facilities to loyal customers such as points per purchase can improve customer frequency.

- Maintaining customer service more efficiently can also improve the customer frequency.

THANK YOU!