

Movie Industry Analysis on Budgets

Vince Scacco DAT9 Course
Teacher: Rajive Islam

Overview

- Study aims to demonstrate how production budget can affect movies
- Compares production budget against domestic gross profit, worldwide gross profit and popularity of over 1400 movies
- Results show that production does not have a great impact on performance of movies
 - All p values are not significant
 - No change in production budget since 2006

Why look into this?

- To see whether production budget is relevant
- Should it be a factor considered when making a movie?

Data

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df_rt_movie_cleaned.head()
```

	id	synopsis	rating	genre	director	theater_date	dvd_date	runtime
0	1	This gritty, fast-paced, and innovative police...	R	Action and Adventure Classics Drama	William Friedkin	Oct 9, 1971	Sep 25, 2001	104
1	3	New York City, not-too-distant-future: Eric Pa...	R	Drama Science Fiction and Fantasy	David Cronenberg	Aug 17, 2012	Jan 1, 2013	108
2	5	Ileana Douglas delivers a superb performance ...	R	Drama Musical and Performing Arts	Allison Anders	Sep 13, 1996	Apr 18, 2000	116
3	6	Michael Douglas runs afoul of a treacherous su...	R	Drama Mystery and Suspense	Barry Levinson	Dec 9, 1994	Aug 27, 1997	128
4	7	NaN	NR	Drama Romance	Rodney Bennett	NaN	NaN	200

```
df_movie_budgets.head()
```

	id	release_date	movie	production_budget	domestic_gross	worldwide_gross
0	1	Dec 18, 2009	Avatar	425000000	760507625	2776345279
1	2	May 20, 2011	Pirates of the Caribbean: On Stranger Tides	410600000	241063875	1045663875
2	3	Jun 7, 2019	Dark Phoenix	350000000	42762350	149762350
3	4	May 1, 2015	Avengers: Age of Ultron	330600000	459005868	1403013963
4	5	Dec 15, 2017	Star Wars Ep. VIII: The Last Jedi	317000000	620181382	1316721747

```
df_tmdb_movies.head()
```

Unnamed: 0	genre_ids	id	original_language	original_title	popularity	release_date	title	vote_average	vote_count	
0	0	[12, 14, 10751]	12444	en	Harry Potter and the Deathly Hallows: Part 1	33.533	2010-11-19	Harry Potter and the Deathly Hallows: Part 1	7.7	10788
1	1	[14, 12, 16, 10751]	10191	en	How to Train Your Dragon	28.734	2010-03-26	How to Train Your Dragon	7.7	7610
2	2	[12, 28, 878]	10138	en	Iron Man 2	28.515	2010-05-07	Iron Man 2	6.8	12368
3	3	[16, 35, 10751]	862	en	Toy Story	28.005	1995-11-22	Toy Story	7.9	10174
4	4	[28, 878, 12]	27205	en	Inception	27.920	2010-07-16	Inception	8.3	22186

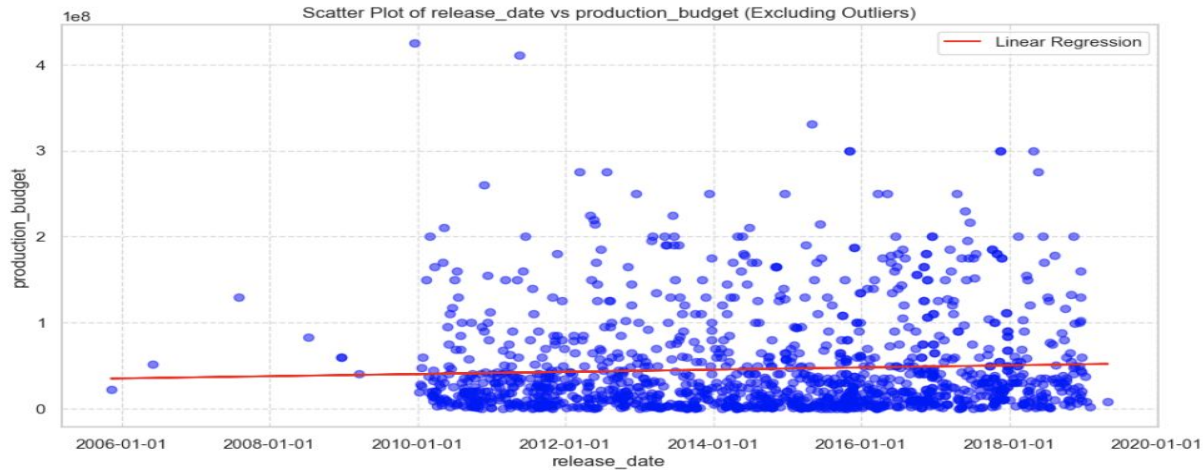
Master data

1400 rows exactly, no missing data or NaN types.

id_x	release_date	title	production_budget	domestic_gross	worldwide_gross	Unnamed: 0	genre_ids	id_y	original_language	original_title	popularity	vote_average
1	2009-12-18	Avatar	425000000	760507625	2776345279	6.0	[28, 12, 14, 878]	19995.0	en	Avatar	26.526	7.4
2	2011-05-20	Pirates of the Caribbean: On Stranger Tides	410600000	241063875	1045663875	2470.0	[12, 28, 14]	1865.0	en	Pirates of the Caribbean: On Stranger Tides	30.579	6.4
4	2015-05-01	Avengers: Age of Ultron	330600000	459005868	1403013963	14169.0	[28, 12, 878]	99861.0	en	Avengers: Age of Ultron	44.383	7.3
7	2018-04-27	Avengers: Infinity War	300000000	678815482	2048134200	23811.0	[12, 28, 14]	299536.0	en	Avengers: Infinity War	80.773	8.3
9	2017-11-17	Justice League	300000000	229024295	655945209	20623.0	[28, 12, 14, 878]	141052.0	en	Justice League	34.953	6.2
11	2017-06-02	Spider-Man: Homecoming	65000000	354013420	675013420	6.9	[28, 12, 14, 878]	141052.0	en	Spider-Man: Homecoming	70.933	7.5

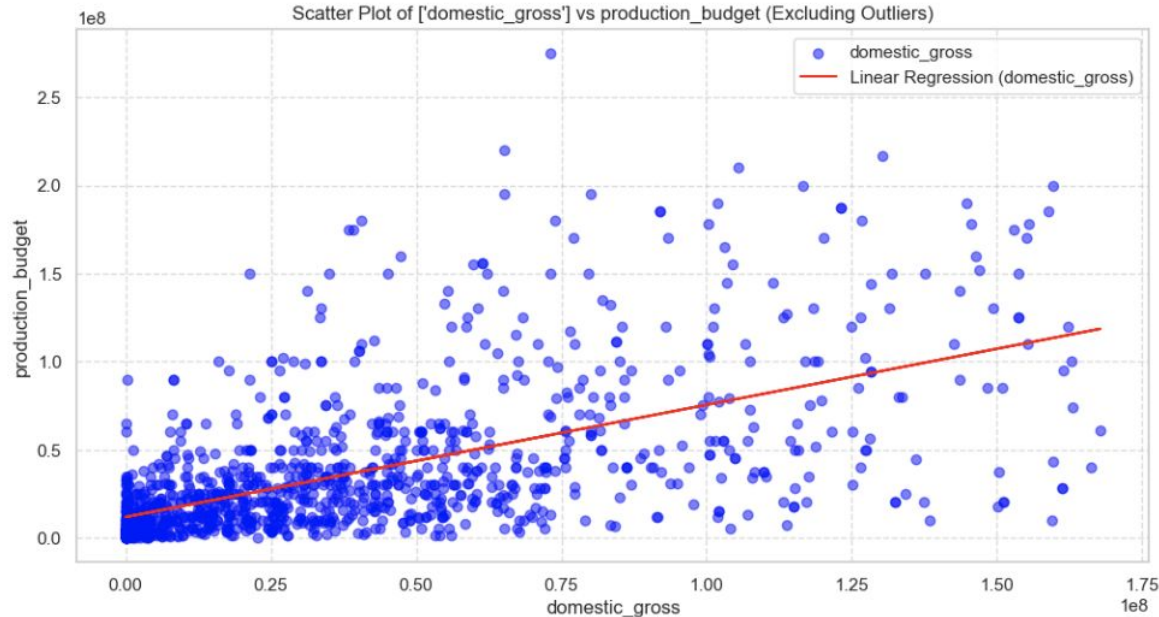
Production Budget Overtime

Slope: 3450.327768514347
Intercept: -10211301.027131252
R-squared value: 0.003073304370272229
P-value: 0.04086718979785132
Standard Error: 1685.6967562795694



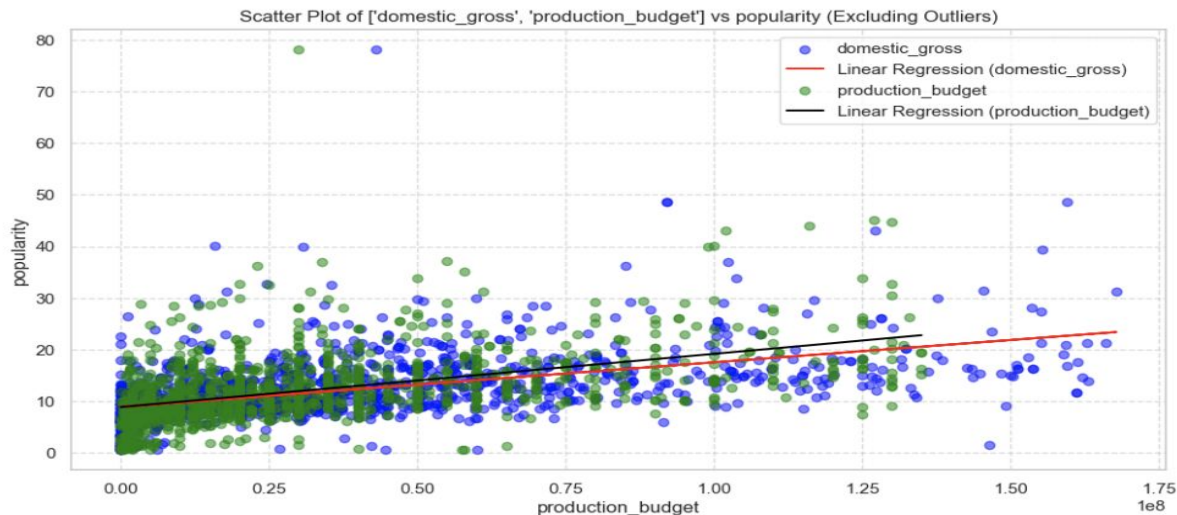
Production Budget against Domestic Gross Profit

Slope for domestic_gross: 0.6367066419038031
Intercept for domestic_gross: 11732874.186206315
R-squared value for domestic_gross: 0.3688017385327644
P-value for domestic_gross: 9.36518404810702e-129
Standard Error for domestic_gross: 0.02340116560545591



Popularity against Domestic Gross and Production Budget

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Slope for domestic_gross: 8.641516435178911e-08  
Intercept for domestic_gross: 8.884680192675125  
R-squared value for domestic_gross: 0.2664156947565959  
P-value for domestic_gross: 2.5080928941967886e-87  
Standard Error for domestic_gross: 4.028531515197711e-09  
Slope for production_budget: 1.0307289691113346e-07  
Intercept for production_budget: 8.862421010842882  
R-squared value for production_budget: 0.2488249900515701  
P-value for production_budget: 5.579553732904165e-81  
Standard Error for production_budget: 5.025348558178138e-09
```



Main Take Home Points

- Focus on the quality of the movies with the given budget
- More money does not equal more success
- Consider your other factors when going into the movie and focus on what the customers want
- Data shows slight increase in profit when you put in more money; this is expected

Future studies should focus on a specific criteria of movie (i.e, successful movies to see what factors went well for that movie).

