Analysis of IMDb Movie Revenue

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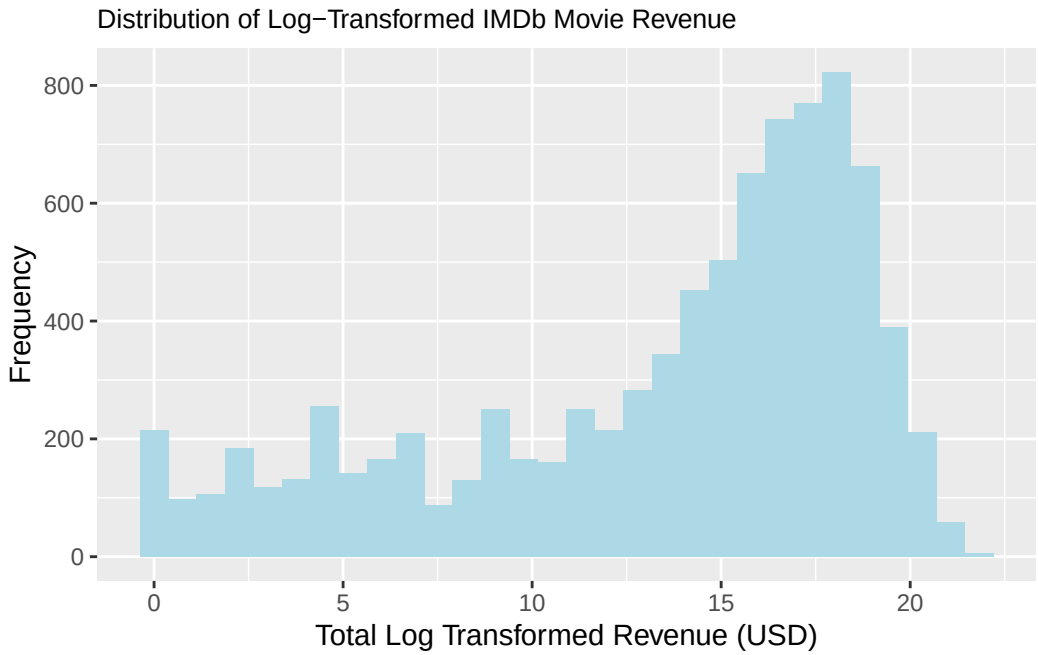
Introduction:

Exploratory Data Analysis:

To obtain informative interpretations of the distribution of the revenue response variable, we analyze IMDb movies released from 2000 and beyond that have a revenue greater than 0 (non-missing values in this dataset). Furthermore, we log transform revenue, as the revenue generated across the IMDb movies is heavily right-skewed. (hellen could you include this in the description of the variables section, maybe write a short blurb for log transformation of log transformation for budget too).

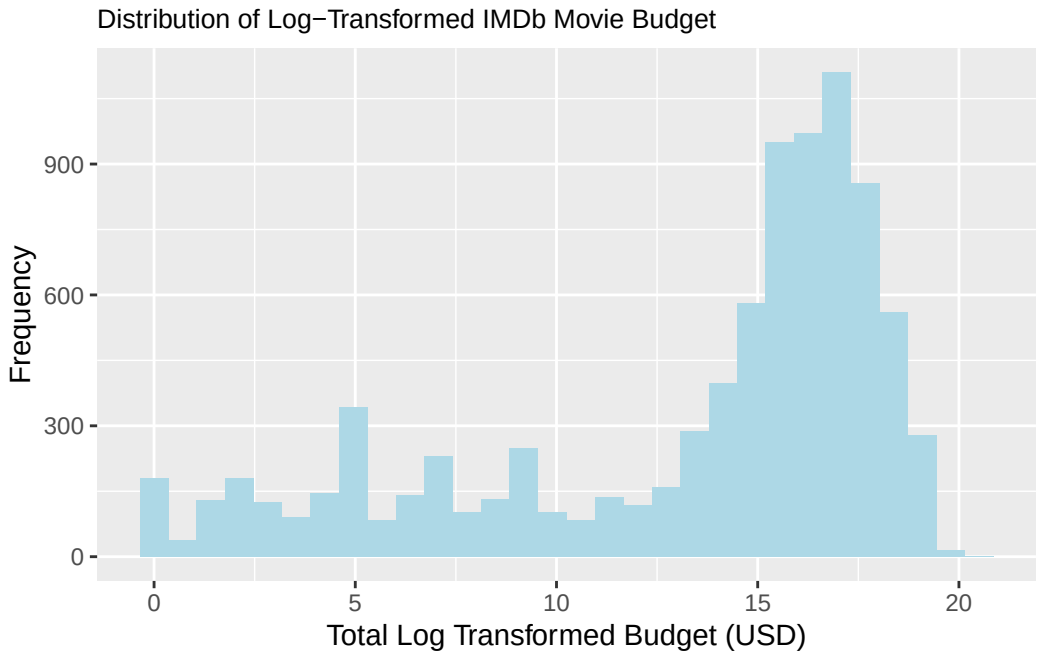
Univariate EDA

```
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
  0.000   9.933  15.323  13.387  17.646  21.822
```

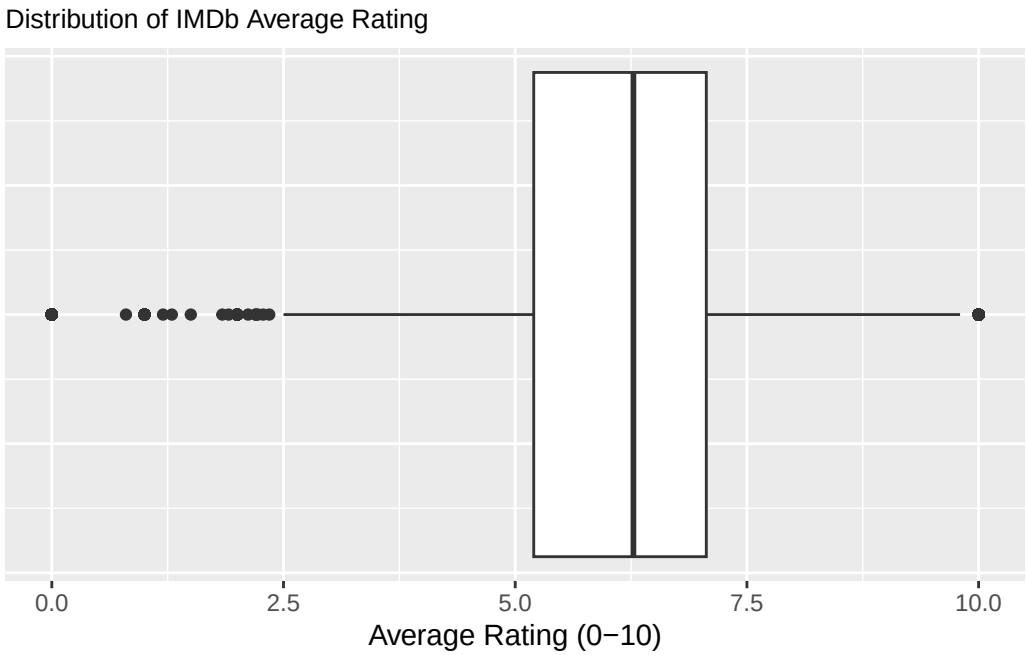


The histogram shows the distribution of the log transformed IMDb movie revenues response variable, which is left-skewed and unimodal, indicating that on average, movies listed on IMDb tend to generate higher revenues. Furthermore, the distribution of the log transformed IMDb movie revenues has a center of approximately 1,800,000 US dollars, described by the median, and a spread of approximately 18,600,000 US dollars, described by the interquartile range. The majority of IMDb movies generate between approximately 24,100 and 18,600,000 US dollars.

```
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
  0.000   9.629  15.425  13.222  17.034  20.500
```

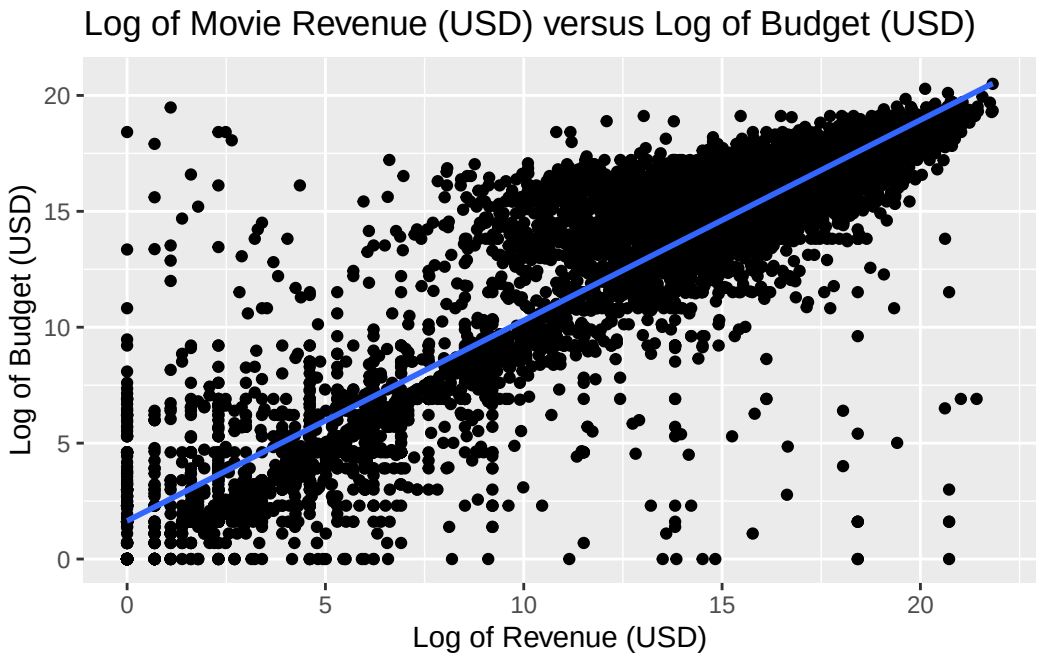


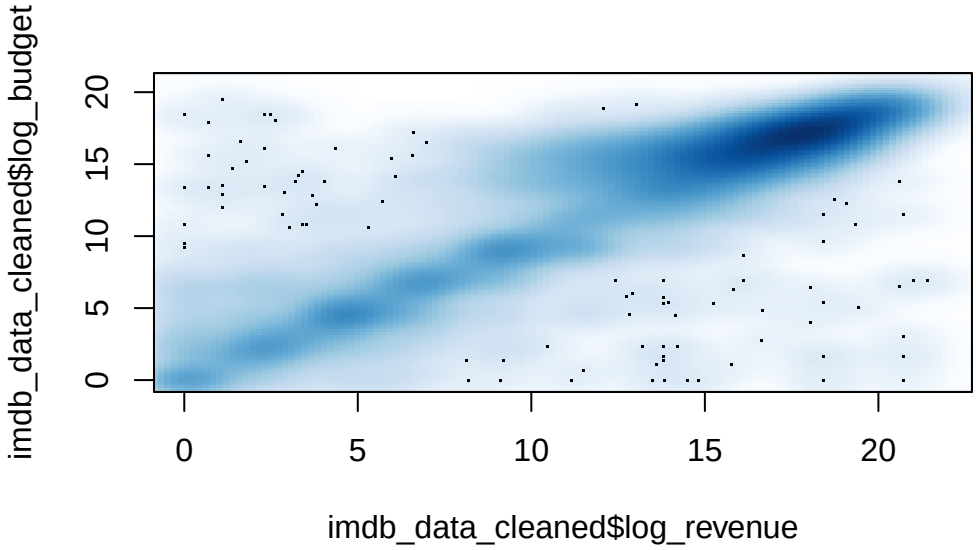
The histogram shows the distribution of the log transformed IMDb movie budget predictor variable, which is left-skewed and unimodal, indicting that although IMDb movie budget varies greatly, on average, movies listed on IMDb tend to have higher budgets. Furthermore, the distribution of the log transformed IMDb movie budget has a center of approximately 5,000,000 US dollars, described by the median, and a spread of approximately 25,000,000 US dollars, described by the interquartile range.



The majority of IMDb movies' average ratings are concentrated between a rating of 4.0 to 8.0. A few IMDb movies have a low rating (average rating below 2.5), contributing to the left-skewness of the distribution of IMDb movies' average rating predictor variable. Furthermore, a few IMDb movies have an extremely high rating (average rating of 10.0).

Bivariate EDA



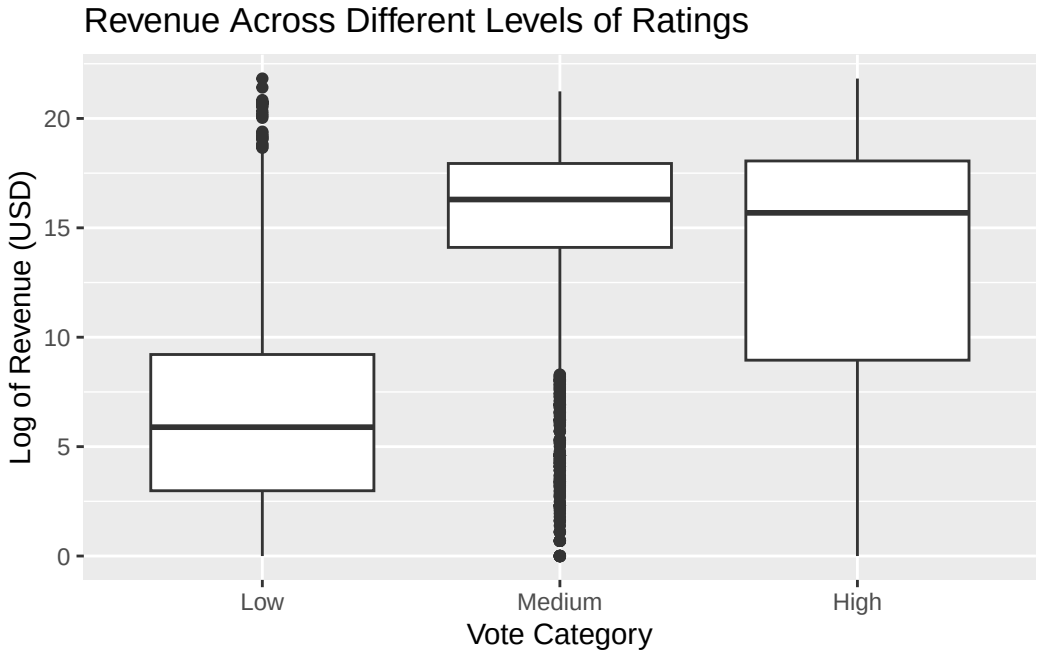



```
# A tibble: 2 x 5
  term        estimate std.error statistic  p.value
  <chr>          <dbl>     <dbl>     <dbl>    <dbl>
```

```
1 (Intercept)    0.595   0.0649       9.16 6.08e-20
2 log_budget     0.967   0.00456    212.   0
```

```
[1] 0.8365862
```

From our visualization plotting the log of movie revenue versus the log of movie budget as well as our relativley high r-squared value associated with a linear regression model, we can identify that there is a strong linear correlation between log of movie revenue and log of movie budget. Our p-value is effectively 0, further exemplifying that there is a linera relationship. We expected this, as high budget movies are often more anticipated and therefore more people buy tickets. Because our data set is so large, we decied to also display this relationship using a smoother scatter visualization, which illustrates point density seen in our scatter plot.



In this visualization, we transformed the vote_average variable into a categorical variable taking levels "Low" for ratings 0-3, "Medium" for ratings 3-7, and "High" for ratings 7-10. From our boxplot, we can see that the median log revenue for Medium rated movies (around 16) is actually slightly higher than those with High ratings (15.5). The median log revenue for Low rated movies is significantly lower (6). The IQR of movies with high ratings is also much larger than for Medium and Low rated movies. ##### Potential Interaction Effects

! Important

Before you submit, make sure your code chunks are turned off with `echo: false` and there are no warnings or messages with `warning: false` and `message: false` in the YAML.