CAPGEMINI

Predicting Movie Revenue

Greenlighting Movies with Data Science.

Presentation Outline

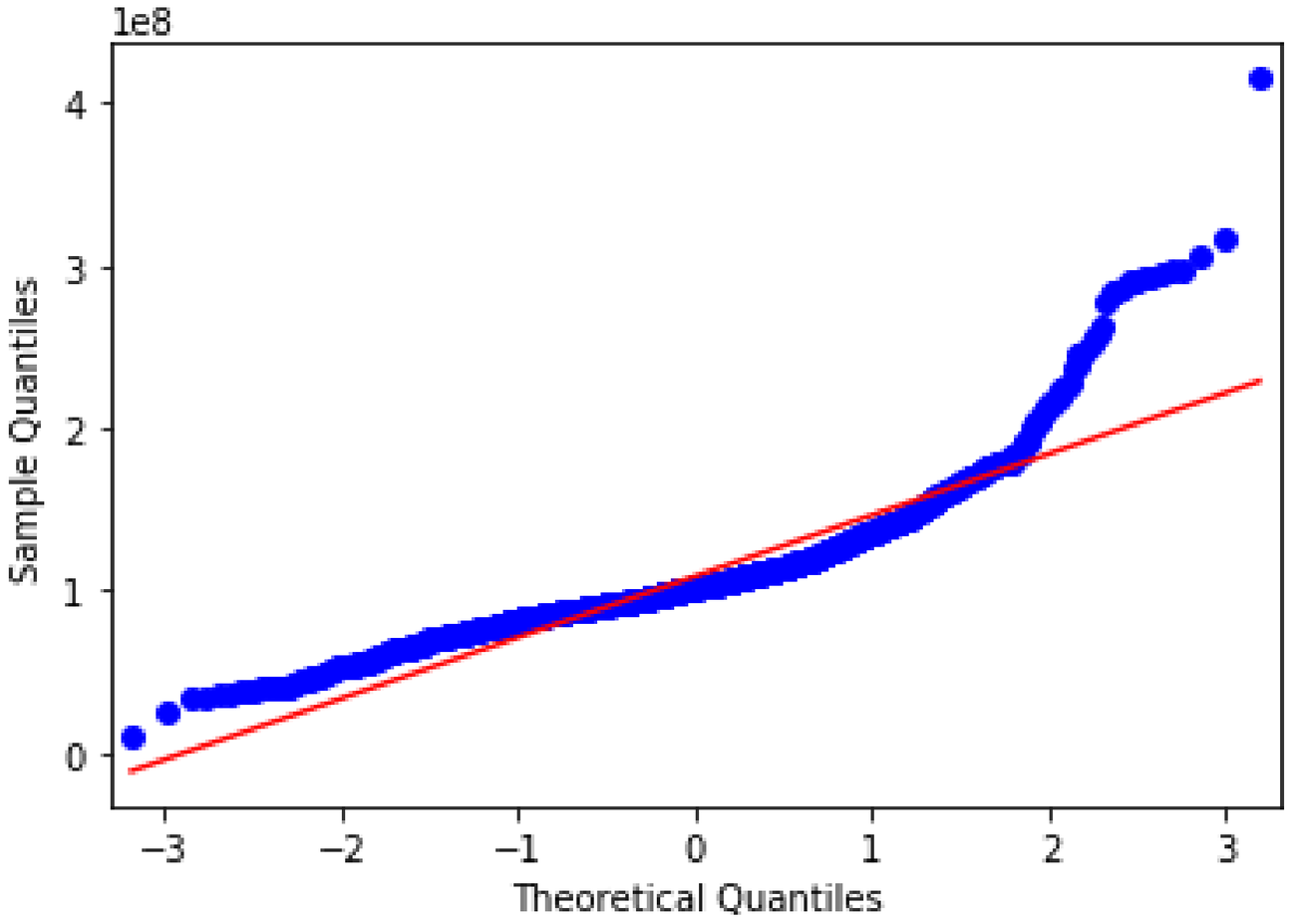
TODAY'S DISCUSSION

Client: Movie Studio

Problem: Predict movie revenue to greenlight the project and assign a budget

Dataset: The data is sourced from Capgemini, and is mostly comprised of categorical variables.

QUANTILE-QUANTILE PLOT



A graphical technique for determining if two data sets come from populations with a common distribution.

Movie Revenue Prediction Model

RESULTS.

MEAN ABSOLUTE ERROR (MAE)

This model appears to predict both seen and unseen data within a MAE of **~$67.2 million**

Data Assessment

Missing Values (NaNs/0's)

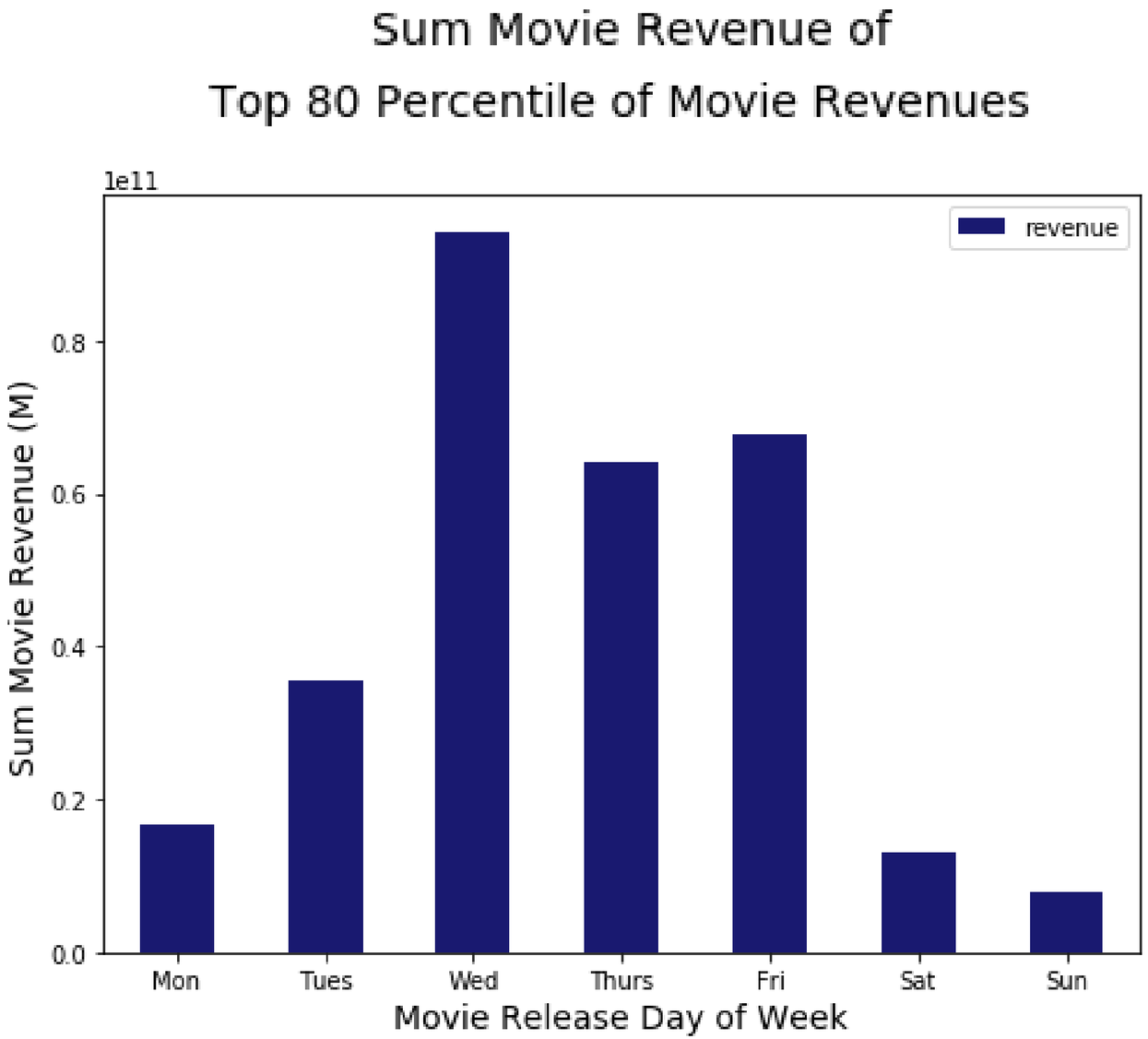
Dates as String

Nested Data

Text Data

Arbitrary/ Unneeded Columns


Data Cleaning
2
Replace Missing Revenue with Mean Revenue in 10-year Intervals
4
Use Python's Regular Expression Module to Select Data from Nested Strings
3
Convert Date Strings to Datetimes
5
Use CountVectorizer to Convert a Columns of Text Data to Numerical 'Tokens'
1
Deleted Unnecessary Columns, like movie 'id' and 'budget'

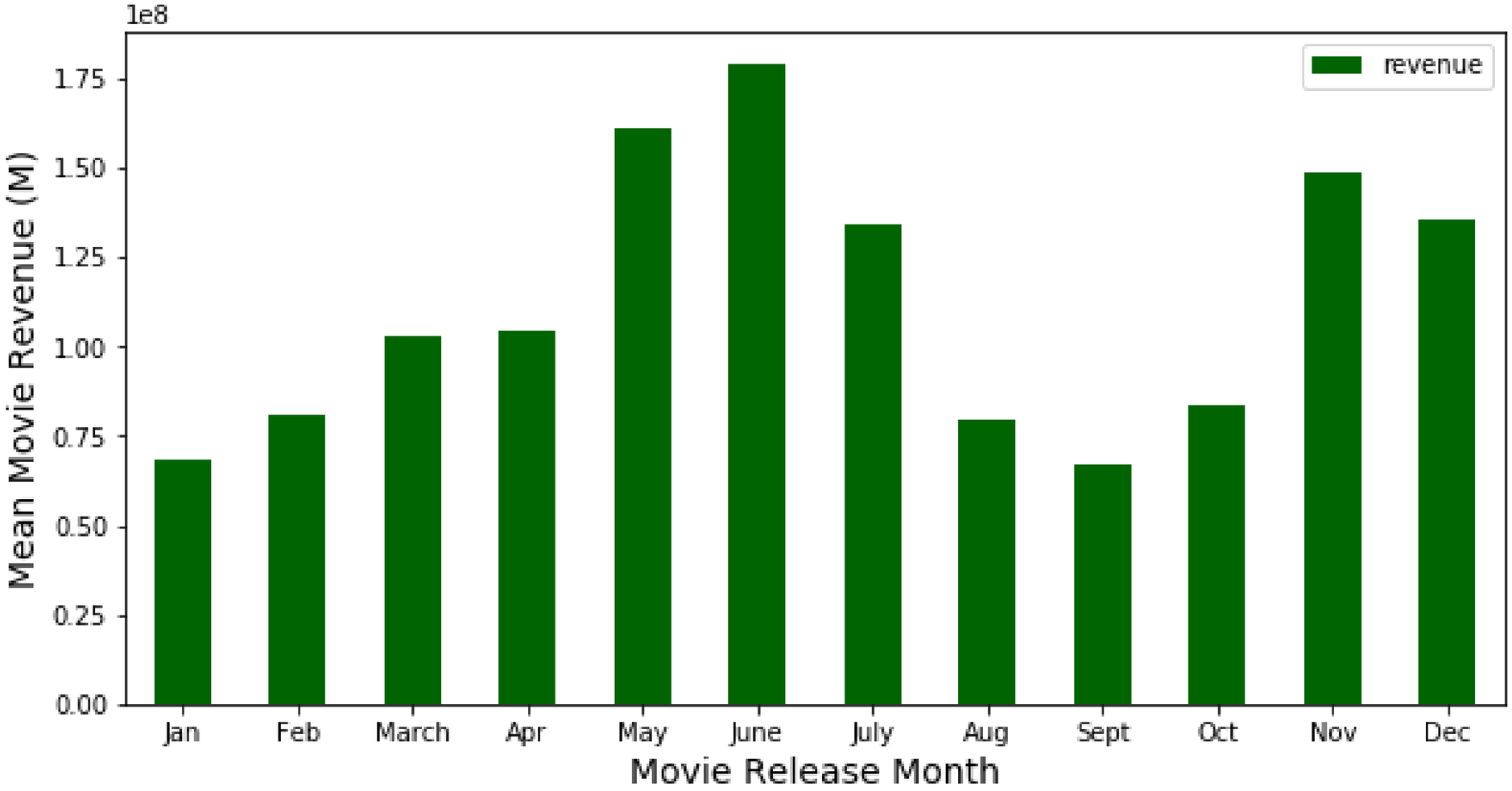


Important Notation: This dataset was sourced from Capgemini and includes the following timeframe: 01-1969 to 02-2017

Which Releases Weekdays Earn the Most Revenue for Blockbusters?

WEDNESDAY.

Overall, Summers and Winter Holiday Months Earn the Most Revenue



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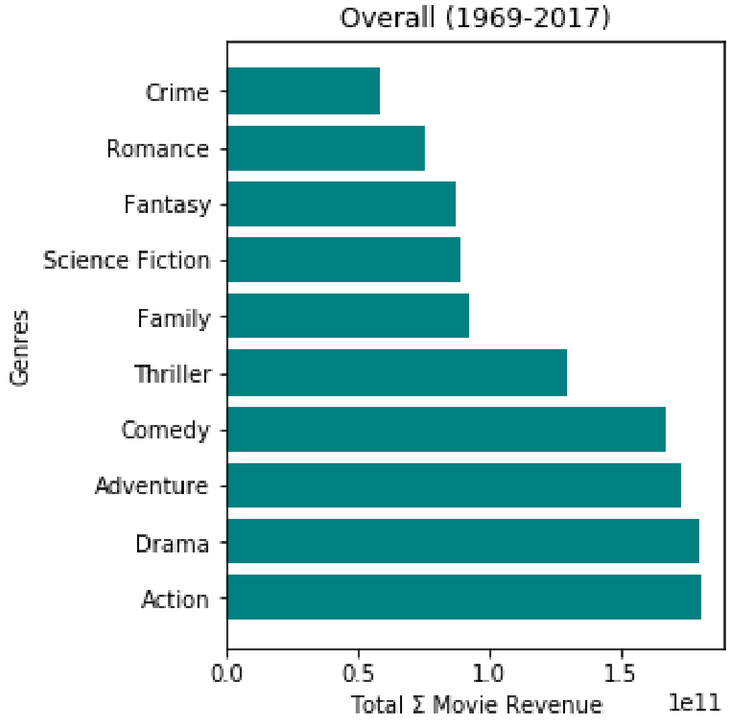
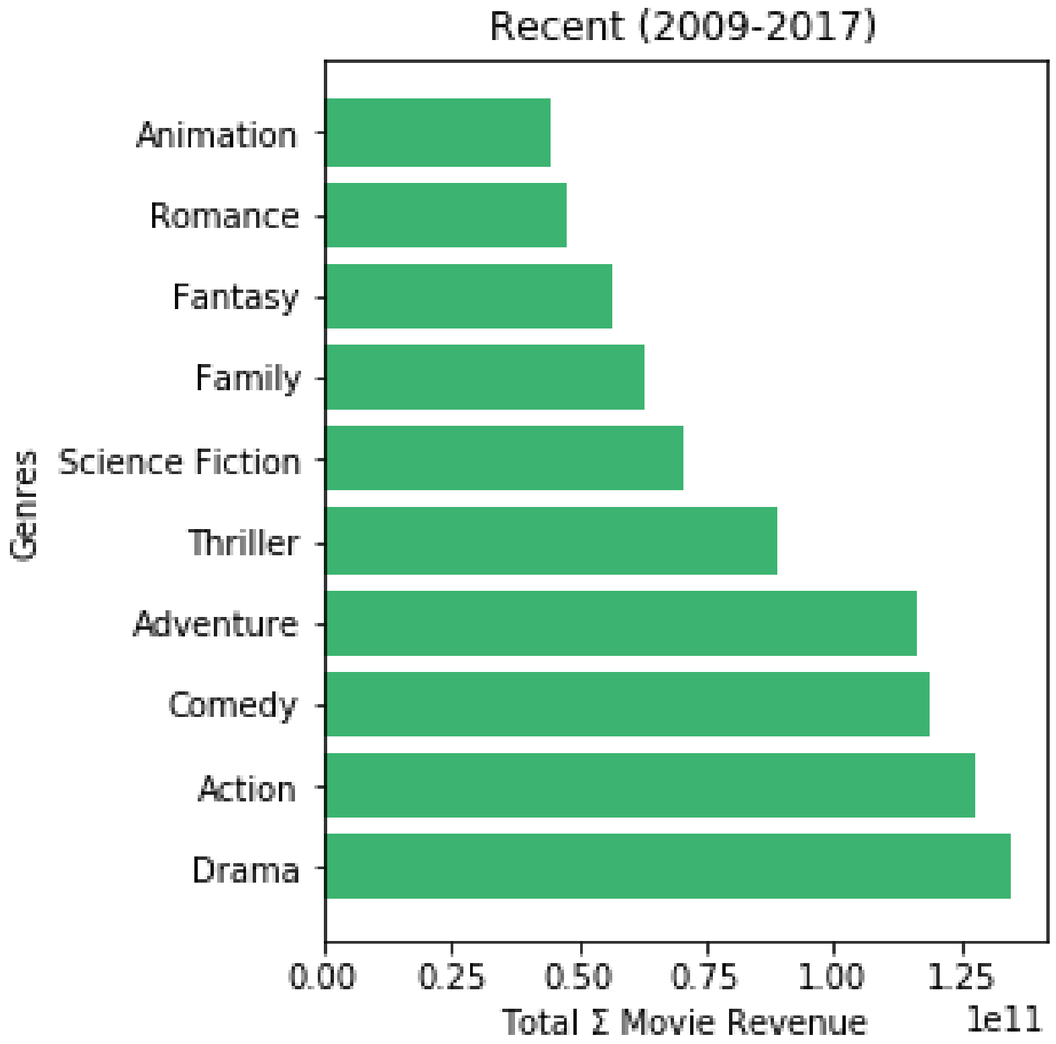
Top-Earning Movie Genres

HIGHEST TOTAL EARNINGS





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Predicting Movie Revenue with Ridge Regression

using Standard Scaling and Truncated Singular Value Decomposition (SVD) for Normalization and Dimensionality Reduction

SHRINKS COEFICIENTS

Ridge reduces model complexity and multi-collinearity

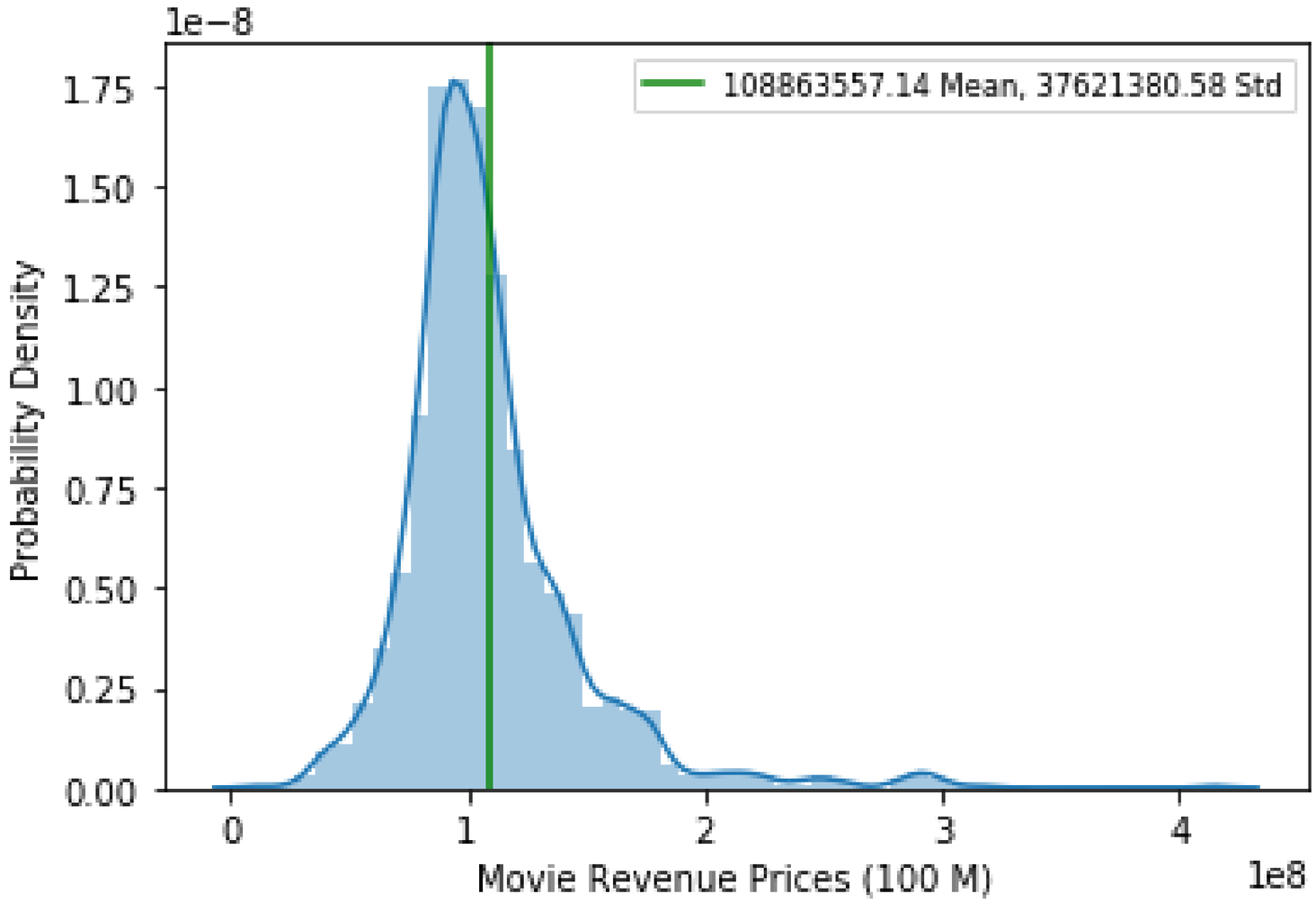
ADDS DEGREE OF BIAS

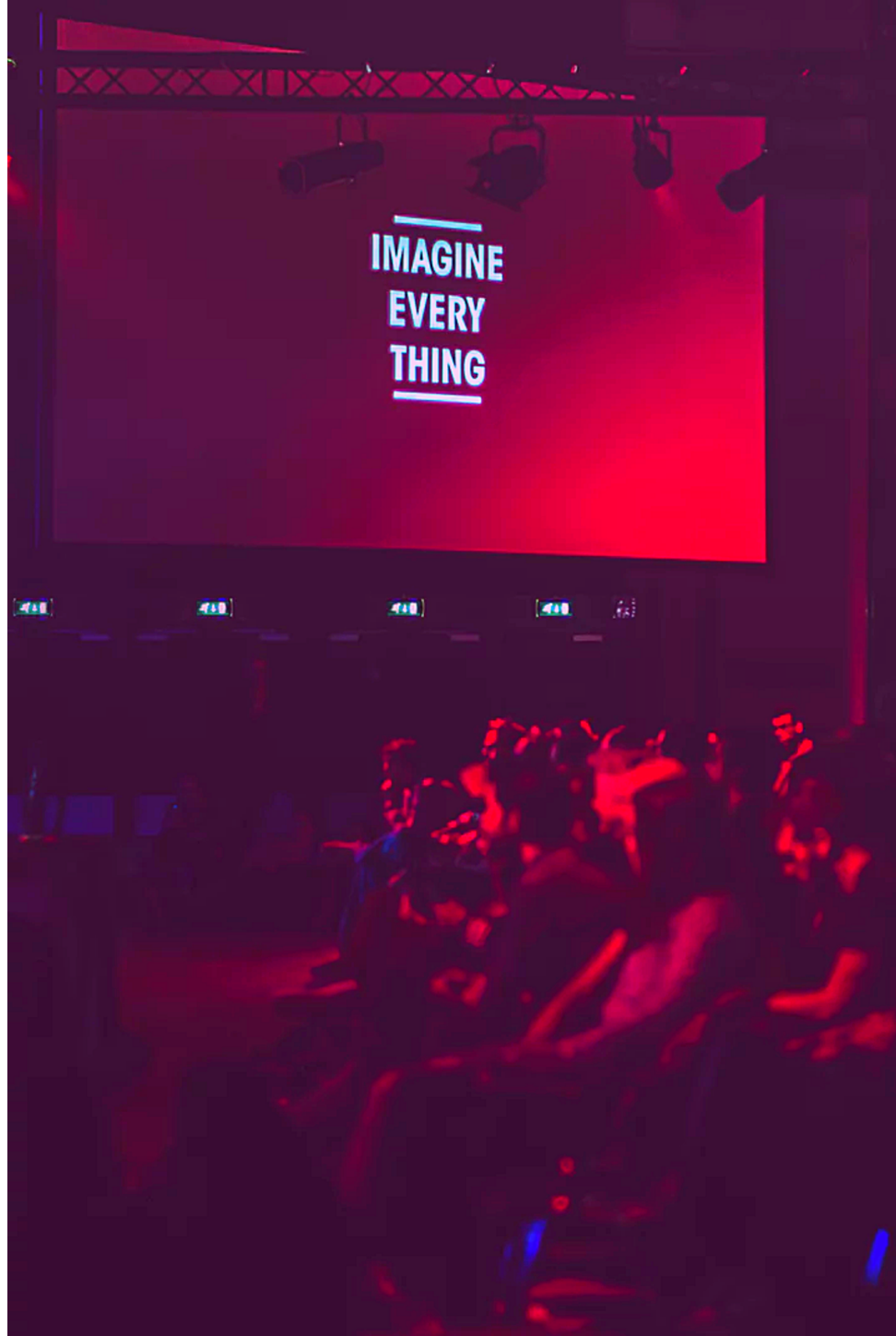
Adding bias to estimates reduces the standard errors

MORE RELIABLE REVENUE

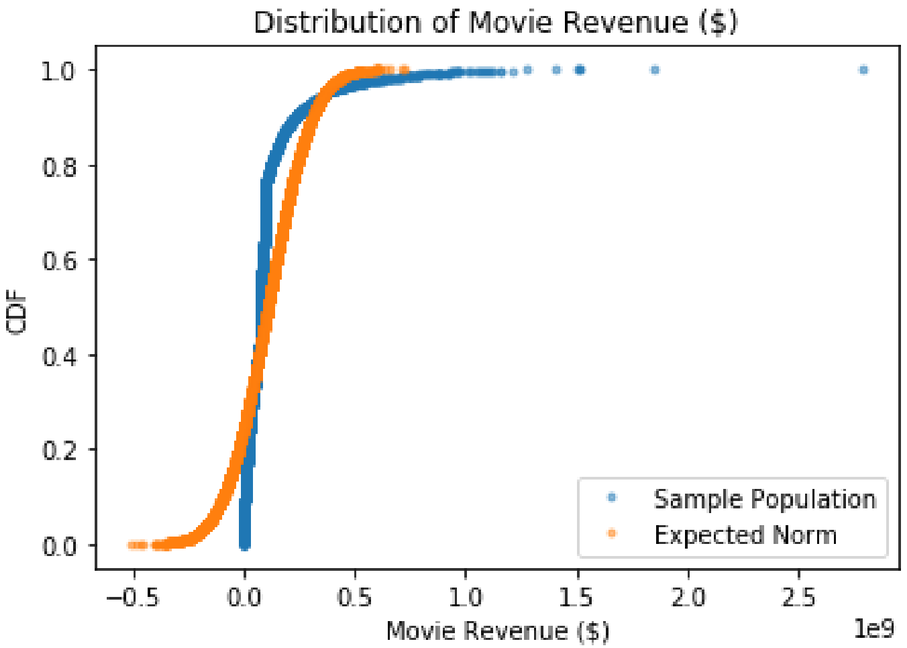
Ridge produces estimates that are more reliable

Predicted Movie Revenue with Ridge Regression



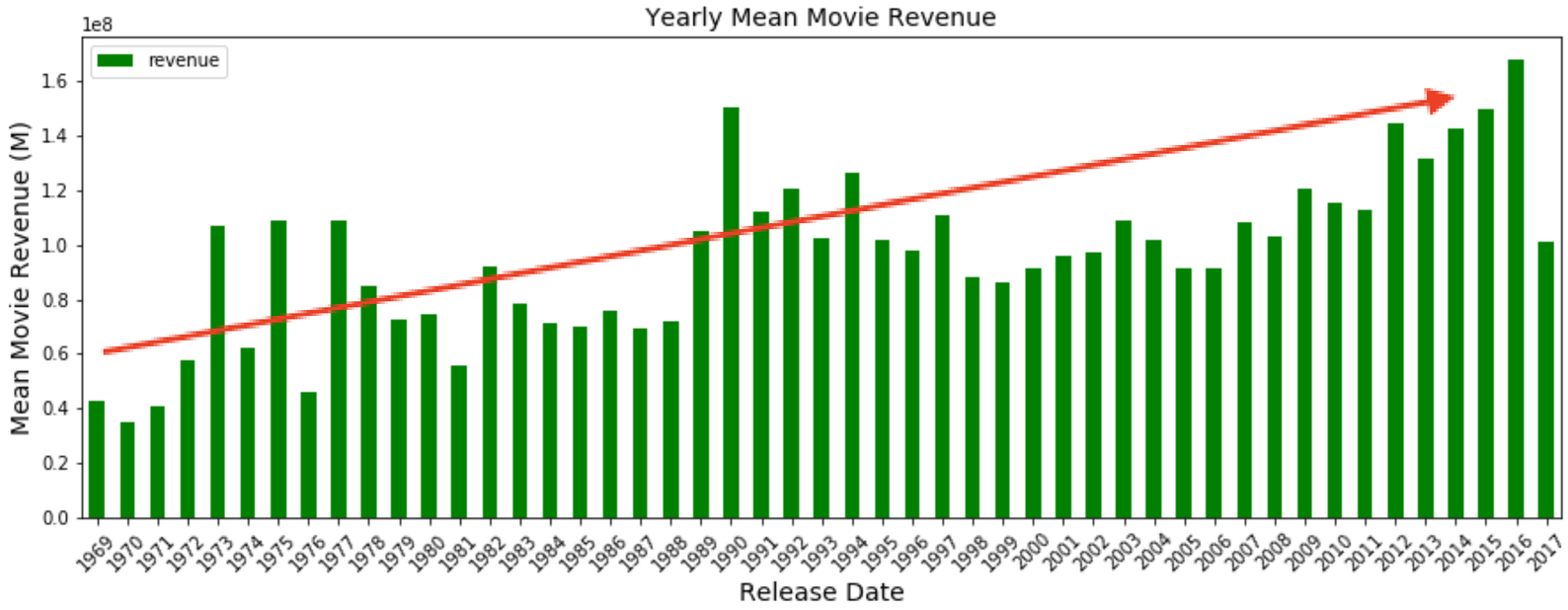


Why Does the Model Make Sense?



Movie Revenue in the Dataset was Skewed Up

Revenue Increases Over Time



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