

Your Next Box Office Hit

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MONEY IN

MONEY OUT

What other factors can we consider?

Our Goal: Higher Domestic Total Gross

Budget

MPAA Rating

Runtime

Genre

Release Date

Methods

Worldwide Releases from **BoxOfficeMojo** for 5 years from 2011-2015

PG, PG-13, and R rated movies

Linear regression with lasso regularization

Tools Used

- ❖ Python 3.4
- ❖ Pandas, Numpy, Statsmodel, Scikit-learn
- ❖ Matplotlib, Seaborn
- ❖ Beautiful Soup

$$[\text{DTG}] = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \\ \beta_5 x_1 x_5 + \beta_6 x_1 x_3 + \beta_7 x_1 x_4 + \varepsilon$$

β_0 = y-intercept

β_1 = [Production Budget]

β_2 = [Runtime]

β_3 = [Genre: Fantasy]

β_4 = [Genre: Action]

$\beta_1 \beta_5$ = [Budget/Romance Interaction]

$\beta_1 \beta_3$ = [Budget/Fantasy Interaction]

$\beta_1 \beta_4$ = [Budget/Action Interaction]

ε = error term

$$\begin{aligned}
 [\text{DTG}] = & .88 x_1 + 5.08 \cdot 10^5 x_2 - 3.12 \cdot 10^7 x_3 \\
 & - 1.72 \cdot 10^8 \beta_4 x_4 + 1.2 x_1 x_5 + 0.34 x_1 x_3 \\
 & + 1.96 x_1 x_4 - 2.97 \cdot 10^7 + \varepsilon
 \end{aligned}$$

β_0 = y-intercept

β_1 = [Production Budget]

β_2 = [Runtime]

β_3 = [Genre: Fantasy]

β_4 = [Genre: Action]

$\beta_1 \beta_5$ = [Budget/Romance Interaction]

$\beta_1 \beta_3$ = [Budget/Fantasy Interaction]

$\beta_1 \beta_4$ = [Budget/Action Interaction]

ε = error term

“The fantasy penalty”

For movie of 108 min and 35M, FANTASY movie predicted to earn 377M compared to 579M of movies generally.

Conclusions

- ❖ PG, PG-13, R ratings did not factor into box office success
- ❖ Seasonality was inconclusive
- ❖ Romance movies are big hits when accompanied by big budgets

Caveats

- ❖ While MPAA rating did not appear significant in the model
- ❖ R^2 of the model is 0.502, limiting predictive value

Next Steps

- ❖ Market research to identify trends in audience taste preferences
- ❖ Holiday weekend release effect

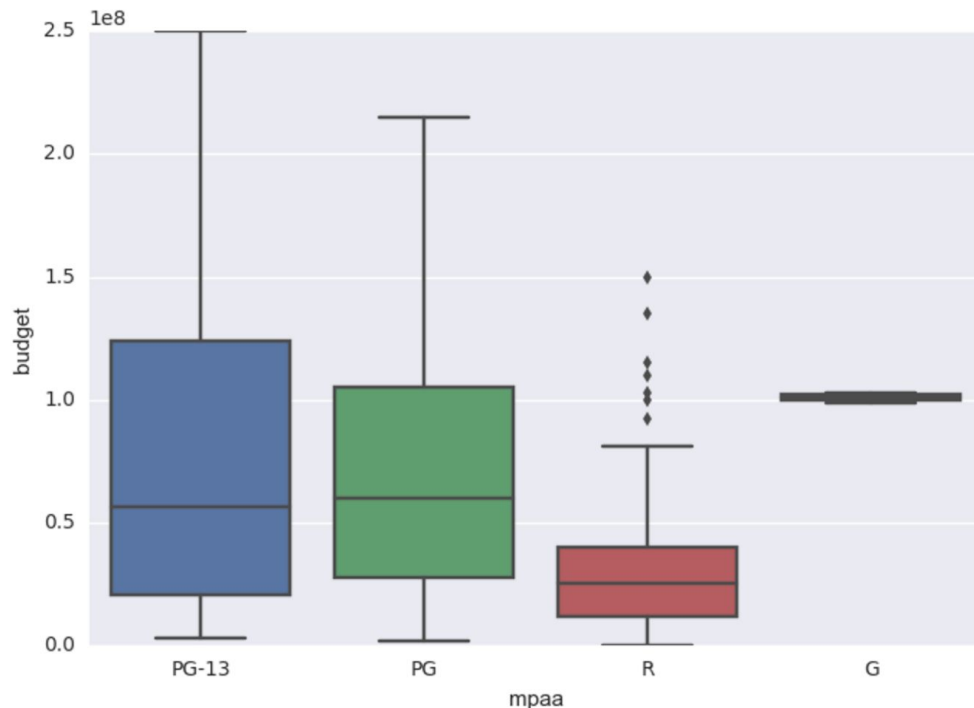
Thank You

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Rationale for Dropping G movies

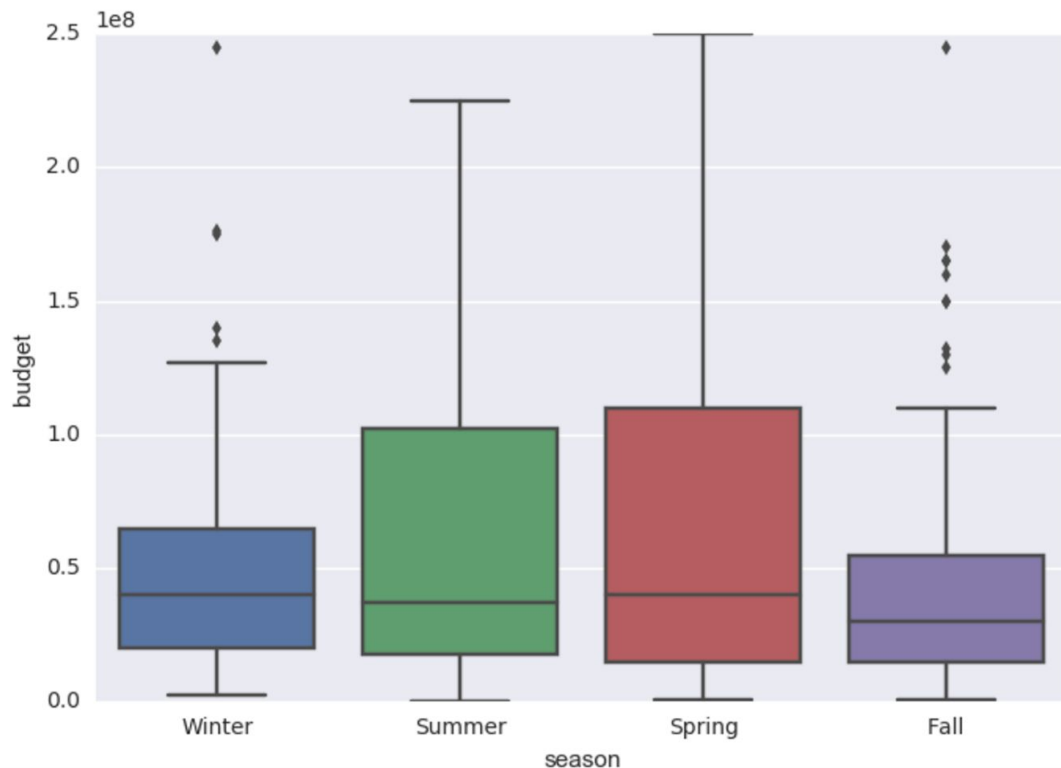
- Different business model: requires additional toy tie-ins
- Potential for big box office gains, but high risk



“G rated movies are more expensive to make”

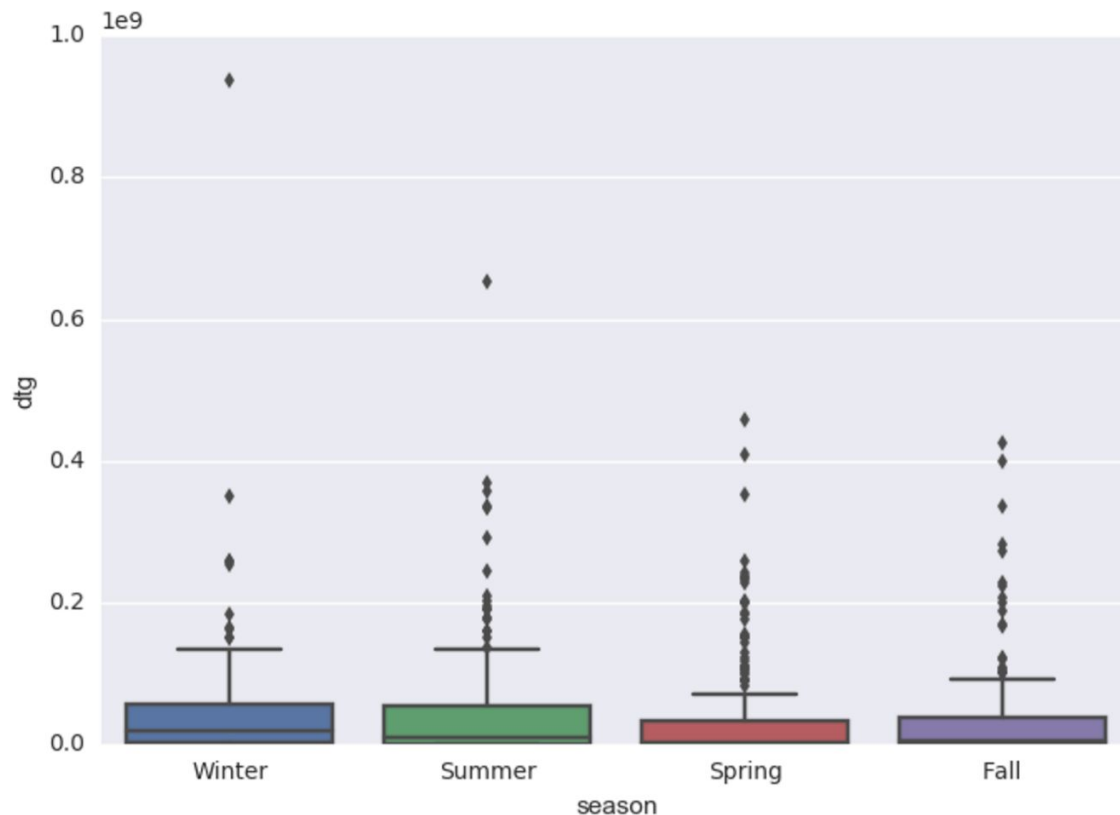
Seasonal Variation Matters

Movies released in the spring have higher production budgets...



Seasonal Variation Matters

...but movies released in spring tend to make less money



MPAA Rating Matters

R-rated movies tend to have lower production budgets and lower domestic total gross

