



Microsoft Film Studio Proposal

By Jake Sherman

A statistical analysis of data in the film industry to provide insights into how to optimize a movie studio's return on investment.



Executive summary

Statistics analyzed for the highest ROI:

- Runtime
- Genre
- Production Budget

Findings:

- A runtime of 75-85 minutes
- The Mystery genre
- Low budget films (\$500K-\$5M)

Business Problem

CAPITAL INTENSIVE

Movies require substantial investment from studios without knowing the end product

HIGH RISK

Box office performance is highly volatile



Data

movie	production_budget	domestic_gross	worldwide_gross
Avatar	\$425,000,000	\$760,507,625	\$2,776,345,279
Pirates of the Caribbean: On Stranger Tides	\$410,600,000	\$241,063,875	\$1,045,663,875
Dark Phoenix	\$350,000,000	\$42,762,350	\$149,762,350
Avengers: Age of Ultron	\$330,600,000	\$459,005,868	\$1,403,013,963
Star Wars Ep. VIII: The Last Jedi	\$317,000,000	\$620,181,382	\$1,316,721,747



primary_title	genres	runtime_minutes	start_year
Tierra	Documentary,Family	1.0	2010
Shark Sanctuary	Adventure, Documentary	1.0	2012
One Minute Of Resistance	Documentary,News	1.0	2017
Great Valley Nature Center Documentary	Documentary	1.0	2015
Lamentation For Little Girls Who Are In Love W...	Animation	1.0	2019

ROI is defined as: $((\text{worldwide gross} / \text{production budget}) * 100)$

Data

release_date	movie	production_budget	domestic_gross	worldwide_gross	genres	runtime_minutes	ROI
2011	Pirates of the Caribbean: On Stranger Tides	410600000	241063875	1045663875	Action,Adventure,Fantasy	136.0	254.667286
2019	Dark Phoenix	350000000	42762350	149762350	Action,Adventure,Sci-Fi	113.0	42.789243
2015	Avengers: Age of Ultron	330600000	459005868	1403013963	Action,Adventure,Sci-Fi	141.0	424.384139
2018	Avengers: Infinity War	300000000	678815482	2048134200	Action,Adventure,Sci-Fi	149.0	682.711400
2017	Justice League	300000000	229024295	655945209	Action,Adventure,Fantasy	120.0	218.648403

Methods

Runtime

Runtime range of 75-175 minutes was broken down into 10 minute intervals

Short films were excluded from the study

Genre

All films were characterized by up to three genres

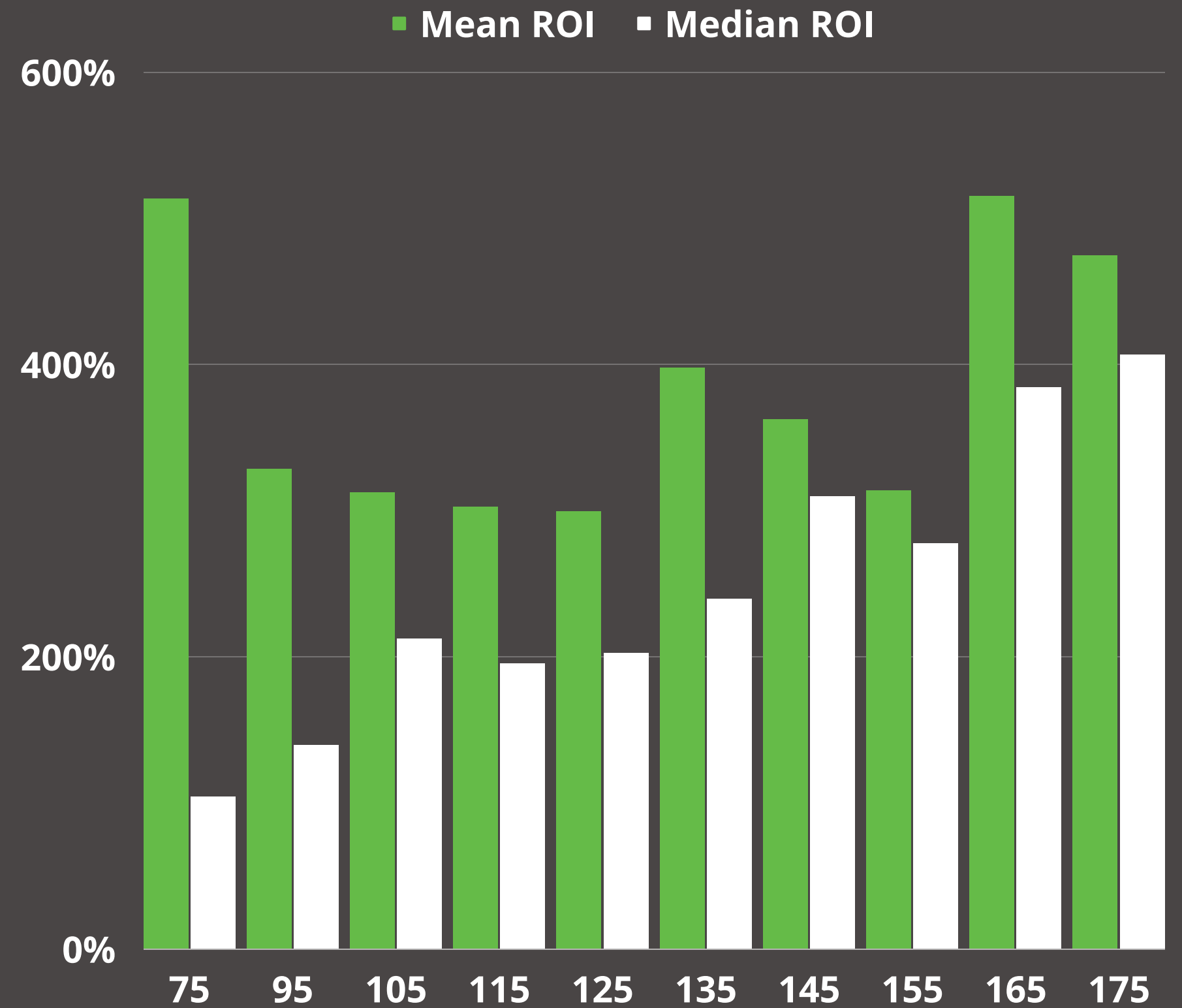
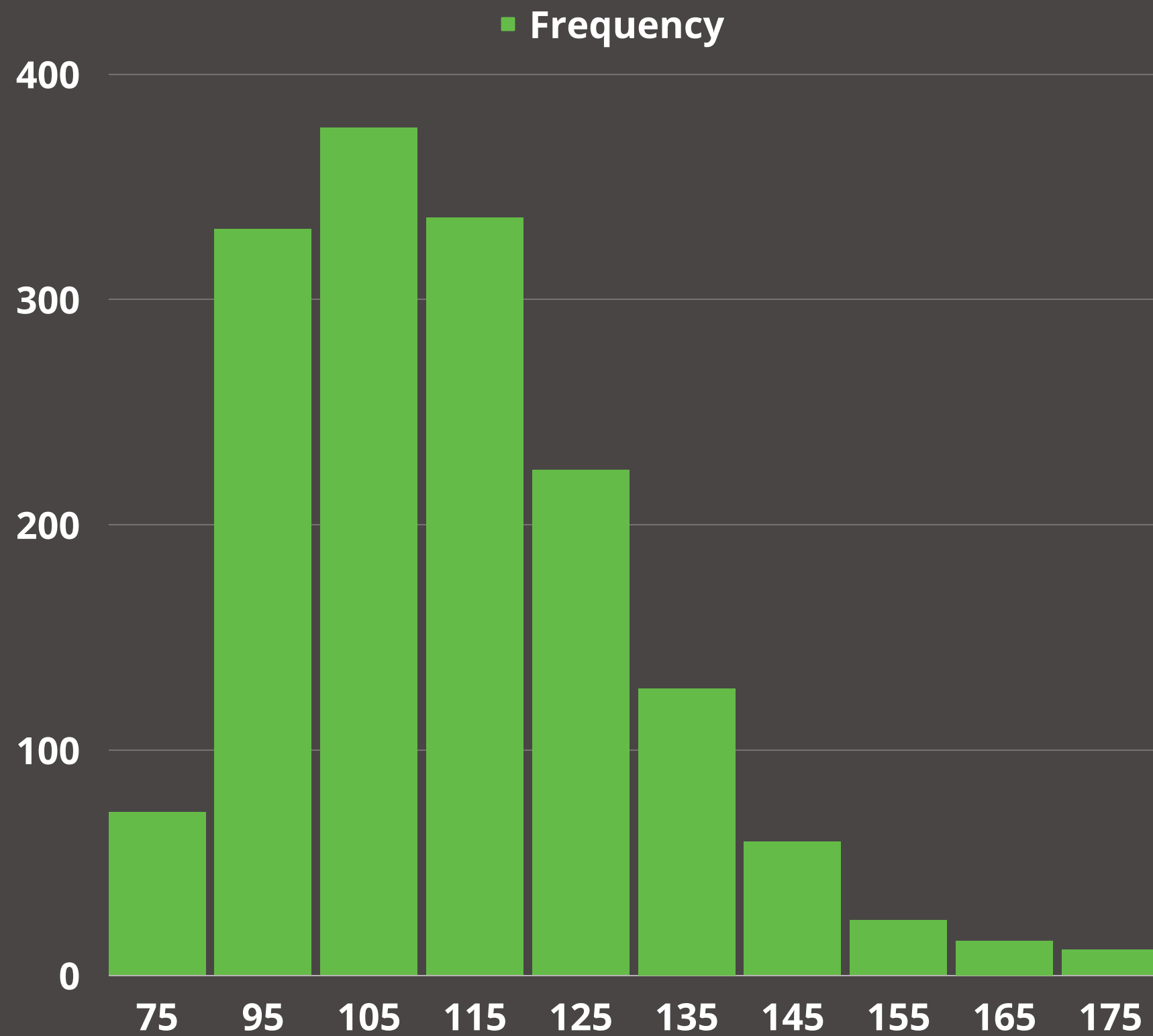
One hot encoding was used for analysis

Production Budget

Productions budgets were broken down into 4 tiers

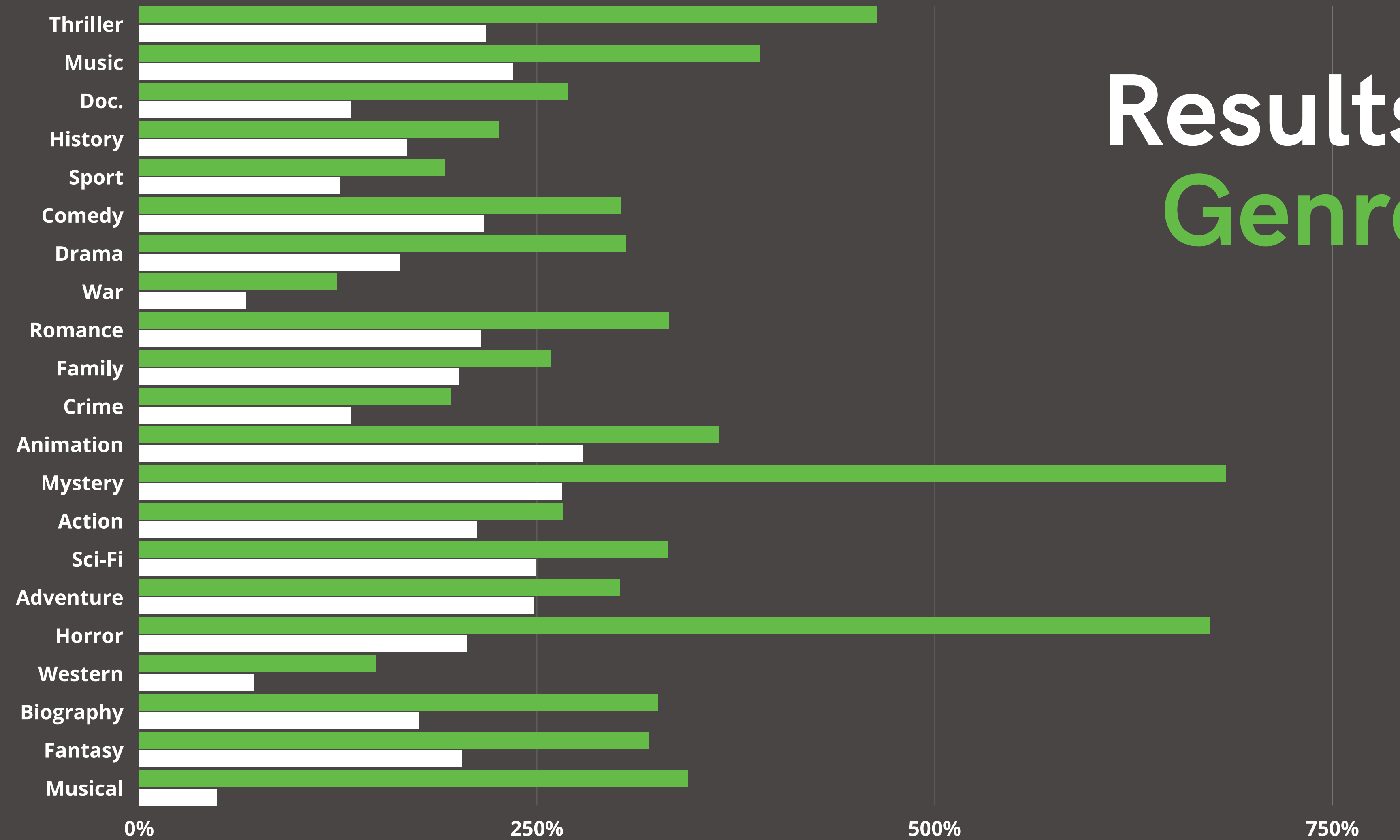
Films below \$500K budget were excluded from the study

Results: Runtime



■ Mean ROI ■ Median ROI

Results: Genre



Results: Genre

MEAN ROI

- The Mystery genre mean ROI is 683%
- Non-Mystery mean ROI is 303%

MEDIAN ROI

- The Mystery genre median ROI is 266%
- Non-Mystery mean ROI is 188%

AVERAGE BUDGET

- Average production budget of Mystery is \$23M
- Average non-Mystery production budget is \$44M

Production Budget Tiers



\$500K -
\$5M

\$5M -
\$50M

\$50M -
\$100M

\$100M +

Results: Production Budget



Conclusions: Highest ROI

- Low budget films have the highest ROI by a significant margin
- The Mystery genre has the highest mean and median ROI
- Runtime of 75 - 85 minutes yields optimal returns



Thank you!

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