TMDB Box Office Collection: Prediction

Predicting the box office revenue of over 4000 movies based on the data and features we have for 3000 movies.

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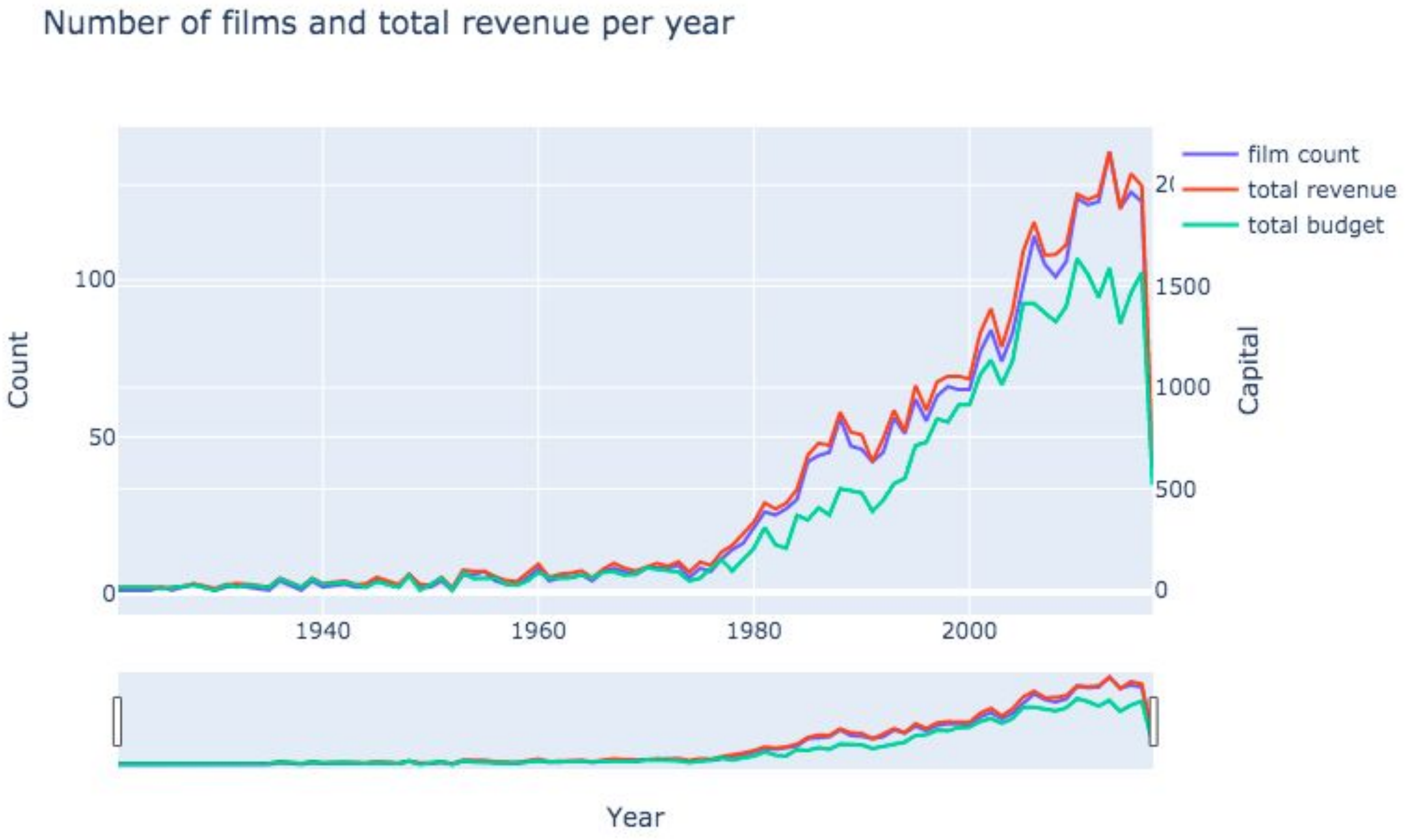
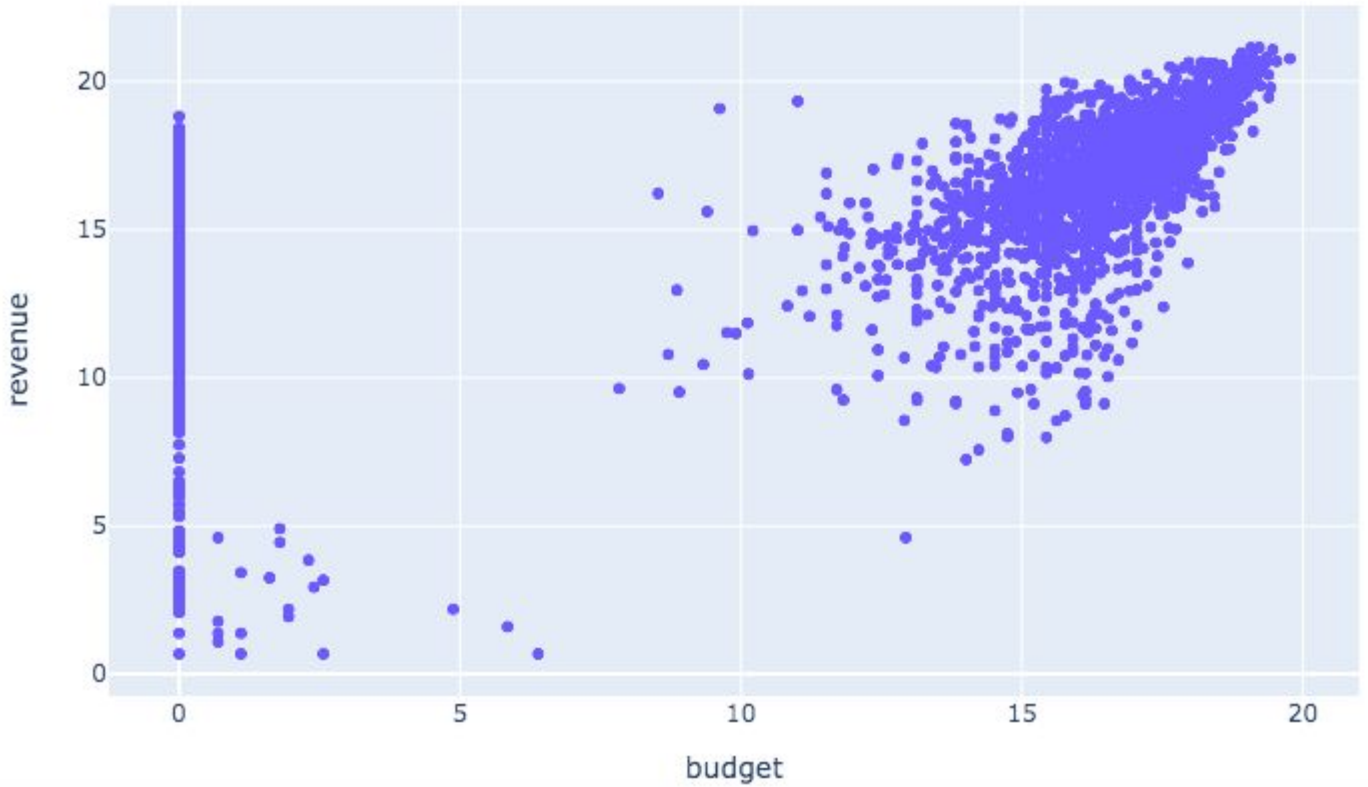
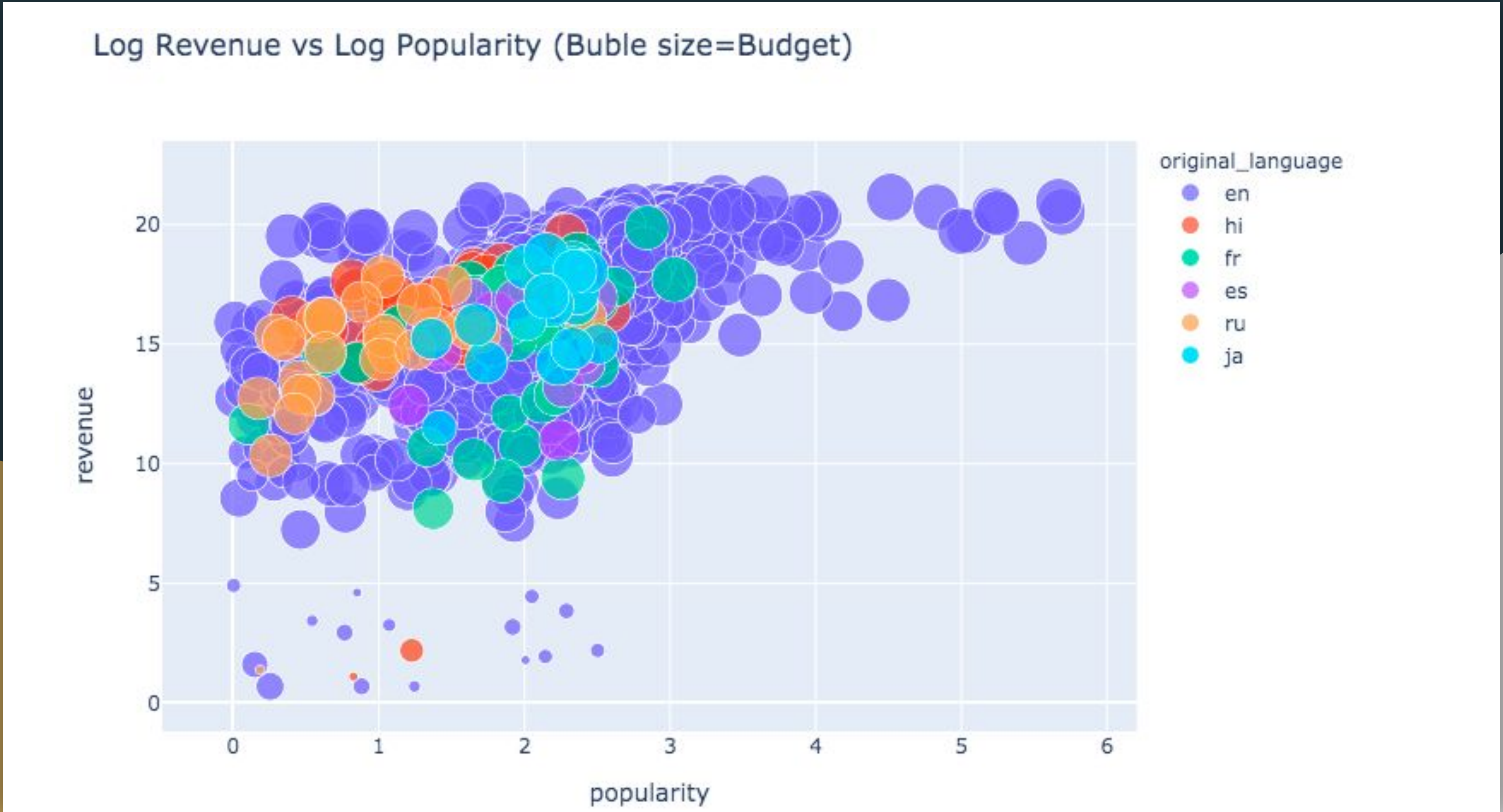
Data Exploration

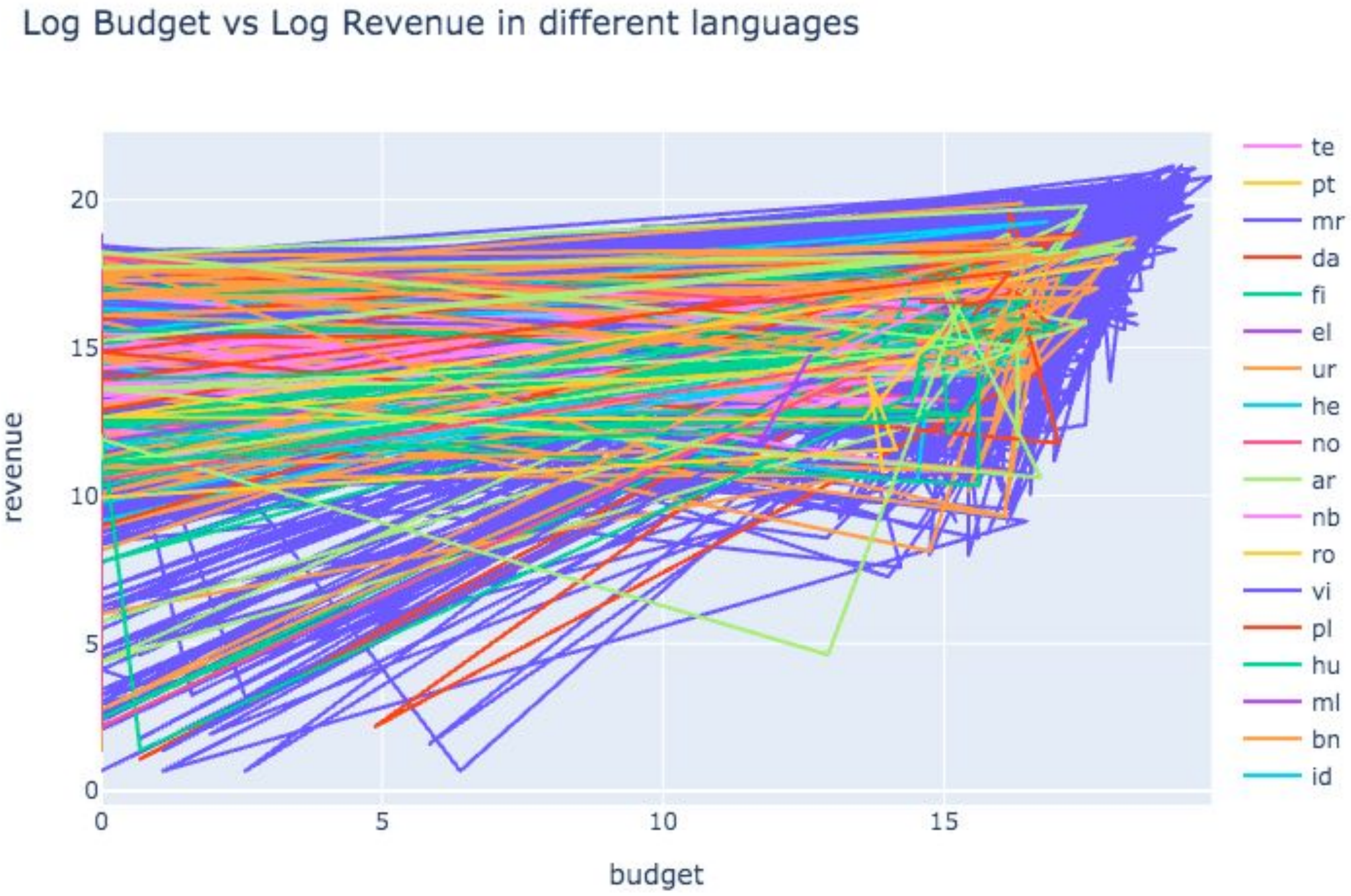


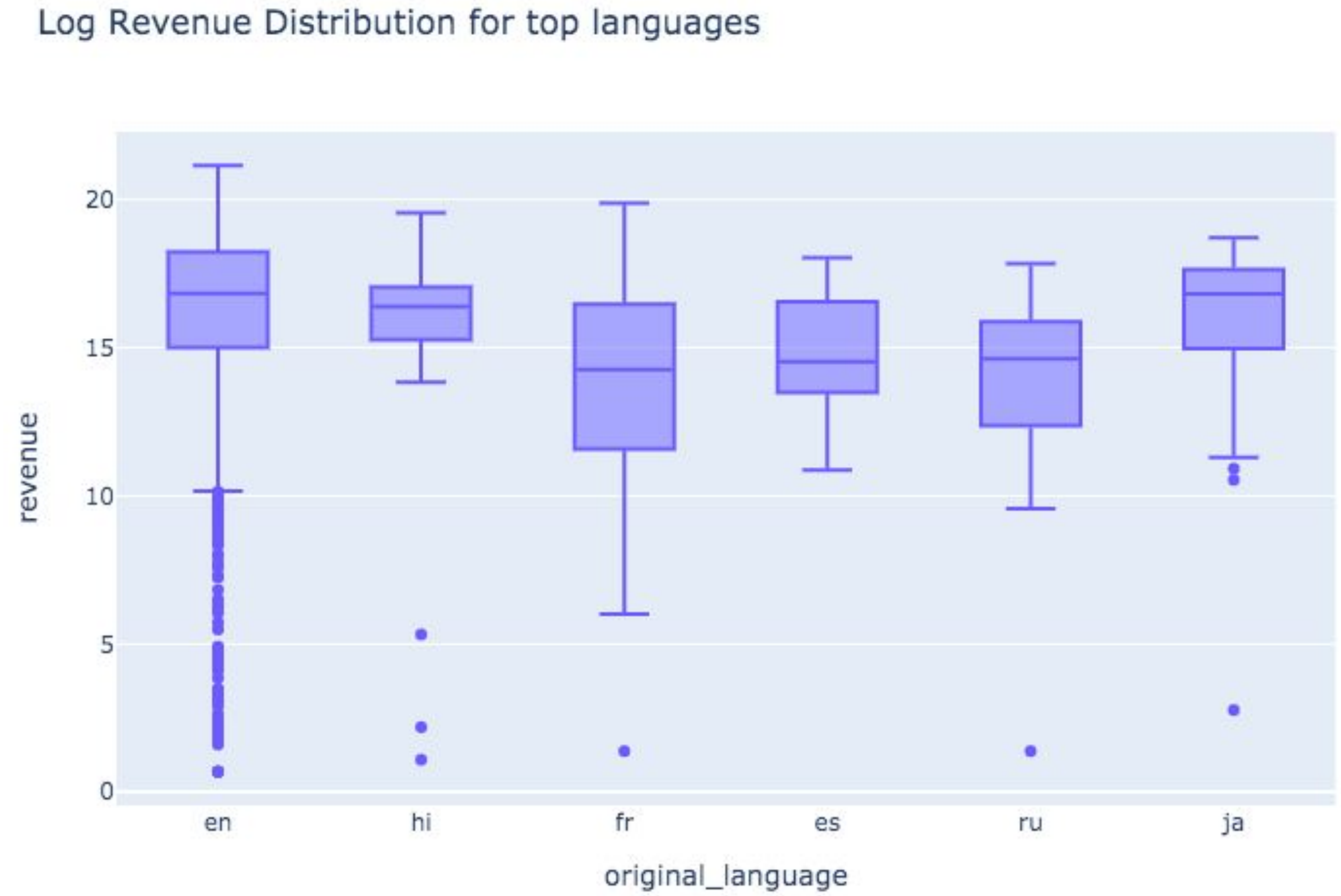
Log Budget vs Log Revenue



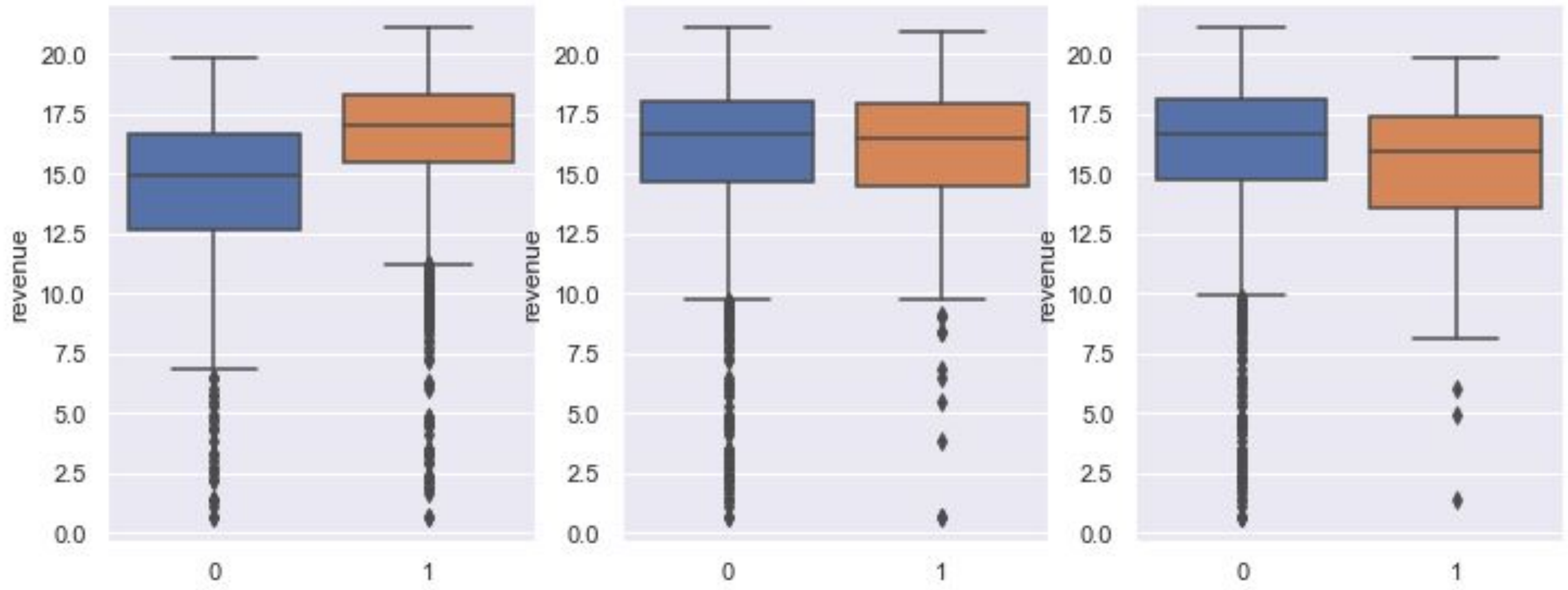


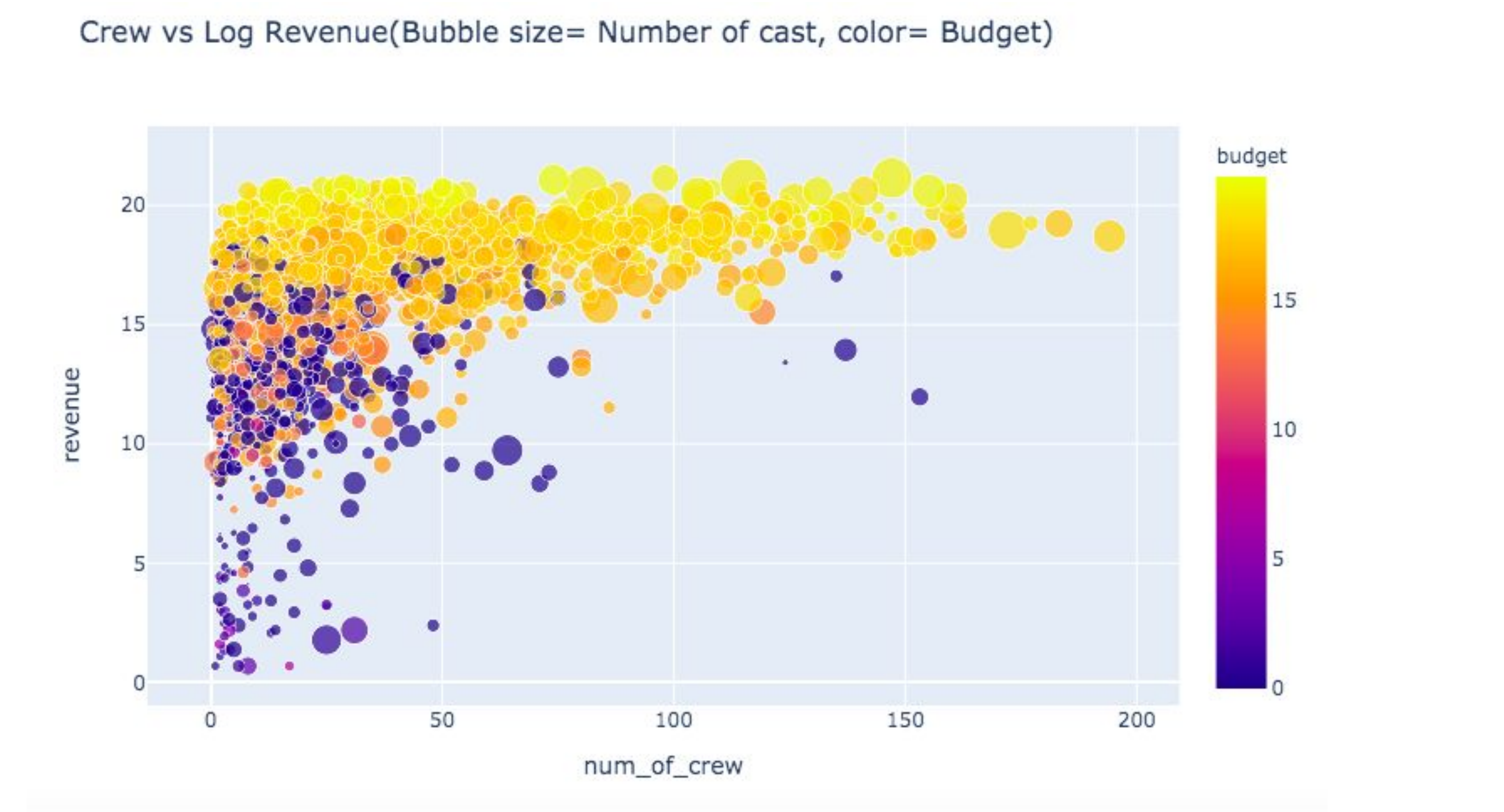
Log Revenue vs Log Popularity (Buble size=Budget)


Log Budget vs Log Revenue in different languages
revenue
budget
0
5
10
15
20
0
5
10
15
te
pt
mr
da
fi
el
ur
he
no
ar
nb
ro
vi
pl
hu
ml
bn
id


Log Revenue Distribution for top languages
revenue
20
15
10
5
0
en
hi
fr
es
ru
ja
original_language

Log revenue vs Top Production Countries



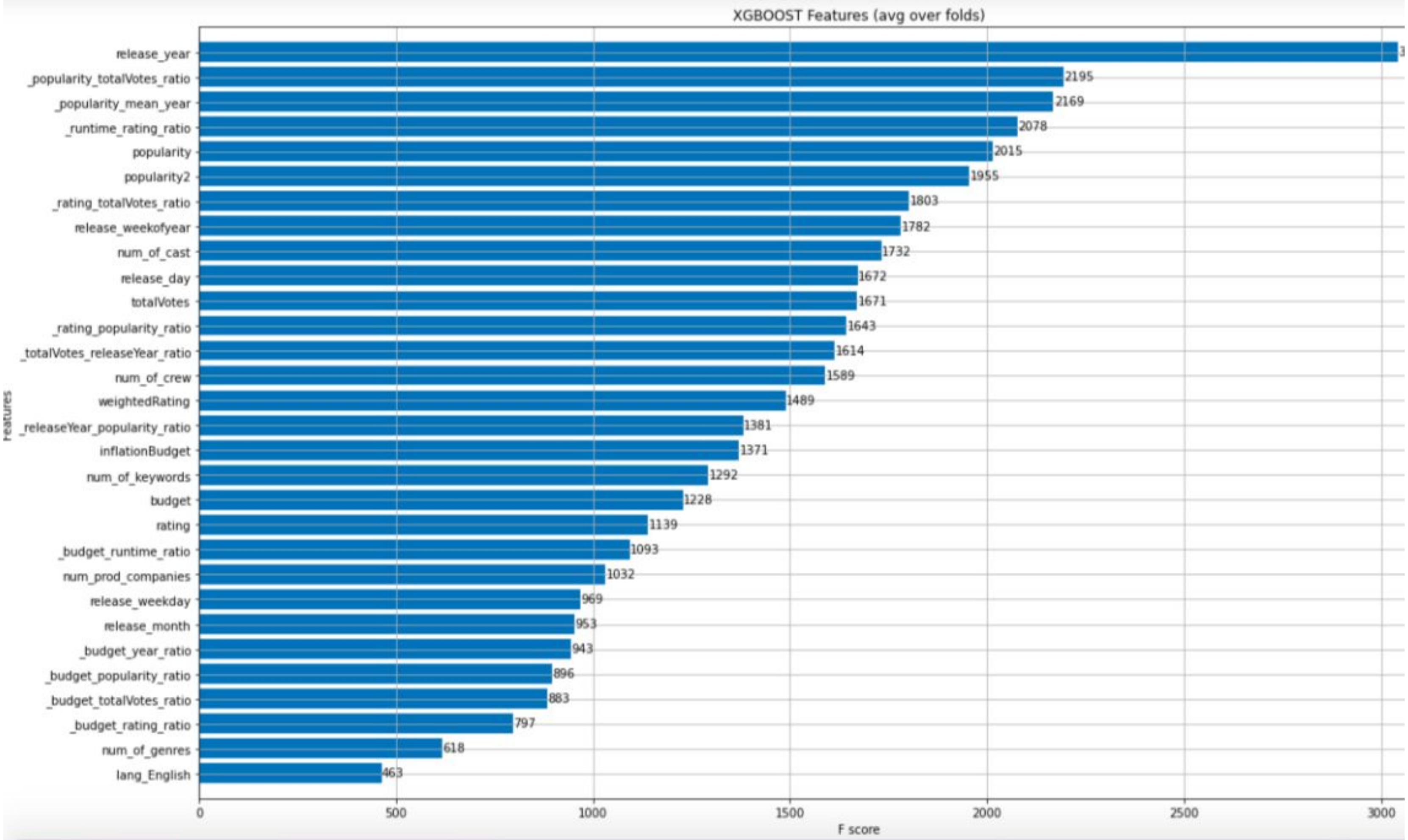

Crew vs Log Revenue(Bubble size= Number of cast, color= Budget)
revenue
20
15
10
5
0
num_of_crew
0
50
100
150
200
budget
15
10
5
0

Model Selection

- After fitting the data on various regression models, random forest gave us good result whereas Xgboost and Catboost model gave us the least errors.
- Random Forest model had rmse of 1.91 on validation set. Xgboost had even less error at rmse 1.83 whereas Catboost with the least rmse 1.81 .
- Since the root mean squared error of Xgboost and Catboost are very close, we can select either one as our final model. But for this project I calculated the final prediction as:

Final prediction = 0.3*Xgboost + 0.7*Catboost

- The above ensemble model gave the best prediction score.
- Next page have important features by Xgboost model.


XGBOOST Features (avg over folds)
release_year
3
_popularity_totalVotes_ratio
2195
_popularity_mean_year
2169
_runtime_rating_ratio
2078
popularity
2015
popularity2
1955
_rating_totalVotes_ratio
1803
release_weekofyear
1782
num_of_cast
1732
release_day
1672
totalVotes
1671
_rating_popularity_ratio
1643
_totalVotes_releaseYear_ratio
1614
num_of_crew
1589
weightedRating
1489
_releaseYear_popularity_ratio
1381
inflationBudget
1371
num_of_keywords
1292
budget
1228
rating
1139
_budget_runtime_ratio
1093
num_prod_companies
1032
release_weekday
969
release_month
953
_budget_year_ratio
943
_budget_popularity_ratio
896
_budget_totalVotes_ratio
883
_budget_rating_ratio
797
num_of_genres
618
lang_English
463
Features
0
500
1000
1500
2000
2500
3000
F score

THANK YOU! ANY QUERIES?