

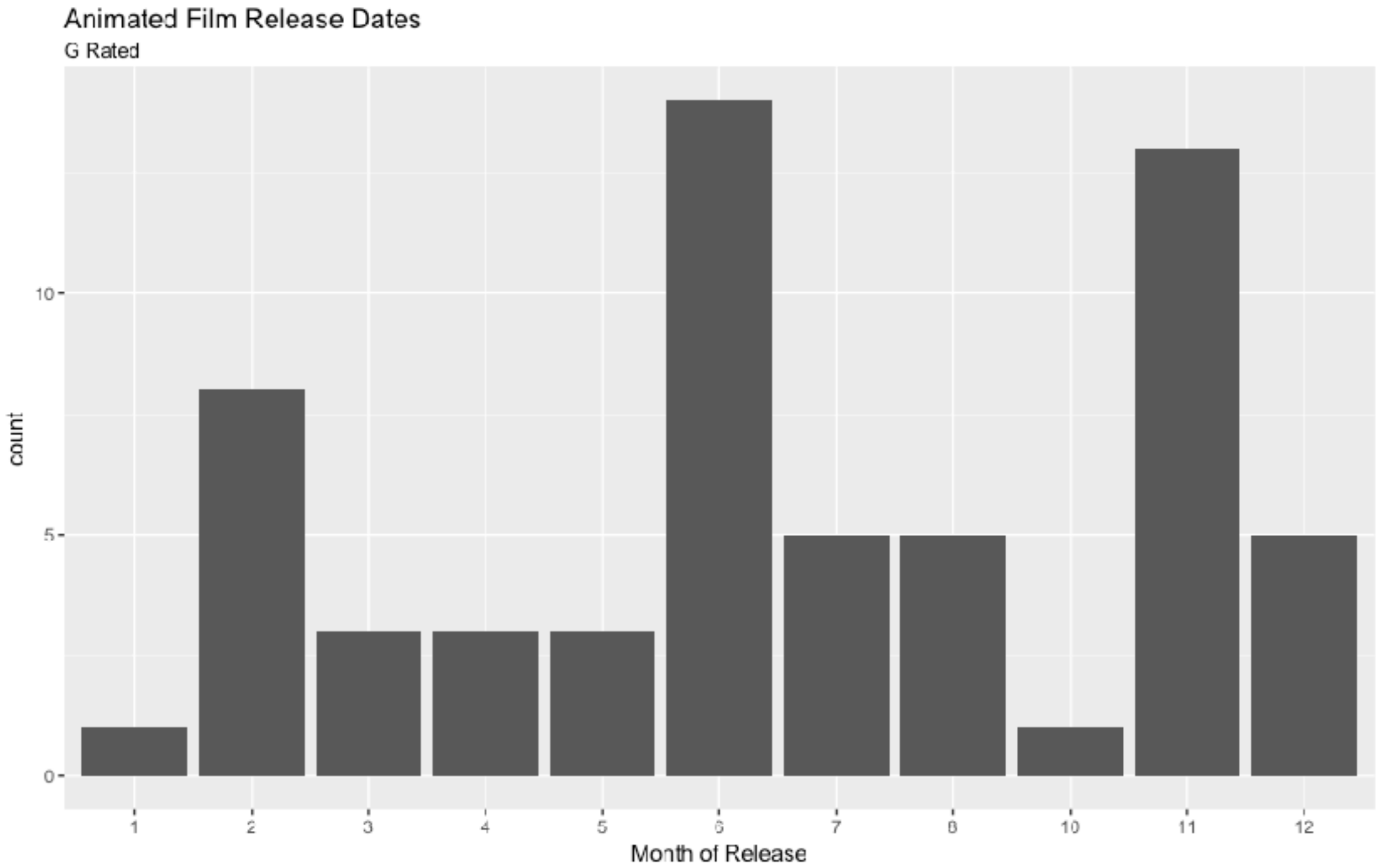
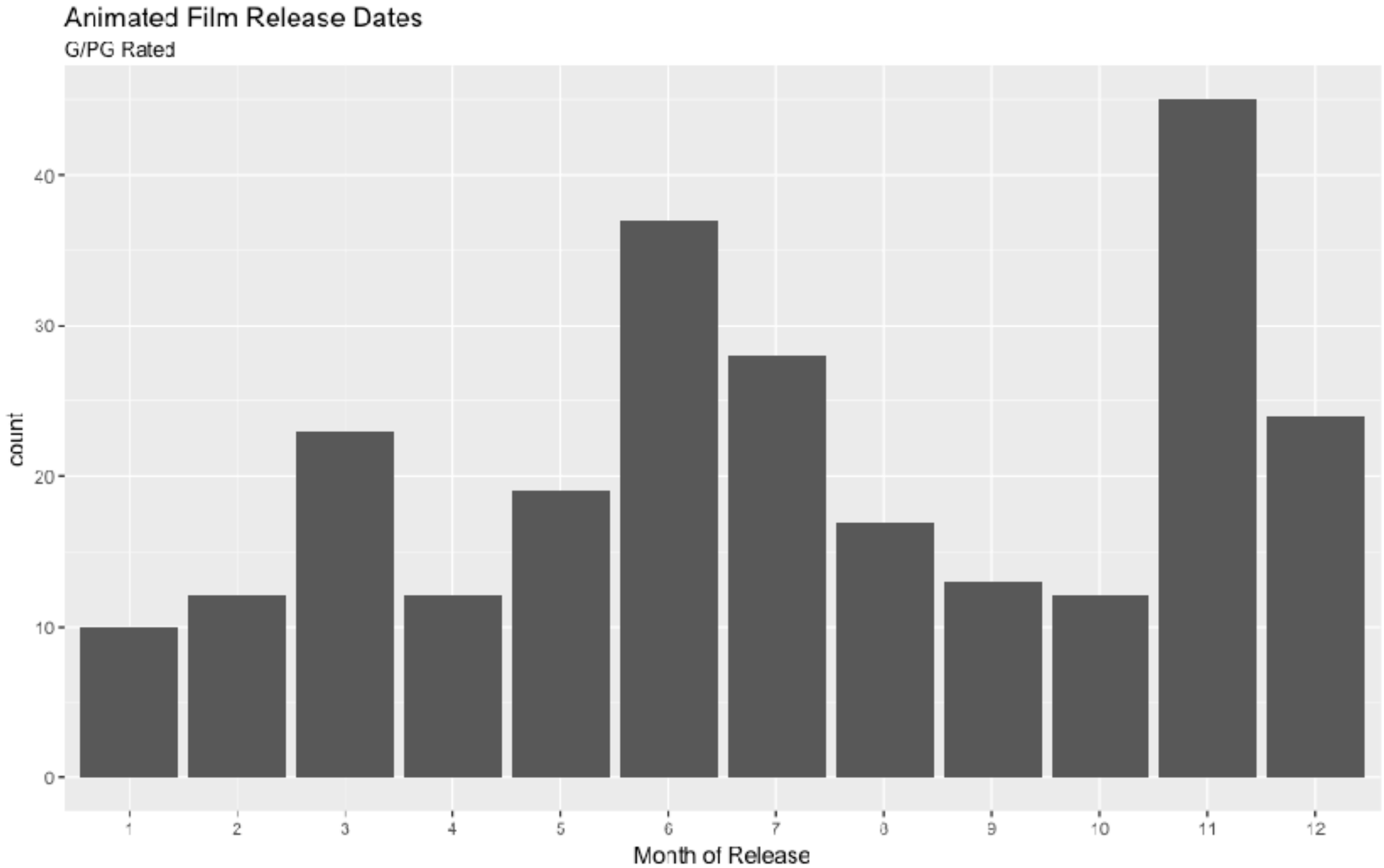
SPRINGBOARD CAPSTONE

AN ANALYSIS OF FILM SEASONALITY

FEB 2018

BACKGROUND:

STUDIOS RELEASE FILMS IN
RECOGNIZABLE AND (FAIRLY)
STANDARD PATTERNS BASED ON
NARRATIVES ABOUT CONSUMER
BEHAVIOR/PREFERENCES



CHALLENGE

WHAT IF SEASONALITY IS NOT A FUNCTION OF CONSUMER PREFERENCE? WHAT IF THE SEASONALITY WE OBSERVE IS A FUNCTION OF THINGS WE CONTROL?

OBJECTIVE:

EXAMINE FILM SEASONALITY

WHAT WE ARE TRYING TO SOLVE

- Establish if movie industry seasonality is related to observable consumer preferences and behaviors
- Examine if other factors (like supply, film budget, etc.) play a greater role in achieving commercial success

WHAT WE ARE NOT TRYING TO SOLVE

- Predicting which films will become successful and which will not
- Identifying what it takes for a film to be a hit

WHY IT MATTERS

- If we can better understand the role of consumer preferences with respect to release date, we may be able to create advantages by ignoring conventional wisdom

THE DATA:

HISTORICAL FILM DATA AND CONSUMER SURVEY

HISTORICAL BOX OFFICE DATA

- Sourced from the database behind the movie website the-numbers.com
- Dataset includes over 5000 movies released between 1970 and 2017
- Contains fields like release date, production budget, genre, box office (domestic and international), MPAA rating, and so on

AMERICAN TIME USE SURVEY

- Sourced from the Bureau of Labor Statistics
- Diary-based survey of how Americans spent their time over the years 2002-2016
- Diary entries are coded by activity (e.g sleeping, watching TV, or shopping) and duration (e.g. 90 minutes)

ANALYSIS: APPROACH

AGGREGRATE

Across the
entire movie
marketplace

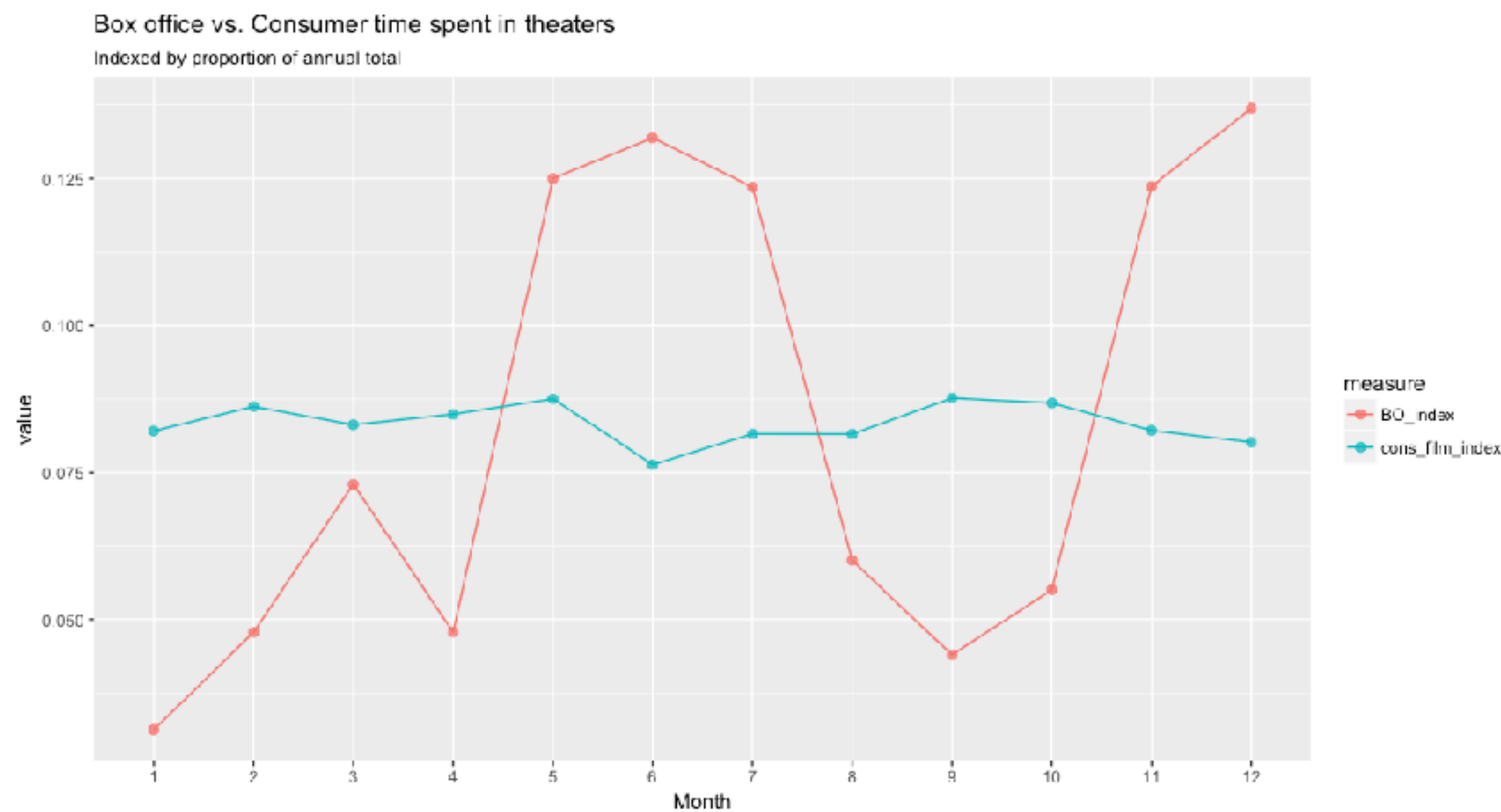
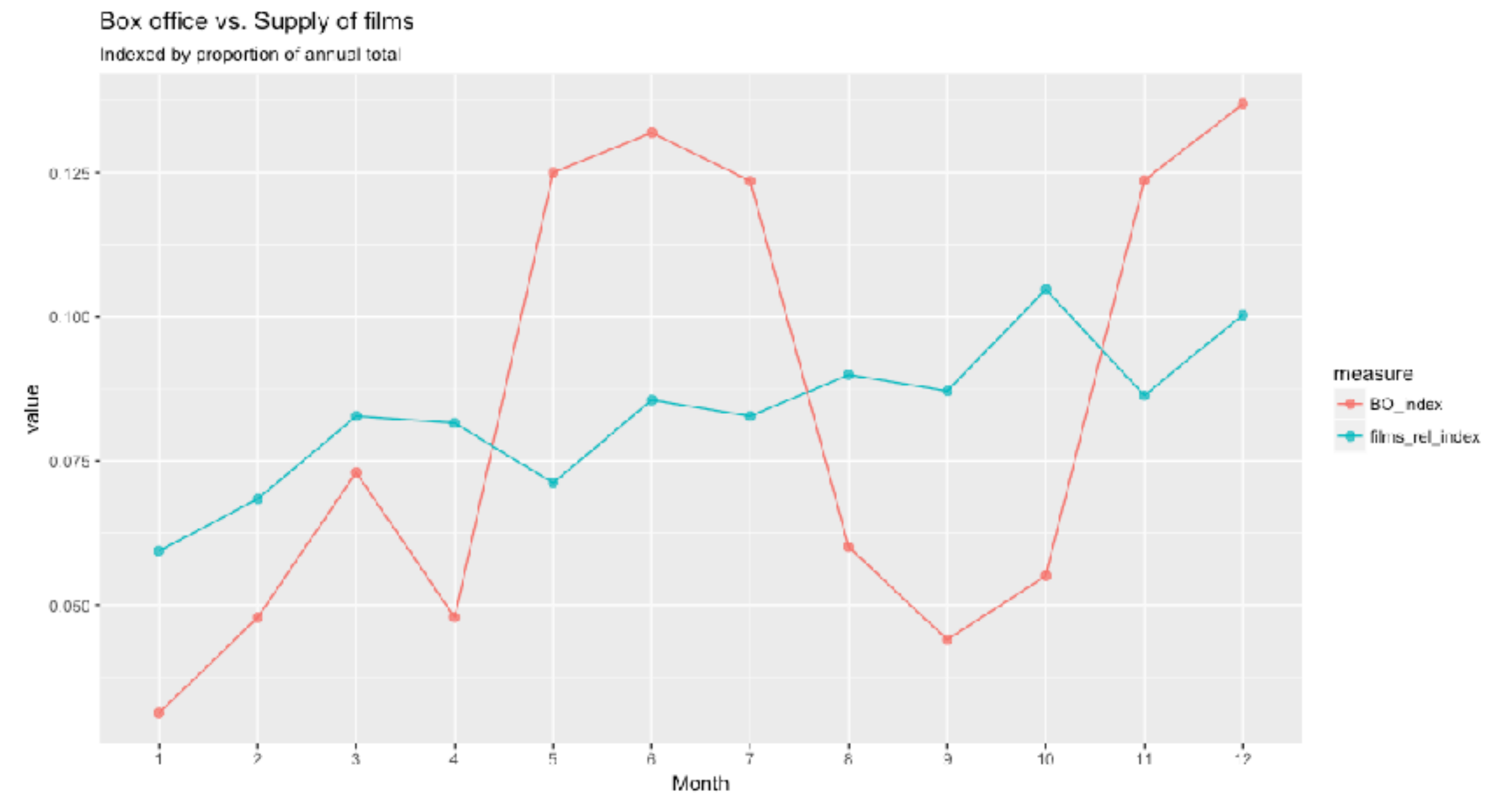
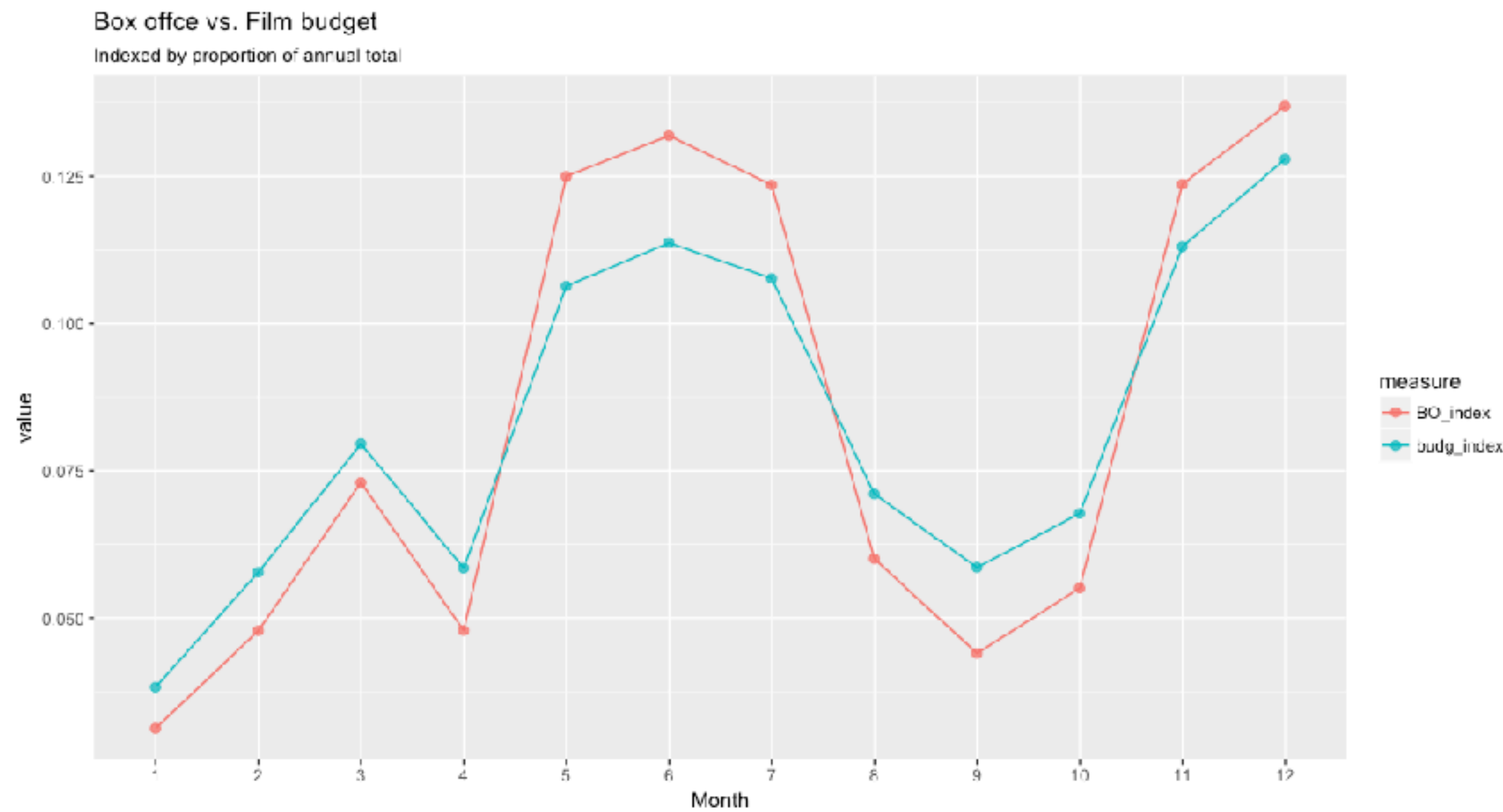
YEAR-MONTH

Examine
relationships on a
month-by-month basis

FILM BY FILM

Model success for all
relevant films
in database

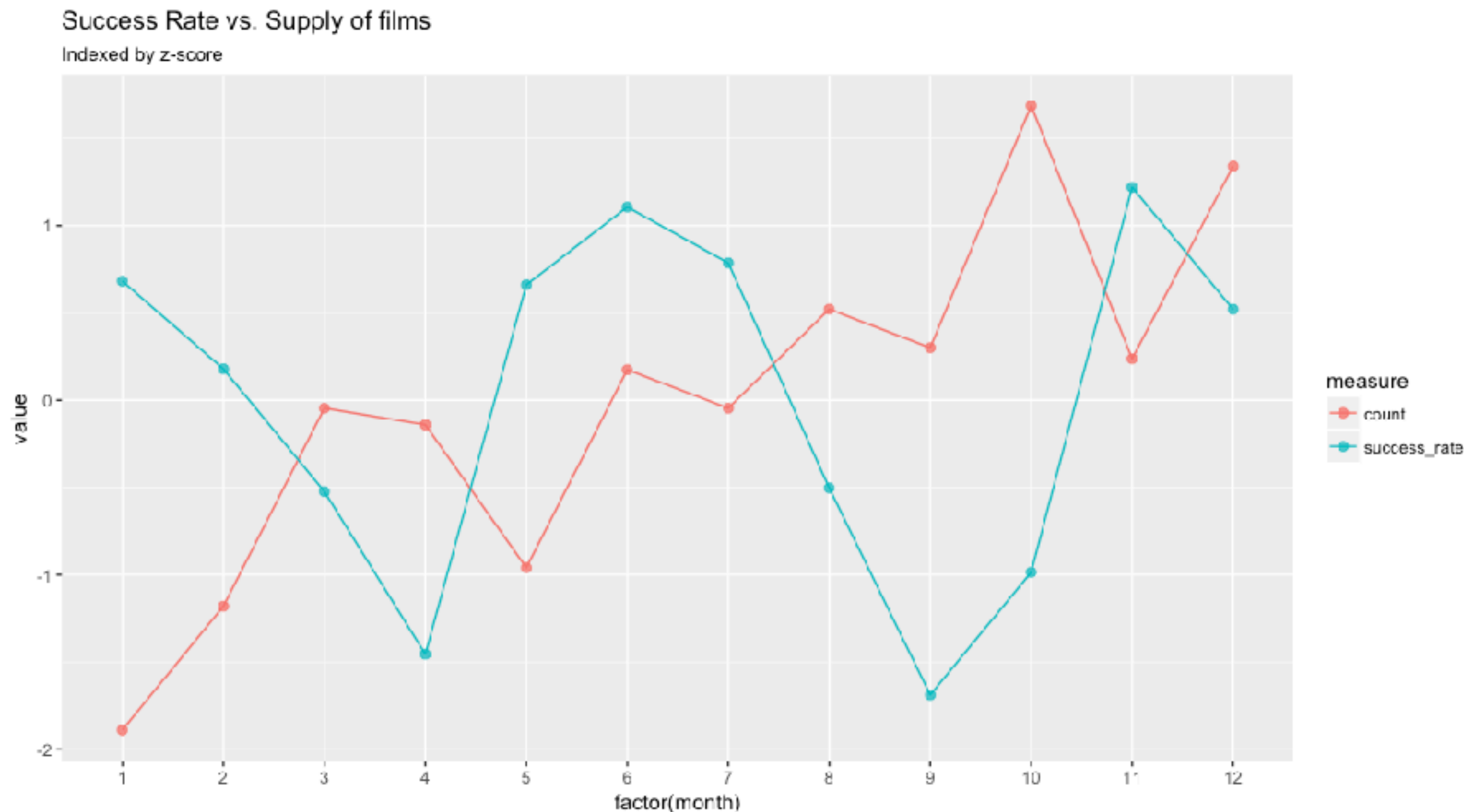
ANALYSIS - AGGREGATE MARKET (BOX OFFICE)



KEY TAKEAWAYS

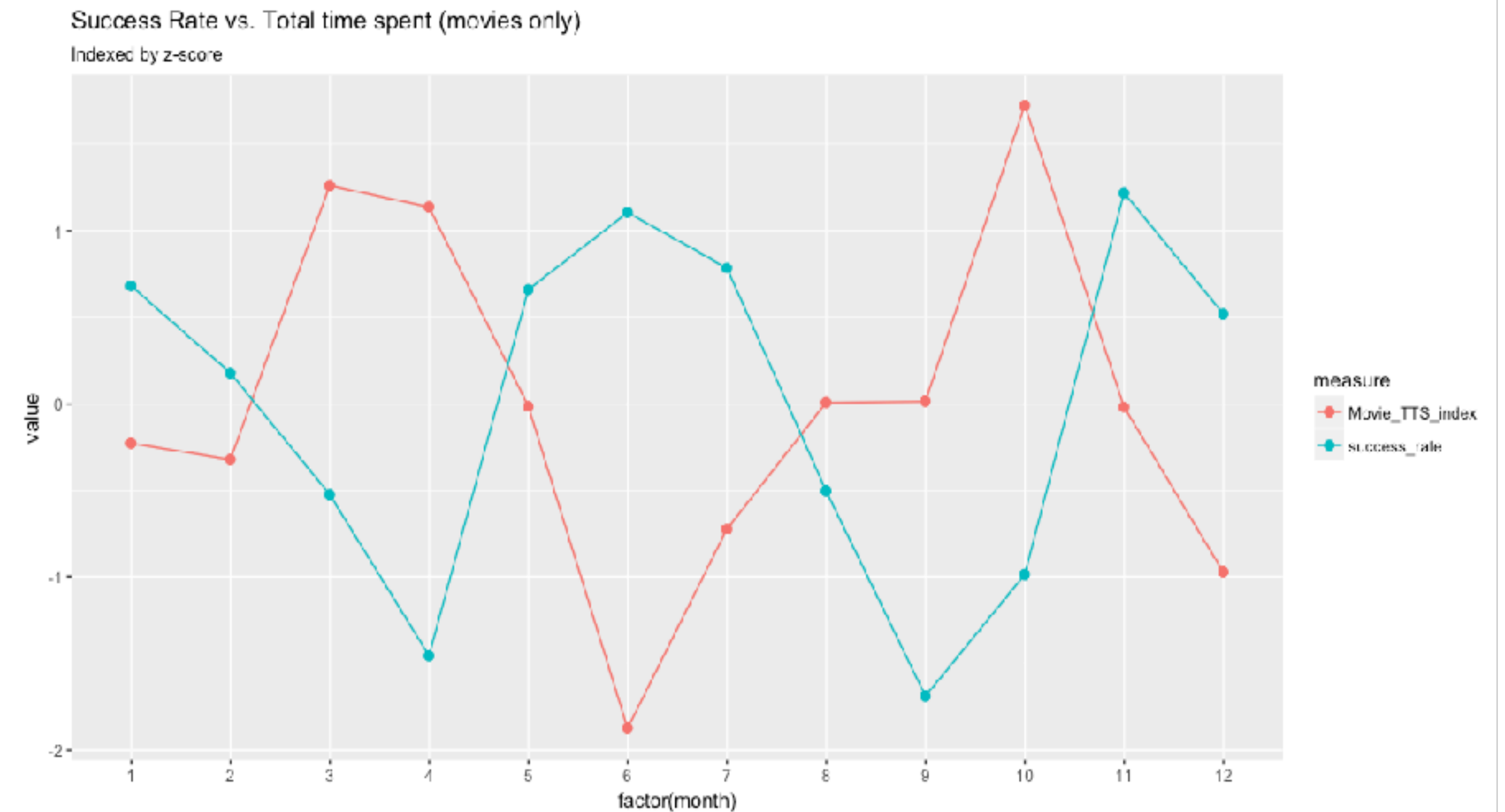
- Tight correlation between budget and box office; to be expected (movies that cost more money should make more money)
- Seasonality is not observed at all in the consumer survey; people report spending about the same amount of time watching movies regardless of month
- Supply of films doesn't initially appear to have impact on total box office

ANALYSIS - AGGREGATE MARKET (SUCCESS RATE)



KEY TAKEAWAYS

- Potentially an inverse relationship between supply of films in the market and success rate (the proportion of films that exceed a 4x return on budget)
- January has few films, but a well above average success rate, while October has many films but a well below average success rate



KEY TAKEAWAYS

- Another potentially inverse relationship between success rate and total time spent by consumers watching movies
- Possible explanations:
 - ATUS survey under-indexes on some portion of the population that sees more films in some seasons (e.g. children)
 - Indexed value has less actual variability than it shows (difference between 1 and -1 is only 11 minutes; a fraction of a film)

ANALYSIS:

YEAR MONTH RELATIONSHIPS

CORRELATION MATRIX

	ATUS - Movies	ATUS - TV	Production Budget	Domestic Box Office	Succes Rate
ATUS - Movies		0.27	-0.09	-0.15	0.00
ATUS - TV	0.27		0.01	-0.01	0.08
Production Budget	-0.09	0.01		0.88	0.18
Domestic Box Office	-0.15	-0.01	0.88		0.35
Succes Rate	0.00	0.08	0.18	0.35	

KEY TAKEAWAYS

- Summarized all data to examine relationships between consumer time spent, production budget, domestic box office, and success rate on month by month basis for Sept 2002 - Oct 2016
- No significant relationships exist (other than between Production Budget and Box office)
- Once again, consumer measures aren't related to success rate

ANALYSIS:

FILM BY FILM

METHOD

- Logistic regression, independent variables for the analysis included release month, consumer survey results for the release month, production budget, and number of films released in the same month

MONTH AS A CATEGORICAL VARIABLE

- With month as a categorical variable, no meaningful/statistically significant relationships exist between the variables and commercial success

‘PRIME’ RELEASE SEASON

- Grouped the months May, June, July, November, and December (months considered ‘prime’ by studios, or through examination of release patterns)
- In this regression, month of release had a statistically significant relationship (positive relationship)
- Supply also had strong relationship with commercial success (negative relationship)

KEY TAKEAWAY

- Unsurprising results do not rebut the idea that consumer behaviors are not the source of seasonality
- Studios control both the supply and the release of films, which means the studios, not the consumers, are primarily responsible for the commercial success of films (w/r/t seasonality)

CONCLUSION:

WHAT'S NEXT

INFLUENCES ON SEASONALITY

- From all of the preceding, it is reasonable to conclude that studio behavior (when they release and along with how many other films) has as much (or more) to do with film seasonality as consumer behaviors
- Intuitively, this conclusion makes some sense; consumers' desire to be entertained does not fluctuate with the calendar (ATUS data shows same conclusion)

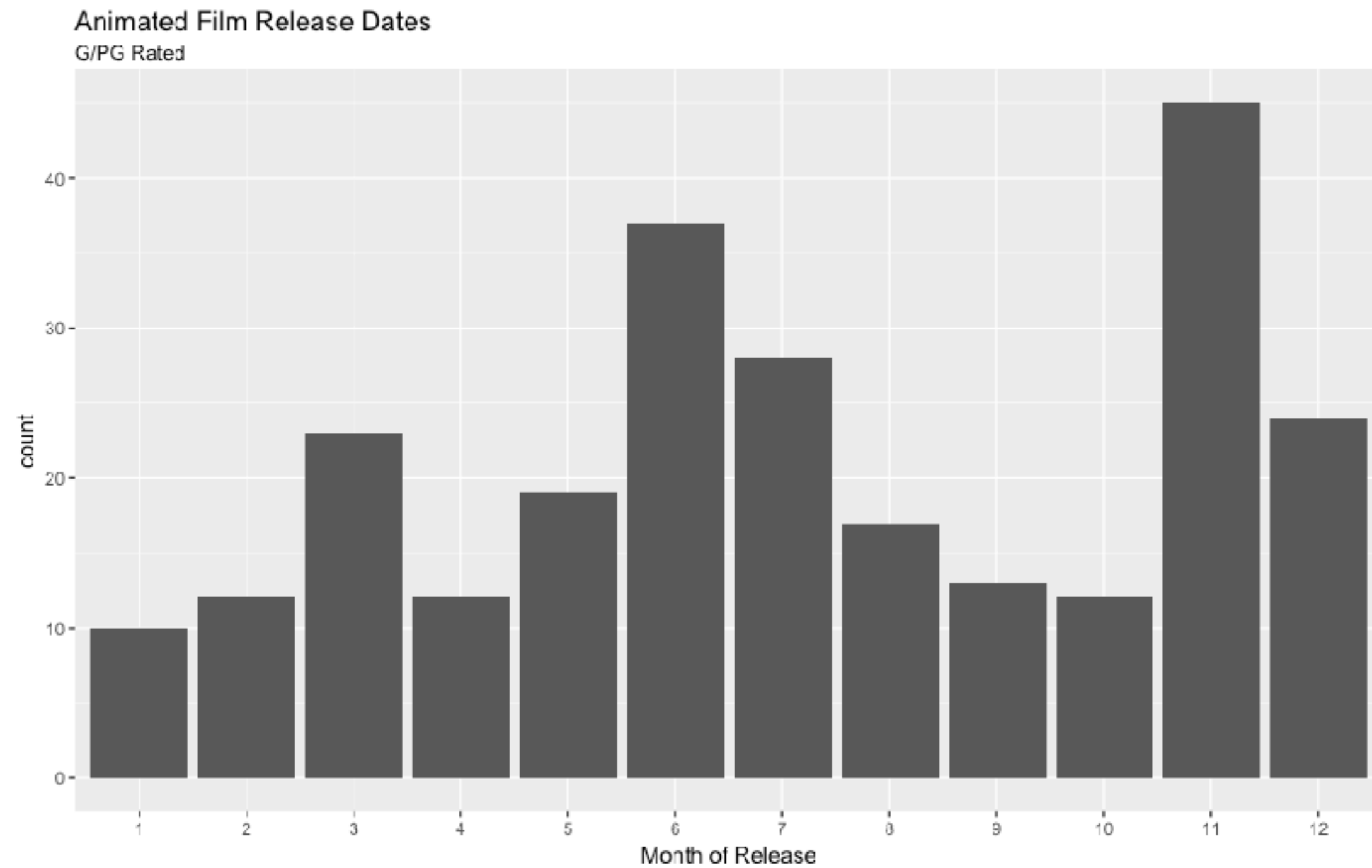
FURTHER ANALYSIS

- Deeper dive into ATUS data to identify sub-groups within survey and understand important seasonal differences between sub-groups (e.g. parents vs. non-parents)
- All films not created equal - entirely possible that different clusters of films (genres, ratings, etc.) would exhibit interesting seasonal patterns that are not caught when considering all films together

T H A N K Y O U

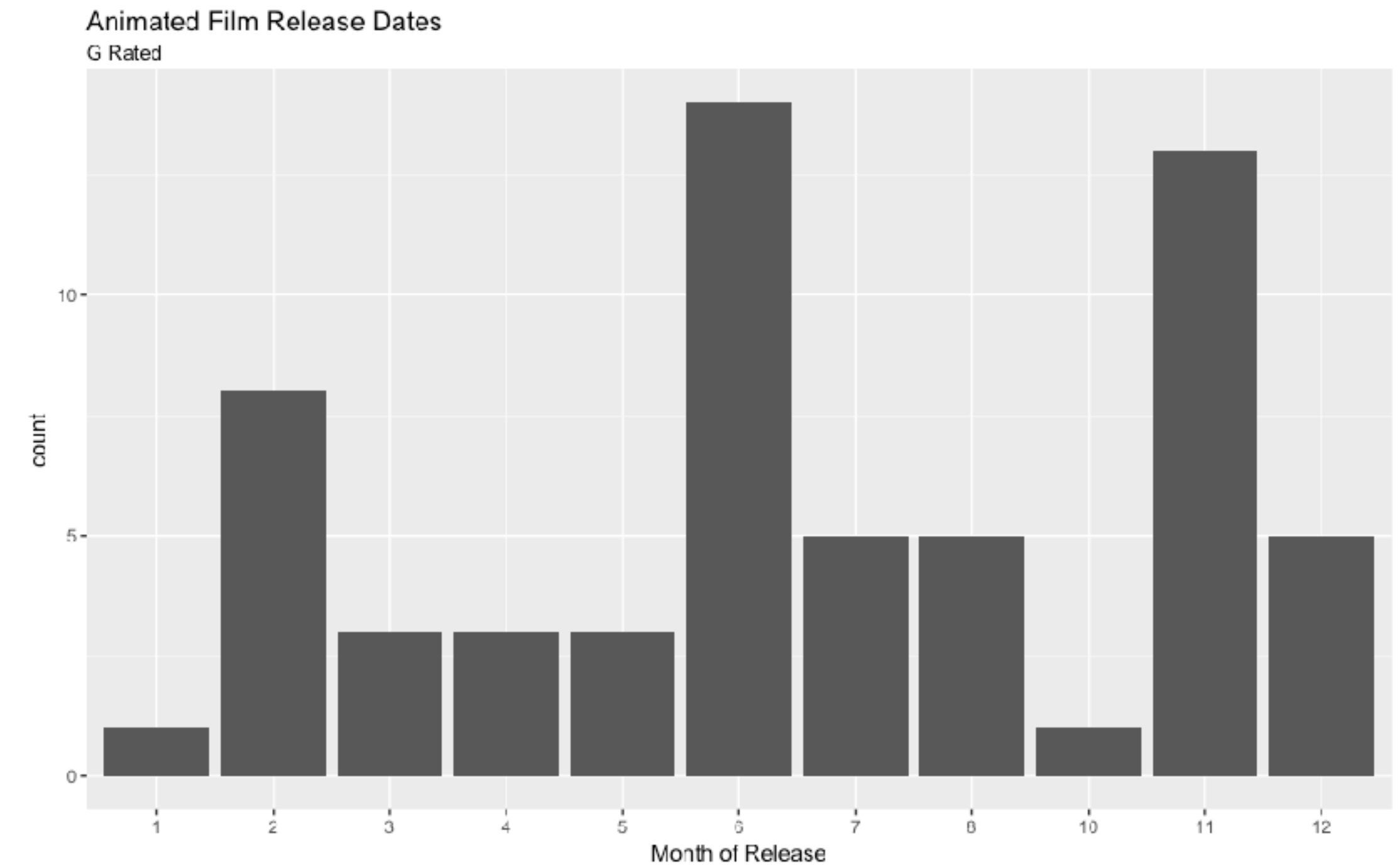
APPENDIX:
ANALYSIS OF ANIMATION FILMS

ANALYSIS - ANIMATED FILMS



KEY TAKEAWAYS

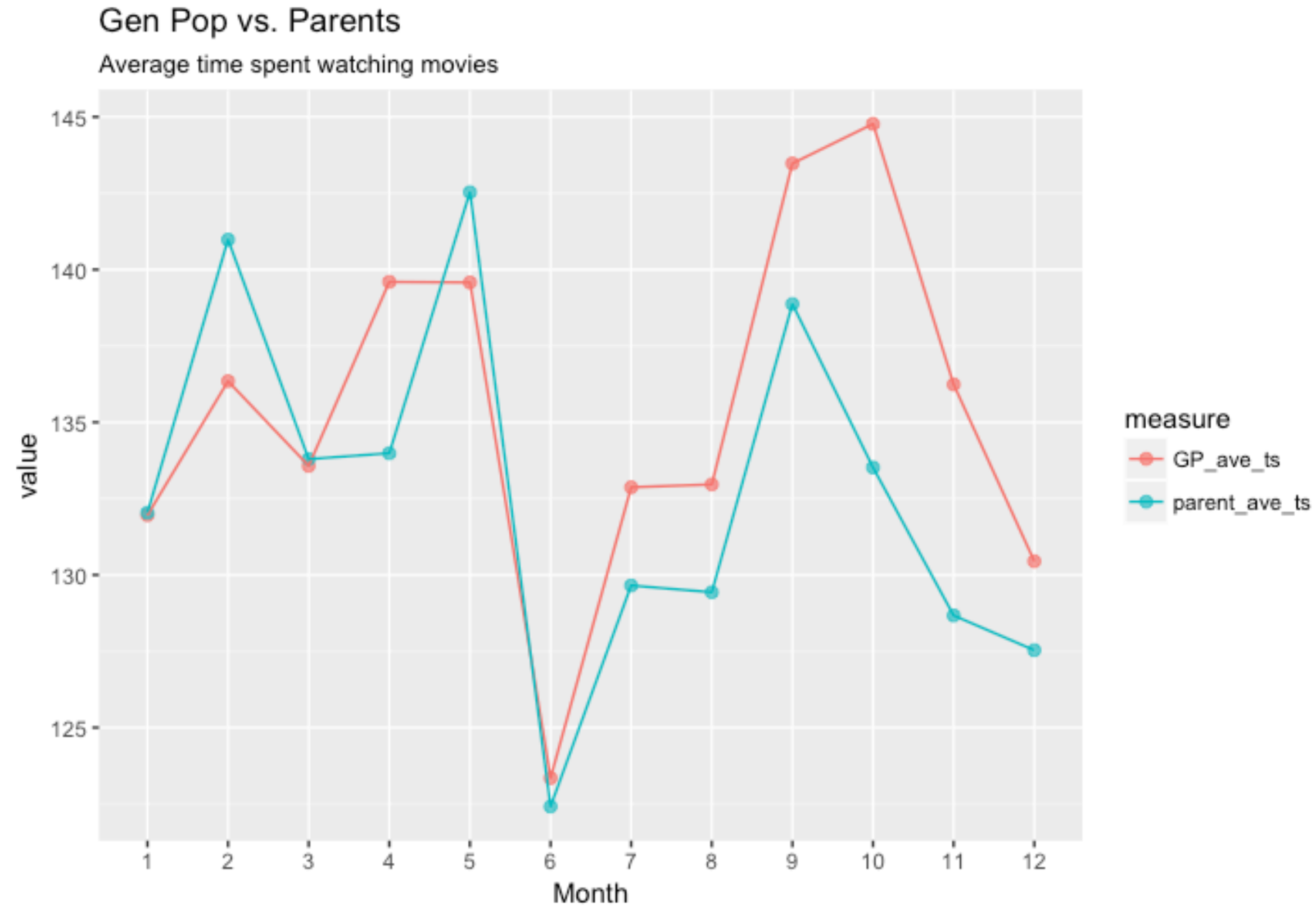
- Above is the distribution of release of 252 films that are PG or G rated and are animated films
- 44% of films are released in November, June, and July



KEY TAKEAWAYS

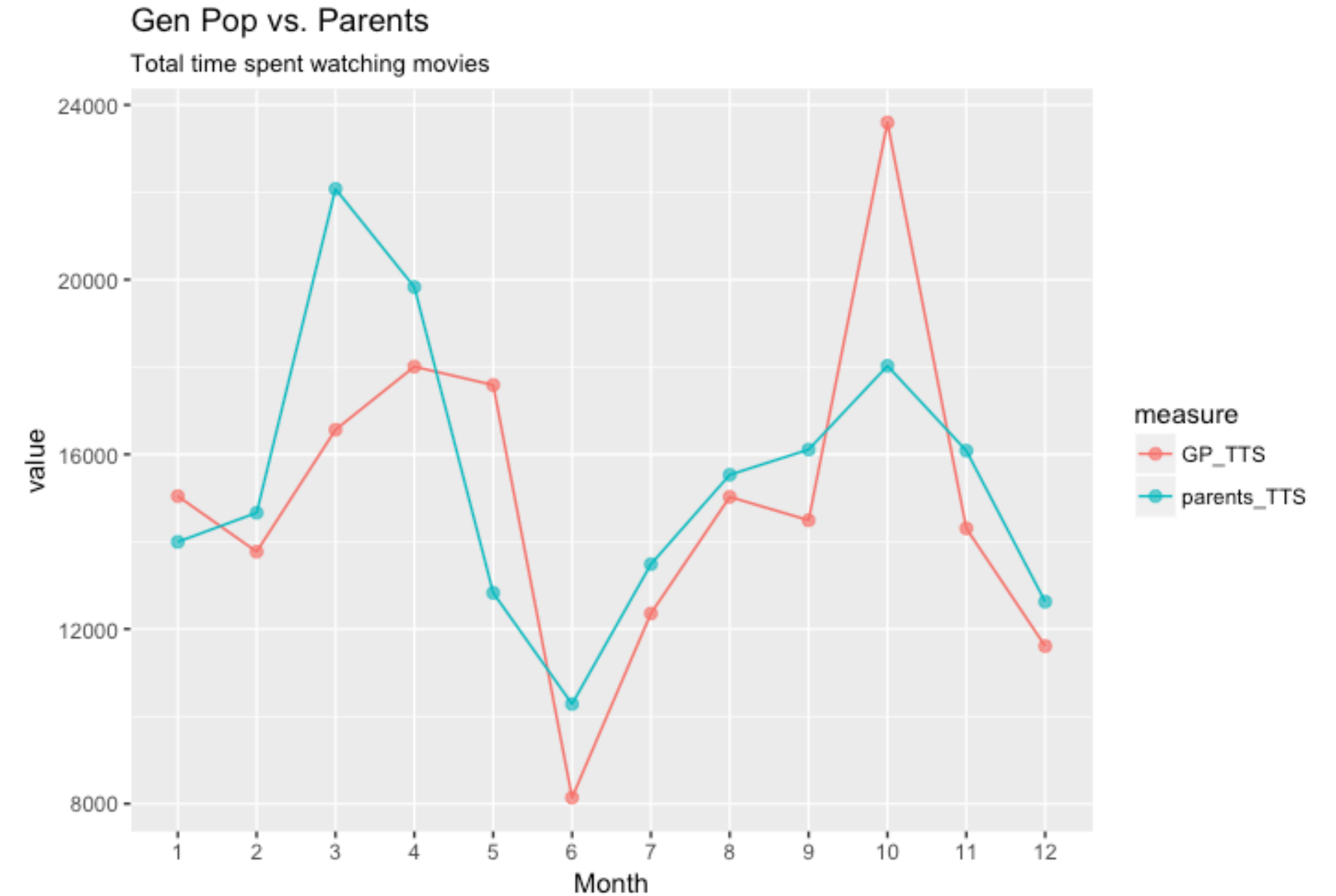
- Zero G-rated films released in the month of September (of 102 films in dataset)
- Pervasive narrative about parents' willingness to take kids to movies during 'back to school'

ANALYSIS - ANIMATED FILMS



KEY TAKEAWAYS

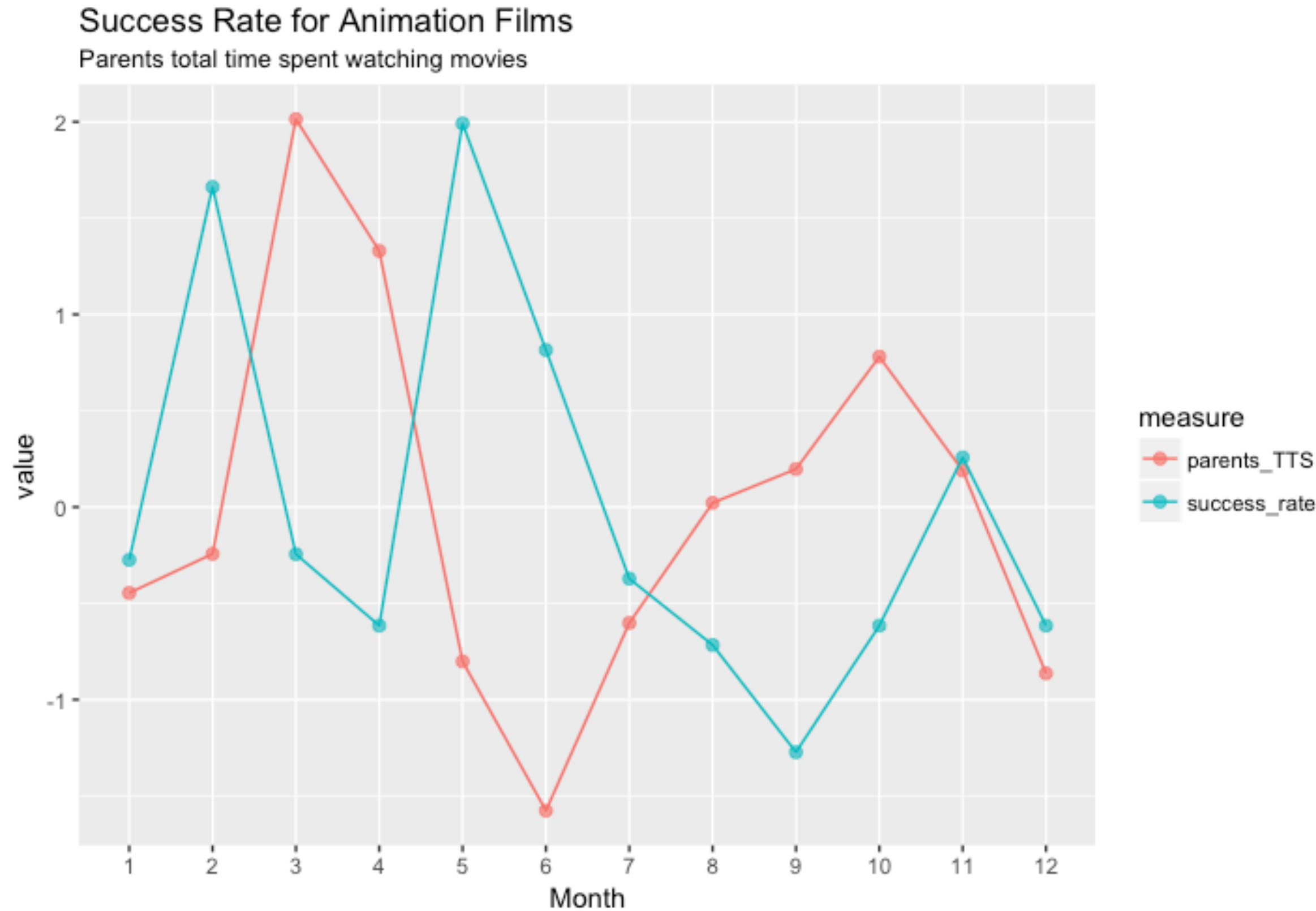
- Parents spend somewhat less time than the general population watching films in theaters across the year
- Difference in September is about 5 minutes; however September is still an above average month for parents



KEY TAKEAWAYS

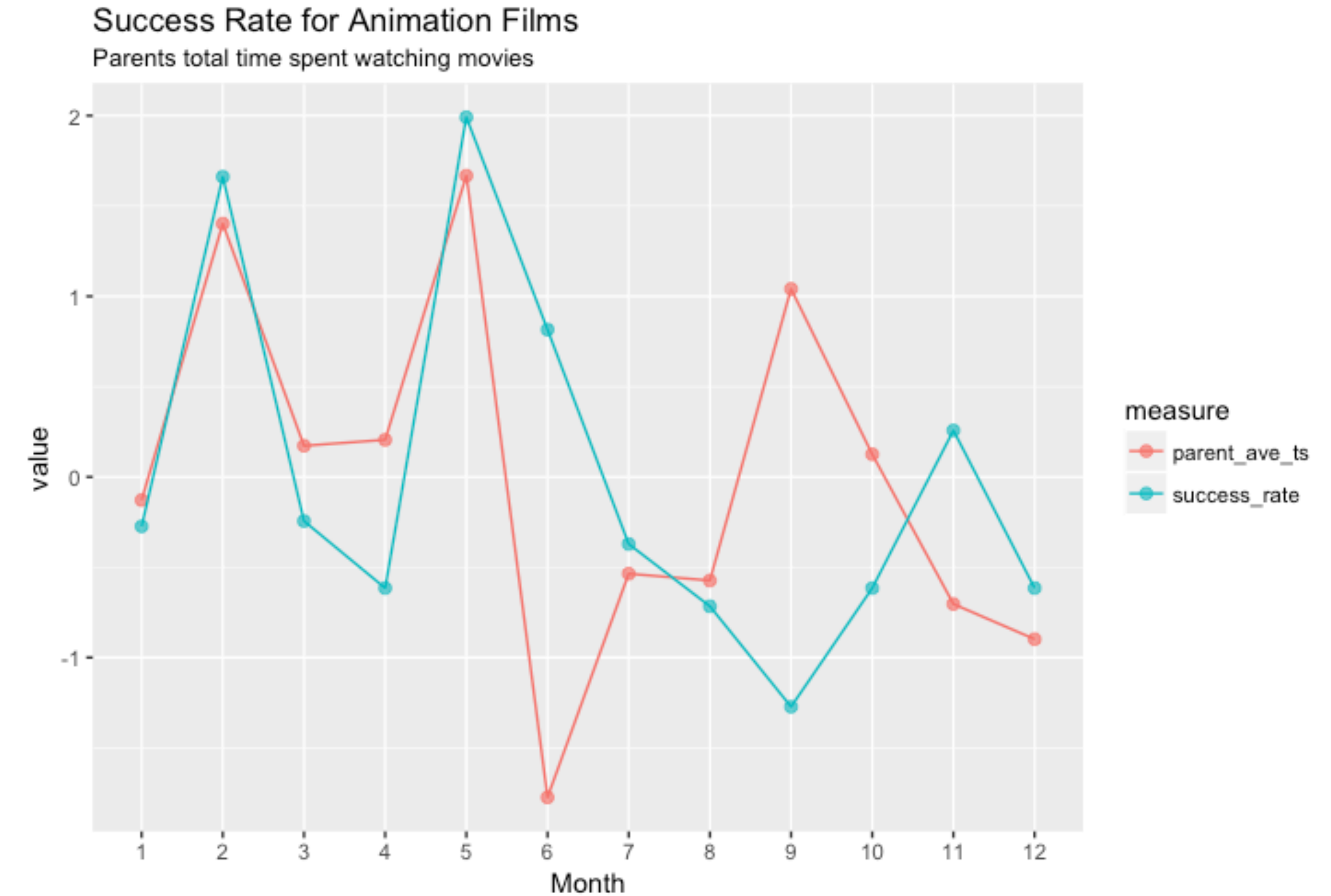
- In terms of total time spent watching films, parents actually report more time than the general population in September
- By this measure, September is about average for parents

ANALYSIS - ANIMATED FILMS



KEY TAKEAWAYS

- Success rate of films doesn't appear to be related to the total time spent by parents watching movies in theaters
- September has the lowest success rate of the year (which probably contributes to the narrative, though doesn't prove that parents have less desire to see movies)



KEY TAKEAWAYS

- Average time spent also does not appear to have a strong correlation with success rate
- Parents spend more time than average watching movies in September