MATH513 Practical Presentation

Strategic Twitter Analysis: Samsung and Apple

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Introduction

- Samsung and Apple
- Flagship phones chosen
  - S20FE
  - iPhone12
  - S20

Tools Utilised

- Rstudio
- RTweet
- Twitter Developer API
- GitHub

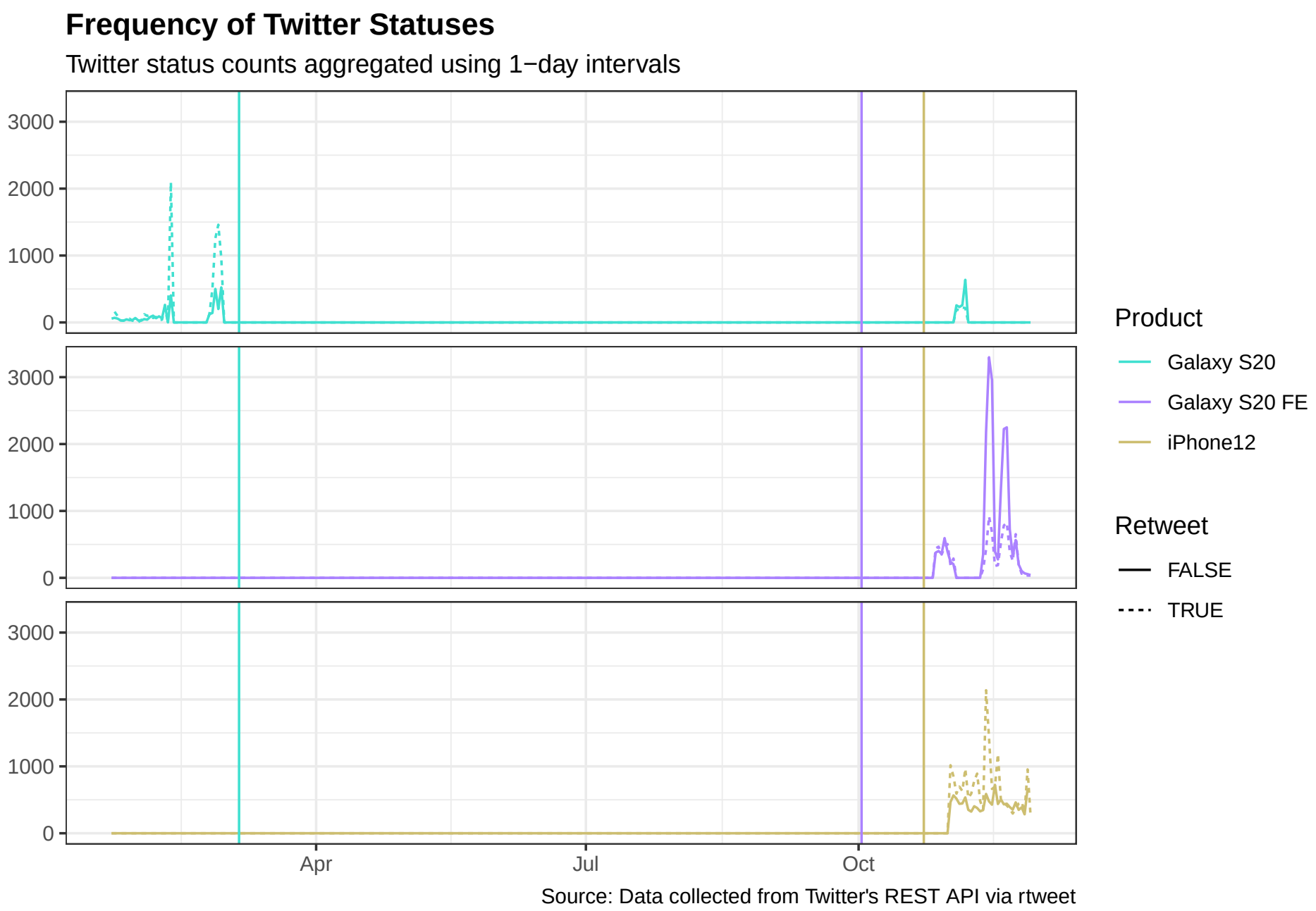

Choosing Twitter for Analysis

- Open API Access compared to others
- Almost all data is public
- Advanced filtering and queries
- Generous Rate limiting

Determining Hashtags

- @SamsungMobile
  - #GalaxyS20FE and #GalaxyS20
- @apple
  - No information
- @tim_cook
  - #iPhone12

Time Periods for Data Collection



Data Cleaning and Feature Engineering

Data Cleaning

- Duplicate tweet and user observations were removed
- Tweet text and user bios were cleaned
  - Removed links, hash-tags, emojis, and user mentions

Feature Engineering

- Users were marked as potential bots
- User country was extracted from the location of their profile
- Tweets were marked as potential spam
- Hash-tags were extracted from the tweet text
- Product features were extracted from the tweet text
  - Display, Battery, Camera, Price, and 5G Capability

Summary of Data

Total Tweets: 73690 after data cleaning

Total Features: `5 (Display, Battery, Camera, Price, and 5G)`

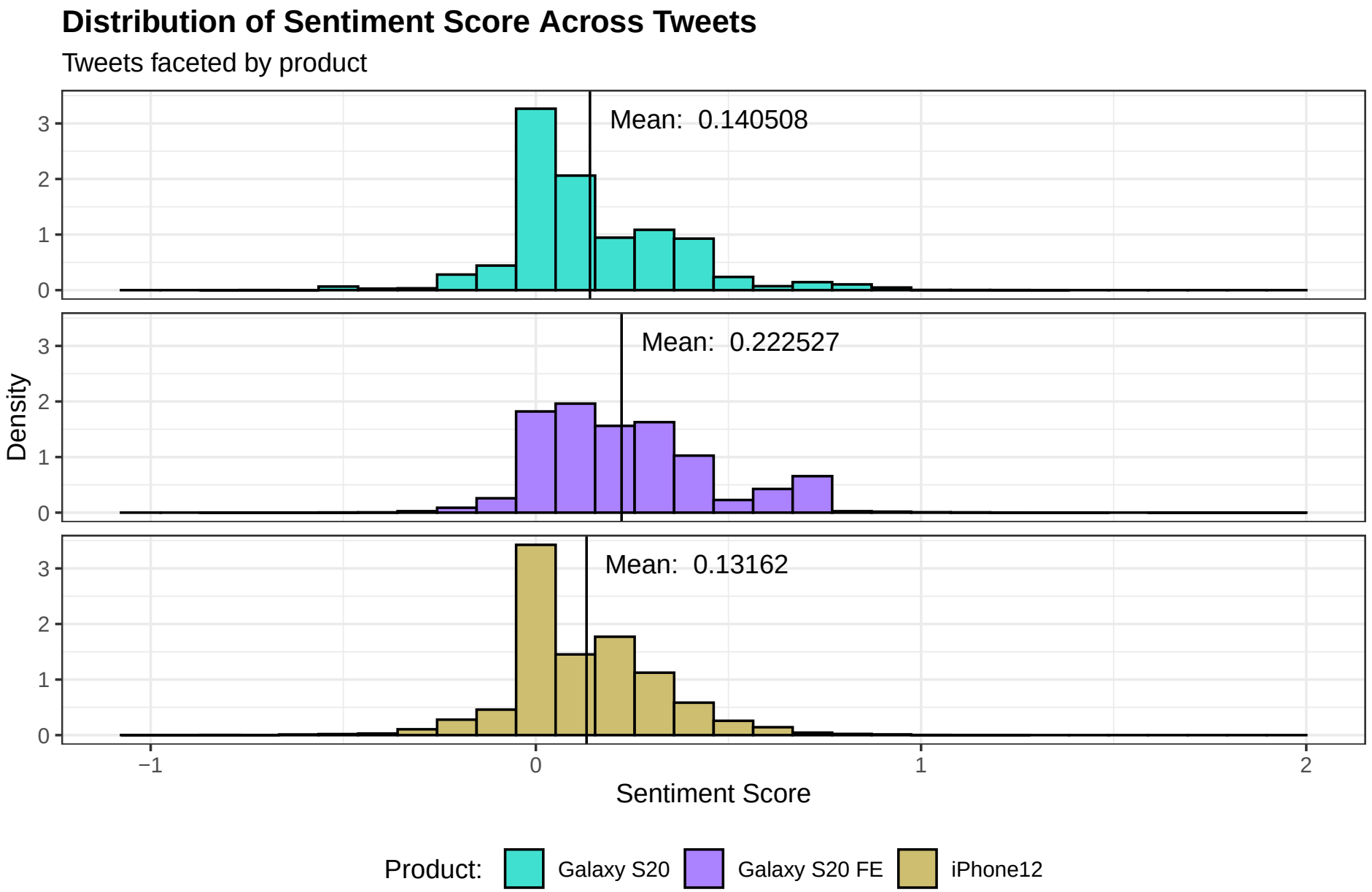
Table 1: Summary of Tweet Data

Product	Number of Tweets	% Spam Tweets	% Feature Tweets
Galaxy S20	13147	3%	20%
Galaxy S20 FE	28923	19%	19%
iPhone12	31620	13%	7%

Table 2: Summary of User Data

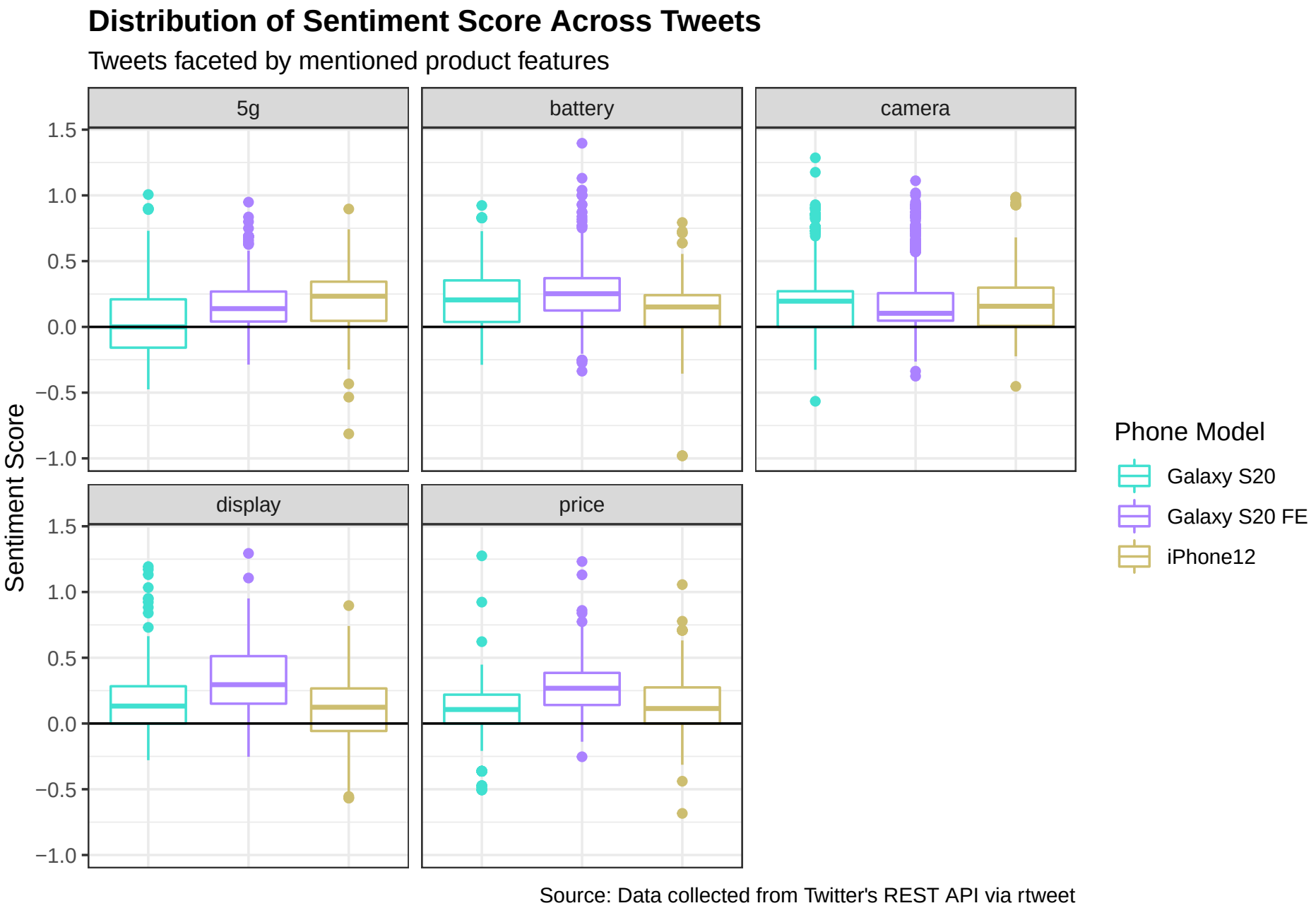
Number of Users	% Bot Users	Unique Countries
35051	>1%	163

Results - Sentiment Analysis - All Tweets

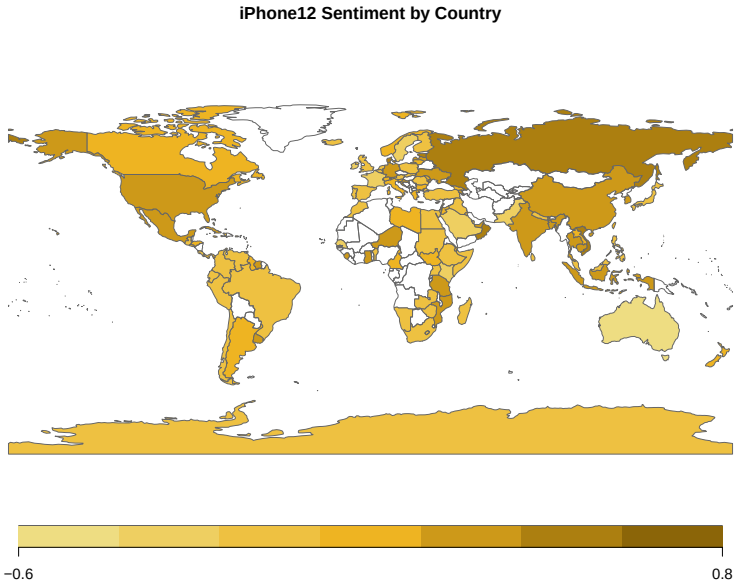


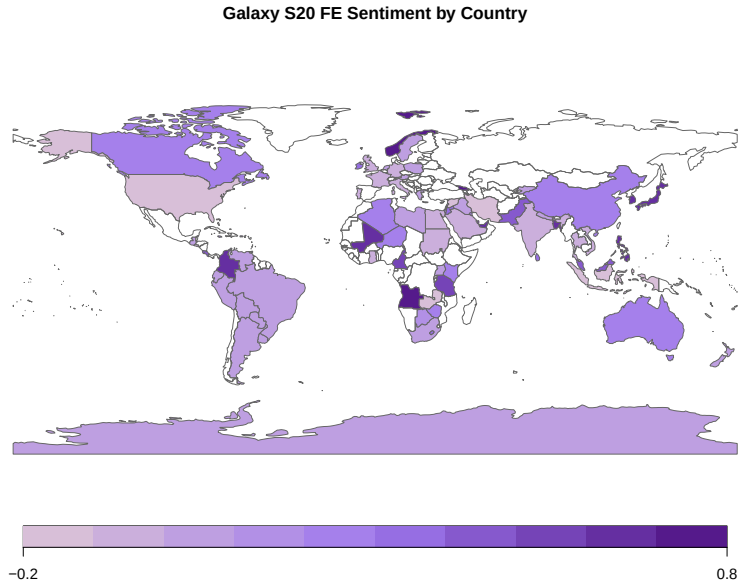
Source: Data collected from Twitter's REST API via rtweet

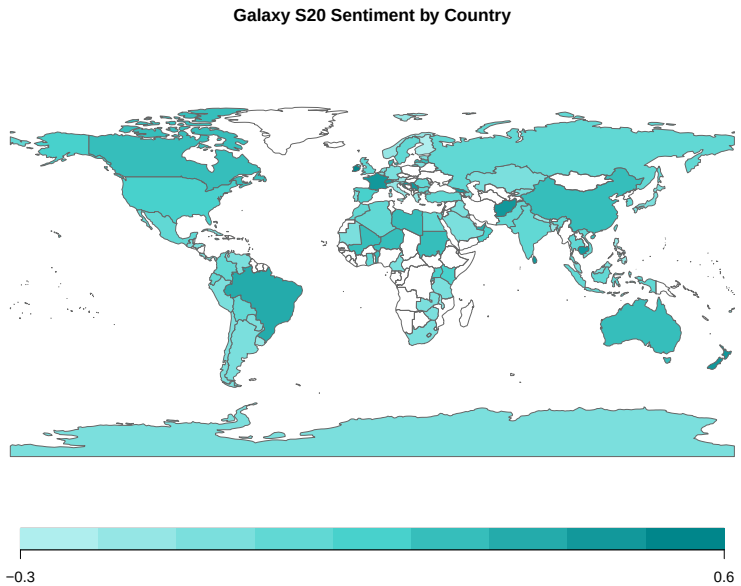
Results - Sentiment Analysis - Features



Results - Global Sentiment By Product





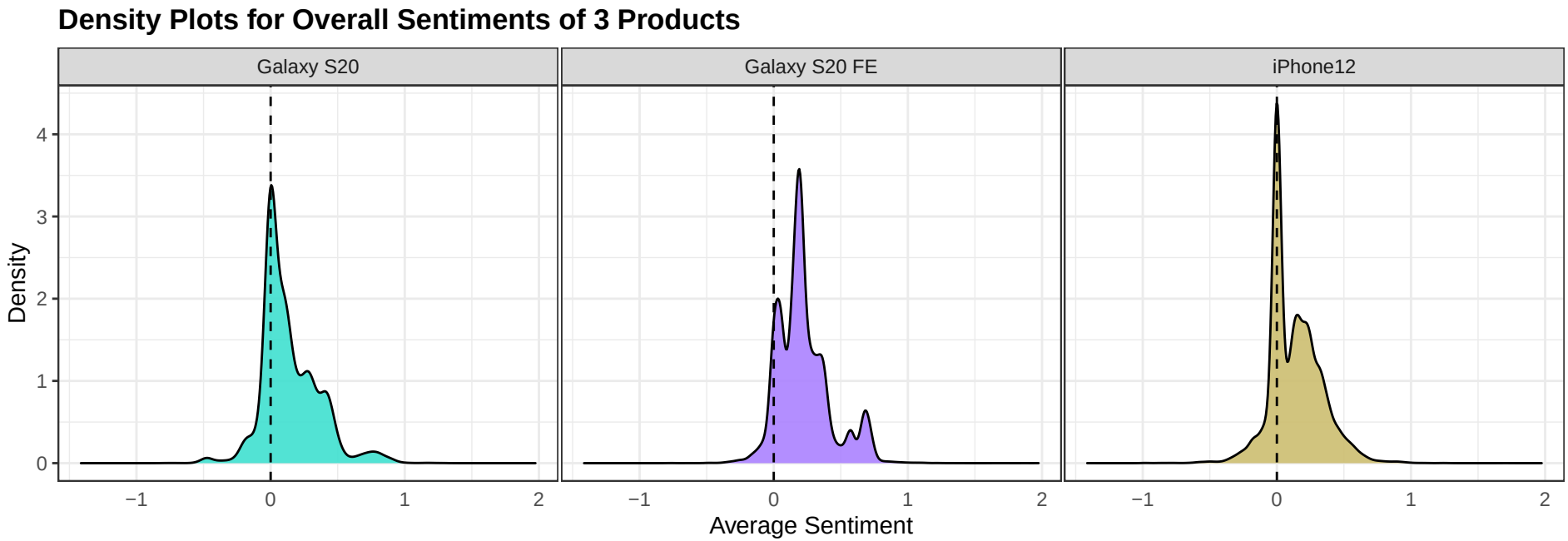


Statistical Test - T-Test

Table 3: Statistical Test Results

test	S20	S20FE	i12
Kolmogorov-Smirnov Test	2.2e-16	2.2e-16	2.2e-16
Anderson-Darling Normality Test	2.2e-16	2.2e-16	2.2e-16

Density Graphs



Source: Data collected from Twitter's REST API via rtweet

Conclusions

General

- Twitter data useful for sentiment analysis
- Live feedback on product releases

Apple

- Analysing customer responses can improve future product sentiment
- Positive in all features
- Only ahead with 5G connectivity
- Strong positive sentiment in Russian and America
- Negative or low sentiment in Australia, Canada and South America
- Feature R&D and targeted marketing required

Samsung

- Using customer opions to guide development was successful
- Battery improvements went almost unoticed
- Camera change decreased sentiment
- Positive sentiment in South America and Africa
- Negative sentiment in Russia and American
- Examintation of areas where Apple is seen more positively

Further Analysis

- Google Maps API
- Look at mentions of Apple in Samsung and vice versa
- Examination of average income and sentiment by region
- Increased number of tweets with more targeted dates before and after the release dates
- Additional analysis of the sentiment by feature along with the actual cost of the changes in device could identify better R&D decisions

References

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