Rotten Tomatoes and The Oscars:
A Data Analysis Project

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Motivation

Rotten Tomatoes

the self-proclaimed "most trusted measurement of quality for movies and TV"

The Oscars

the most prestigious awards ceremony of the entertainment industry

Can Rotten Tomatoes scores be used
as a reliable predictor of a film's
Oscar success?

Defining the Variables

Average Critic Rating	Best Picture Win (Binary)
Average Audience Rating	Any Win (Binary)
Tomatometer Rating (percentage of professional critic reviews that are positive)	Number of Wins (Continuous)

Use Cases

Non-technical User → View model results

Read results report in main branch of repo

Technical User or Peer Reviewer → Review code that produced results

Download repository and review the code

Maintainer → Rerun entire pipeline to refresh results

Follow process in how_to_run_pipeline.md
to rerun code and push new results to repository

The Data

Obtained three raw datasets via Kaggle API:
1. <u>rotten_tomatoes_movies.csv</u> → aggregated Rotten Tomatoes scores by movie
2. <u>rotten_tomatoes_critic_reviews.csv</u> → individual critic reviews
3. <u>the_oscar_award.csv</u> → all historical Oscar nominations and wins

any_win_data

| year_film	movie_title	num_wins	rotten_tomatoes_link	critic_name	top_critic	review_type	review_score
1997	Titanic	11	m/1056130-titanic	Christopher Null	FALSE	Fresh	60
1997	Titanic	11	m/1056130-titanic	John J. Puccio	FALSE	Fresh	70
1997	Titanic	11	m/1056130-titanic	Ken Hanke	FALSE	Fresh	70
1997	Titanic	11	m/1056130-titanic	Carol Cling	FALSE	Fresh	80
1997	Titanic	11	m/1056130-titanic	James Sanford	FALSE	Fresh	80
1997	Titanic	11	m/1056130-titanic	Ryan Cracknell	FALSE	Fresh	76
1997	Titanic	11	m/1056130-titanic	Emanuel Levy	FALSE	Fresh	60
1997	Titanic	11	m/1056130-titanic	Chuck O'Leary	FALSE	Rotten	40
1997	Titanic	11	m/1056130-titanic	Emanuel Levy	FALSE	Fresh	85
1997	Titanic	11	m/1056130-titanic	Matthew Lucas	FALSE	Fresh	62.5
1997	Titanic	11	m/titanic	Scott Nash	FALSE	Fresh	87.5
1997	Titanic	11	m/titanic	Susan Stark	TRUE	Rotten	50
1997	Titanic	11	m/titanic	Scott Renshaw	FALSE	Fresh	90

Merged and cleaned into two final datasets for analysis:
1. any_win_data.csv → total number of Oscar wins
2. best_picture_data.csv → best picture wins

Issues:
- Rotten Tomatoes scrapes a variety of review websites for scores → no standard ratings system (letters, scores over 100%, different denominators)
- Oscar awards have changed names over time
- Some movies receive a dramatically higher quantity of reviews than others
- Trolling/review bombing

Data Analysis Pipeline

Rotten Tomatoes Analysis Pipeline
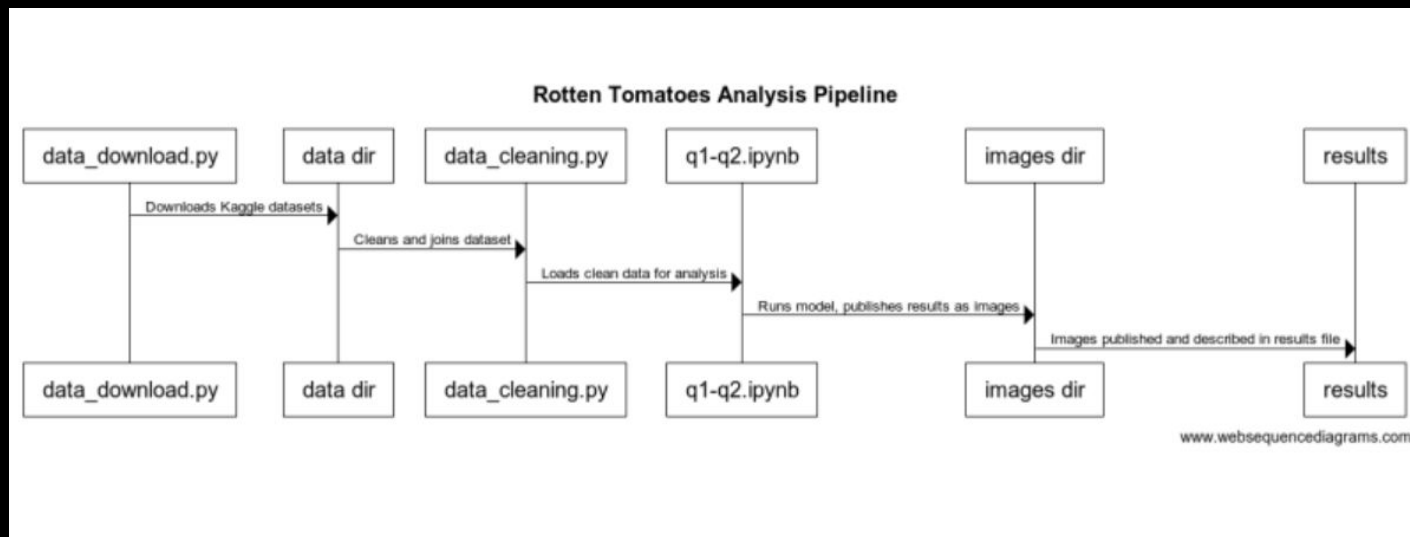
Findings: Average Critic Score and Best Picture Win

- Historically, there is not a strong correlation between Rotten Tomatoes score and Oscars win

Ratings bins by Oscars win/loss
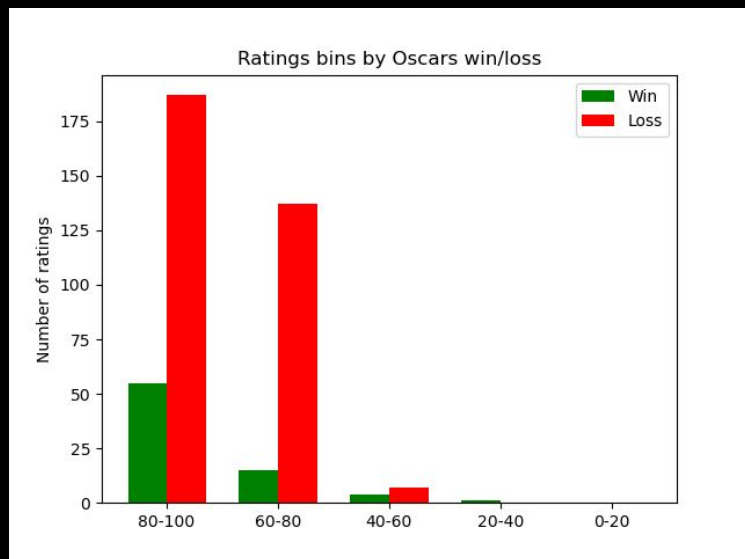
	Regression coefficient	Model accuracy
Any win model	0.02294634	0.83333
No win model	0.02779508	0.84314

Findings: Critic Score and Number of Wins

Neither average critic score nor average audience score is highly correlated with or a good predictor of number of Oscars won
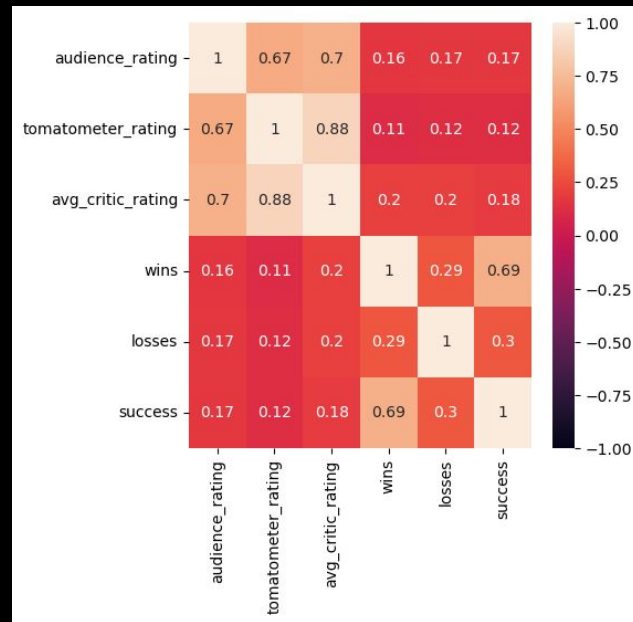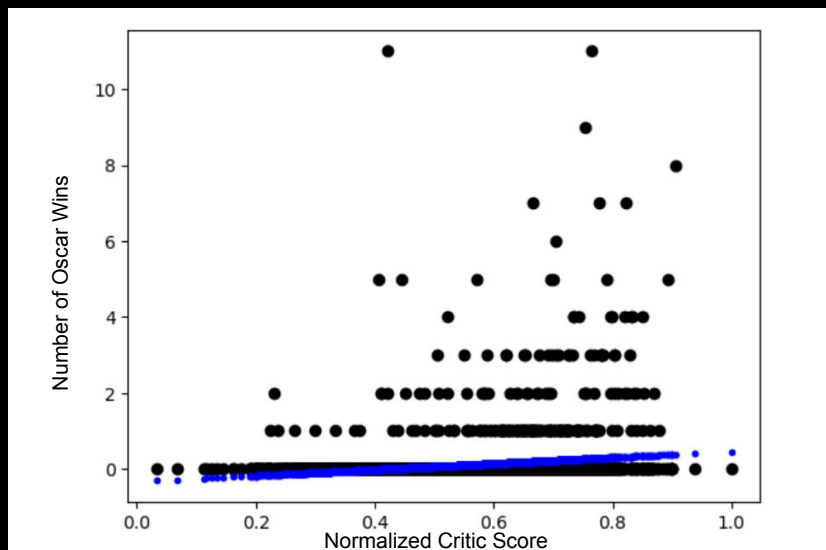
Software Engineering Lessons Learned

- Define your inheritance structure and modularity early

- Pylint is difficult to use as a linter - use flake8 instead

- Test and review code as you go was a helpful strategy

- Trying to test API calls in unit tests is very expensive and difficult

- Push before you rebase

Questions for Further Analysis

- Does another model type more accurately fit the relationship between Rotten Tomatoes scores and Oscar wins?

- Would the model fit better with more independent variables incorporated?

- Which Oscar award most strongly correlates with Rotten Tomatoes scores?

- Is there an interaction effect between genre and Rotten Tomatoes score on Oscar wins?

- How closely do audience scores correlate with critic scores?

- How do outside factors (budget, box office sales, etc.) affect Oscar win probability?

- Do scores from top critics correlate more strongly with Oscar wins than non-top critics?

Demo