



Starting with a BANG!

*Predicting Opening Weekend Revenue
For Domestic Market Releases*

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Can we influence the Opening Weekend?

If so, how much & what do we influence?

BUT.... Why?

50% Revenue Kept

Strong Media Attention

Movie Rating Not A Factor Yet

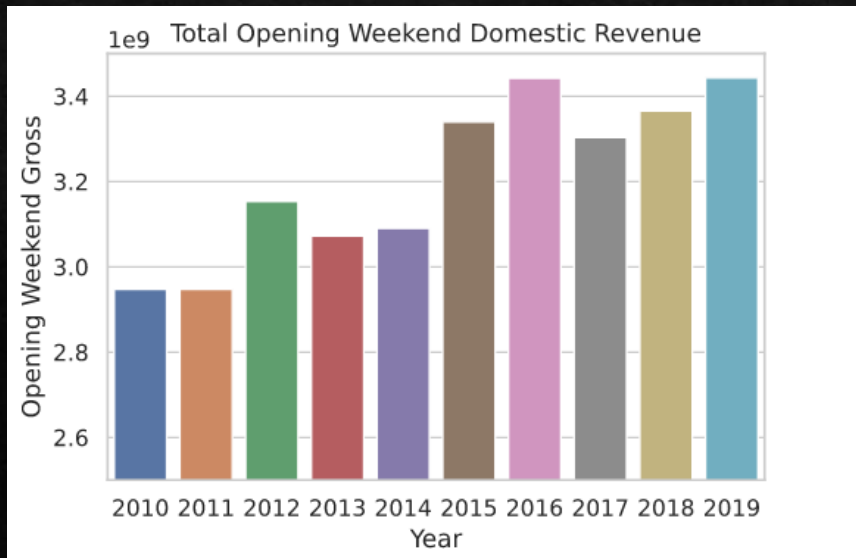


At \$360M, Avengers Endgame holds the record currently!

Setting the stage



Marking Boundaries

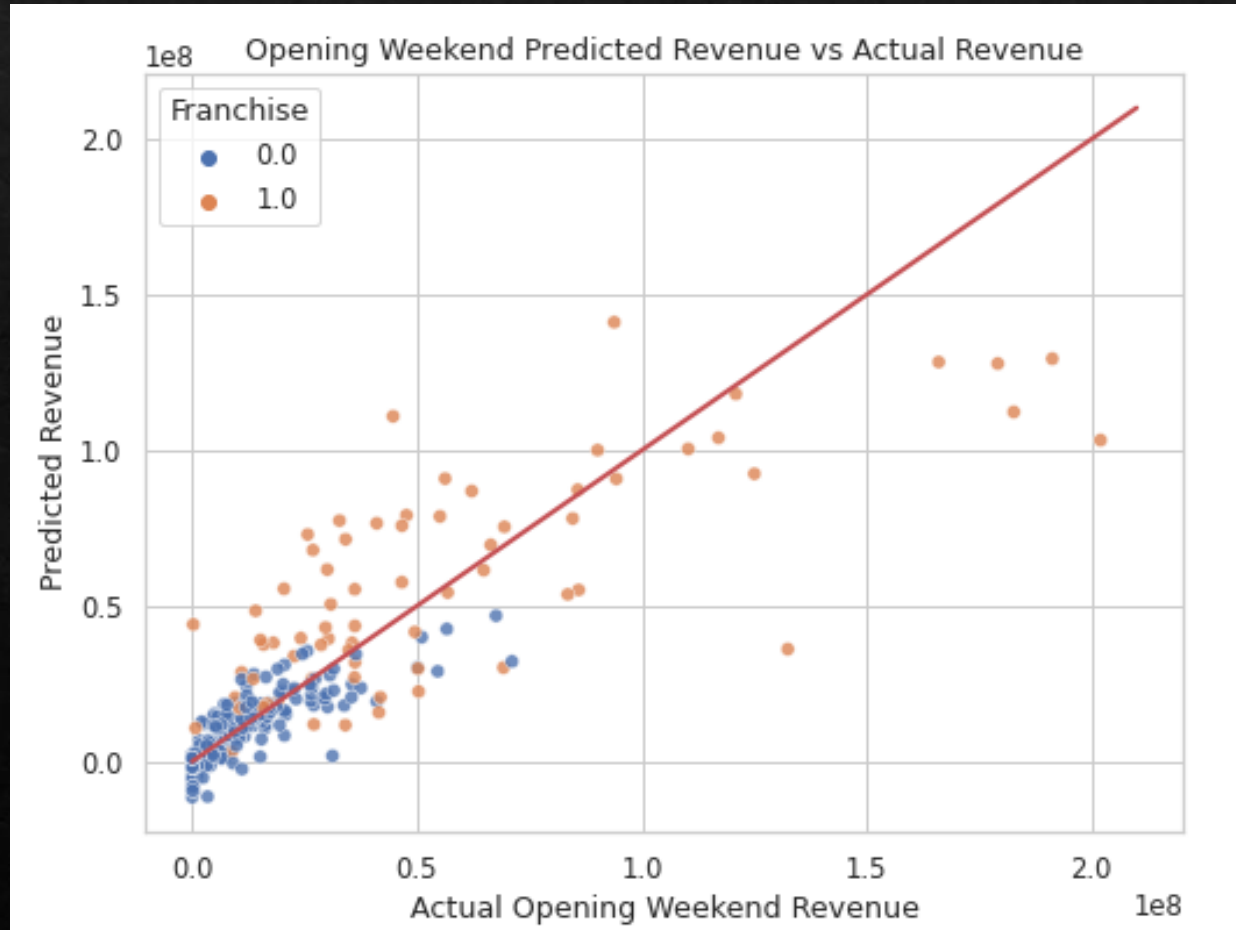


2010-2019 Movies in US



Re-releases ignored

And The Verdict is...



Good at low revenue films
Huge misses at higher revenues

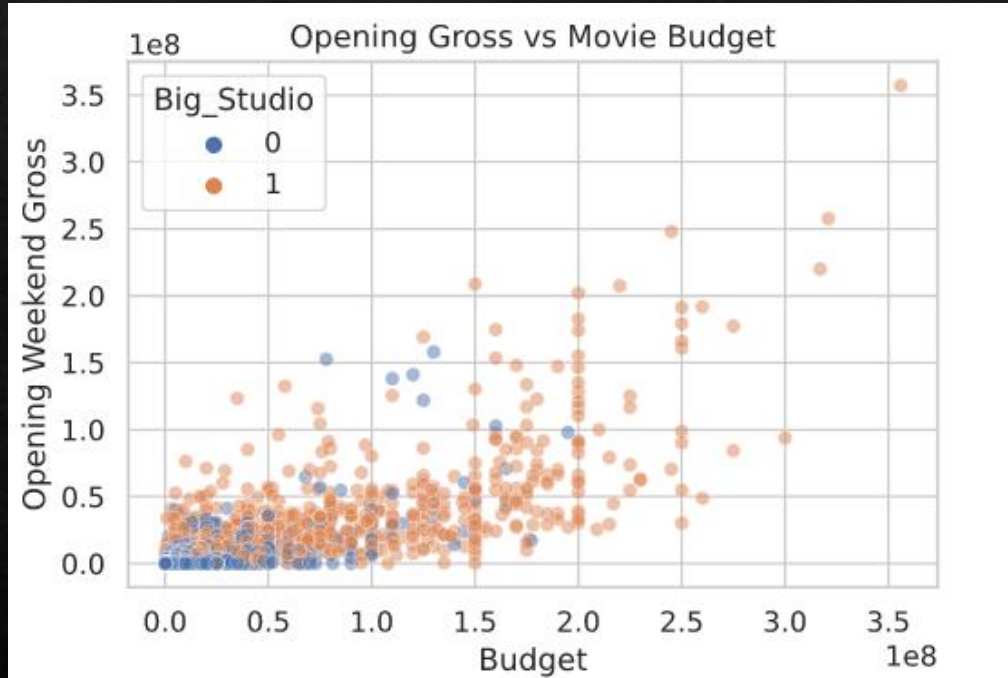
R^2 : 0.77 | MAE: ~ \$6.4 Million

Linear Regression Model
P-values to eliminate features

Ridge Regularized model
on polynomial interactions
has lesser MAE, but more complex

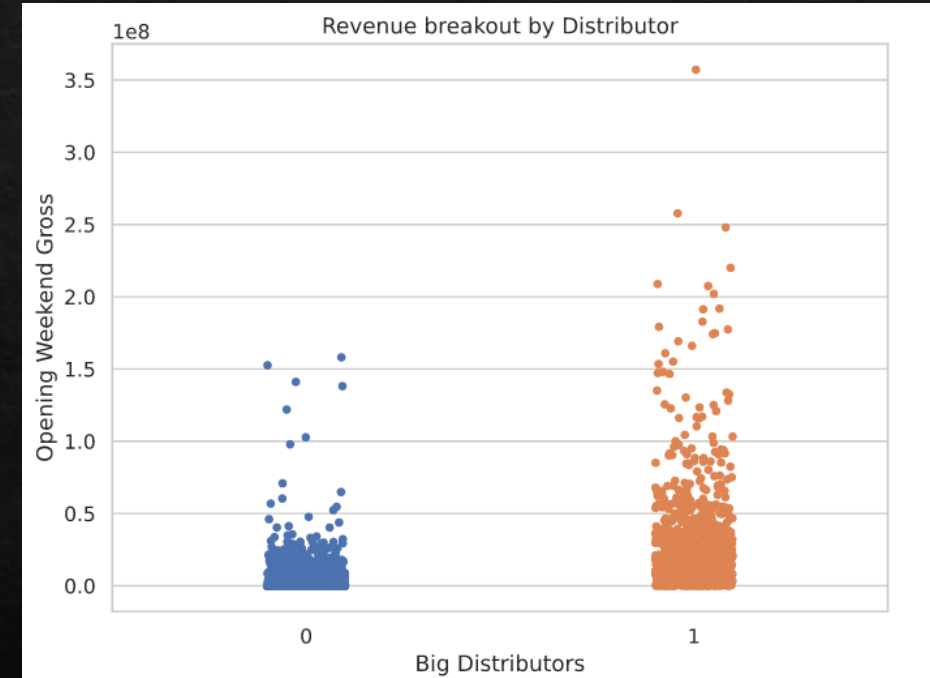
So, What Matters & What Doesn't?

Budget



Impact: 0.032

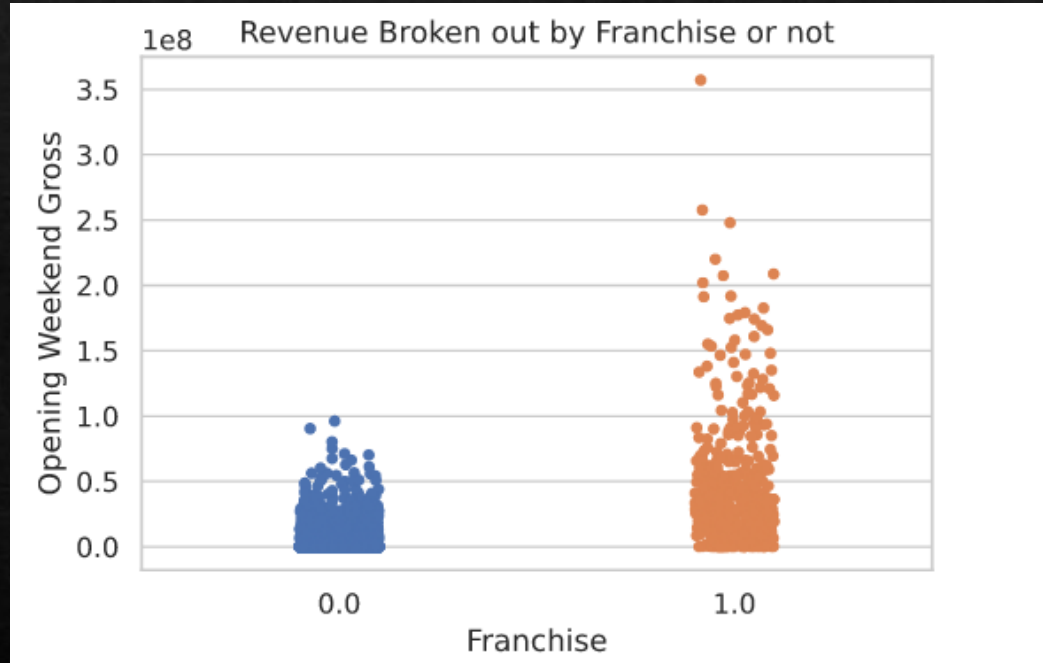
Distributors... nope!



Walt Disney, Warner Bros, Sony Pictures, Universal Pictures, Twentieth Century Fox, Paramount Pictures

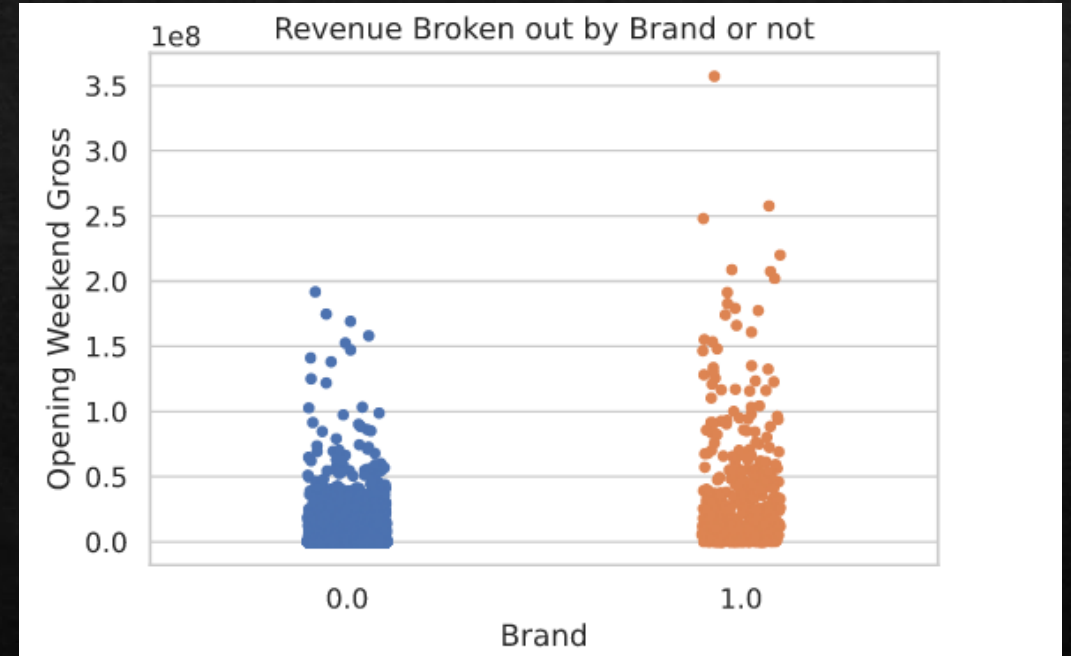
So, What Matters & What Doesn't?

Franchise



Franchise × Budget
Impact: 0.234

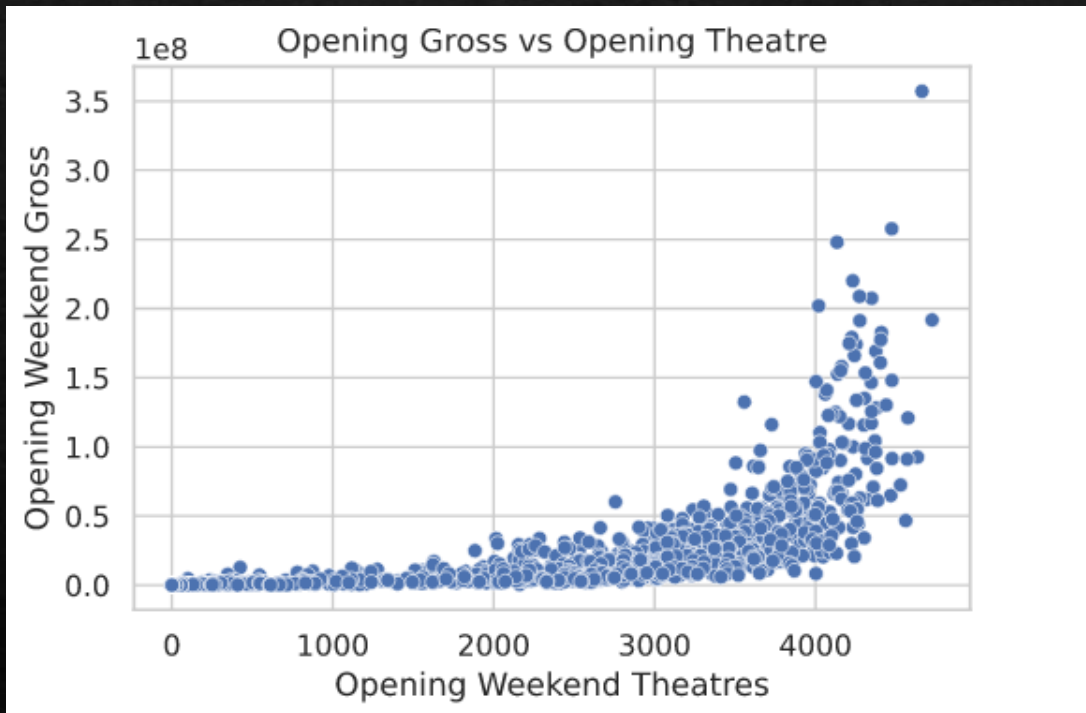
Brand



Brand × Budget
Impact: 0.102

So, What Matters & What Doesn't?

Opening Weekend Theatres



Opening Weekend Theatres $\wedge 3$
Impact: 0.0005

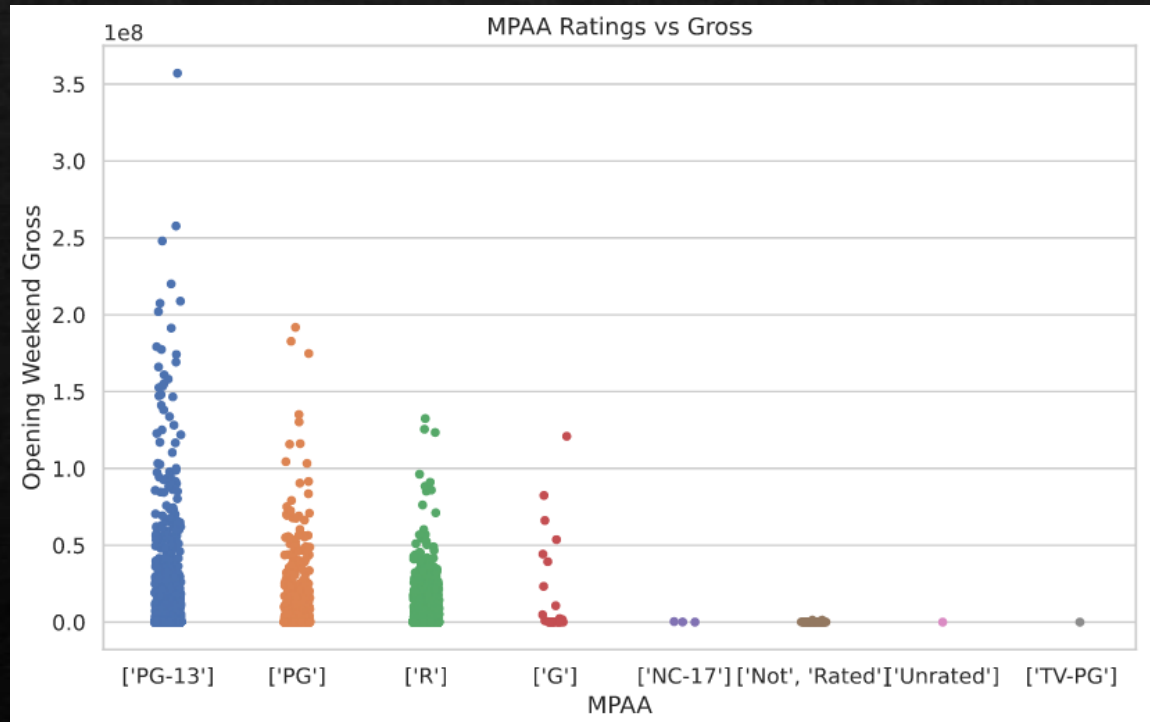
Movie Genres... sort of



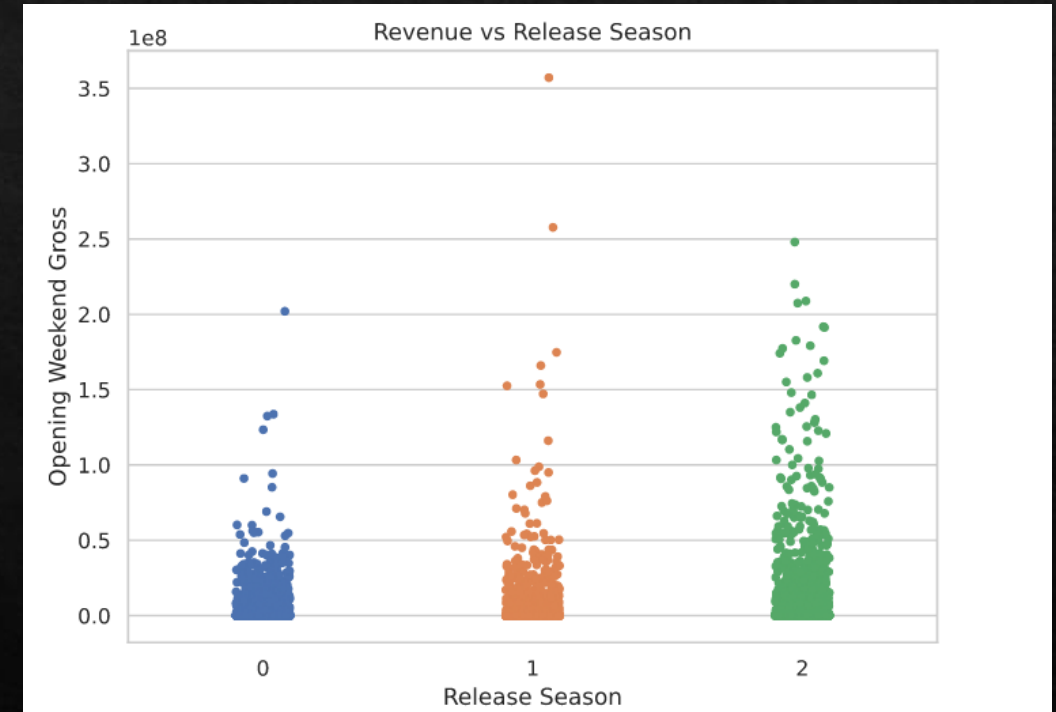
Adventure: - \$7.3M
Comedy: -\$2.6M
High Fiction: -\$3.5M

So, What Matters & What Doesn't?

MPAA Ratings.. No?



Release Season.. No?



0: Jan, Feb, Aug, Sep
1: Mar, Apr, Oct
2: May, Jun, Jul, Nov, Dec

Crystal ball !

	Budget	Adventure	Comedy	High Fiction	OWT**3	Franch * Budget	Brand * Budget	Target	Prediction
Interstellar	\$ 165 M	1	0	1	45 B	-	165 M	\$ 47.5 M	\$ 40 M
Clandestine Childhood	\$ 1 M	0	0	0	8	-	-	\$ 8,137	\$ 1.1 M
Circle	\$ 2 M	0	0	0	8	-	-	\$ 3,926	\$ 1.1 M
The Best of Me	\$ 26 M	0	0	0	25 B	-	26 M	\$ 10 M	\$ 19.3 M
Thérèse	\$ 12.7 M	0	0	0	216	-	-	\$ 20,050	\$ 1.5 M

What else can matter?

- Director & Lead Actor(s)
- More data - Impute Missing Budget Values
- Marketing Spend & Social Media Buzz Index
- Study Franchises Separately



It's a wrap !

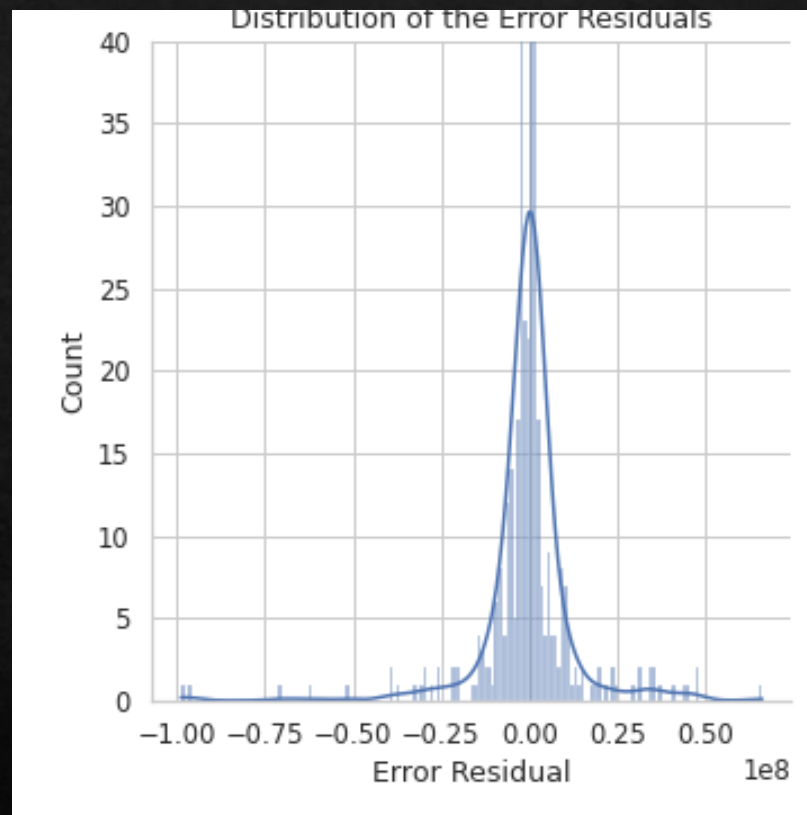
- Franchises increasingly popular
- 6 Distributors ~80% market share
- Budget is proxy predictor
- Possibly need multiple separate models
- Avg. Abs. Error of \$6.4M with R^2 of 0.77 currently

*More work required to reliably predict opening weekend revenue
& determine factors most influential towards it*

Questions?

Thank You!

Appendix



Dep. Variable:	Opening Weekend Gross	R-squared:	0.750
Model:	OLS	Adj. R-squared:	0.749
Method:	Least Squares	F-statistic:	741.6
Date:	Thu, 08 Oct 2020	Prob (F-statistic):	0.00
Time:	21:26:44	Log-Likelihood:	-26552.
No. Observations:	1487	AIC:	5.312e+04
Df Residuals:	1480	BIC:	5.316e+04
Df Model:	6		
Covariance Type:	nonrobust		

	coef	std err	t	P> t	[0.025	0.975]
const	1.457e+06	5.22e+05	2.790	0.005	4.33e+05	2.48e+06
Adventure	-6.15e+06	1.18e+06	-5.227	0.000	-8.46e+06	-3.84e+06
Comedy	-2.992e+06	7.68e+05	-3.898	0.000	-4.5e+06	-1.49e+06
High Fiction	-2.396e+06	1.05e+06	-2.277	0.023	-4.46e+06	-3.32e+05
OWT**3	0.0006	2.51e-05	23.592	0.000	0.001	0.001
Franch*Budget	0.2247	0.012	18.713	0.000	0.201	0.248
Brand*Budget	0.1421	0.012	11.863	0.000	0.119	0.166

Omnibus:	1189.250	Durbin-Watson:	2.025
Prob(Omnibus):	0.000	Jarque-Bera (JB):	76745.551
Skew:	3.210	Prob(JB):	0.00
Kurtosis:	37.604	Cond. No.	9.88e+10

Brand	Total ▾	Releases ⬆	#1 Release	Lifetime Gross ⬆
Marvel Comics	\$14,244,374,932	63	Avengers: Endgame	\$858,373,000
Legendary Pictures	\$6,918,142,562	55	Jurassic World	\$652,270,625
Lucasfilm	\$6,324,798,918	39	Star Wars: Episode VII - The Force Awakens	\$936,662,225
Pixar	\$6,076,030,662	26	Incredibles 2	\$608,581,744
DC Comics	\$5,713,151,081	44	The Dark Knight	\$533,345,358
DreamWorks Animation	\$5,658,603,427	37	Shrek 2	\$441,226,247
Bad Robot	\$3,077,078,931	15	Star Wars: Episode VII - The Force Awakens	\$936,662,225
Vertigo Entertainment	\$3,053,748,082	40	It	\$327,481,748
Walt Disney Animation Studios	\$2,624,970,738	12	Frozen II	\$477,373,578
Illumination Entertainment	\$2,610,640,345	10	The Secret Life of Pets	\$368,384,330
Blumhouse Productions	\$2,309,807,326	47	Get Out	\$176,040,665
Hasbro	\$2,051,221,499	16	Transformers: Revenge of the Fallen	\$402,111,870
Nickelodeon	\$1,930,746,182	26	Teenage Mutant Ninja Turtles	\$191,204,754
Sony Pictures Animation	\$1,918,763,863	21	Spider-Man: Into the Spider-Verse	\$190,241,310

	Release Link	Title	Domestic Gross	Max Theatres	Opening Weekend Gross	Domestic to Opening Gross	Opening Weekend Theatres	Release Date	Studio Link	Studio Name	...	Running Length
4524	https://www.boxofficemojo.com//release/rl29928...	Black Panther	700059566	4084	202003951	0.289	4020	2018-02-16	https://pro.imdb.com/company/co0226183/boxoffi...	Walt Disney Studios Motion Pictures	...	134.0
3306	https://www.boxofficemojo.com//release/rl11458...	Suicide Squad	325100054	4255	133682248	0.411	4255	2016-08-05	https://pro.imdb.com/company/co0002663/boxoffi...	Warner Bros.	...	123.0
3307	https://www.boxofficemojo.com//release/rl25887...	Deadpool	363070709	3856	132434639	0.365	3558	2016-02-12	https://pro.imdb.com/company/co0000756/boxoffi...	Twentieth Century Fox	...	108.0
3921	https://www.boxofficemojo.com//release/rl34812...	It	327481748	4148	123403419	0.377	4103	2017-09-08	https://pro.imdb.com/company/co0002663/boxoffi...	Warner Bros.	...	135.0
2143	https://www.boxofficemojo.com//release/rl31774...	Guardians of the Galaxy	333176600	4088	94320883	0.283	4080	2014-08-01	https://pro.imdb.com/company/co0226183/boxoffi...	Walt Disney Studios Motion Pictures	...	121.0
5185	https://www.boxofficemojo.com//release/rl11074...	It Chapter Two	211593228	4570	91062152	0.430	4570	2019-09-06	https://pro.imdb.com/company/co0002663/boxoffi...	Warner Bros.	...	169.0
2742	https://www.boxofficemojo.com//release/rl39804...	Fifty Shades of Grey	166167230	3655	85171450	0.513	3646	2015-02-13	https://pro.imdb.com/company/co0005073/boxoffi...	Universal Pictures	...	125.0
2149	https://www.boxofficemojo.com//release/rl64372...	The Lego Movie	257760692	3890	69050279	0.268	3775	2014-02-07	https://pro.imdb.com/company/co0002663/boxoffi...	Warner Bros.	...	100.0