Google Play Store Apps: A Statistical Analysis

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Background

Google Play is a digital distribution service for mobile applications on the Android operating system allowing users to browse and download applications developed with the Android software development kit. With computer science growing and open-source projects expanding, the Google Play store is increasing in popularity. While many public datasets provide Apple's App Store data, there are not many counterpart datasets available for Google Play store apps, yet the Google Play store data has enormous potential to drive application-making businesses. Unlike web development or desktop development, mobile development is unique in its convenience. With smartphones increasing in usage, mobile applications are growing in popularity as well. Actionable insights can be drawn for developers to work on and capture the Android market.

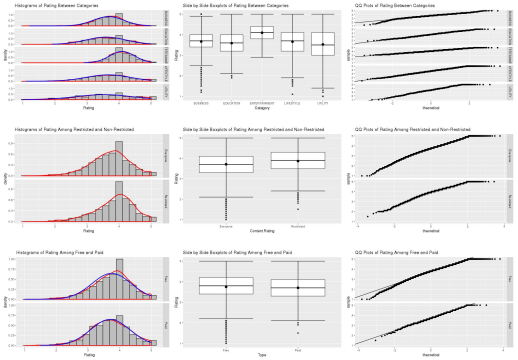
Analyses Questions

1. Which Google Play store app category has the greatest ratings?
2. Is there a significant difference in ratings between a Google Play store app that has either a restricted or a non-restricted content rating?
3. Is there a significant difference in ratings between a Google Play store app that is either paid or free?

Analysis Methods

The dataset for this analysis is from Kaggle, and the information was collected through web scraping around 10,000 Play Store apps. Since Google Play uses modern-day techniques like dynamic page load using JQuery, this made scraping more challenging. Each app has values for category, rating, size, installs, and other app specifications. Although Google Play acts as a digital media store as well, the data covers only mobile applications. The program R was used in the analysis. To address the first question, an ANOVA test was used to observe whether there was a statistically significant difference between the ratings of each of categories. To address the second and third question, two Welch two-sample t-test were used to observe whether there was a statistically significant difference between the two different content ratings and the cost of the app. The assumptions made for all tests were met by the datasets.

Histograms, Boxplot, and QQ Plots



Results

The ANOVA test indicated that there was significant statistical evidence to conclude that the true mean ratings among the all categories were not equal to each other. Instead, "UTILITY" and "EDUCATION" were not statistically different, and "LIFESTYLE" and "BUSINESS" were not statistically different. This was determined by whether the confidence intervals between the categories contained a zero value for the difference between the true means. The Welch two-sample t-tests indicated the p-value of the null hypothesis, the true mean rating. For the content rating, the p-value was less than 2.2e-16 which shows that the true mean rating between content ratings are not equal to each other. For the cost, the p-value was 0.1251 which shows that the true mean rating between paid or free are equal to each other.

ANOVA Significance Graph for Category

UTILITY	EDUCATION	LIFESTYLE	BUSINESS	ENTERTAINMENT
3.526027	3.588740	3.661369	3.669651	4.095233

Welch Two-Sample t-test for Content Rating

```
        Welch Two Sample t-test

data:  googlePlay$Rating by googlePlay$Content.Rating
t = -9.658, df = 2978.2, p-value < 2.2e-16
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.1889858 -0.1252002
sample estimates:
  mean in group Everyone mean in group Restricted
               3.709780                3.866873
```

Welch Two-Sample t-test for Type

```
        Welch Two Sample t-test

data:  googlePlay$Rating by googlePlay$Type
t = 1.5362, df = 511.8, p-value = 0.1251
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.01275056  0.10419232
sample estimates:
mean in group Free mean in group Paid
          3.747919           3.702198
```

Conclusion

Based on the results of our analyses, there was statistical evidence to show that "ENTERTAINMENT" category has the greatest rating. This is likely due to entertainment pleases the users naturally, so a higher rating is inclined. There is also statistical evidence to show that Google Play store apps with a restricted content rating has a higher rating, and there is no significant difference in ratings between apps that are either free or paid.
For mobile developers or those who are looking to develop applications, the general idea for an application can help increase the rating on Google Play. These results promise that developers in the future can shape the Android market.

GET IT ON Google Play

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