

# Analyzing Album Reviews

By Daniel Mocombe



# Business Case

- Metrics for success in the music industry continue to evolve
- Digital album sales dropped 7.3% between 2017 – 2018
- Streaming makes it difficult to measure overall album performance
- Direct feedback gained by album reviews
- Review sentiment helps artists and record labels understand fans' and critics' likes/dislikes





# The Data

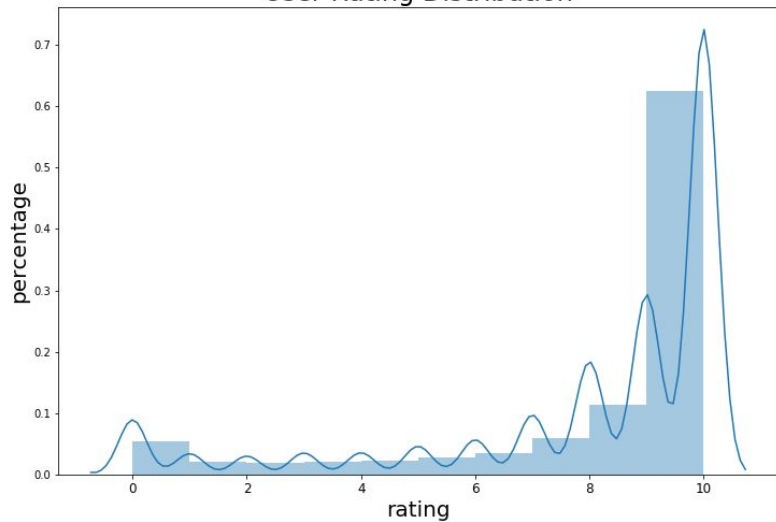
- Album reviews from users and critics on metacritic.com
- Classified into positive, neutral, and negative reviews
- Analyze album reviews
- Look into the words used in different review classes
- Create an NLP classification model



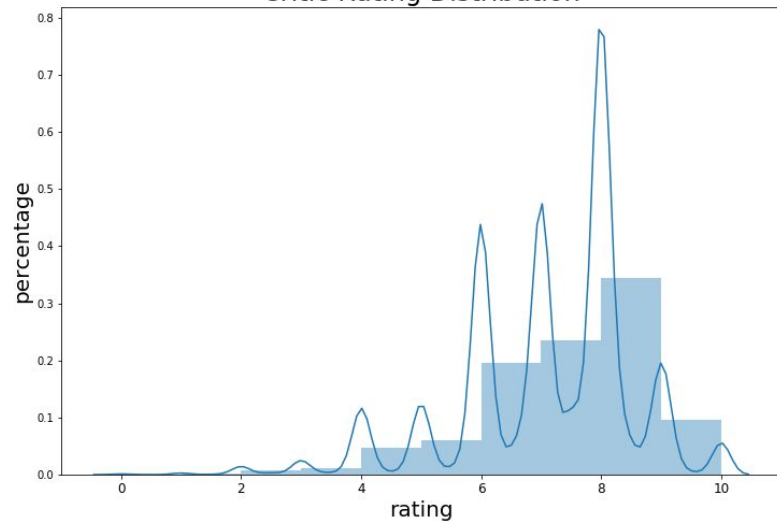
# Ratings



User Rating Distribution

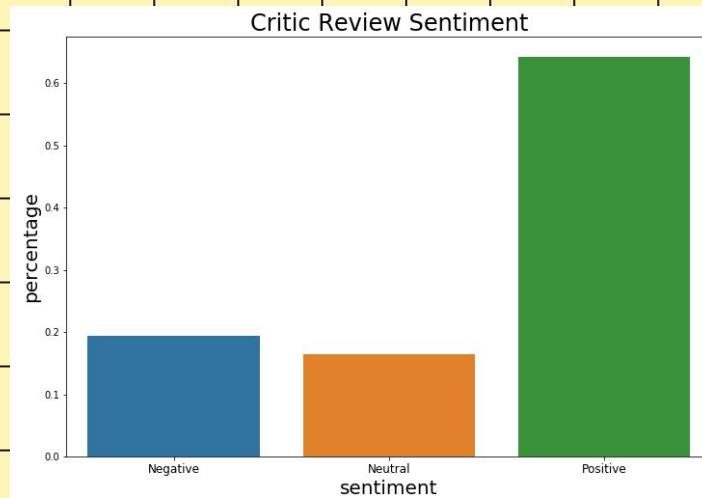
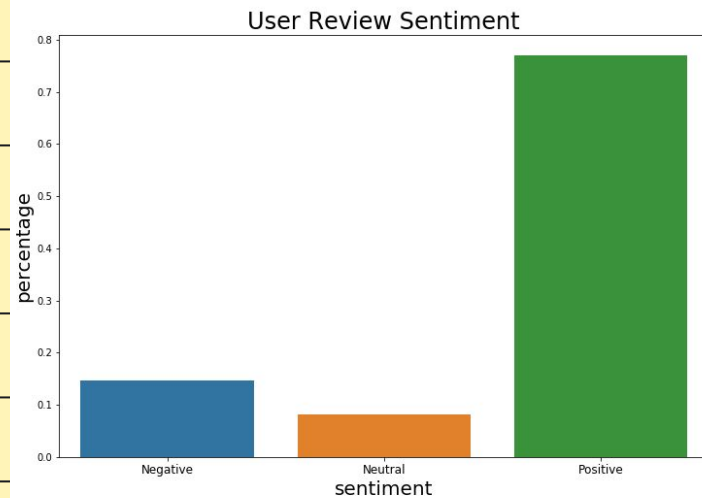
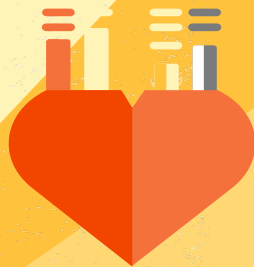


Critic Rating Distribution



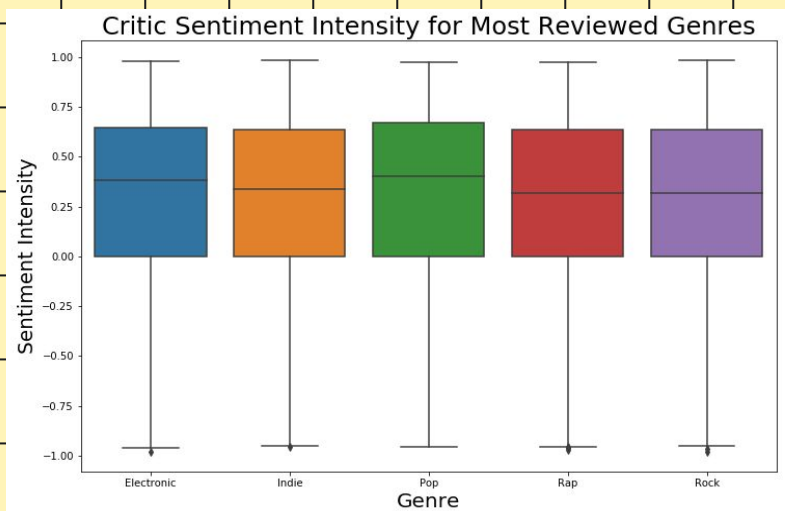
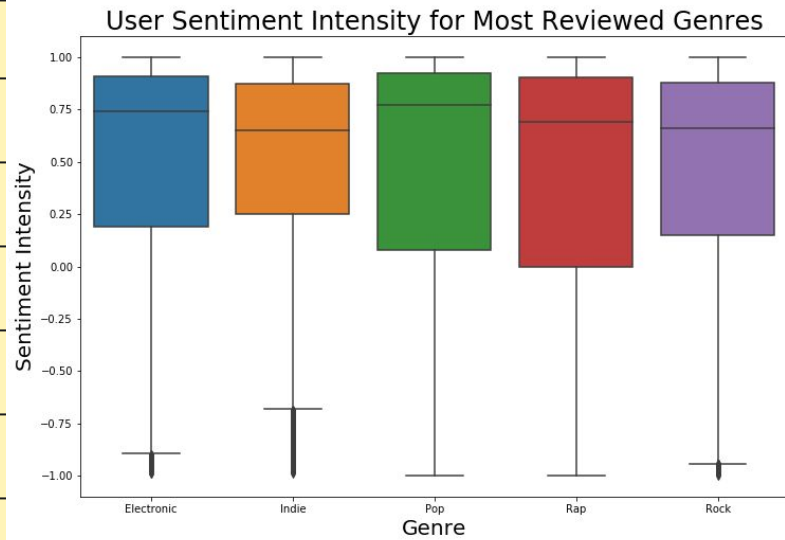
# Classes

- 84k user reviews
- 110k critic reviews
- Vader's Sentiment Intensity Analyzer
- Classes highly imbalanced

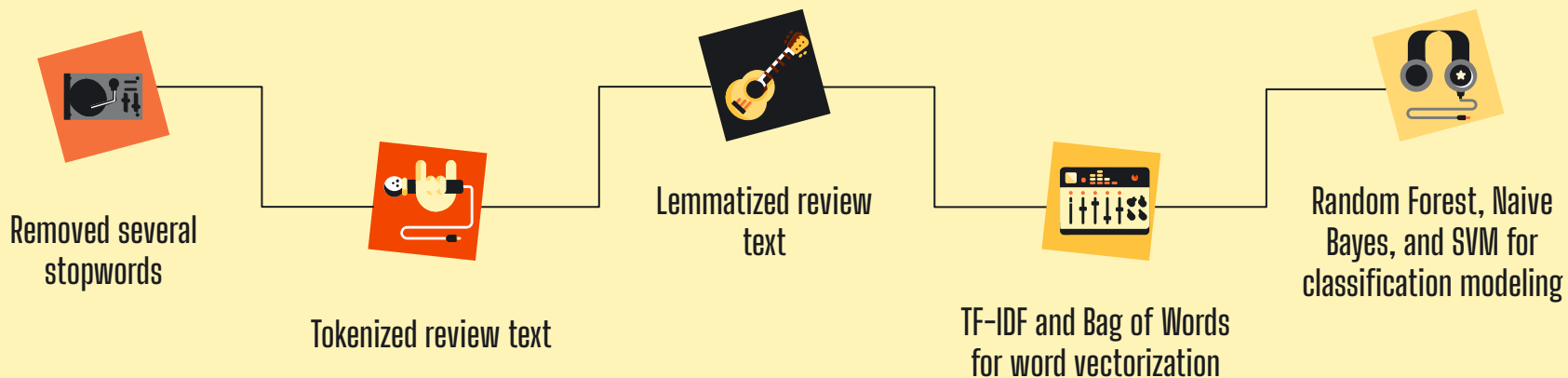


# Sentiment by Genre

- Positive -  $\geq 0.05$
- Neutral -  $< 0.05$  &  $> -0.05$
- Negative -  $\leq -0.05$



# Preprocessing and Modeling



# Classifiers

Model	User Reviews	Critic Reviews
(Baseline) Dummy Classifier	Accuracy: 0.778 F1 (Weighted): 0.680	Accuracy: 0.481 F1 (Weighted): 0.481
Random Forest	Accuracy: 0.848 F1 (Weighted): 0.819	Accuracy: 0.812 F1 (Weighted): 0.797
Naive Bayes	Accuracy: 0.789 F1 (Weighted): 0.718	Accuracy: 0.648 F1 (Weighted): 0.511
Support Vector Machine	Accuracy: 0.890 F1 (Weighted): 0.891	Accuracy: 0.843 F1 (Weighted): 0.844



# Topic Modeling

## 01

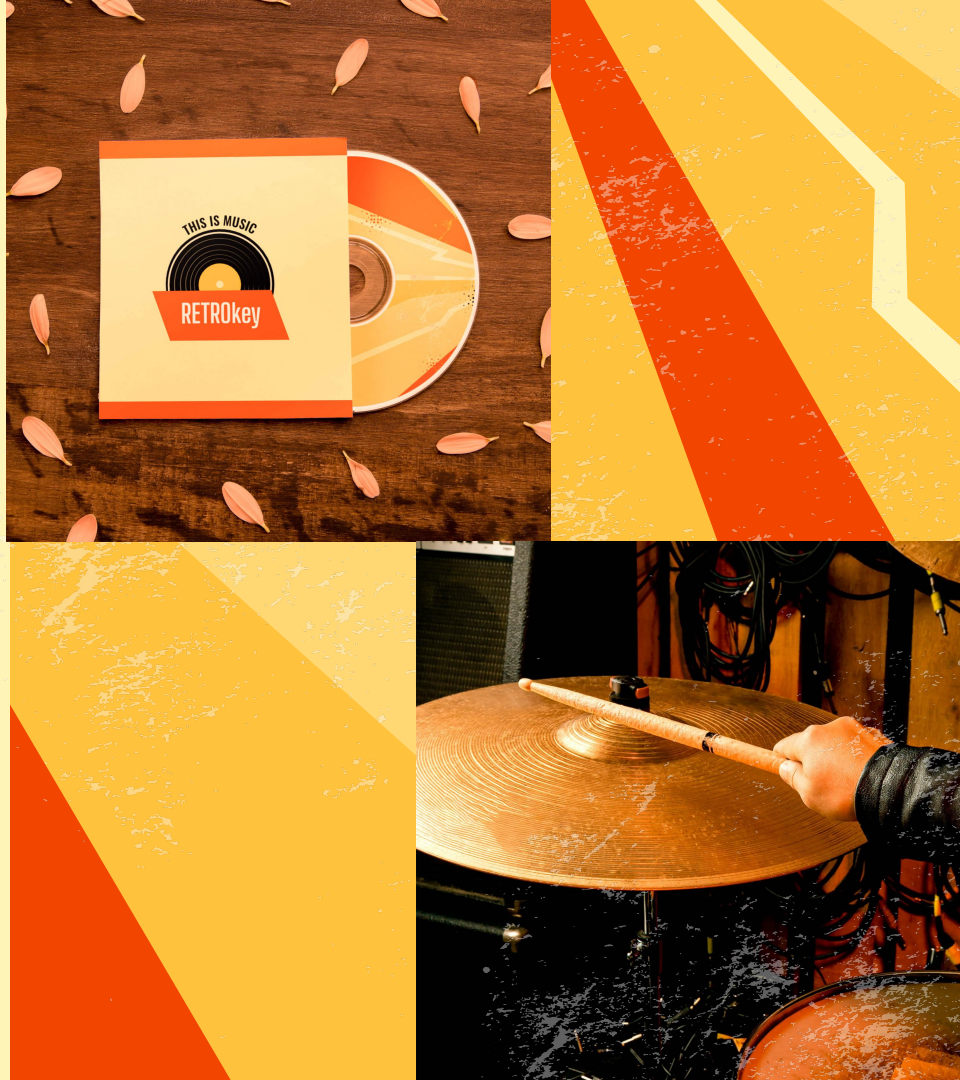
### Users

- Positive
  - Log Likelihood Score: -426,236
  - Perplexity: 1090
- Negative
  - Log Likelihood Score: -76,239
  - Perplexity: 800

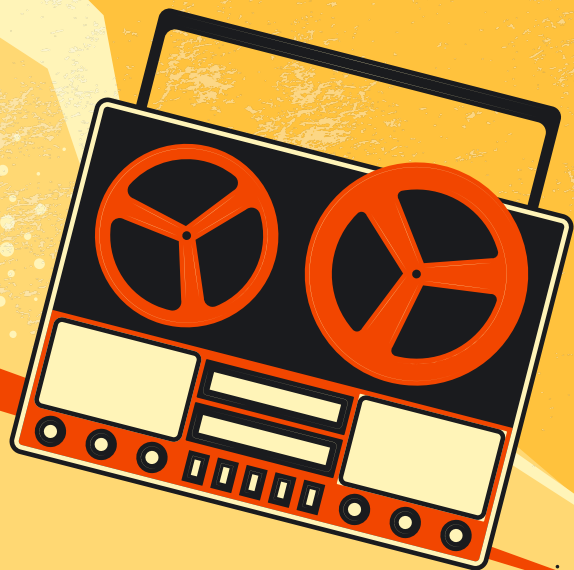
## 02

### Critics

- Positive
  - Log Likelihood Score: -152,178
  - Perplexity: 1821
- Negative
  - Log Likelihood Score: -46,859
  - Perplexity: 1313



# Limitations and Discussion



- Some reviews misclassified in data preparation
- Irrelevant or misleading user reviews
- Rap fans and critics discuss similar themes in their music
- Flow, production, guest artists are important to listeners
- Explore review topics for different genres
- Develop text generator for user reviews

# THANKS!



Any questions?

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