Spectacular Studios

Analysis of profitability driving production options

This is the analysis of the historical profitability of almost 1000 IMDB listed movies, with the purpose of providing insights to Spectacular Studios in terms of what are the characteristics of a top earning movie.

Problem statement

What are the **key characteristics** that differentiate the top **10% most profitable** movies from **the bottom 90%?**

In our analysis we tried to identify the key differentiators that characterize the top 10% movies in terms of profit rate, and hopefully to be able to draw a set of recommendations based on them.

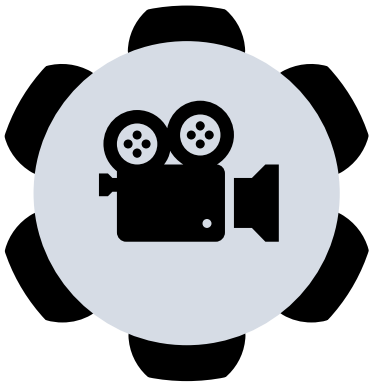
Executive Summary

The top **10% most profitable** movies are setting themselves apart from the **bottom 90%** through the choice of genre and release timing.

We recommend **mixing high risk / high reward genres** like Horror and Thrillers with **so-so but certainly** profitable genres like animations, romance or family,

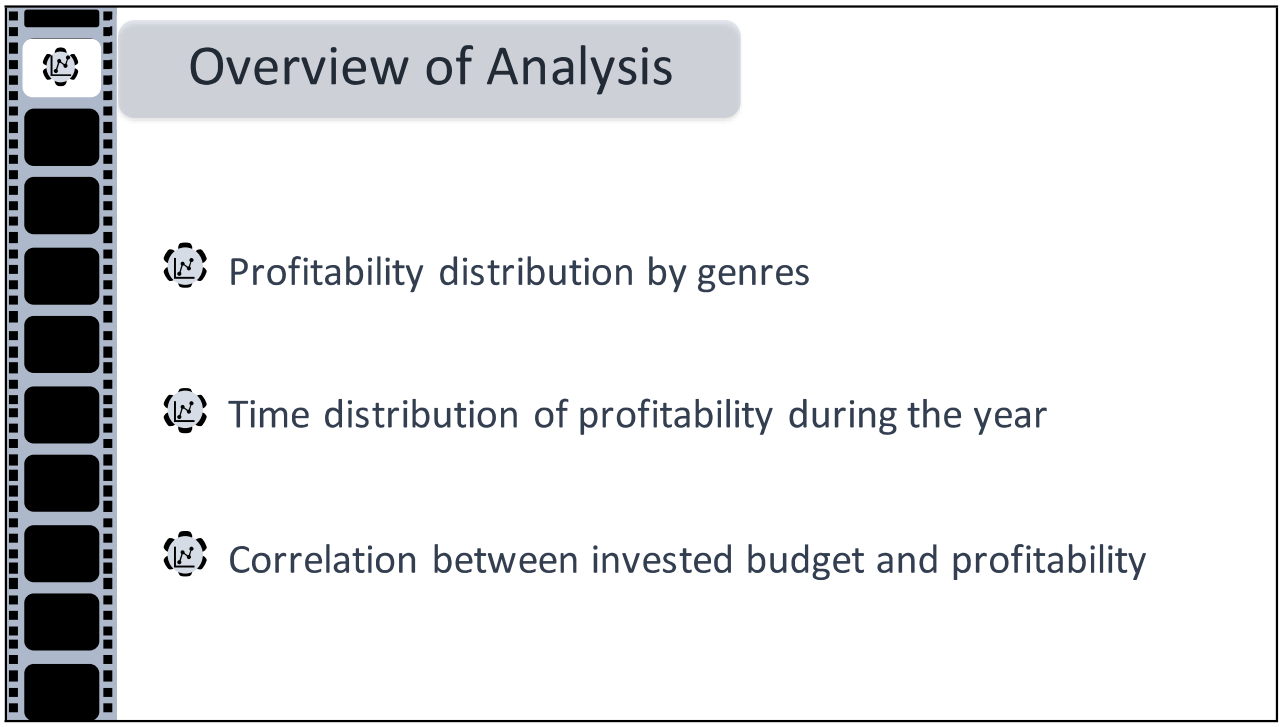
investing **no more than 100-150M**,

and releasing the movies in **January, June-July or September-October.**



What we figured out is that indeed there are specific genres that have made it up in the top 10% and that the timing is important. We will get into details in a moment, but we'll give you the conclusions up front: there are high risk and high reward movie genres – like horror / thrillers, so these are worth taking a chance. However, because they fail to bring money so many times, we recommend having a diverse portfolio, by including movies that, over time, have proven to bring decent profitability rate and with a higher rate of certainty – for instance animations, fantasy, family, or romance. From budget perspective we could not find proof that more money in will get you better returns, quite the opposite, therefore we recommend to not push above 100-150M.

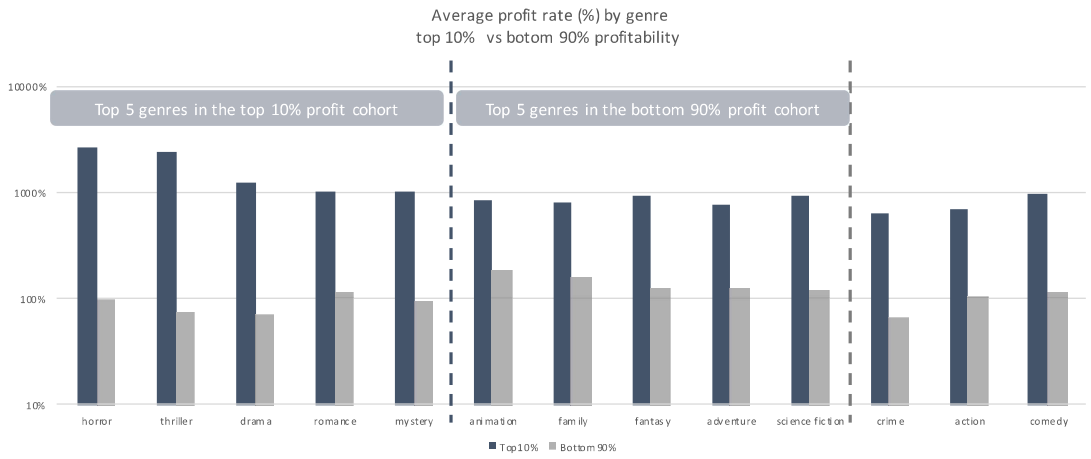
In terms of release dates, it seems there are a few windows of opportunity: January (both overall and specifically for the to 10%), but also the summer June-July window and then September-October.



What we will walk you through in the next steps are 3 analysis direction we embarked on: looking at the genre's profitability, at the monthly performance and at the possible correlation of investment vs return.

Horror and Thriller movies get most of the top outliers, but Animation and Romance get more balanced results overall

Is the distribution of profitability uniform between genres or are there some genres that have a better performance?



Looking at the profitability ranks by genre, we are showing here 2 interesting groups, the top 5 10% genres are followed by to top 5 genres from the 90% cohort, and then the rest.

If we look at Horror, Thriller and Drama these have very good results that place them in the top 10%, however, the ones that do not make big profits, make pretty low ones – there's not much in between – which point out the high risk of these genres. We see the unbalance in the difference of height between the blue and grey bars per genre.

If by contrast we look at genres like Romance, Mystery, Animation, Family or Fantasy, they make overall decent and balanced profits – sure they won't break records, but they seem to pose a lot less risk.

Let's look in a bit more detail at some of these genres profit histograms.

High Profit Horror movies have also high risk of flop, while Animations tend to have lower mean profits, but more certain

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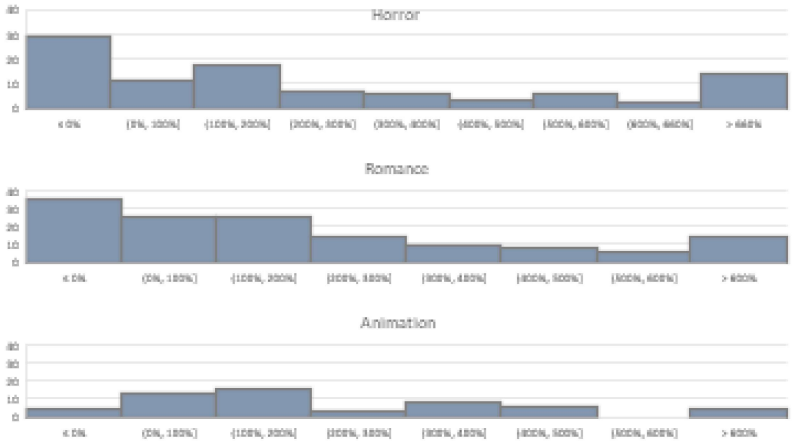
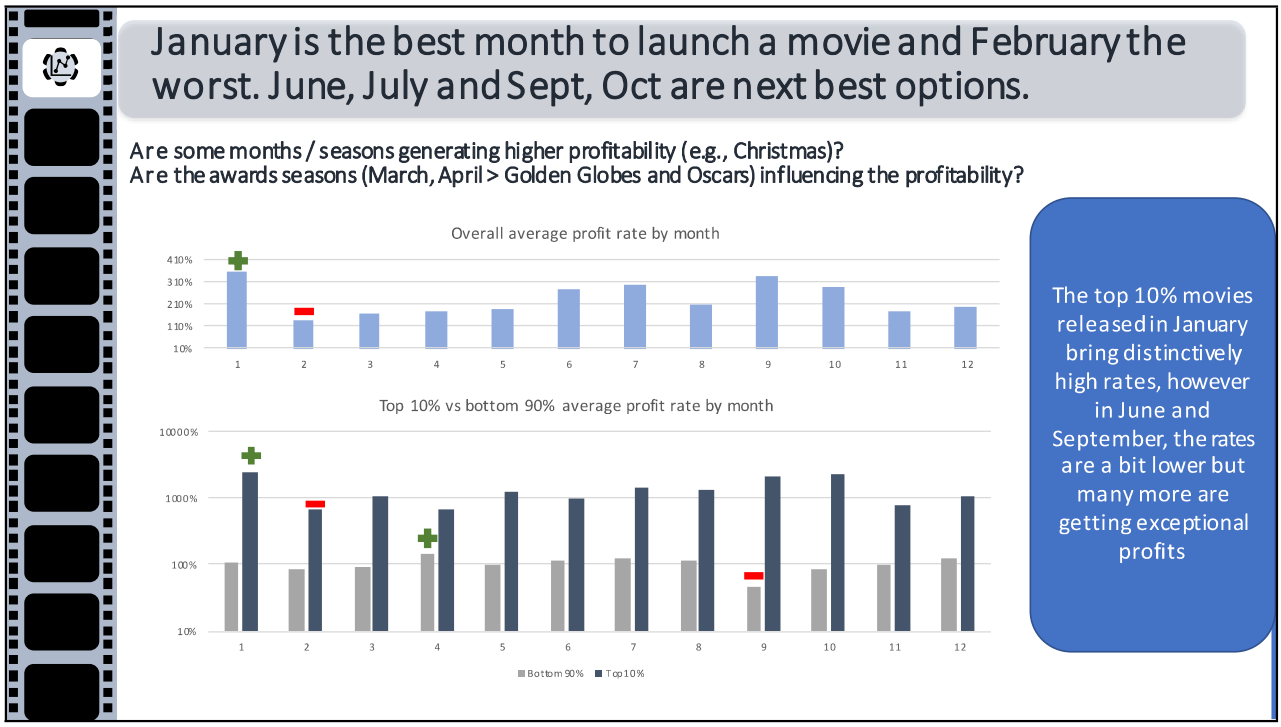


Horror movies bring twice the average profit rates and 5-10 times the max rates vs Romance or Animations. **However**, the range of profits is so much larger for horror and therefore unreliable, while Animations have a higher median point.

	Horror	Romance	Animation
min	-100%	-99%	-74%
mean	612%	241%	242%
median	140%	143%	183%
std dev	1520%	563%	248%
max	10076%	5957%	1177%

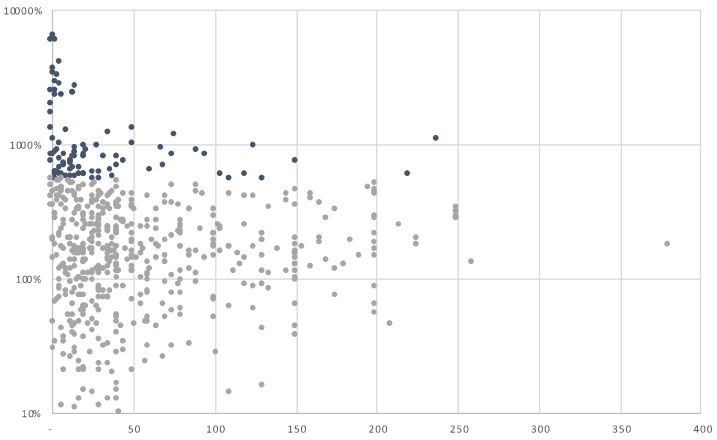
We picked just a few genres in order to illustrate what we meant by the high risk / high reward problem.
We took the risky Horror, the safe Animation and the in-between Romance: you see that Horror in particular but also Romance, although they have a very nice >600% bar, the no profit bar on the right is really outstanding – so sure, you might get big horror hit movies, but there is even a higher chance you will lose money.
Statistically speaking you have a 1520% standard deviation, so there are many chances for success but also for loss.
Now Animation has a more down to earth distribution – there are a lot less chances to hit the jackpot (leftmost bar), but also significantly less chances to lose your investment (rightmost bar).
Most likely your profit will be somewhere around 100-200%.
Out of the 3, Animation has also the highest median at 183%: which again points out that the Animations have a better overall balance between the top and bottom half of the distribution.



Moving on to the monthly distribution of profitability.
Overall, January is the best and February the worst month for releasing a movie. January profits seem to go mostly to the top 10% profitable ones, so probably they are cannibalizing the others. A similar pattern seems to appear in September – October which bring good overall profits, but again, the 10% profitable ones are taking the share of the lion.
June, July seem more balanced, so it could be a safer approach to get at least some exposure and revenue.

Investments higher than 130M rarely bring better profitability and the top 10% in terms of profitability are usually the outlier productions

Are the higher profit rates generated by higher invested budgets?



74 out of the 864 movies have outlier budgets over the 132M threshold, but only 3 of them are in the top 10% by profitability.

60 of the 91 top 10 profitability movies are outliers in terms of profit hitting rates > 700%

	Budget	ProfitRate
min	8	-100%
mean	46,210	242%
median	27,220	101%
std dev	52,767	721%
max	380,000	10076%

Surprisingly, the high investments are not driving better profit rates.
Only 3 of the movies with budgets over 132M (outliers that is) – Frozen, Avengers and Avatar, have made it to the 10% list.
Also, the most budget demanding genres are action and adventure – these not being very well positioned in terms of profitability.
As you can see, the dark blue dots – top 10% profitability, have taken mostly < 50M of budget.
Therefore, we would not recommend exceeding 100-150M per movie.

Limitations and Biases – 1/2

Data Collection :

- There are missing budget and revenue records
- There latest release date is 2013 in the data set
- The IMDB ratings are based on the options of the people who decide on their own to provide a feedback and therefore it is not quite a statistically proper way of using this as the sample that represents the population
- The data does not include information on the critics' reviews, nor the nominations and prizes received

In terms of limitations and biases of the analysis, as mentioned before, consider that we worked on a limited amount of data in terms of time coverage, with many missing (or unreliable) financial data, and without clear indication of inflation adjustments. There are many factors that influence a movie's popularity and consequently the revenue and profit – cast, famous reviewers' opinion – and the factors like all matters of fashion change in time. We live in the digital era and the channels of marketing and distribution have changed: see Netflix as a platform and producer, Amazon Prime, and others.

Limitations and Biases – 2/2

Data Processing:

- The analysis has focused only on the English language movies from the latest 5 years of the dataset – to avoid comparing financial data that is not inflation-adjusted
- Because the movies fall into multiple genres many movies are double counted; also, the counts by genres range between ~50 and ~300 so the conclusions are not fully balances

Insight:

- Most of the data flagged as target cohort – top 10% movies in terms of profitability are outliers – of course as a production company this is what you want, outstanding results. However, by definition outliers are out of the ordinary, not controllable events

In order to overcome some of the flaws of the data, we introduced further bias while processing and removing the movies with incomplete data, or the ones that were not of English language.
There are other aspects like the fact that you cannot frame a movie as a single genre, but we are not trying to get an exact number, so we can live with the assumptions, but we need to take it with a grain of salt.

Lastly, let's not forget that we tried a little to predict the unpredictable – the most profitable 10% movies are mostly outliers, so their performance will be hard to replicate just by choosing a specific genre or a release month.

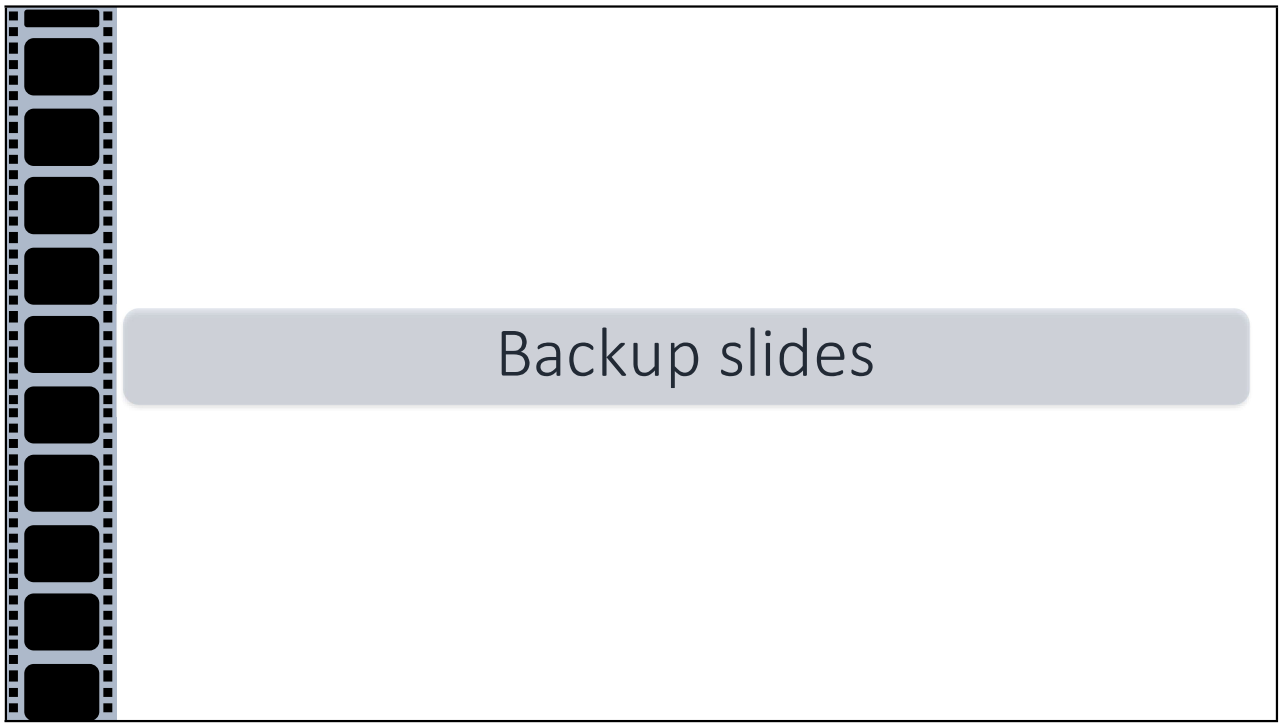
And this is why we also recommend to look at other data sources also.

Next steps

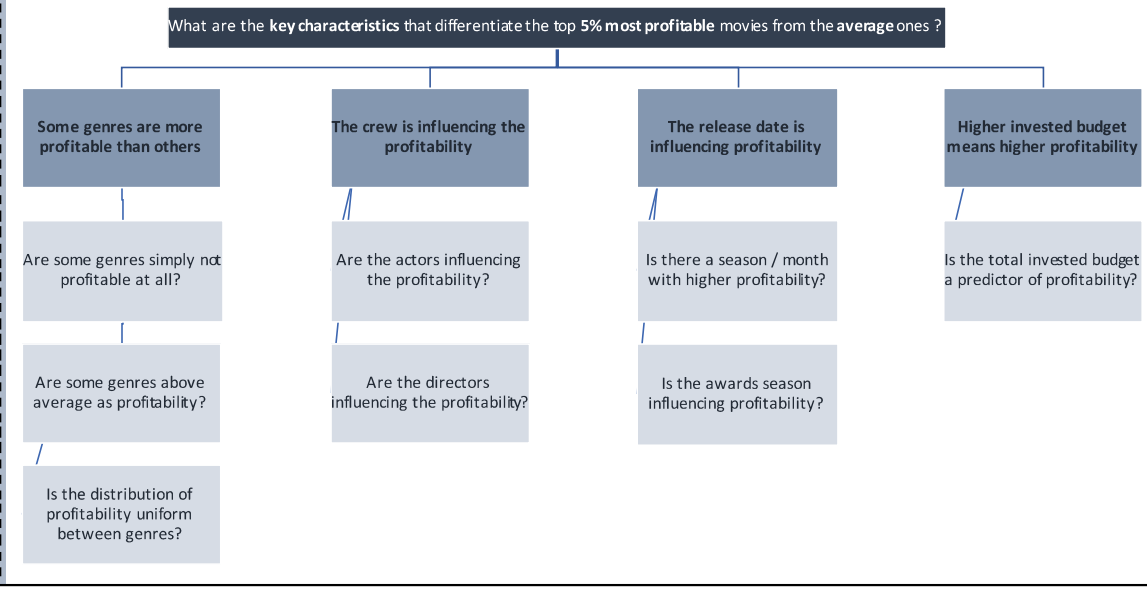
Identify other data sources:

- Prizes records (Oscars, Golden Globes, TIFF, etc.)
- Movie critics reviews data (Roger Ebert, Rotten Tomatoes)
- Budget and revenue data (to address missing data points)
- Update the IMDS data with latest years records

Intuitively, we all remember that movie with Meryl Streep or the other one Tom Hanks, so for sure the distribution of the top earning movies might give some interesting insights.
The analysis should for sure be re-run with a fully updated (and validated) data that covers all movies in the past 10 years, and with all budget / revenue numbers.
As a nice to have a sentiment analysis of tweets and review boards, prize nomination statistics could add depth to the conclusions.


Backup slides

Issue Tree


What are the **key characteristics** that differentiate the top **5% most profitable** movies from the **average** ones ?
Some genres are more profitable than others
Are some genres simply not profitable at all?
Are some genres above average as profitability?
Is the distribution of profitability uniform between genres?
The crew is influencing the profitability
Are the actors influencing the profitability?
Are the directors influencing the profitability?
The release date is influencing profitability
Is there a season / month with higher profitability?
Is the awards season influencing profitability?
Higher invested budget means higher profitability
Is the total invested budget a predictor of profitability?