

# The Movie Remake Maker



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# Hollywood Loves Remakes

Remaking a film lowers the risk of a failed creative concept

There is an installed audience

Proof of concept from proven idea

Historical data from a film that is close to identical

But the Hollywood Studios are not flawless  
when it comes to choosing what to remake

# Making Remakes is Hard



It's not a remake if the kids never heard of it



Who needs Stallone if you have 3D glasses?



Change Russia to North Korea and cast good looking actors

# What if...

there was a model that told you exactly  
what films you should consider remaking?

Well thank the **Bruins** for  
Mr. David Juran



# We Sourced Some Data

'The Hobbit' at \$223 million worldwide... > Updated 12/16/2012 9:12 A.M. Pacific Time  
Daily Box Office (Sun.) | Weekend Box Office (Dec. 14-16) | #1 Movie: 'The Hobbit' | Get Showtimes

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Movies A-Z  
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**Last 28 days**

Row	Date (click to view)	Day Filter ▾	Day #	Top 10 Gross	% Change YD / LW		Movies Tracked	#1 Movie	Gross
1	Nov. 17	Sat	322	\$84,792,592	-14.9%	+29.1%	48	Breaking Dawn Part 2	\$41,443,147
2	Nov. 18	Sun	323	\$56,092,284	-33.8%	+25.4%	48	Breaking Dawn Part 2	\$28,456,648
3	Nov. 19	Mon	324	\$20,411,618	-63.6%	-9.6%	45	Breaking Dawn Part 2	\$10,090,710
4	Nov. 20	Tue	325	\$26,122,163	+28.0%	+116.1%	45	Breaking Dawn Part 2	\$11,772,338
5	Nov. 21	Wed	326	\$43,274,071	+65.7%	+366.7%	46	Breaking Dawn Part 2	\$12,779,287
6	Nov. 22	Thu	327	\$37,170,496	-14.1%	+328.5%	46	Breaking Dawn Part 2	\$8,014,701
7	Nov. 23	Fri	328	\$79,457,077	+113.8%	-20.3%	46	Breaking Dawn Part 2	\$17,546,033
8	Nov. 24	Sat	329	\$77,007,084	-3.1%	-9.2%	47	Breaking Dawn Part 2	\$17,016,976
9	Nov. 25	Sun	330	\$42,120,050	-45.3%	-24.0%	47	Breaking Dawn Part 2	\$0,078,430

And we built our own database

# Data Instance Breakdown

Title	Year	Genre	Total Gross	Total Theaters	Opening Gross	Opening Theaters	Opening/Total Theaters	Ticket Price	Total People	Opening People	Opening/Total People	Δ People/Δ Theaters
The Poseidon Adventure	1972	3	\$84,563,118	25	\$264,850	25	100.00%	\$1.65	51,250,375	160,515	0.31%	0.00
Jaws	1975	4	\$260,000,000	675	\$7,061,513	409	60.59%	\$2.03	128,078,818	3,478,578	2.72%	0.04
The Omen	1976	4	\$60,922,980	515	\$4,273,886	515	100.00%	\$2.13	28,602,338	2,006,519	7.02%	0.07
Star Wars	1977	3	\$307,263,857	1,750	\$1,554,475	43	2.46%	\$2.23	137,786,483	697,074	0.51%	0.21
Close Encounters of the T	1977	5	\$116,395,460	650	\$5,379,460	272	41.85%	\$2.23	52,195,274	2,412,314	4.62%	0.11
Saturday Night Fever	1977	2	\$94,213,184	726	\$3,878,099	504	69.42%	\$2.23	42,248,065	1,739,058	4.12%	0.06

How much was made in the US Box Office

How many screens the film was showing on

Average Ticket Price/year (Reported by NATO)

$$= \frac{\text{Total Gross}}{\text{Ticket Price}}$$

THE AUDIENCE GROWTH RATIO

# The Audience Growth Ratio

A metric that measures a film by its audience and theater scalability

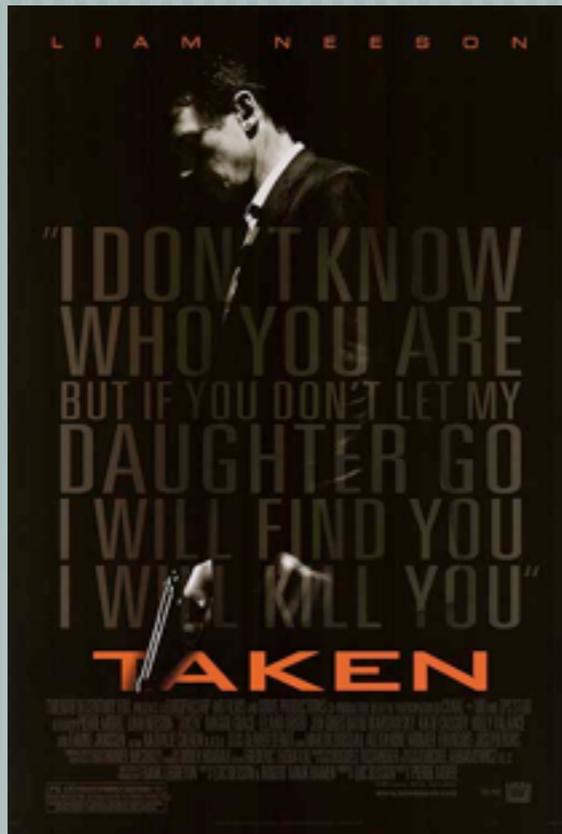
(Copyright © 2012 Lustgarten/Belfer, All rights reserved.)

$$= \frac{\text{Opening Weekend/Total People}}{\text{Opening Weekend/Total Theaters}}$$

**Our  
Logic:**

If the percentage of Opening Weekend People/Total People is LOW then the Audience GREW  
If the percentage of Opening Weekend Theaters/Total Theaters is LOW then the Audience GREW

# Examples:



**TAKEN, FIGHT CLUB, and DRIVE** were all films that few people heard about until **AFTER** the audience began to grow.

# Ranked by TOTAL BOX OFFICE

Avatar	\$749,766,139
Marvel's The Avengers	\$623,357,910
Titanic	\$600,788,188
The Dark Knight	\$533,345,358
The Dark Knight Rises	\$448,136,692
Shrek 2	\$441,226,247
Star Wars: Episode I - The Phantom Menace	\$431,088,295
Pirates of the Caribbean: Dead Man's Chest	\$423,315,812
Toy Story 3	\$415,004,880
The Hunger Games	\$408,010,692

# Ranked by TOTAL AUDIENCE

Star Wars	137,786,483
Titanic	130,890,673
Jaws	128,078,818
E.T.: The Extra-Terrestrial	122,175,863
Avatar	99,968,819
Jurassic Park	86,248,296
Star Wars: Episode I - The Phantom Menace	85,195,315
Forrest Gump	80,807,475
Return of the Jedi	80,185,275
The Empire Strikes Back	77,843,132

# Ranked by AUDIENCE GROWTH RATIO

The Poseidon Adventure	0.00
Arthur	0.03
Raiders of the Lost Ark	0.04
Tootsie	0.04
Flashdance	0.04
Heaven Can Wait	0.04
Jaws	0.04
Out of Africa	0.05
Rain Man	0.05
E.T.: The Extra-Terrestrial	0.05

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Decision Models Final Project.xlsx

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	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Title	Year	Total Gross	Total Theaters	Opening Gross	Opening Theaters	Opening/Total Theaters	Opening/Total Gross	Ticket Price	Total People	Opening People	Opening/Total People	Δ People/Δ Theaters			
2	The Poseidon Adventure	1972	\$84,563,118	25	\$264,850	25	100.00%	0.31%	\$1.65	51,250,375	160,515	0.31%	0.31%			
3	Jaws	1975	\$260,000,000	675	\$7,061,513	409	60.59%	2.72%	\$2.03	128,078,818	3,478,578	2.72%	4.48%			
4	The Omen	1976	\$60,922,980	515	\$4,273,886	515	100.00%	7.02%	\$2.13	28,602,338	2,006,519	7.02%	7.02%			
5	Star Wars	1977	\$307,263,857	1,750	\$1,554,475	43	2.46%	0.51%	\$2.23	137,786,483	697,074	0.51%	20.59%			
6	The Deep	1977	\$47,346,365	731	\$6,835,540	731	100.00%	14.44%	\$2.23	21,231,554	3,065,265	14.44%	14.44%			
7	Exorcist II: The Heretic	1977	\$30,749,142	703	\$6,735,000	703	100.00%	21.90%	\$2.23	13,788,853	3,020,179	21.90%	21.90%			
8	Oh, God!	1977	\$41,687,243	198	\$2,040,920	198	100.00%	4.90%	\$2.23	18,693,831	915,211	4.90%	4.90%			
9	Looking for Mr. Goodbar	1977	\$22,512,655	110	\$1,540,635	110	100.00%	6.84%	\$2.23	10,095,361	690,868	6.84%	6.84%			
10	Close Encounters of the	1977	\$116,395,460	650	\$5,379,460	272	41.85%	4.62%	\$2.23	52,195,274	2,412,314	4.62%	11.04%			
11	Saturday Night Fever	1977	\$94,213,184	726	\$3,878,099	504	69.42%	4.12%	\$2.23	42,248,065	1,739,058	4.12%	5.93%			
12	Damien: The Omen Part	1978	\$26,518,355	525	\$3,880,880	525	100.00%	14.63%	\$2.34	11,332,630	1,658,496	14.63%	14.63%			
13	Grease	1978	\$159,978,870	862	\$8,941,717	862	100.00%	5.59%	\$2.34	68,367,038	3,821,247	5.59%	5.59%			
14	Jaws 2	1978	\$77,737,272	640	\$9,866,023	640	100.00%	12.69%	\$2.34	33,221,056	4,216,249	12.69%	12.69%			
15	Heaven Can Wait (1978)	1978	\$81,640,278	540	\$3,652,486	540	100.00%	4.47%	\$2.34	34,889,008	1,560,891	4.47%	4.47%			
16	The Lord of the Rings (29	1978	\$30,471,420	31	\$626,649	31	100.00%	2.06%	\$2.34	13,021,974	267,799	2.06%	2.06%			
17	Superman	1978	\$134,218,018	817	\$7,465,343	508	62.18%	5.56%	\$2.34	57,358,127	3,190,318	5.56%	8.95%			
18	Invasion of the Body Snar	1978	\$24,946,533	445	\$1,298,129	445	100.00%	5.20%	\$2.34	10,660,912	554,756	5.20%	5.20%			
19	Brass Target	1978	\$5,011,158	334	\$354,797	334	100.00%	7.08%	\$2.34	2,141,521	151,623	7.08%	7.08%			
20	Alien	1979	\$78,944,891	757	\$3,527,881	91	12.02%	4.47%	\$2.47	31,961,494	1,428,292	4.47%	37.17%			
21	Butch and Sundance: The	1979	\$5,136,913	689	\$1,522,351	689	100.00%	29.64%	\$2.47	2,079,722	616,336	29.64%	29.64%			
22	Dracula (1979)	1979	\$20,158,970	395	\$3,141,281	395	100.00%	15.58%	\$2.47	8,161,526	1,271,774	15.58%	15.58%			
23	The Amityville Horror	1979	\$86,432,000	748	\$7,843,467	748	100.00%	9.07%	\$2.47	34,992,713	3,175,493	9.07%	9.07%			
24	Animal House (1979 re-is	1979	\$21,508,877	40	\$201,747	40	100.00%	0.94%	\$2.47	8,708,047	81,679	0.94%	0.94%			
25	Meteor	1979	\$8,400,000	575	\$2,250,000	575	100.00%	26.79%	\$2.47	3,400,810	910,931	26.79%	26.79%			
26	Star Trek: The Motion Pic	1979	\$82,258,456	1,002	\$11,926,421	857	85.53%	14.50%	\$2.47	33,303,019	4,828,511	14.50%	16.95%			
27	The Jerk	1979	\$73,691,419	525	\$5,935,025	525	100.00%	8.05%	\$2.47	29,834,583	2,402,844	8.05%	8.05%			
28	Kramer Vs. Kramer	1979	\$106,260,000	898	\$5,531,000	524	58.35%	5.21%	\$2.47	43,020,243	2,239,271	5.21%	8.92%			
29	Going in Style	1979	\$26,869,286	731	\$1,781,164	731	100.00%	6.63%	\$2.47	10,878,253	721,119	6.63%	6.63%			
30	Guyana: Cult of the Dam	1980	\$3,798,102	748	\$1,668,965	748	100.00%	43.94%	\$2.69	1,411,934	620,433	43.94%	43.94%			
31	Jaws 2 (1980 re-issue)	1980	\$4,028,735	26	\$1,382,756	26	100.00%	34.32%	\$2.69	1,497,671	514,036	34.32%	34.32%			
32	When Time Ran Out	1980	\$3,763,988	677	\$1,400,994	677	100.00%	37.22%	\$2.69	1,399,252	520,816	37.22%	37.22%			
33	Folkes	1980	\$2,993,772	398	\$805,511	398	100.00%	26.91%	\$2.69	1,112,926	299,446	26.91%	26.91%			
34	The Empire Strikes Back	1980	\$209,398,025	1,278	\$4,910,483	126	9.86%	2.35%	\$2.69	77,843,132	1,825,458	2.35%	23.79%			
35	Popeye	1980	\$49,823,037	901	\$6,310,520	901	100.00%	12.67%	\$2.69	18,521,575	2,345,918	12.67%	12.67%			
36	Raiders of the Lost Ark	1981	\$212,222,025	1,078	\$8,305,823	1,078	100.00%	3.91%	\$2.78	76,338,858	2,987,706	3.91%	3.91%			
37	Superman II	1981	\$108,185,706	1,878	\$4,100,523	1,397	74.39%	13.03%	\$2.78	38,915,722	5,072,131	13.03%	17.52%			
38	The Cannonball Run	1981	\$72,179,579	1,692	\$11,765,654	1,673	98.88%	16.30%	\$2.78	25,963,877	4,232,250	16.30%	16.49%			
39	Arthur	1981	\$95,461,682	701	\$2,719,534	701	100.00%	2.85%	\$2.78	34,338,735	978,250	2.85%	2.85%			

Raw Data Clean Data Model

# The Raw Data

# #SolverFail



**Too many Variable Cells.**

OK

# The Clean Data

## Decision Variables

We need to decide **which 5 films** we should choose to remake from the **top 200 films** released **prior to 2000** based on number of box office attendees.

## Objective

**Minimize** the Audience Growth Ratio of the films selected for remake.

## Constraints

Five films must be selected across a range of **seven genre types** (Comedy, Drama, Action, Horror, Sci-Fi, Thriller, and Animation).

There must be no more than **one film** selected from **any given genre**.

There is a **non-negativity** constraint, as we cannot produce a negative number of films.

# The Model

## Decision Variables

As we are choosing from 200 films, we have 200 decision variables, ranging from  $X_1$  to  $X_{200}$ .

## Objective Function

SumProduct

	Title	$\Delta$ People/ $\Delta$ Theaters	Genre	Comedy	Drama	Action	Horror	Sci-Fi	Thriller	Animation		
0	The Poseidon Adventure	0.00	3	0	0	0	0	0	0	0	Audience Growth Ratio	-
0	Jaws	0.04	4	0	0	0	0	0	0	0		
0	The Omen	0.07	4	0	0	0	0	0	0	0	Remakes	#NUM!
0	Star Wars	0.21	3	0	0	0	0	0	0	0		#NUM!
0	Close Encounters of the Third Kind	0.11	5	0	0	0	0	0	0	0		#NUM!
0	Saturday Night Fever	0.06	2	0	0	0	0	0	0	0		#NUM!
0	Jaws 2	0.13	4	0	0	0	0	0	0	0		#NUM!
0	Grease	0.06	1	0	0	0	0	0	0	0		
0	Heaven Can Wait (1978)	0.04	1	0	0	0	0	0	0	0		
0	Superman	0.09	3	0	0	0	0	0	0	0		
0	Alien	0.37	5	0	0	0	0	0	0	0		

Names of Films  
VLookUp (sorta)

# Objective Function (Detailed)

$$Z = \sum_{i=1}^{200} X_i Y_i$$

Audience Growth Ratio	-	=SUMPRODUCT(A2:A198,C2:C198)
Remakes	#NUM! #NUM! #NUM! #NUM! #NUM!	=INDEX(\$B\$2:\$B\$198, SMALL(IF(1=\$A\$2:\$A\$198, ROW(\$A\$2:\$A\$198)-MIN(ROW(\$A\$2:\$A\$198))+1, ""), ROW(A1)))

Allows for multiple VLookUp searches to run  
(Don't ask me what this is, I found it on the Internet)

# The Genre Matrix

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1		Title	Δ People/Δ Theaters	Genre	Comedy	Drama	Action	Horror	Sci-Fi	Thriller	Animation			
3	0	The Poseidon Adventure	0.00	3	0	0	0	0	0	0	0			
4	0	Jaws	0.04	4	0	0	0	0	0	0	0			
5	0	The Omen	0.07	4	0	0	0	0	0	0	0			
6	0	Star Wars	0.21	3	0	0	0	0	0	0	0			
7	0	Close Encounters of the Third Kind	0.11	5	0	0	0	0	0	0	0			
8	0	Saturday Night Fever	0.06	2	0	0	0	0	0	0	0			

=IF(AND(IF(A3=1,D3=0),D3=7),1,0)



(yes, we went there)

# Model Constraints

196	0	American Beauty	0.82	2	0	0	0	0	0	0	0	0		
197	0	Double Jeopardy	0.23	3	0	0	0	0	0	0	0	0		
198	0	Toy Story 2	3.98	7	0	0	0	0	0	0	0	0		
199	0	The World Is Not Enough	0.28	3	0	0	0	0	0	0	0	0		
200	0	The Green Mile	0.13	2	0	0	0	0	0	0	0	0		
201	0	Stuart Little	0.12	7	0	0	0	0	0	0	0	0		
202	0				0	0	0	0	0	0	0	0		
203	=				<=	<=	<=	<=	<=	<=	<=	<=		
204	5				1	1	1	1	1	1	1	1		
205														

=SUM(E202:K202)

=SUM(A2:A201)

=SUM(E2:E201)

$$\sum_{i=1}^{200} X_i = 5$$

$$0 \leq \sum_{i=1}^{200} a_i \leq 1$$

**Solver Parameters**

Set Objective: \$N\$52

To:  Max  Min  Value Of: 0

By Changing Variable Cells: \$A\$2:\$A\$201

Subject to the Constraints:

- \$A\$202 = \$A\$204
- \$A\$2:\$A\$201 = binary
- \$E\$202 <= \$E\$204
- \$F\$202 <= \$F\$204
- \$G\$202 <= \$G\$204
- \$H\$202 <= \$H\$204
- \$I\$202 <= \$I\$204
- \$J\$202 <= \$J\$204
- \$K\$202 <= \$K\$204
- \$L\$202 = \$N\$202

Make Unconstrained Variables Non-Negative

Select a Solving Method: Simplex LP

**Solving Method**  
Select the GRG Nonlinear engine for Solver Problems that are smooth nonlinear. Select the LP Simplex engine for linear Solver Problems, and select the Evolutionary engine for Solver problems that are non-smooth.

Buttons: Add, Change, Delete, Reset All, Load/Save, Close, Solve

Now lets run this puppy...

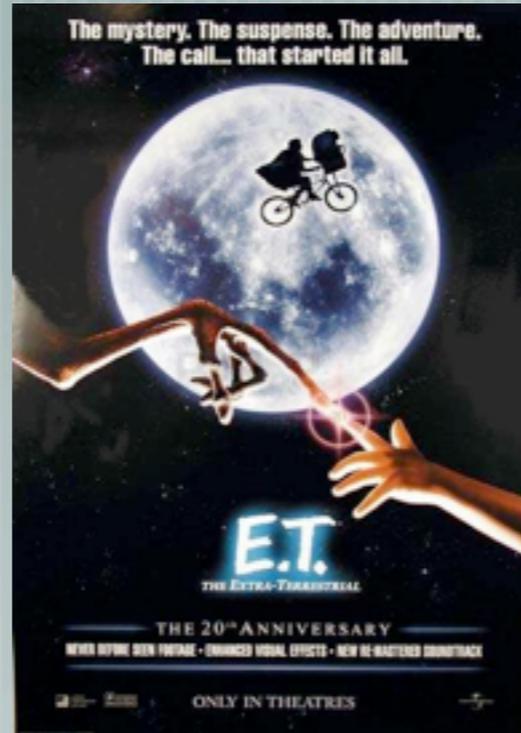
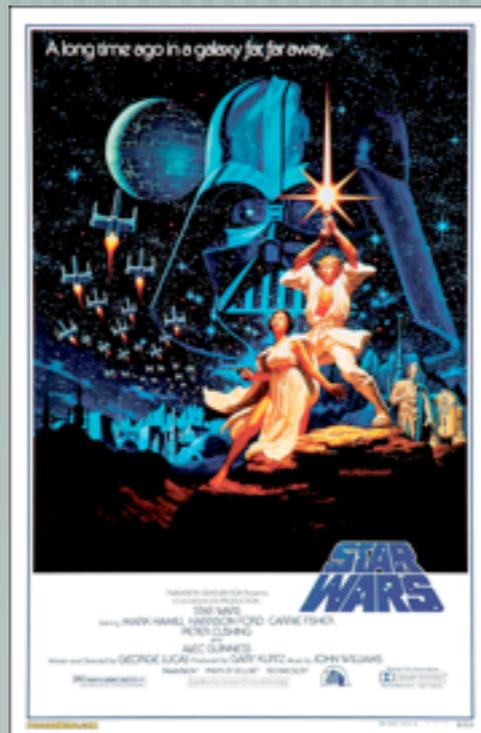
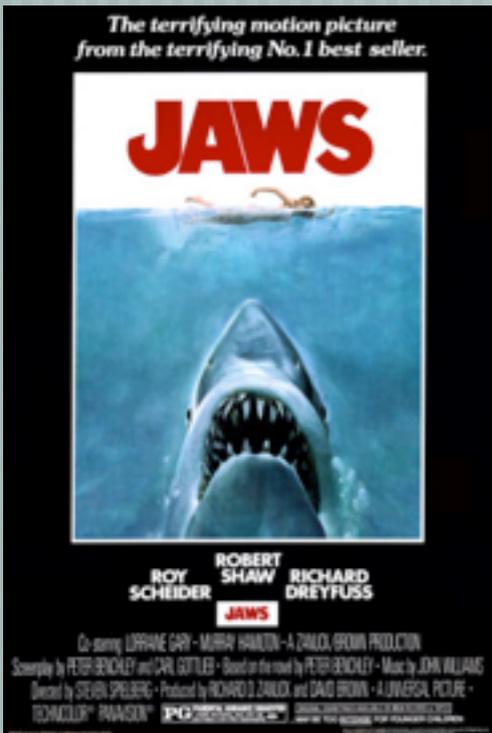
# The Results



Audience Growth Ratio: 0.17

Industry Average of 11,000 films: 0.49  
Model Average of 5 films: 0.03

# The Results 2: The Results Strike Back



Total People: 595,612,121

Industry Average of 11,000 films: 3,658,984

Model Average of 5 films: 119,122,424

# Which is better?

## Audience Growth

Audience Growth Ratio	0.17
Total People	365,342,584
Total Theaters	4,319
Total Gross	\$892,143,040
Gross/Theater	\$206,562
People/Theater	84,590

## Total People

Audience Growth Ratio	7.02
Total People	595,612,121
Total Theaters	10,092
Total Gross	\$1,840,104,643
Gross/Theater	\$182,333
People/Theater	59,018

Optimizing for Total People leads to higher Total Gross  
BUT does not optimize Gross/Theater & People/Theater  
THESE TWO METRICS HAVE A DIRECT EFFECT ON ROI

# J&J's Final Thoughts...

Does the extra \$947,961,603 the Total People Model makes outweigh the cost of the extra 5,773 theaters it needs to make it?

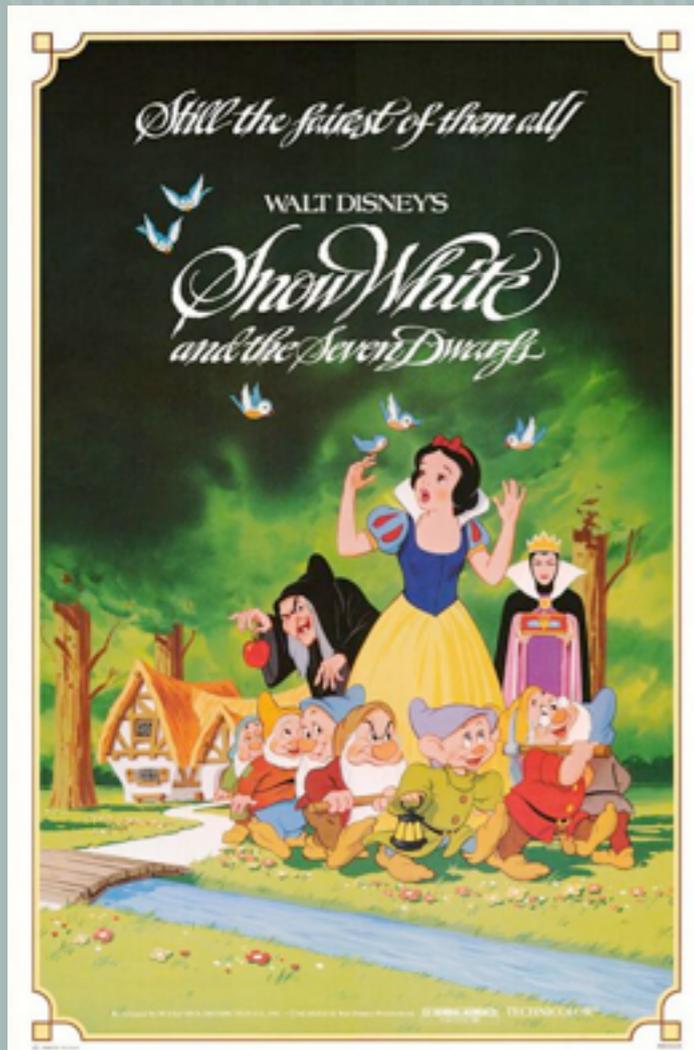
Does Gross/Theater and/or People/Theater optimization matter MOST?

Will we ever get more detailed and accurate data?

(Box Office Mojo is user generated and crude)

Because in a PERFECT world...

# Remakes Won't Be CRAP



Thank You!