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# Business Consultation of Select Best Practices to an Animated Film Studio: How to Produce the Most Successful Film You Can

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# Business Consultation of Select Best Practices to an Animated Film Studio

How to Produce the Most Successful Film You Can

Senior Thesis

Spring 2016

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## Table of Contents

Introduction.....	1
Establishing Scope.....	4
Methodology.....	5
Operational Planning Data	
Animation Studio.....	8
Release Date.....	9
Runtime.....	11
Pre-sold Property.....	12
Negative Cost.....	13
Content Data	
Rating.....	14
Content Advisory.....	15
Non-Regression Data	
Cast Demographics.....	16
Bechdel Test.....	18
Time Period.....	19
Regression.....	20
Moving Forwards.....	24
Works Cited.....	29
Appendix.....	31

## Introduction

Movies are created in order to provide a certain experience to viewers, be it to entertain, inform, or even challenge the audience to think from a new perspective. Nonetheless, they remain products of creators, incorporating extreme planning down to the finest details in order to convey the exact story envisioned. With growing pressure to gain the limited financial spending of the American public, several notable players are churning out blockbusters every year that continue to break box office records or suffer mediocre returns. In 2013, Disney managed to earn over \$1 billion worldwide with *Frozen*, earning more than a 1000% return on the production budget of the film (The Numbers). However, studios and other agents of the industry must be wary of flops because in the past failures of a single film have been enough to cause companies to leave the film industry all together. For instance, the company Heaven's Gate shut down in 1981 when United Artists recouped less than \$3.5 million in theater revenues from the \$44 million budget (Robey).

This thesis is framed as a mock consultation to an animated film studio to advise them on what factors they need to take into consideration in order to produce the most successful product that they can. Quantitative research and statistical analysis will be conducted to answer this question and the conclusions drawn should offer valuable insight to a film studio. Major elements of a movie to be examined will be pulled from both creator and viewer sides of the experience.

To establish some context to this project, Justin Wyatt wrote the book High Concept to outline the general formula behind successful Hollywood films. He proposed that movie premises must be able to be summarized succinctly and be inherently marketable for maximum success (Wyatt).

This has had a lasting impact on the industry at large, and is practiced by major players such as producer Steven Spielberg who once said "I like ideas, especially movie ideas, that you can hold in your hand. If a person can tell me the idea in twenty-five words or less, it's going to make a pretty good movie" (Wyatt).

This project was inspired by the idea that there is a formula for success. The focus of this project is not on the plot, premise, nor marketing strategies used by a film, but rather other areas of planning that go into producing a film. Any aspects of planning a film that demonstrate significance in predicting financial success should be purposefully designed in order to maximize profits.

Participants in this thesis include the following:

Honors Student – Josh Blackwood, a senior Global Supply Chain and Operations Management student with a penchant for movies

Thesis Director - Dr. Lauren Steimer, faculty member of the USC The School of Visual Art and Design: Media Arts, as well as in the Program in Film and Media Studies.

Second Reader - Dr. Jack Jensen, faculty member of the USC Management Science department

## Establishing Scope

This project will narrow its scope to only animated films in order to offer specific, tangible insights that need not be further adapted to be useful to the studio. The result of solely working with animated films is that the majority of films analyzed in this research will belong to a small number of studios, namely Disney, Dreamworks, and Pixar. Films from other studios will be included as long as the movies meet the necessary criteria to be considered for inclusion. To provide thorough understanding and suggestions through this project, only select practices will be covered. These practices will be a mix of elements that revolve around the planning and production of a film in addition to elements that focus on the actual content of the film.

Variables explored during this project that cover operational planning of a film are the animation studio, the release date, the runtime, if it's a presold property, and the negative cost. Variables explored during this project related to the content of a film are the rating and the content advisories received. Other variables that will not be incorporated into the predictive regression but will be gathered to identify any current trends in the industry are the U.S. main cast demographics, passing or failing the Bechdel Test, and the time period of the film.

## Methodology

This project aims to determine which elements contribute most to and predetermine best the success of a film. Success in this project is defined as financial success. The critical success or acclaim of a film will not be considered as a dependent variable for this project.

The return on investment (ROI) of a film found using revenue and negative cost estimates is used as the metric for success in this project. Marketing and advertising budgets are important cost items as well, but this information is not widely available and is usually less than the production budget. Therefore, these costs will be omitted from the financial success calculations. These film budgets and revenues are sourced primarily from the two online databases The Numbers and Box Office Mojo, both of which focus on reporting the financial performance of theatrically released movies.

As a crude rule of thumb, movies that have an ROI of less than 200% using the estimates for the production budgets and revenues cited on these databases are considered having performed poorly (Steimer). Films that have an ROI of over 200% (otherwise stated as earning three times the production budget in revenues) are considered to have performed well. This high approximation is to account for heavy manipulation of the figures reported by animation studios.

Movies that can be attributed to a single animated studio may be included in the population for this project as long as that studio has had a film in the top 50 highest grossing animated films of all time per Box Office Mojo. Studios that meet this criteria are Walt Disney Animation Studios (Disney), DreamWorks Animation SKG, Inc (DreamWorks), Pixar Animation Studios (Pixar),

Illumination Entertainment (Illumination), and Blue Sky Studios (Blue Sky) (Box Office Mojo). The movies attributed to these studios totals to 116 films. However, prior to the release of Pixar's Toy Story in 1995, Disney monopolized the market for theatrically-released animated films and did not face much competition, if any. Therefore, only movies released since 1995 in a truly competitive market are considered a part of the population for this project, which results in a list of 81 animated films.

Observation of some films is necessary to collect certain content data. In order to stay current with any identifiable trends, only movies released since 2011 (the past 5 years) will be eligible. Ten movies that were representative of the wide range of ROIs were observed in order to collect information on main cast demographics, passing or failing the Bechdel Test, and the time period.

After collecting the aforementioned data on the movies in the sample, the information was organized using Microsoft Excel. The raw data has been compiled into various graphs to visually display any observable trends currently practiced by the industry. Then, categorical variables were separated into binary variables to allow for linear regression. These variables include the animation studio, the release period during the year, and the content advisories received. The various elements of the main U.S. cast demographics, the Bechdel Test, and the time period were compiled into individual charts for visual analysis.

After organizing the data, the variables were analyzed using Minitab to determine the Pearson Product-Movement Correlation coefficient. This coefficient is used to determine if any variables



are interdependent or not. Of any variables that are found to be interdependent, the variable with a stronger relationship through individual linear regression is kept for the collective regression.

Once interdependent variables are eliminated, the variables will undergo linear regression to predict the dependent variable of ROI. A confidence level of 90% is considered significant for this project to accommodate for the approximations for revenues and production budgets. After running the regression the first time, all variables with p-values above 0.5 will be removed from the model and the regression run again. After the second run, all variables with p-values above the alpha level of 0.1 will be removed and the model run again. This last step will be repeated until all remaining variables are considered significant.

## Animation Studio

There are few major animation studios who regularly release movies. Before Pixar released *Toy Story* in 1995, the market was dominated by Disney. Since then, several major studios have emerged that focus on producing animated films, including Pixar, DreamWorks, Blue Sky, and Illumination. Sometimes entities like production studios and visual effects studios collaborate to make animated films, such as *The Lego Movie* in 2014, but this is much less common.

Although studios entered the market at different times, the oldest studios have not released the most movies nor have the highest ROI. DreamWorks has released 30 movies since 1995, but started after both Disney and Pixar. Illumination's ROI is three times that of the next highest performer Blue Sky, and is actually the youngest of the three studios (Appendix A).

## Release Date

High concept films are predictable on their marketability, which includes when the film will be theatrically released. The film industry has adopted a general timeline for releasing films theatrically due to expectations on viewership throughout the year. The two major points of the year that are believed to have the highest revenue potential are the summer months of end of May through early July, as well as the Christmas/winter holiday season beginning in November.

To increase the precision of this variable, each month was split into two periods at the 15<sup>th</sup> and 16<sup>th</sup> of each month to create 24 periods in the year. With the 81 movies in the study, two major release season peaks can be identified during the year as consistent with the industry trends of late May through July and in November and December. A few movies were released in a small peak in March and early April. (Appendix B). Notable gaps are January through February and August through September. Disney and Pixar released 16 of the 19 June releases, as well as 14 of the 20 November releases (Appendix C). Illumination has released all three of their films in July, and DreamWorks has dominated May by releasing 8 of the 12 May films.

Another aspect of release date that is analyzed is in what year the movie was released. More studios have entered the market and subsequently more movies are being produced each year. Ten movies were released over the course of five years from 1995 through 1999, but the same number of movies were released in just two years from 2014 through 2015 (Appendix D). There does not appear to be an increased average ROI over the years to merit the increase in movies released (Appendix E).

The time that has passed since a release by the same studio is an additional variable explored. The industry average is just under a year with 11.7 months, but individual time lapses range from 1 month to 36 months. About 25% of the movies debuted 12 months after the last film by the same studio. When looking at the overall cycle time of each studio, some studios have much shorter waits in between releases than others. DreamWorks sports the shortest cycle time of only 7 months, whereas Illumination has a cycle time of 30 months (Appendix A).

The final aspect of a film's release covered in this model is the widest release a movie experiences during its theatrical run. This refers to the maximum number of theater screens showing the film over the course of its run in theaters. From 1995 to around 2005, the industry experienced an increase in the widest release of films, but since 2005 it has hovered around 4000 screens (Appendix N). Illumination, Pixar, DreamWorks, and Blue Sky have comparable widest releases in the window of 3700 to 4000 screens on average, but Disney has a substantially lower average widest release of around just 3150 screens (Appendix A). When looking at 2012 to 2014, however, Disney does reflect the current industry trend by averaging around 3750 screens for the average widest releases.

## Runtime

The runtime of a movie is the reported length in minutes a movie lasts including credits. Due to the target market of children as well as adults, it's not much of a surprise that animated films tend to be shorter than films targeted towards adults. There has not been an animated film from the major studios released since 1995 that has exceeded 120 minutes in runtime. Common knowledge points to the attention span of children being generally lower than that of adults, which may account for this trend. Another benefit of having a shorter runtime is being able to screen a movie in a theater more times in a single day, increasing maximum viewership per day.

Disney has the shortest average runtime for their films at 89 minutes, and Pixar has the longest average run time at 99 minutes (Appendix A). A general trend of increasing runtimes can be observed from 1995 to 2016 as movies go from closer to 80 minutes to over 95 minutes (Appendix G).

## Pre-sold Property

After releasing a film, the studio may consider releasing a sequel, prequel, or subsequent film set in the same universe as the original, creating a franchise. The characters, premise, or world in the subsequent films are considered pre-sold because they are already known by the general public. The person debating to see a movie with pre-sold content may be influenced by their experience or knowledge about the original. Movies with a screenplay adapted from a well-known novel such as *Harry Potter* or *Twilight* may be considered pre-sold properties as well since the audience is already familiar with the story before the first movie is released. However, for the scope of this project only subsequent films in a franchise are considered pre-sold.

Creating subsequent films to leverage a pre-sold property differs vastly by studio. Over one third of DreamWorks' movies belong to a franchise, totaling 10 pre-sold properties. Disney, on the other hand, has never released a subsequent film in a franchising, suggesting their value in original content and storylines with every movie. Half of Blue Sky's movies belong to either the *Ice Age* or *Rio* franchise, and all three of Illumination's movies belong to the *Despicable Me* franchise. Overall, 20 of the 81 movies showcased pre-sold property in 10 franchises. The largest franchise by number of movies released is the Shrek franchise with five movies (Appendix F).

## Negative Cost

Negative cost is how much money the studio spends to create the film. This budget does not include advertising and marketing costs, which can fluctuate from non-existent to several times the negative cost. As a rule of thumb, the negative cost is higher than the advertising and marketing costs of the film. In 2007, the average marketing and advertising costs of a movie were \$35 million compared to the average production budget of \$71 million (Friedman).

The production budgets for these animated films ranged from \$30 million for the original *Toy Story* to \$260 million for *Tangled*, with an average of \$116 million. The average budget appears to have shifted upwards by about \$60 million around 2006 and 2007. From 1995 to 2006, the average production budget hovered around \$80 million, but after 2007 the average budget hovered around \$140 million (Appendix H).

Illumination has the lowest average production budget across their three films of only \$73 million. Pixar has the highest average production budget of the five studios, hovering around \$137 million (Appendix A).

This variable tries to explain if having a higher negative cost results in a higher return on investment due to higher revenues and profits. Possible reasons behind this include paying more to secure specific voice actors or longer production times.

## Rating

Animated films generally receive ratings assigned by the MPAA of G or PG. These ratings are received after submitting a movie to the organization for review, and are often contested to land a lower rating. Movies targeting children generally avoid PG-13 and R ratings. Submission to the MPAA is optional, however most large theater chains will not carry NC-17 or Unrated films. There are no set standards for assigning a rating to a film, although general criteria are consistent, as the MPAA aims to constantly evolve and represent modern interests and opinions of the American population (Film Ratings).

Movies rated G do not receive content advisories, and movies rated PG are generally considered family-friendly but include some content advisories for potentially offensive matter. Of the sample of movies collected, 65% of the movies were rated PG. All of Illumination's movies and all but one of DreamWorks' movies received a PG rating, and the majority of Pixar and Disney movies receive G ratings (Appendix A). From 1995 to 2016, an increasing percentage of movies released each year received a PG rating, and in the years 2004 and 2012 only PG animated films were theatrically released by these studios (Appendix J).

The point of this variable is to see if movies with a G or PG rating draw in larger crowds and therefore generate more revenue. If one ratings does draw in larger crowds than the other, this may be because people may have a preference for milder or edgier movies, and particularly with the children demographic if parents are comfortable with the content of the film as expressed succinctly with a rating.



## Content Advisory

Along with a rating, the MPAA provides a list with each film warning what content the film has that warranted the rating. Movies that receive a G rating do not receive content advisories, so all the content advisories collected were from PG movies. There is no set list of content advisory labels that the MPAA can pull from, although there are repeated terms and general umbrella categories that the many terms can be aggregated into (for example, “some rude language” and “mild language” are lumped into “language”). The categories found in the sample are language, action, thematic material, humor, violence, sexuality/sensuality, and images. A movie can and commonly does receive a content advisory for multiple categories.

DreamWorks and Blue Sky are the only studios whose movies received Language or Sexual content advisories. All five studios had movies that received Action and Humor content advisories, but these were less common in Disney and Pixar movies with around 25% with Action and less than 20% with Humor advisories (Appendix K). Before 2004, few movies had either of these two content advisories, but they seem to have grown in popularity, especially the Action content advisory. More than 80% of PG movies released since 2012 received an Action content advisory (Appendix L).

## U.S. Main Cast Demographics

The cast of the film consists of characters who have a significant impact on the plot, to the point where removing them would change the development of the film. Only 10 of the 81 films were observed to collect data on these variables, and not every studio was represented in this part of the project. The average cast size was 8 characters, but ranged from 6 in *Mr. Peabody and Sherman* and *Home* to 12 in *Toy Story 3*.

The age of characters was broken up into four categories being child, adolescent, adult, and elderly. Only three of the movies depicted children as main cast characters. This was an interesting observation given that these films are heavily marketed towards younger children. More films had an adolescent as a main cast character than not, with six of the 10 having one. The majority of main cast characters for all movies were adults, with an average of 7 adult main characters per movie. And similar to the number of children, only three movies had elderly characters as a part of the main cast (Appendix M).

The gender of characters was determined from pronoun use. All characters from all movies observed fell within the gender binary, including all non-human characters. In eight of the 10 movies there were more male characters than female characters in the main cast. *Inside Out* was the only film in the sample to have more female characters than male characters, and in *Mr. Peabody and Sherman* there was an equal number of male and female characters. On average, there were 5.5 (6) male characters per film and 2.5 (3) female characters per film (Appendix M).

Almost every movie in the sample had at least one main cast character that was not a human, the exception being *Brave*. Some movies had machines, animals, or even a snow man as seen in *Frozen*. Half of the movies had more human characters than non-human characters, and the other half vice versa. Likewise, the average number of human characters per film was 3.7 (4), and the average number of non-human characters per film was 4.3 (4) (Appendix M).

The last element of the cast demographics collected was an approximation of race for human main cast characters. Only four umbrella races were used, which were white, black, Asian, and Latino. There were an average of 3.75 (4) white characters per film, 0.38 (0) black and Asian characters per film, and .13 (0) Latino characters per film. *Home* was the only film with a human as part of the main cast that did not have a white cast member.

## Bechdel Test

An extension of the demographics variable is whether or not the film passes the Bechdel Test. This variable aims to examine if female representation in animated films have any effect on a film's revenues and ROI. The Bechdel Test serves as a very simple proxy for female representation on screen by outlining three criteria for a film to meet, which are:

1. If there are two or more female characters
2. If the female characters talk to each other (beyond 'hello', some variations require 30 seconds of dialogue minimum)
3. The conversation is about something other than a man

Half of the films in the sample passed the Bechdel Test, and the other half did not. This will be disappointing to those invested in pushing for increased representation of women on the screen. The sample average of Bechdel-test-passes is higher, however, than that of the Pixar collection, which only has six passes out of 16 movies (Greenbaum).

*Cars 2* and *Penguins of Madagascar* each only had a single female character, so it would have been impossible for these movies to pass any step of the test (Appendix M). It is worth mentioning that the female characters in both movies were professionals (ironically both were involved with some form of secret agent/intelligence role) and not fulfilling other common token female archetypes.

### Time Period of the Movie

The time period refers to when in history the story is taking place. The categories were past, present, and future, yet all 10 movies in the sample only fell into the past and present categories.

Three of the movies were set in the past, and seven were set in the present. This was determined by observing the available technology in the film. This shows that the general trend at the moment by writers is to set movies in the present day.

## Regression

The model underwent two rounds of removing insignificant variables before only significant variables remained (Appendix P). To summarize the results of the analysis, the variables that significantly contribute to predicting an animated film's financial success are:

<b>Variable</b>	<b>Equation Variable</b>	<b>P-Value</b>
(Constant)	-	0.022
Widest Release	X <sub>1</sub>	0.000
Year Released	X <sub>2</sub>	0.012
Production Budget	X <sub>3</sub>	0.000
Illumination	X <sub>4</sub>	0.000
DreamWorks	X <sub>5</sub>	0.002
PreSold	X <sub>6</sub>	0.001
Period 22	X <sub>7</sub>	0.016

The function of these variables to the ROI for a film are as follows:

$$\hat{y} = -4.26 + .003606X_1 - .1481X_2 - .0000000333X_3 + 4.924X_4 - 1.537X_5 + 2.031X_6 + 1.685X_7$$

With respect to the widest release variable, the positive coefficient shows that the more theaters that a film runs in, the higher the ROI. This may appear intuitive, but with this significance demonstrated studios should strive to maximize the number of theaters screening their films.

The negative year variable shows that the industry as a whole is seeing lower ROIs as time goes on. For each year after 1995, this model shows that studios should anticipate a 14% lower ROI per year. In the long term, this may result in fewer new entrants into the industry and for studios to constantly assess their probability of turning a profit before considering beginning new projects that will be released several years later.

The negative cost/production budget variable shows that the larger the production budget, the lower the ROI will probably be. This is highlighted exceptionally with Illumination's films, all three of which sport a production budget under \$100 million USD and an average ROI of over 1000%. This variable may also seem intuitive, but may serve as a source of caution for studios who encounter mammoth budgets, such as Disney's \$260 million USD negative cost for Tangled which generated an ROI of only 126%. One area in which studios may lower their negative costs are by pursuing tax incentives granted in different states/countries for operating there. A prime example is the state of Georgia, which under the Film, Television, and Digital Entertainment Tax Credit provides a 20% tax credit for companies that spend \$500,000 or more on production and post-production in Georgia and an additional 10% tax credit if the finished project includes a promotional logo provided by the state ("U.S. Tax Incentive Info"). Other U.S. states that offer significant tax credits are Kentucky, Louisiana, Massachusetts, and Puerto Rico, and such tax credits can be found internationally as well. By producing animated films within the borders of such generous tax breaks, studios stand to save substantial amounts of money. The cost of relocating production equipment, staff, and facilities would need to be taken into consideration when deciding where to carry out production and post-production of a film.

Illumination shows a significantly higher ROI than the contrast level Blue Sky, with a prediction of generating 492% higher ROIs for their movies than Blue Sky. Studios should extensively study Illumination's techniques, franchise, and organizational capabilities to determine any special methods that contribute to their elevated success.

Movies produced by DreamWorks, on the other hand, are predicted to have an ROI 154% lower than Blue Sky's films. DreamWorks should look inwards at any efficiencies that may be causing these shortcomings. They may start by evaluating their production budgets which are the second highest in the industry and the possibility of spreading their resources too thin by producing multiple films at a time in order to maintain such a quick cycle time (Appendix A).

Movies that are a subsequent film in a franchise are predicted to see an increase of 203% in their expected ROI. This shows that people actively see sequels, although further research would be required to gain any insight on the ideal number of movies in a franchise before diminishing returns make another movie ill-advised. The traditional number of movies in a franchise capped at three with famous trilogies such as the original Star Wars, Indiana Jones, and Lord of the Rings, but several studios have exceeded three like DreamWorks with Shrek, Blue Sky with Ice Age, and Pixar with its planned Toy Story 4.

Out of the 15 periods of the year in which movies have been released since 1995, Period 22 (or the end of November) is the only period with a significant advantage over Period 24, predicting a 169% higher ROI than movies released at the end of December. This calls into question why studios focus on releasing films during the summer over the winter holiday period, and more research should be done in this area to explore the potential of disrupting the traditional cycle entrenched in the industry since the release of The Matrix in 2000 (Steimer). It is important to note that more movies are released during the summer months than during the winter holiday season, including successes like all three Despicable Me movies. Movies released at the end of November may not have been as successful had they competed during the summer months.



Scatter plots for each significant variable plotted against ROI are located in Appendices Q through W.

The adjusted R-squared value of a regression represents how well the model fits the data. The closer the adjusted R-squared value is towards 1.0, the better the model fits the data and is more accurate for predictions. The adjusted R-Squared value of the model using the aforementioned variables is 60.18%. This means that 60% of the sample ROIs can be explained using this function. Additionally, the model was used to determine the predicted ROI for all observations. The expected and observed residuals were plotted and are located in Appendix X. The residual plot does not display any discernable trends. This means that the model does not consistently over- or under- predict ROI, there are no reactions between variables, nor are there missing variables from the equation.

Variables that did not demonstrate significance in predicting ROI through this model, including any of the content advisories, the runtime, or the length of time since the last release of the studio, should be back-burner areas of concern for studios while they tackle more pressing and influential factors that will more likely affect the success of an animated film.

## Moving Forwards

This model may be used as a rough tool for predicting the financial success of a film by anticipating its ROI. To demonstrate the model, information on *Finding Dory* was gathered to predict the ROI of the upcoming Pixar film. A simple four point moving average of most recent Pixar films was used to estimate the widest release and production budget due to this information not yet being publicly available.

		Model			
Coefficient				=	-4.26
Widest Release*	3790 screens	x	-4.26	=	13.667
Year Released	22	x	.003606	=	-3.258
Production Budget*	\$161,250,000	x	.0000000333	=	-5.370
Illumination	0	x	4.924	=	0
DreamWorks	0	x	-1.537	=	0
Pre-sold	1	x	2.031	=	2.031
Period 22	0	x	1.685	=	0
				<hr style="width: 50%; margin: 0 auto;"/>	
Predicted ROI				=	281%

\* values estimated with four point moving average of most recent Pixar films

This model predicts that *Finding Dory* will have an ROI of 281%. This would demonstrate solid financial success by clearing the 200% threshold. This would increase if the widest release is more than 3070 screens and if the production budget is less than \$161,250,00 USD.

With all of this information compiled together, another tangential opportunity is a general insight into the major players in the industry and their strategies for competing. Given the scope of the research for this project, none of the studios seem to be on the verge of exiting the industry. They do each exhibit slightly different strategies for how they compete in the animated film segment.

Illumination sports a long production cycle, with about 36 months between the releases of each of their movies. This provides them the chance to focus on one film project at a time and really dedicate time and efforts to churning out a solid, high quality product. However, this also requires depending heavily on past success to provide funds for operating into the future. Variable costs associated with the number of projects a studio is working on are kept to a minimum, but overhead costs are heavily concentrated at all times. The studio may encounter serious problems if one of their future films performs poorly and the studio does not have the funds to sustain another large gap in their release cycle. At present, Illumination is scheduled to release two films in 2016, *The Secret Life of Pets* and *Sing*, so it appears they may simply be growing as a company and striving to shorten their production time in the future.

DreamWorks appears to operate using an opposing strategy to Illumination. By releasing 30 movies since 1998, they have managed to reduce their release cycle to a mere 7 months. This means that the studio balances several projects at a time, dividing resources and efforts between potentially conflicting and competing efforts. However, this approach allows DreamWorks to spread the fixed overhead costs for operating the studio across many projects. This results in less of a dependency on each individual project's success, and may be more forgiving of isolated failures. The less attention devoted to each film may be why DreamWorks has experienced few

extreme successes (namely Shrek and Shrek 2) and has a lower average ROI than others at just 190%, but by distributing the overhead a lower ROI would be needed to continue operating.

Disney has the lowest average ROI between the five studios, no franchises in their theatrically released movies, and has smaller widest releases than the other studios, even when looking at a 3-point moving average of most recent films across each studio. This suggests that Disney is most likely not dependent on the performance of the movies themselves, but rather use the movies to promote new content, characters, and stories that create merchandise sales. Also supporting this is the fact that Disney has not theatrically released a sequel to an animated film since 1995. They have announced the upcoming release of Frozen 2 in 2020, but this will be the first time in at least 25 years that Disney has released a non-direct-to-video sequel for one of their animated films. Again, this suggests that Disney prefers to put out only new content, most likely to generate profit across their other business units such as merchandise and their theme parks.

Of the 10 films Blue Sky has released, six belong to the two franchises Ice Age and Rio. While they have an attractive average ROI of 345%, that shows a reliance on their existing rather than new material. Blue Sky also is the studio with the least consistent release schedule, with releases during the spring, summer, and winter months. This suggests that Blue Sky is subject to planning their films around other, more established studios (namely Pixar and Disney). As the second youngest studio other than Illumination, this may change as Blue Sky becomes a more established studio in the industry.

Pixar has the highest average production budget among the five studios, but that may be related to also having the highest average runtime. The other distinguishing factor that sets Pixar apart from the other studios is that they have the lowest percentage of films rated PG. This means that more often than not, a Pixar film will be rated G. Disney is the only other studio that has less than 50% of their movies receiving a G rating, but just barely with 45%. Pixar may have established a reputation for consistently putting out movies appropriate for small children, creating a brand image that parents can trust to take their kids to.

If this research were to be continued, here is a list of ideal topics to delve deeper into:

- More detailed analysis of franchises, looking into elements such as how many installments to create in a franchise, which film in the series should be expected to make the most money, or if the success of the preceding installment affects the success of a subsequent film.
- How soon will movies become not profitable enough to sustain the current number of competitors in the industry due to decreasing predicted ROIs, and who would be the first to exit the industry should it be necessary.
- What practices DreamWorks should stop doing in order to increase the predicted success of their films.
- What practices Illumination should continue and competitors would want to adopt in order to increase the predicted success of their films
- How many films can be released at the end of November and still experience the elevated ROI? Why do studios and distributors stick to such a cyclical release schedule if it appears to not contribute significantly to the predicted ROI?

- Run this analyses using other measures of success, such as box office revenues instead of ROI or using the widest release of a film as the financial success indicator instead of as a predicting variable.
- Collecting more data on the Bechdel Test in order to incorporate this variable into the regression model, as well as other film content information to uncover any predictors for financial success since the content advisories proved insignificant to this end.

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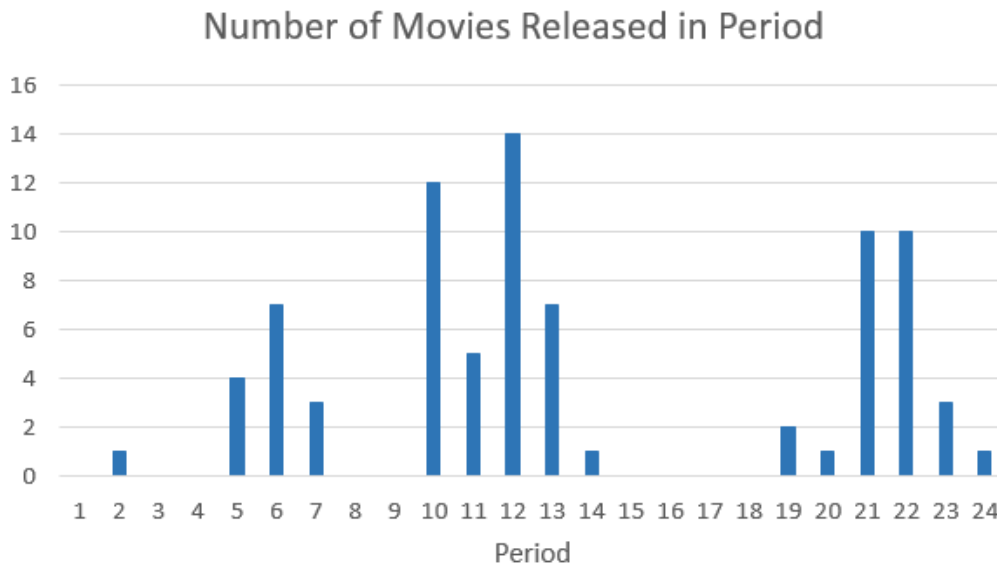


## Appendices

### Appendix A

	Disney	Pixar	DreamWorks	Blue Sky	Illumination
Movies Released since 1995	22	16	30	10	3
Average ROI	95%	342%	190%	345%	1014%
Year of First Release	1937	1995	1998	2002	2010
Average Months between Releases	11	15	7	18	30
Number of Movies in Franchises	0	7	14	6	3
Percent of Movies are Pre-Sold	0%	25%	33%	40%	67%
Production Budget (USD)	\$ 112,800,000	\$ 136,800,000	\$ 120,400,000	\$ 90,900,000	\$ 73,000,000
Average Runtime (minutes)	89	99	91	91	95
Percentage PG Movies	45%	31%	97%	60%	100%
Widest Release	3147	3727	3872	3865	3972

### Appendix B

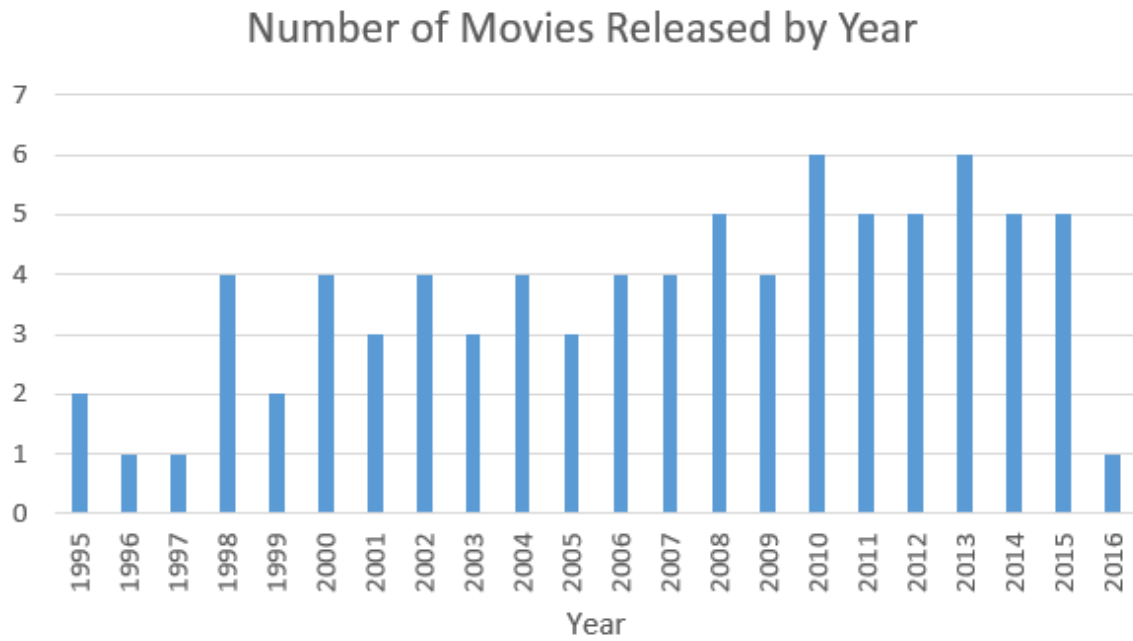


(Period 1 is early January, Period 2 is late January, split at the 15<sup>th</sup>/16<sup>th</sup> of the month)

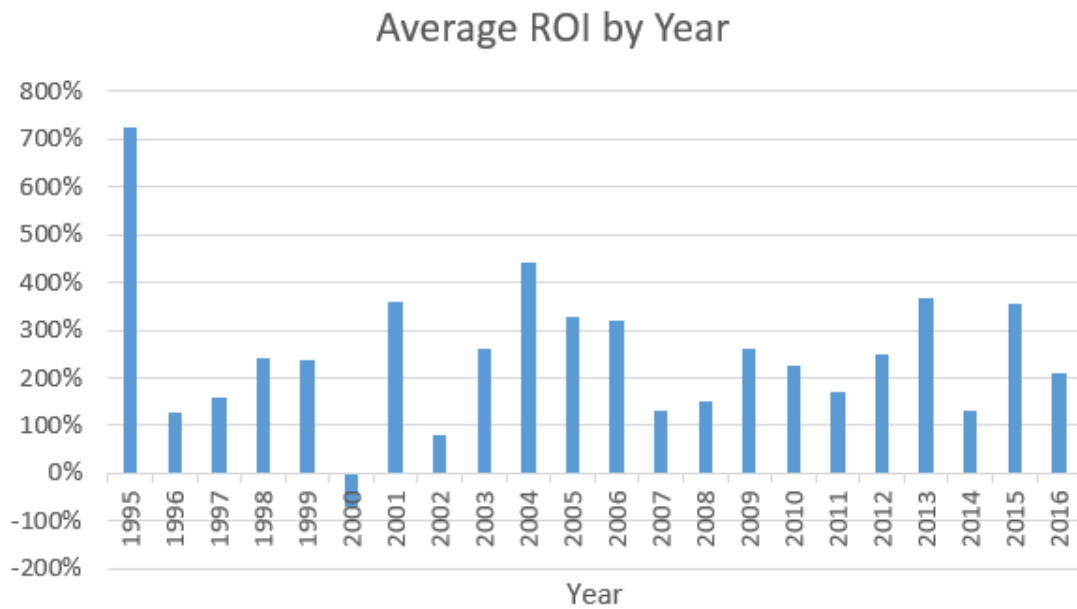
Appendix C

Period	Studio	Movies Released
<b>Early January</b>		
	DreamWorks	1
<b>Early March</b>		
	Blue Sky	3
	DreamWorks	1
<b>Late March</b>		
	Blue Sky	1
	DreamWorks	5
	Disney	1
<b>Early April</b>		
	Blue Sky	2
	Disney	1
<b>Late May</b>		
	Blue Sky	1
	DreamWorks	8
	Pixar	2
	Disney	1
<b>Early June</b>		
	DreamWorks	3
	Pixar	1
	Disney	1
<b>Late June</b>		
	Pixar	7
	Disney	7
<b>Early July</b>		
	Blue Sky	2
	DreamWorks	1
	Illumination	3
	Disney	1
<b>Late July</b>		
	DreamWorks	1
<b>Early October</b>		
	DreamWorks	2
<b>Late October</b>		
	DreamWorks	1
<b>Early November</b>		
	DreamWorks	4
	Pixar	2
	Disney	4
<b>Late November</b>		
	DreamWorks	2
	Pixar	4
	Disney	4
<b>Early December</b>		
	Blue Sky	1
	Disney	2
<b>Late December</b>		
	DreamWorks	1

## Appendix D



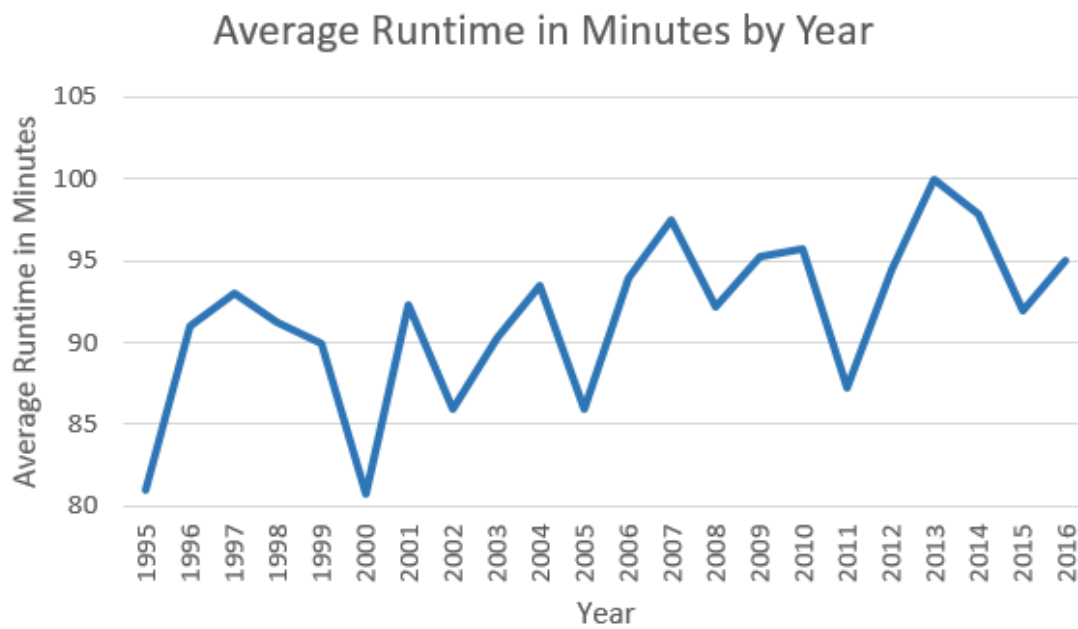
## Appendix E



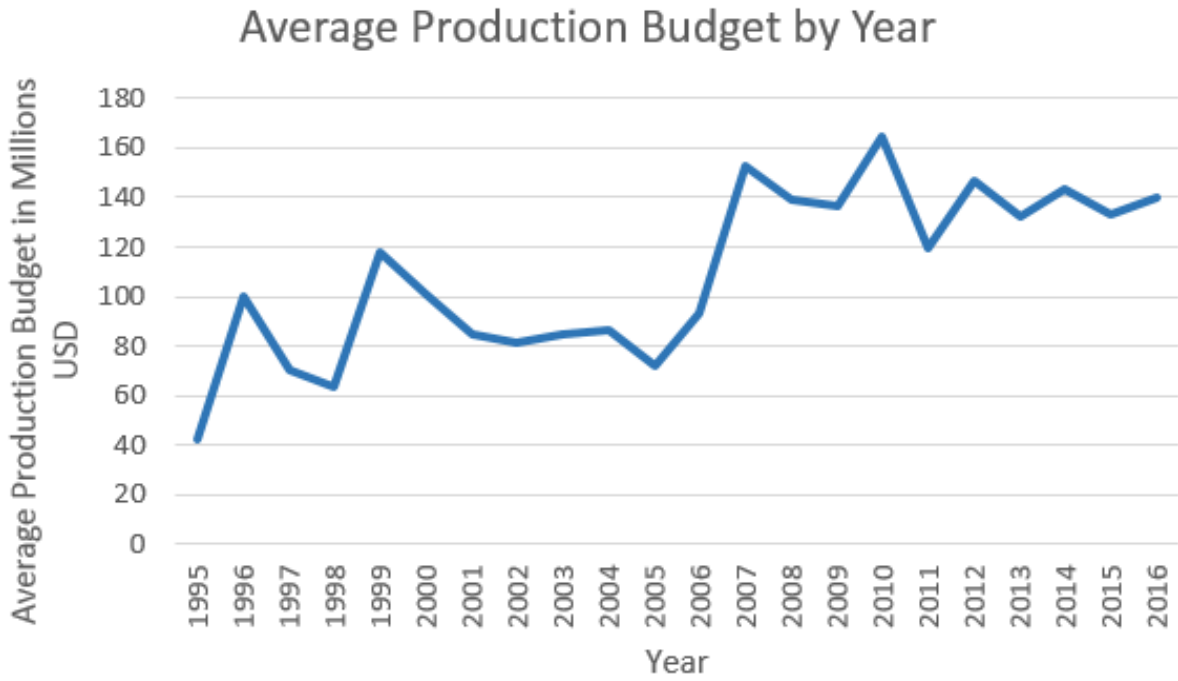
Appendix F

Franchise	Number of Movies
Ice Age	4
Rio	2
How to Train Your Dragon	2
Kung Fu Panda	3
Madagascar	4
Shrek	5
Despicable Me	3
Cars	2
Monsters, Inc.	2
Toy Story	3

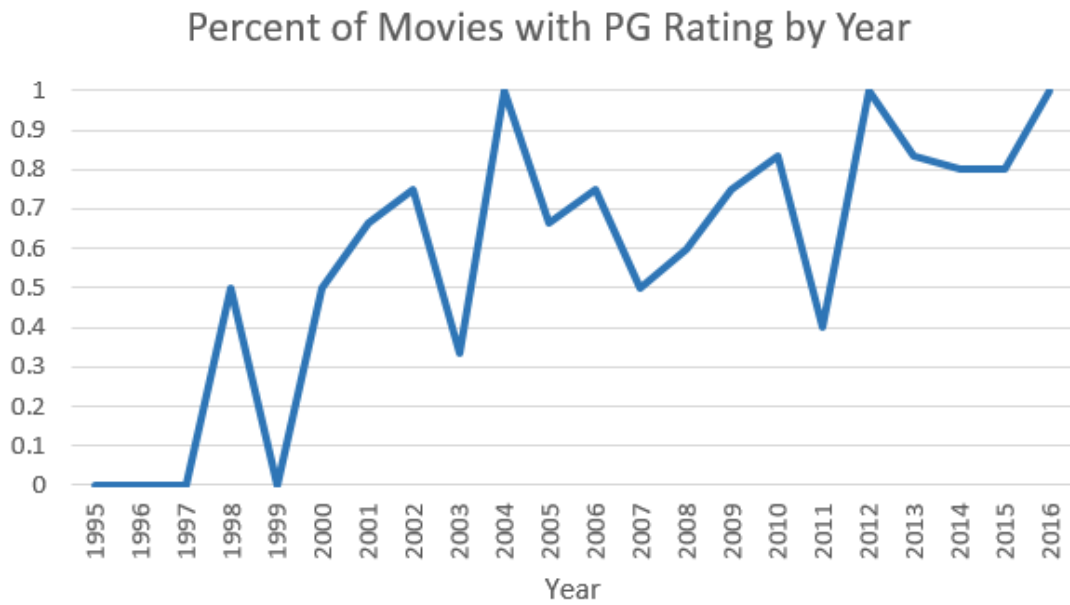
Appendix G



Appendix H



Appendix J



## Appendix K

	Humor	Action	Language	Thematic	Violence	Sexual	Images	Total Movies
Blue Sky	3	4	3	0	0	1	1	10
DreamWorks	18	20	11	7	1	3	1	30
Illumination	3	3	0	0	0	0	0	3
Pixar	1	4	0	2	1	0	0	16
Disney	4	6	0	1	3	0	1	22

\*Content advisories are not mutually exclusive, so a movie may receive more than one

## Appendix L

	Humor	Action	Language	Thematic	Violence	Sexual	Images	Total Movies
1995	-	-	-	-	-	-	-	2
1996	-	-	-	-	-	-	-	1
1997	-	-	-	-	-	-	-	1
1998	-	25%	25%	25%	-	-	-	4
1999	-	-	-	-	-	-	-	2
2000	-	-	25%	25%	-	-	25%	4
2001	33%	-	33%	-	33%	-	-	3
2002	-	75%	-	-	-	-	-	4
2003	-	33%	33%	-	-	33%	-	3
2004	75%	-	25%	25%	25%	25%	-	4
2005	67%	-	67%	33%	-	-	-	3
2006	50%	25%	50%	-	-	25%	-	4
2007	50%	25%	-	25%	-	25%	-	4
2008	20%	40%	-	-	-	-	-	5
2009	50%	75%	25%	-	-	-	-	4
2010	33%	67%	50%	-	17%	-	17%	6
2011	20%	40%	-	-	20%	-	-	5
2012	80%	100%	-	20%	20%	-	-	5
2013	33%	83%	17%	17%	-	-	17%	6
2014	80%	80%	-	20%	-	-	-	5
2015	40%	80%	-	40%	-	-	-	5
2016	100%	100%	-	-	-	-	-	1

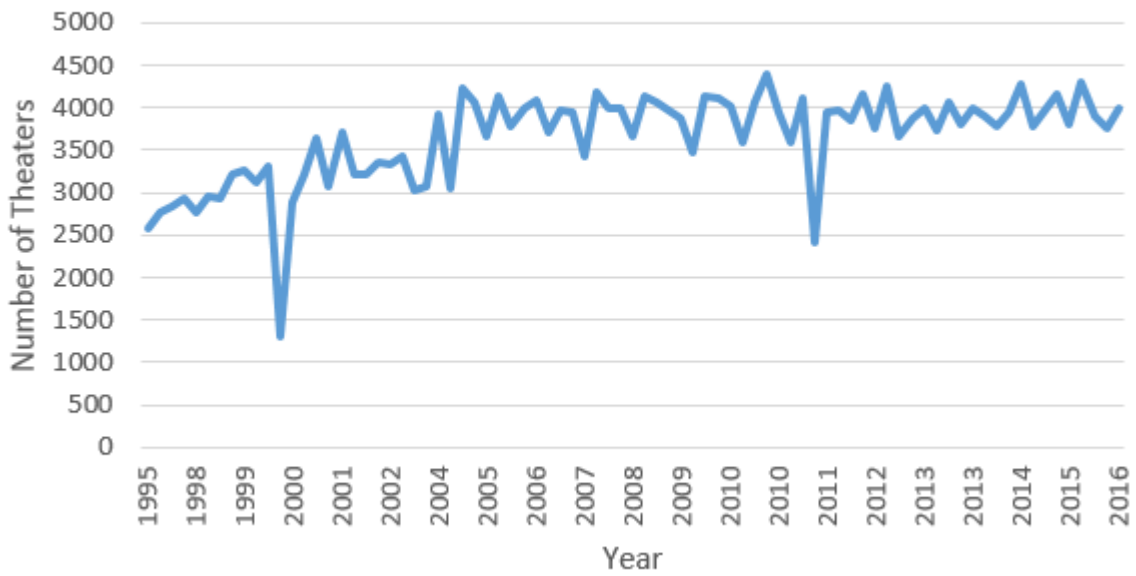
\*Content advisories are not mutually exclusive, so a movie may receive more than one

Appendix M

Movie	Main Cast Size	AgeChild	AgeAdolescent	AgeAdult	AgeElderly	FormHuman	FormNonHuman	GenderMale	GenderFemale	RaceWhite	RaceBlack	RaceAsian	RaceLatino	Bechdel Test	TimePast	TimePresent
How to Train Your Dragon 2	7	0	0	7	0	6	1	5	2	6	0	0	0	0	1	0
Mr. Peabody and Sherman	6	2	0	4	0	5	1	3	3	5	0	0	0	0	0	1
Penguins of Madagascar	9	0	1	8	0	0	9	8	1				0	0	1	
Home	6	0	1	5	0	2	4	4	2	0	2	0	0	1	0	1
Frozen	8	0	1	5	2	5	3	5	3	5	0	0	0	1	1	0
Big Hero 6	9	1	1	7	0	8	1	7	2	3	1	3	1	1	0	1
Inside Out	9	1	0	8	0	3	6	4	5	3	0	0	0	1	0	1
Cars 2	7	0	0	7	0	0	7	6	1					0	0	1
Brave	7	0	1	5	1	7	0	4	3	7	0	0	0	1	1	0
Toy Story 3	12	0	1	10	1	1	11	9	3	1	0	0	0	0	0	1
Averages	8	0.4	0.6	6.6	0.4	3.7	4.3	5.5	2.5	3.75	0.38	0.38	0.13	0.5	0.3	0.7

Appendix N

Widest Release of Animated Films since 1995



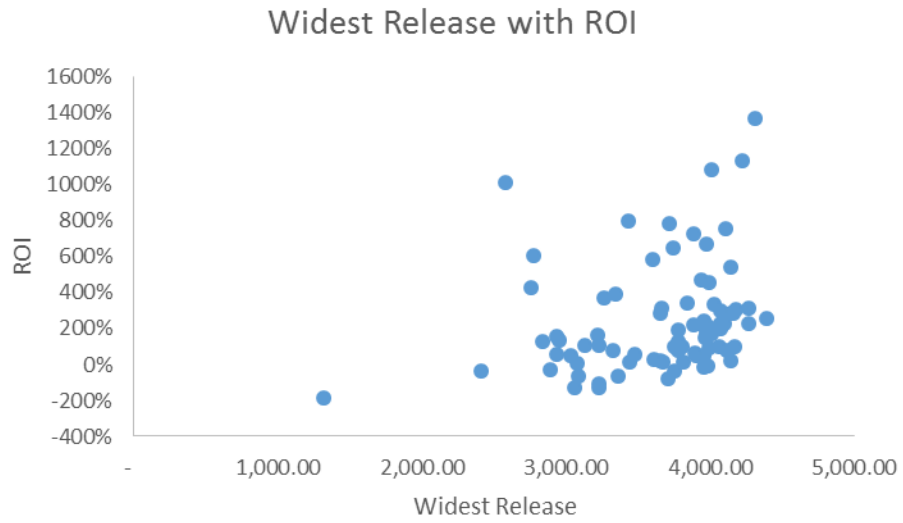
Appendix P

1st Run (eliminate >.5)	
Variable	P-value
Coefficient	0.647
Widest Release	0.008
Year	0.197
Last Release	0.939
Runtime	0.868
Production Budget	0.000
Illumination	0.030
Pixar	0.578
Disney	0.642
Dreamworks	0.083
BlueSky	DUMMY
Pre-Sold	0.066
Rating	0.520
Language	0.413
Action	0.727
Thematic Material	0.459
Humor	0.038
Violence	0.407
Sexual	0.518
Images	DUMMY
Period 2	0.925
Period 5	0.765
Period 6	0.605
Period 7	0.777
Period 10	0.577
Period 11	0.900
Period 12	0.841
Period 13	0.885
Period 14	0.738
Period 19	0.863
Period 20	0.995
Period 21	0.922
Period 22	0.479
Period 23	0.779
Period 24	DUMMY

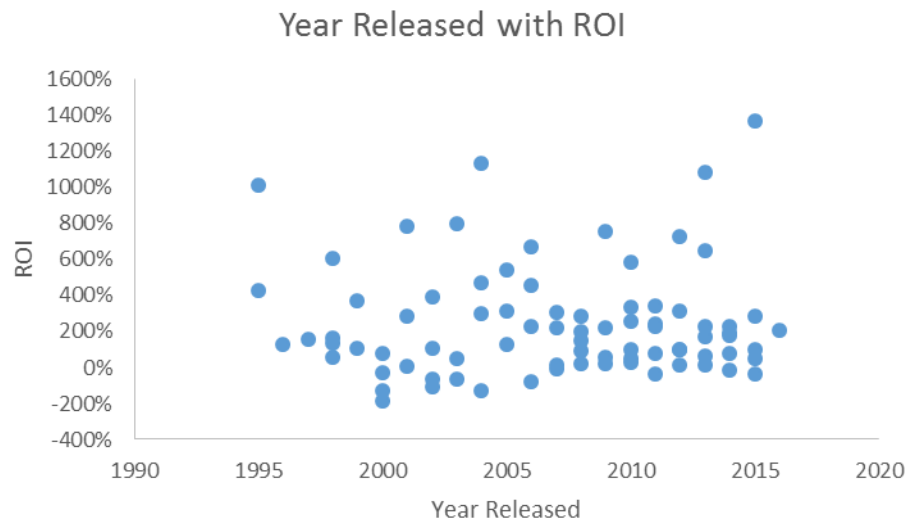
2nd Run (eliminate >.1)	
Variable	P-value
Coefficient	0.043
Widest Release	0.000
Year	0.006
Production Budget	0.000
Illumination	0.001
DreamWorks	0.003
BlueSky	DUMMY
Pre-Sold	0.001
Lanauge	0.427
Thematic Material	0.258
Humor	0.140
Violence	0.576
Images	DUMMY
Period 22	0.028
Period 24	DUMMY



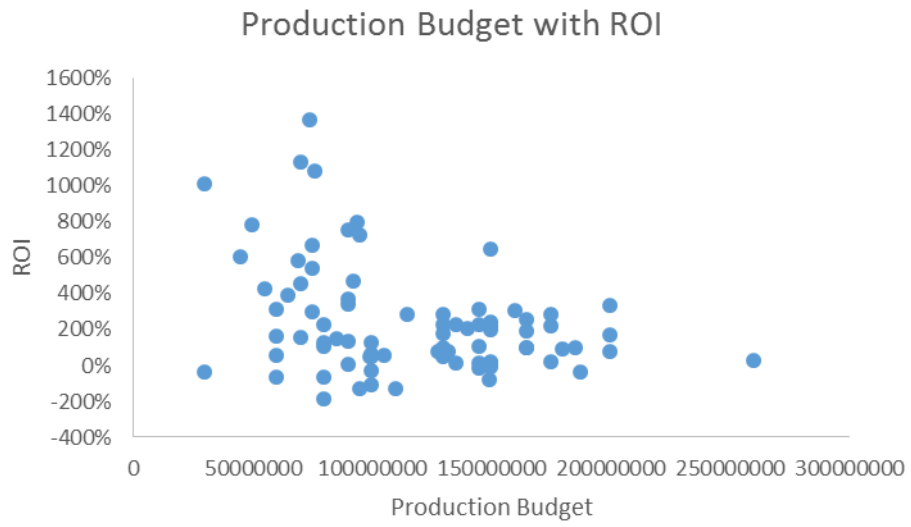
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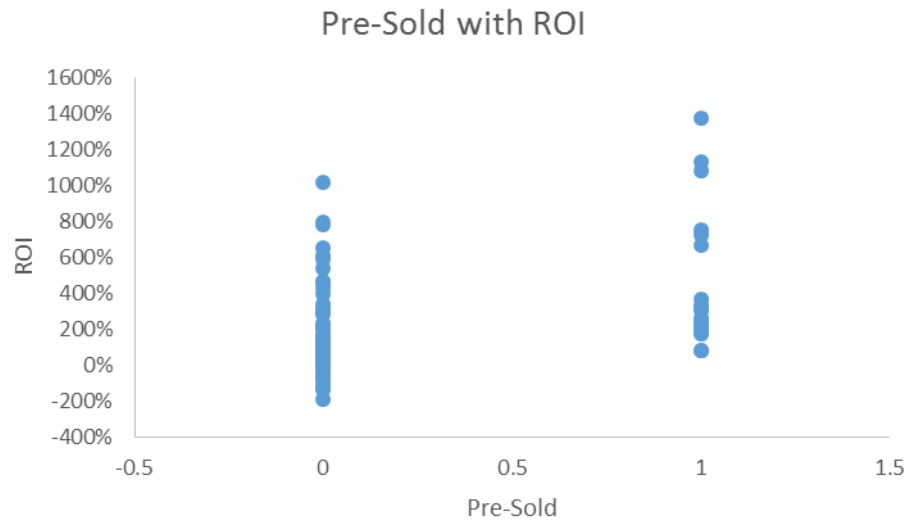
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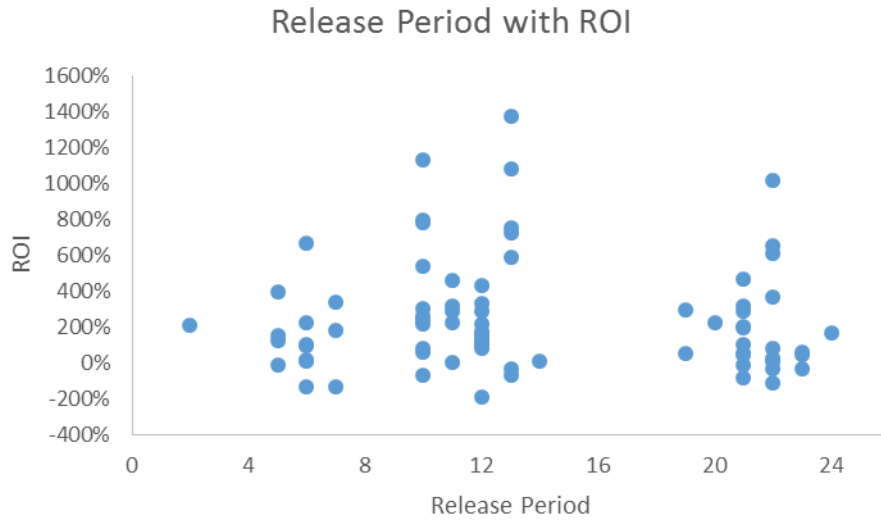
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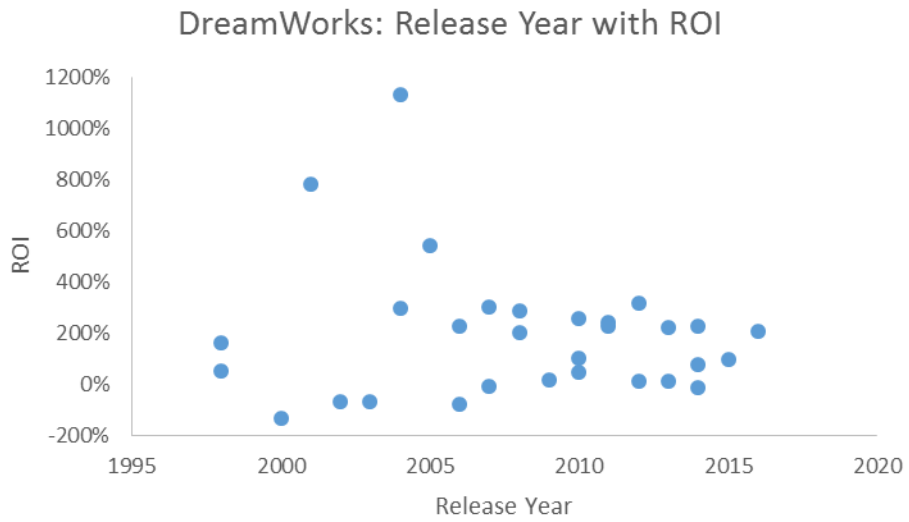
## Appendix T



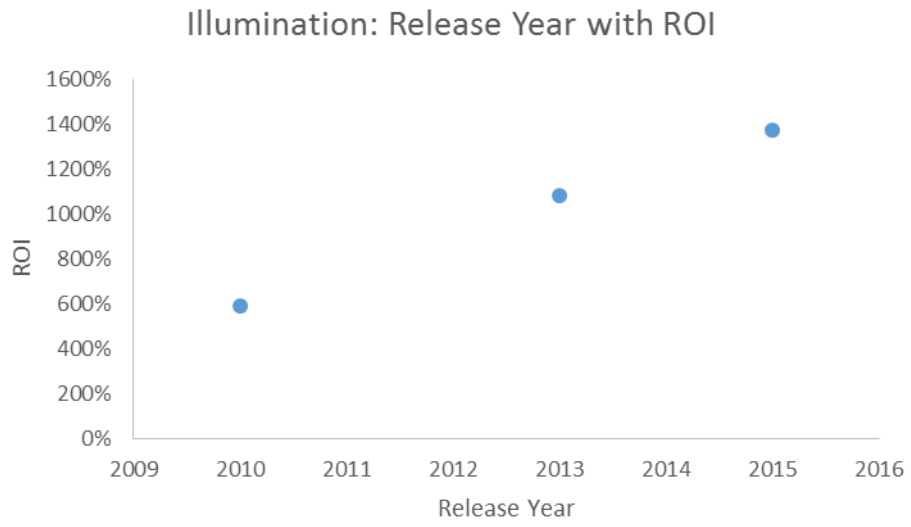
## Appendix U



## Appendix V



Appendix W



Appendix X

