



Investigating ROI in Horror Films: Taglines and Budgets

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STA 199

- **Return on investment (ROI)** measures how profitable an investment is by comparing net profit to its cost expressed as a percentage:
 - $(\text{revenue} - \text{budget/cost}) \times 100$
- This project investigates how variables related to horror films correlate with ROI.
- Variables of interest:
 - the presence or absence of a **tagline**
 - *Jaws*: "You'll never go in the water again."
 - production **budget**
 - total cost in dollars of making a film
 - **ROI**

Research Questions

- How does the presence of a tagline relate to ROI for horror films?
- How do budget and tagline presence relate?
- What can be observed by visualizing tagline presence, budget, and ROI?



Data

- From the TidyTuesday Project
- Extracted from The Movie Database (TMDB)
- Horror film data ranging from 1950 to 2022

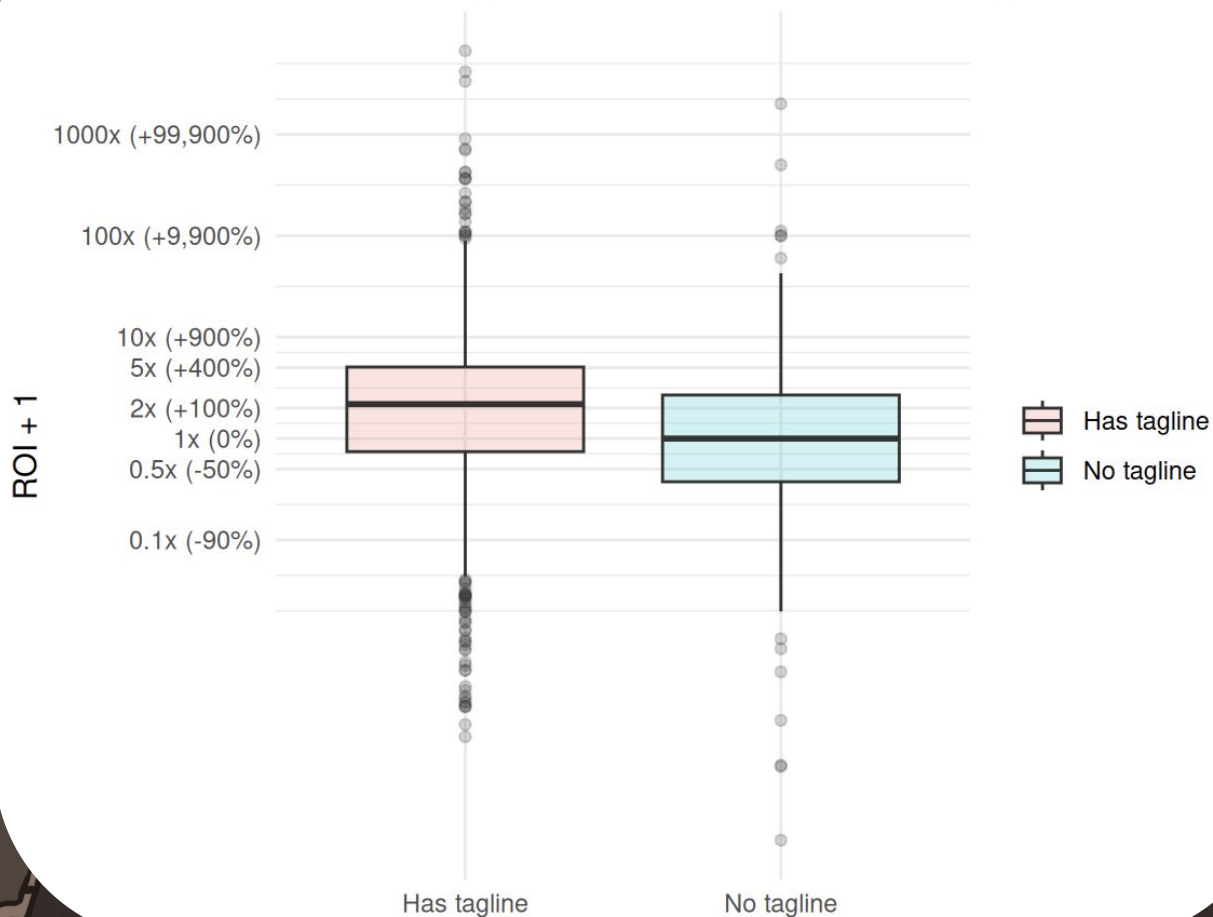


Selected variables:

- Budget – production cost of the film
- Revenue – total earnings (used in calculating ROI)
- ROI – calculated as $(\text{revenue} - \text{budget}) / \text{budget}$
- Mean ROI (as % of budget)
- Tagline – marketing phrase (if present)
- has_tagline – indicator (Yes/No)

ROI Distribution by Tagline Presence (Log Scale)

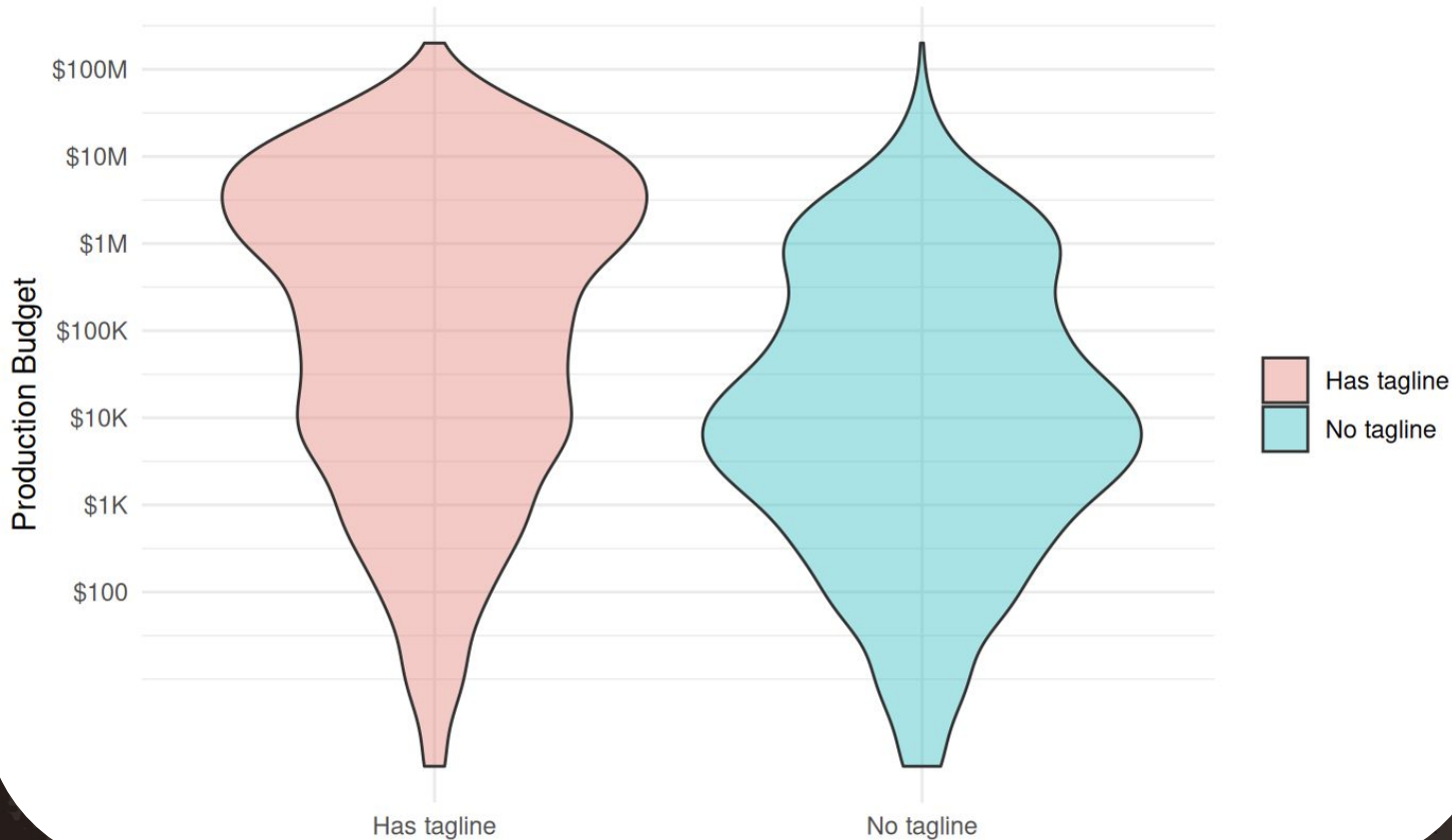
ROI is shifted by +1 to allow log-scale visualization (0% = break-even)



- Log scale used due to extreme variability in ROI.
- Films with taglines show a slightly higher median ROI than those without.
- Both groups have significant overlap, indicating the relationship is weak.

Budget vs. Tagline Presence

Budget by Tagline Presence (Log Scale)



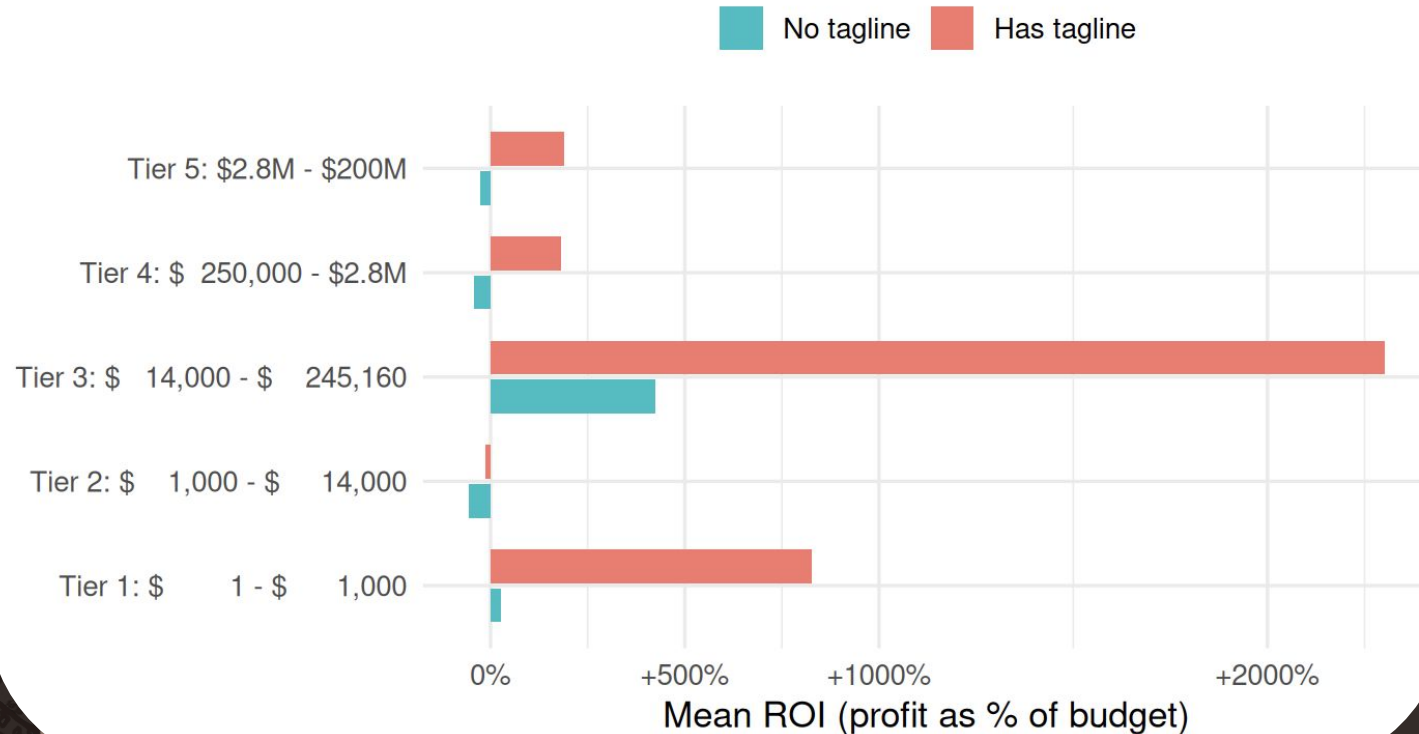
- Films with taglines tend to have higher budgets overall and a wider distribution toward large budgets.
- Higher-budget films are more likely to have taglines.



Mapping all 3 Variables

Budget Tier × Tagline Presence

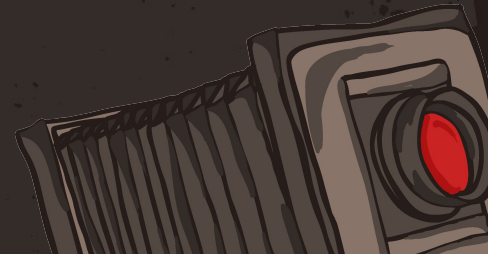
on Mean ROI



- Across nearly all budget tiers, films with taglines have higher mean ROI than films without taglines.
- Magnitude of this difference varies by tier and may be influenced by extreme values.

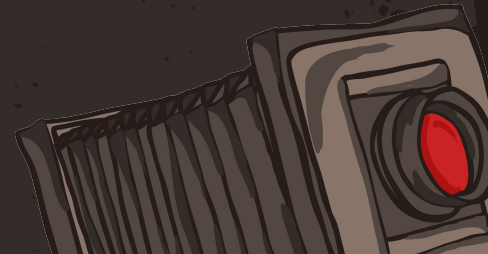
Discussion/Conclusion

- How does the presence of a tagline relate to ROI for horror films?
 - > Films with taglines tend to have slightly higher ROI, but the distributions overlap heavily, so tagline presence is not strongly associated with profitability via this metric.



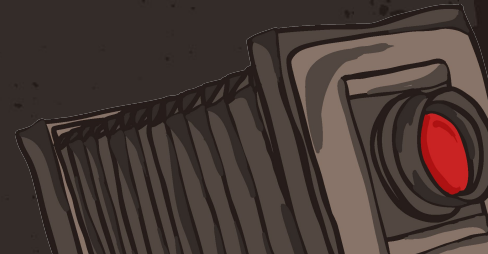
Discussion/Conclusion

- How do **budget** and **tagline presence** relate?
 - > Budget and tagline presence are related– films with taglines are generally higher budget.



Discussion/Conclusion

- What can be observed by visualizing tagline presence, budget, and ROI?
 - > Films with taglines tend to have higher mean ROI within each budget tier.



Critique

- Use of mean ROI - highly sensitive to extreme values; Large differences in some plots are likely driven by a small number of outliers.
- ROI varies widely across films, even on a log scale. This makes comparisons less stable and harder to interpret.
- Budget is a confounding variable because it's related to both tagline presence and ROI. Higher-budget films are more likely to have taglines. So when we initially see higher ROI for films with taglines, part of that difference may actually be due to budget, not the presence of the tagline.