

# Project Luther

---

Predicting Total Movie Gross After Opening Weekend

# Introduction

A film's Opening Weekend represents on average 25% of total Domestic Gross revenue.

Expectation: I expect that a film's Opening Weekend grosses would be highly predictive for Total Domestic Gross.

# What's at stake?

Most theatrical release contracts are for 2 weeks minimum, and may extend based on negotiations tied to initial performance metrics.

Due to intense competition for theater screens, movie ***theater*** executives do not want to spend more than the contractually obligatory two weeks on a film that doesn't meet their targets.

This project will benefit movie ***studio*** executives looking to recoup secondary revenue if they miss their target and need to take film into international distribution, subscription streaming channels (Netflix, Hulu, Amazon), Blu-Ray, etc.

Data Source: 11,784 usable films (of 16,703) dating from 1983 - current.

# Box Office Mojo

Adjuster: Actuals Go


Search Site  
Search...

Social  
Facebook  
Twitter

Features  
News  
Release Sched.  
Showtimes  
at IMDb

Box Office  
Daily  
Weekend  
Weekly  
Monthly  
Quarterly  
Seasonal  
Yearly  
All Time  
International

Indices  
Studios  
People



## 47 Ronin

Domestic Total Gross: <b>\$38,362,475</b>	
Distributor: <b>Universal</b>	Release Date: <b>December 25, 2013</b>
Genre: <b>Action Drama</b>	Runtime: <b>2 hrs. 7 min.</b>
MPAA Rating: <b>PG-13</b>	Production Budget: <b>\$175 million</b>

Summary Daily Weekend Weekly Foreign Similar Movies

**Total Lifetime Grosses**  
**Domestic:** **\$38,362,475** **25.3%**  
**+ Foreign:** **\$113,421,364** **74.7%**  
**= Worldwide: \$151,783,839**

**Domestic Summary**  
Opening Weekend: **\$9,910,310**  
**(#9 rank, 2,689 theaters, \$3,686**  
**average)**  
% of Total Gross: **25.8%**  
[View All 6 Weekends](#)

**The Players**  
Director: Carl Rinsch  
Writers: Hossein Amini  
Chris Morgan  
Actor: Keanu Reeves  
Producers: Pamela Abdy  
Erwin Stoff  
(executive)  
Scott Stuber  
(executive)  
Composer: Ilan Eshkeri

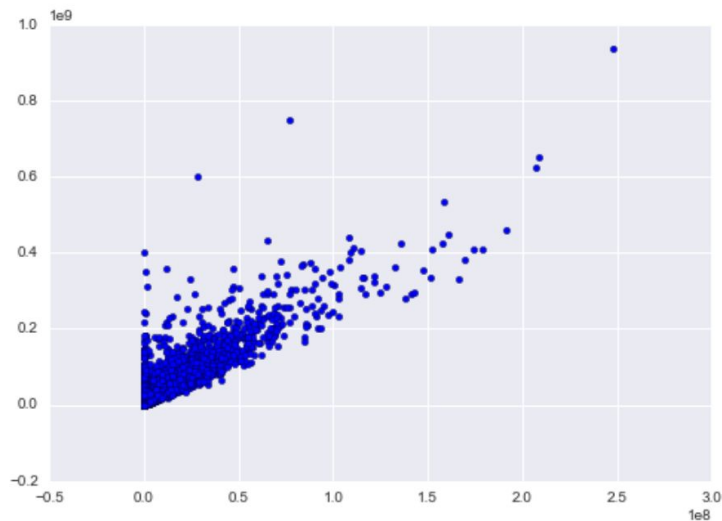
**Related Stories**  
12/29/13 Weekend Report: 'Hobbit,' 'Frozen' Top 'Wolf,' 'Mitty' on Final Weekend of 2013  
12/26/13 'Hobbit' Holds Off 'Wolf' on Christmas Day

**Related Products**

- 47 Ronin [Blu-ray]
- 47 Ronin
- 47 Ronin [Blu-ray 3D]

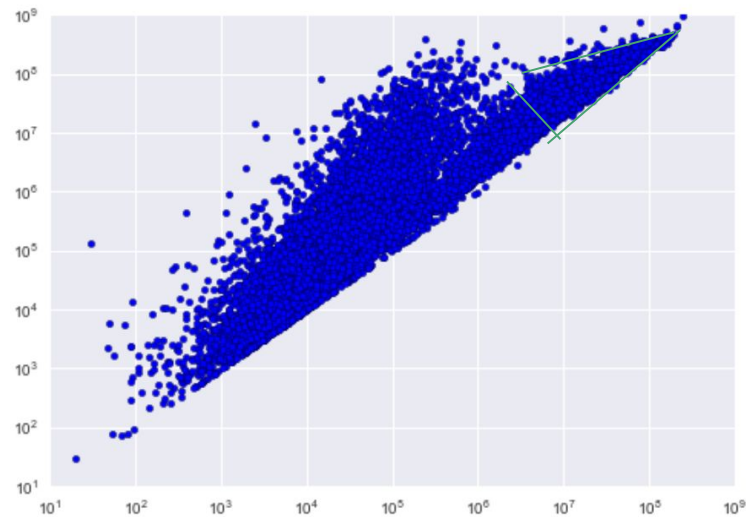
Widest Release: 2,690 theaters  
Close Date: February 6, 2014  
In Release: 44 days / 6.3 weeks

# Initial Impressions: plotting opening vs. total



Linear

x = open  
y = total



Log

# Feature Selection:

- Opening Weekend Gross \$
- Distributor (aka “Studio”)
- Release Season (Holiday = Nov/Dec, Summer = Jun/Jul, Dump Months)
- Genre
- Runtime
- Rating

# Identifying Seasonality

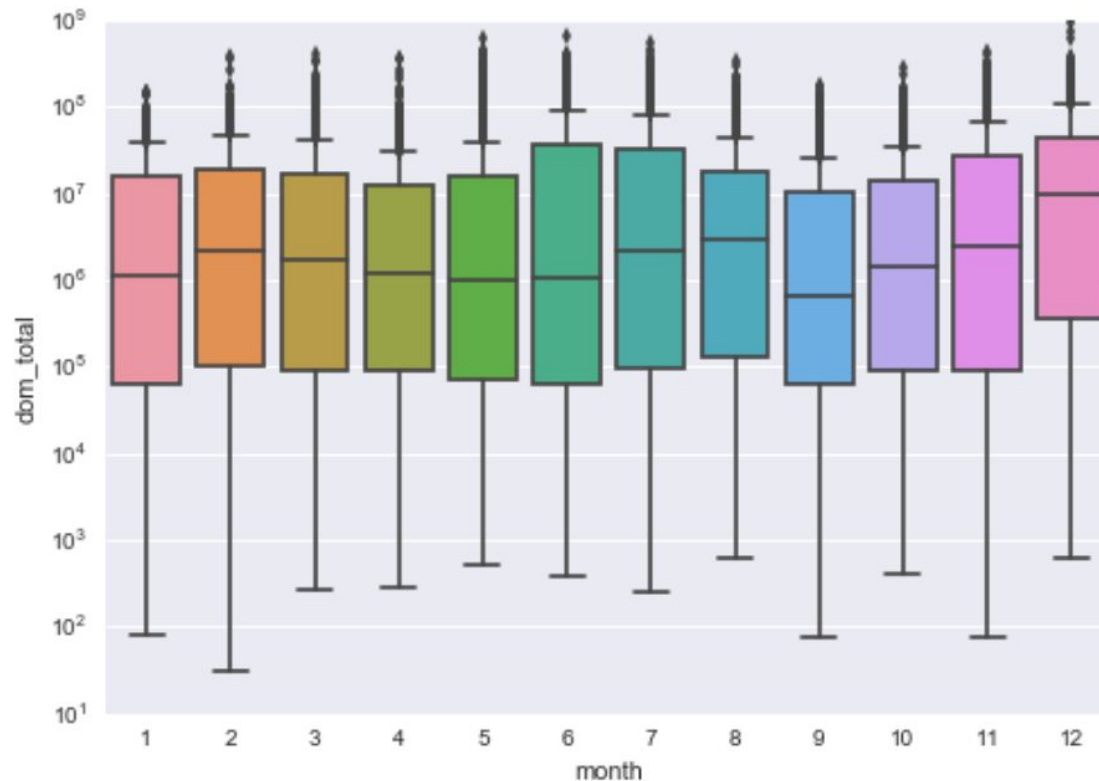
"It's easy to kill a movie..."

Just move it to January!"

-Mike Meyers as Dr. Evil

Saturday Night Live

12/19/2014



# Adjusted $R^2$

## Feature Engineering

Initial OLS/LR	.826
Binning release date into seasons	.828
Removing PG-13 bin	.828
Removing dump months bin	.828
Removing studio/distributor	.820



# Insights

Correlation: There is an obvious relationship between Opening Weekend Take & Total Domestic Gross. The most significant features were shaped by the holiday and summer blockbuster periods, ratings and specific genres.

Although this project could apply to exhibition contracts in the film industry, it could also apply to other entertainment products with large upfront production costs and uncertain demand such as music, video games, and books.

# Next Steps

Binning by Decade or Era:

I'd like to examine how the seasonality has changed over time. For example, I learned that the Summer Blockbuster phenomenon is relatively recent (Jaws 1975, Star Wars 1977).

Binning or Isolating Studios/Distributors:

My model's Adj  $R^2$  dropped slightly when I removed Studio from my features.

Selecting/binning Genres:

I found highly significant genres: Action-Adventure, Animation, Family Comedy, Romantic Comedy, Sci-Fi Adventure, Sci-Fi Fantasy & War should be considered.

## Next Steps (continued)

Cross-validation to test for over fitting and compare predictive model versus actuals.

Run more models, plot residuals, & perform tighter analysis in post.

Lastly, if anyone needs the entire Box Office Mojo website as of yesterday afternoon, it resides on my hard drive.