

*Mad at Disney? Examining how social values are portrayed by
Disney movies over time*

Video Presentation



Agenda

- Research Questions and Objective
- Literature Review
- Methodology
- Qualitative Findings
- Quantitative Findings
 - **To what extent are the main values being portrayed in Disney movies?**
 - BERT Classification Model
 - Topic Modelling
 - **How successful is this portrayal/lack of it?**
 - Log-Linear Regression
- Conclusion

Overview of ISC

Motivation:

- Disney's long history and wide reach of audience through storytelling
- Disney's attempts in recent years to incorporate gender, cultural and social inclusivity in its films in the past 2 decades, but with **mixed success**

Research Question:

- RQ1: How has Disney portrayed the values of female empowerment, racial diversity and moral values in its films over time?
- RQ2: And how successful are these portrayals?

Literature Review

Value 1: Feminism	Value 2: Racial Diversity	Value 3: Moral Values
Mixed Criticism, more problematic in the past but showing signs of improvement	Mixed Criticism, more problematic in the past but showing signs of improvement	Strong positive portrayal over time

Methodology

RQ1: How has Disney portrayed the values of Feminism, Racial Diversity and Morality over time?

RQ2: How successful are these portrayals?

Analysis Framework

Qualitative Analysis

Method:

Thematic coding according to relevant keywords and values, using a tick-cross-dash method

Data Sources:

- 1) Original movie screenplay and transcript
- 2) Existing analyses and reviews of individual films

References / As studied by:

Chen et. al (2021), Wang (2022), Dittmer (2021)

Quantitative Analysis

Method:

- BERT classification, topic modeling
- log-linear Poisson regression model of earnings and IMDB ratings against qualitative scores

Data Source:

- 1) Original movie transcript
- 2) Box office earnings and IMDB data from IMDBMojo

References / As studied by:

Eisenhauer (2017)

Findings Summary

RQ1: How values are portrayed

RQ2: How successful was portrayal

		Value 1: Feminism	Value 2: Racial Diversity	Value 3: Moral Values
RQ1: How values are portrayed over time	Tick-Cross-Dash Scoring (Qualitative)	Overall positive and improving over time (more ticks, less crosses)	Overall positive and improving over time (more ticks, less crosses)	Strong positive portrayal, consistent over time
	BERT Classification Model, Topic Modelling (Quantitative)	<p>Mostly consistent over time, some outliers (Mulan, Pocahontas)</p> <p>Greater variability in portrayal of patriarchal ideals, gender stereotypes and feminist attitudes in New Age</p>	<p>Mostly consistent over time</p> <p>Weakening portrayal of cultural awareness and border transgression subvalues</p>	<p>Mostly consistent over time, some outliers (Mulan, Pocahontas)</p> <p>Weakening portrayal of Empathy from Classics to Renaissance, but improved in New Age</p>
RQ2: How successful was Disney's portrayal of values	Earnings Regression	<p>Classics is stat. significant</p> <p>Individual values' tick/cross/dashes are statistically insignificant</p>		
	IMDB Regression	-	Dash, Classics are statistically significant	Cross, Classics are statistically significant

Qualitative Analysis

Qualitative Data - Selection Criteria of films

	Criteria	Explanation / Application	Reference
1	Spread of Time Period (3 to 5 in each period) <ul style="list-style-type: none"> - Before 1980s = Classic - 1989 to 1998 = Transitional - 1998 onwards = Modern 	<p>Categorized Disney narratives due to distinct characteristics portrayed by female characteristics</p> <p>Example:</p> <ul style="list-style-type: none"> • Classic -> rigidly bound to roles of duty and subservience to males (e.g Cinderella) • Transitional -> signs of independence and agency (e.g Mulan) • Modern -> breaking free from traditional gender roles (e.g Frozen, Brave) <p>*To extend this time period categorization to other two values (morality and cultural inclusivity) and include more Modern films</p>	<p>Hefner et. al (2017), Whelan (2012) <i>Happily Ever After? A Content Analysis of Romantic Ideals in Disney Princess Films</i></p>
2	Bechdel Test for female representation: <ul style="list-style-type: none"> - At least two female characters - female characters talk to each other, and about anything but men 	<p>Adapted criteria as a rule-of-thumb for other 2 values:</p> <ul style="list-style-type: none"> - At least two characters of different [races/backgrounds] / opposing [values] - characters talk to each other - AND about topics apart from race or specific moral values 	<p>Nyh (2015). <i>From Snow White to Frozen: An evaluation of popular gender representation indicators applied to Disney's princess films</i></p>

Qualitative Data - Thematic Coding

- For each selected film, qualitative coding of transcript will be performed taking reference from a template by López-Fuentes and Fernández-Fernández (2024)
- Method used by researchers: Qualitative coders watch film / read transcript and analyzed overall takeaway message of films by selecting from five categories

Thematic Coding Table: Racial inclusivity

Inclusive values	Tinker Bell and the Secret of the Wings	Zootopia	Monsters, Inc.
Includes cultural diversity			
Introduces different races or ethnicities			
Includes mobility as an important issue			
Displays border transgression in the narrative			
Deals with difference in an open way			
Portrays moments of openness where two cultures are reunited with each other			
Awakens Cultural and Intercultural awareness			
Encourages an empathic understanding of the Other and the acquisition of social skills such as tolerance			

RQ1: How values are portrayed

Qualitative Findings

Feminism

Movie / Time Period	Sub-value 1: Feminine gender stereotypes	Sub-value 2: Reinforcement of patriarchal ideals	Sub-value 3: Feminist attitudes and behaviour	Total	Average Ticks and Crosses
Snow White (1937)/ Classics	***	*** 2	-	***** 1	18/3 ✖
Cinderella (1950)/ Classics	***	***	-	*****	
Sleeping Beauty (1959)/ Classics	***	***	-	*****	
Little Mermaid (1989) / Renaissance	-	**	✓	**✓	8/3 ✓ 18/3 ✖
Beauty and the Beast (1991) / Renaissance	✖	**	✓	***✓	
Aladdin (1992) / Renaissance	✖	**	✓✓	***✓✓	
Pocahontas (1995)/ Renaissance	✖	**	✓✓	***✓✓	
Mulan (1998) / Renaissance	**	**	✓✓	***✓✓	
Princess and the Frog (2009)/ Renaissance	**	✖	✓✓	***✓✓	
Tangled (2010)/ New Age	✖	✖	✓✓✓	***✓✓✓	14/3 ✓ 2/3 ✖
Brave (2012)/ New Age	-	-	✓✓✓	✓✓✓	
Frozen (2013)/ New Age	-	-	✓✓✓	✓✓✓	
Wreck it Ralph (2012)/ New Age	-	-	✓✓✓	✓✓✓	
New Age					
Total	17 ***** ***** ✖	21 ***** ***** *****	22 ✓✓✓✓✓✓ ✓✓✓✓✓✓ ✓✓✓✓✓✓	3	

Qualitative Findings

Racial Diversity

Movie / Time Period	Sub-value 1: Displays border transgression in the narrative	Sub-value 2: Encourages empathetic understanding of the Other	Sub-value 3: Awakens Cultural and Intercultural awareness	Total	Average Ticks and Crosses
The Jungle Book (1967) / Classics	✓	-	xx	✓xx	1 1/3 ✓ 2 ✗
Peter Pan (1953) / Classics	-	xx	-	xx	
Dumbo (1941) / Classics	-	-	xx	xx	
Aladdin (1992) / Renaissance	✓	-	xx	✓xx	5/3 ✓ 4/3 ✗
Pocahontas (1995) / Renaissance	✓	-	x	✓x	
Mulan (1998) / Renaissance	✓	✓	✓x	✓✓✓x	
Moana (2016) / New Age	✓	-	✓x	✓✓x	2 ✓ 1/6 ✗
Zootopia (2016) / New Age	✓	✓	-	✓✓	
Elementals (2023) / New Age	✓	✓	-	✓✓	
Total	7 ✓✓✓✓✓✓✓ 3	3 ✓✓✓ 2 xx	2 ✓✓ 9 xxxxxxxxxxxx 2		

RQ1: How values are portrayed

Qualitative Findings

Moral Values

Movie / Time Period	Sub-value 1: Honesty	Sub-value 2: Sympathy vs Empathy?	Sub-value 3: Courage	Total	Average Ticks and Crosses
Pinocchio (1940)/Classics	✓	✓	✓	✓✓✓	7/3 ✓ 1/3 ✗
Bambi (1942)/Classics	-	✓	✓	✓✓	
The Story of Robin Hood (1952)/Classics	✗	✓	✓	✓✓✗	
The Lion King (1994)/Renaissance	✓	✓	✓	✓✓✓	4 ✓ 1/6 ✗
Pocahontas (1995)/Renaissance	✗	✓✓	✓	✓✓✓✗	
The Hunchback of Notre Dame (1996)/Renaissance	✓	✓✓	✓✓	✓✓✓✓✓	
Hercules (1997)/Renaissance	✓	-	✓✓	✓✓✓	
Mulan (1998)/Renaissance	✓✓	✓✓	✓✓	✓✓✓✓✓✓	23/4 ✓
Coco (2017)/New Age	✓✓	✓✓	✓✓	✓✓✓✓✓✓	
Zootopia (2016)/New Age	✓✓	✓✓	✓✓	✓✓✓✓✓✓	
Encanto (2021)/New Age	✓✓	✓✓	✓✓	✓✓✓✓✓✓	
Inside Out 2 (2024) / New Age	✓✓	✓✓	✓	✓✓✓✓✓	
Total	14 ✓✓✓✓✓✓✓✓ ✓✓✓✓✓✓ 2 ✗	18 ✓✓✓✓✓✓✓✓ ✓✓✓✓✓✓✓✓ ✓✓	18 ✓✓✓✓✓✓✓✓ ✓✓✓✓✓✓✓✓ ✓✓		

Quantitative Analysis

Quantitative Tools and Applications

We aim to answer 2 main questions through our quantitative tools:

Q1. To what extent are the main values portrayed in Disney movies?

Tool 1: Multi-class classification using Huggingface's pre-trained BERT model - classifying each movie script into different subvalues under the 3 major values

Tool 2: Natural Language Processing - Topic modeling on outlier movies using the Latent Dirichlet Allocation (LDA) model - deep dive into the prominent topics portrayed in each movie and align findings with results from tool 1

Q2. Is this portrayal/ lack of it successful amongst consumers?

Tool 3: Log-linear Poisson regression (verify the findings of Tool 1 & Tool 2 as well)

Quantitative Tools - Brief Overview of Tools 1

Rationale:

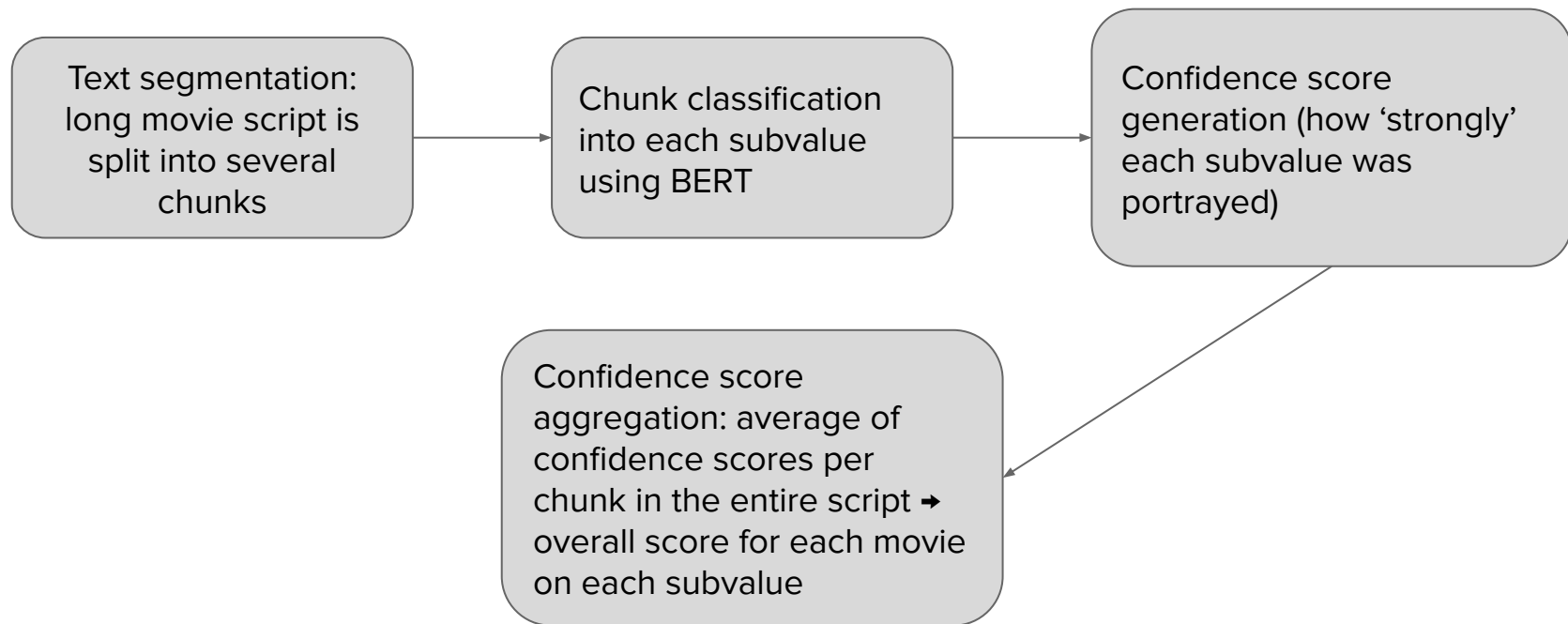
Bidirectional Analysis: BERT reads text in both directions, capturing better context for nuanced topics like feminism, morality, and racial diversity.

Efficient with Large Text Data: Handles extensive text (e.g., 30 movie scripts) effectively, making it suitable for complex script analysis.

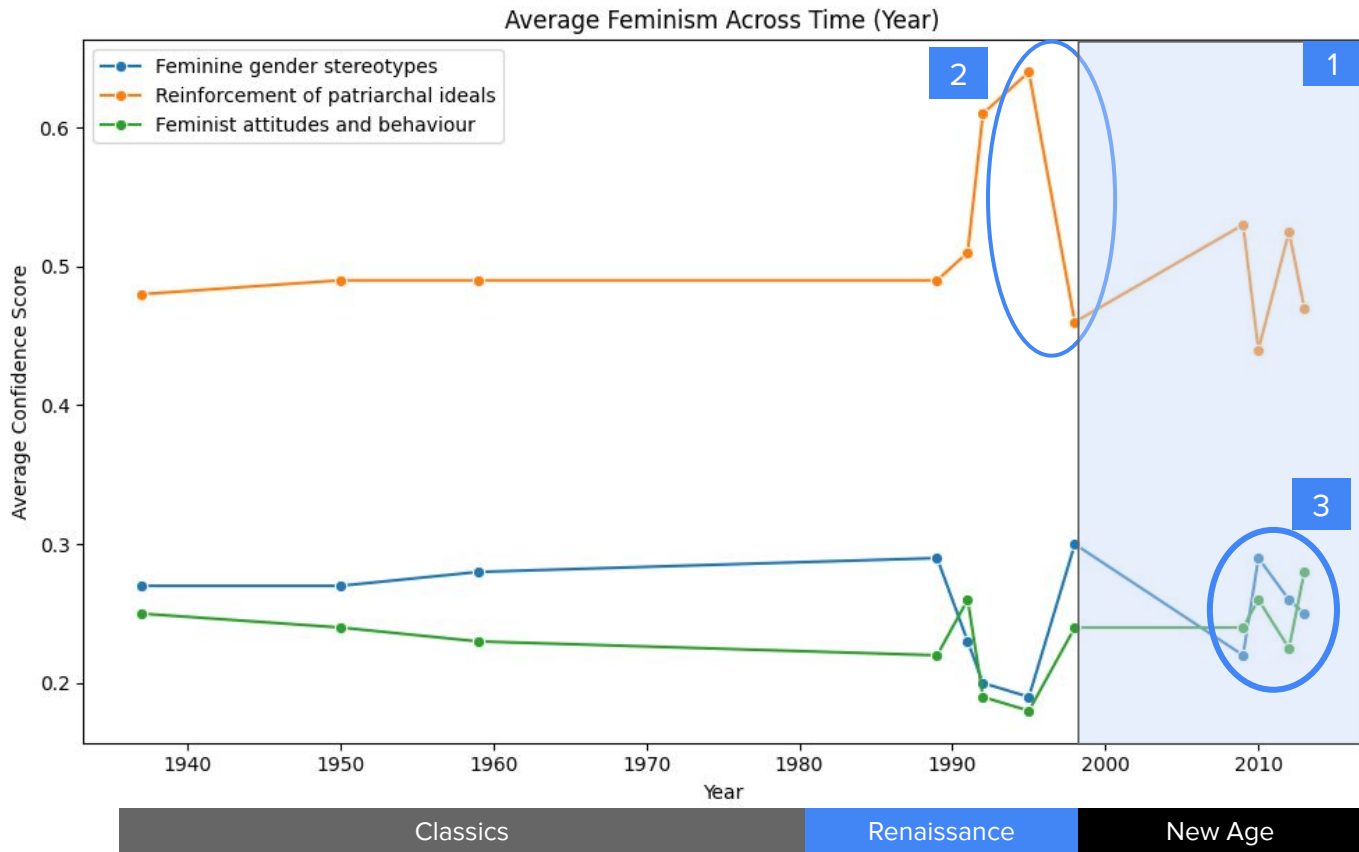
Pre-trained Model: Leverages existing training on large corpus datasets, saving time and resources by avoiding full re-training.

Quantitative Tools - Brief Overview of BERT

Analysis framework:

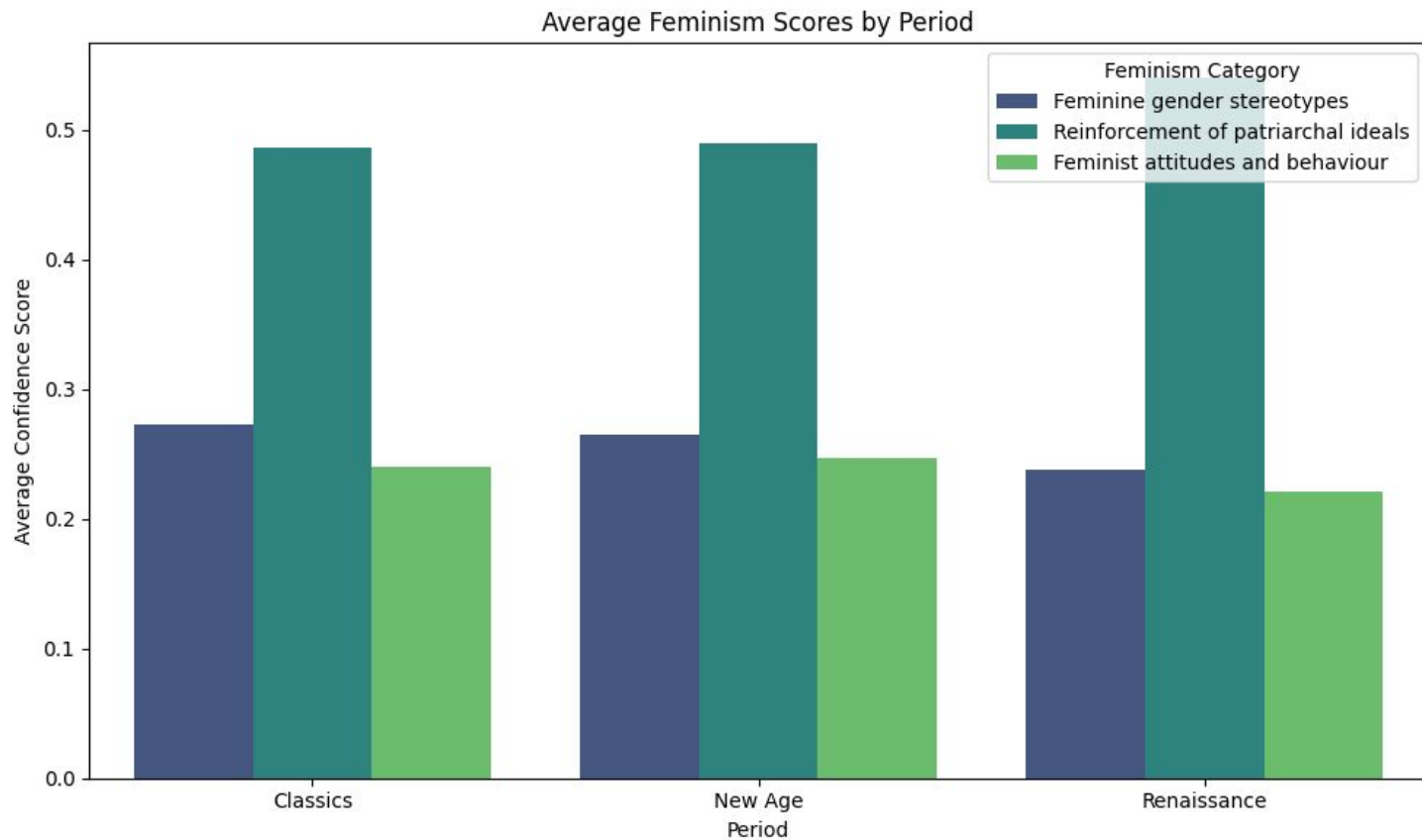


Tool 1: BERT Classification - Feminism

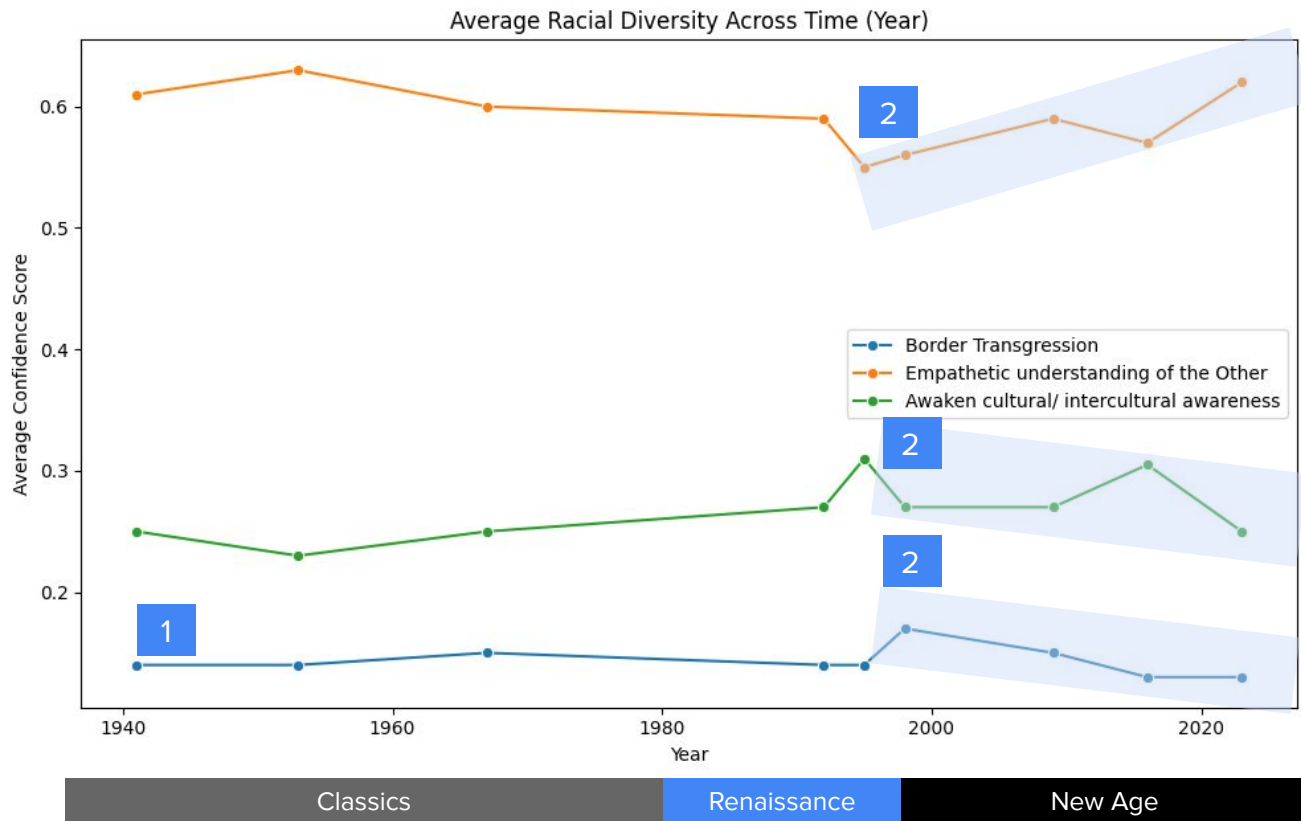


- 1) Portrayal of all 3 subvalues were mostly consistent over time, **greater variability** in New Age
- 2) Outlier in patriarchal ideals in **Pocahontas** (peak), dropped drastically in **Mulan**
- 3) Post-2010, new Age films portrayed more feminist attitudes but also ironically more feminine gender stereotypes

BERT Classification - Feminism

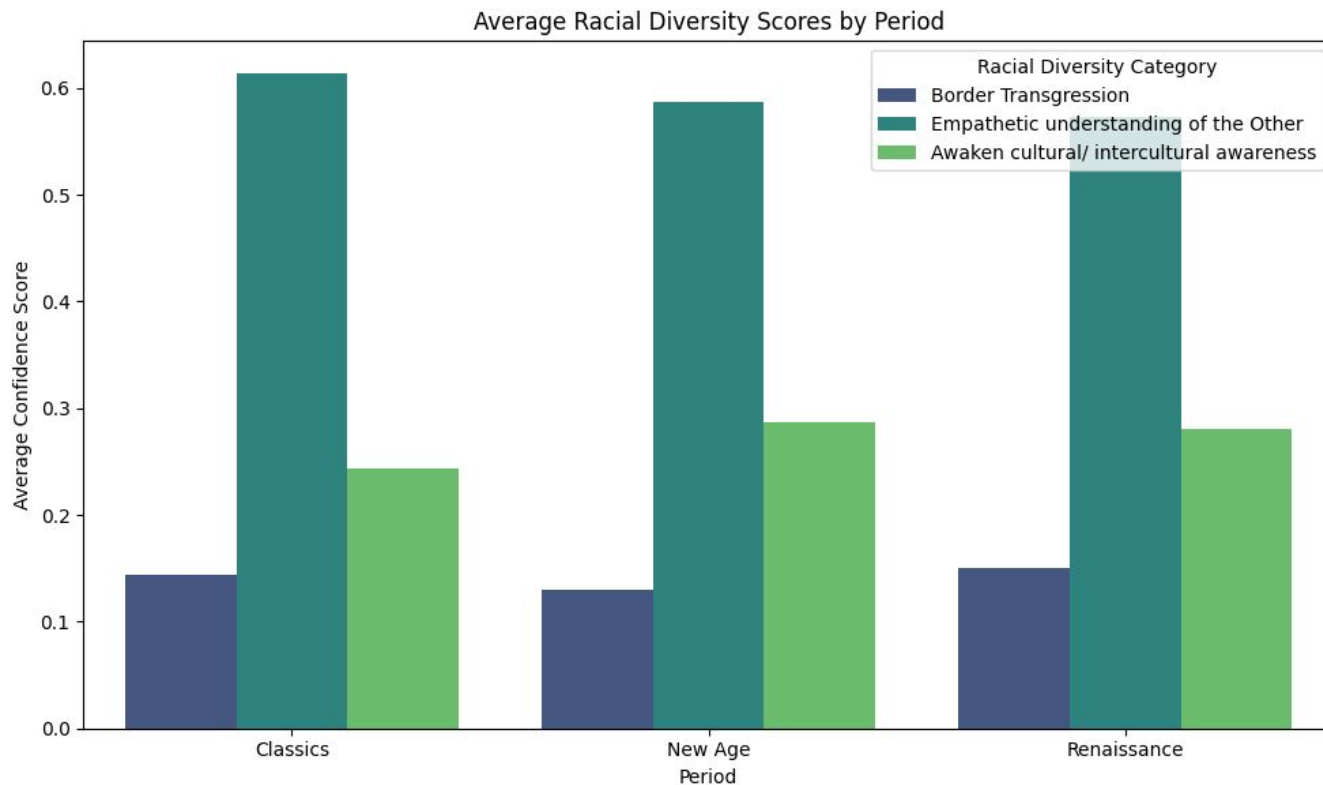


Tool 1: BERT Classification - Racial diversity

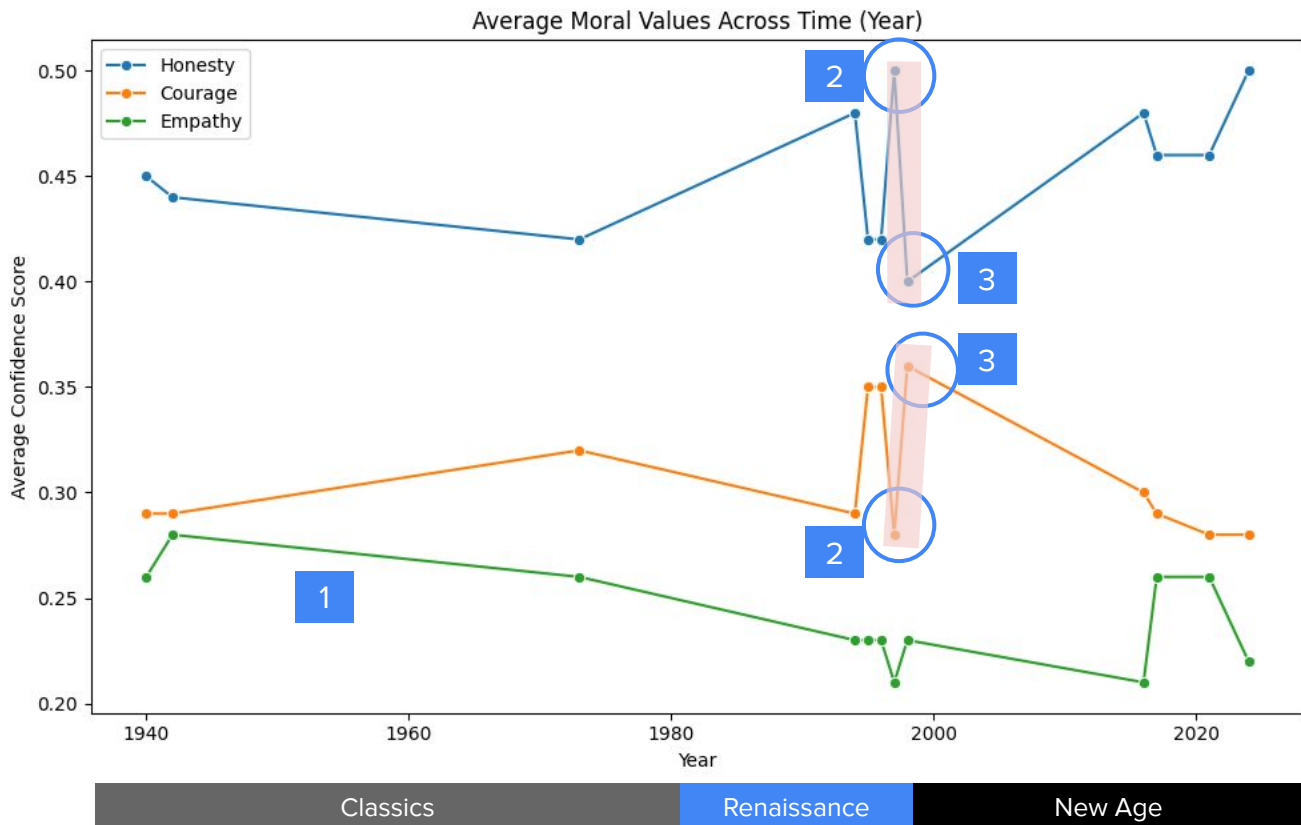


- 1) Portrayal of all 3 sub-values were mostly constant over time, but subvalue 1 (border transgression) was the weakest.
- 2) Movies in the New Age had a weakening portrayal of subvalues 1 and 3, but displayed an increase in subvalue 2 (empathetic understanding of the Other).

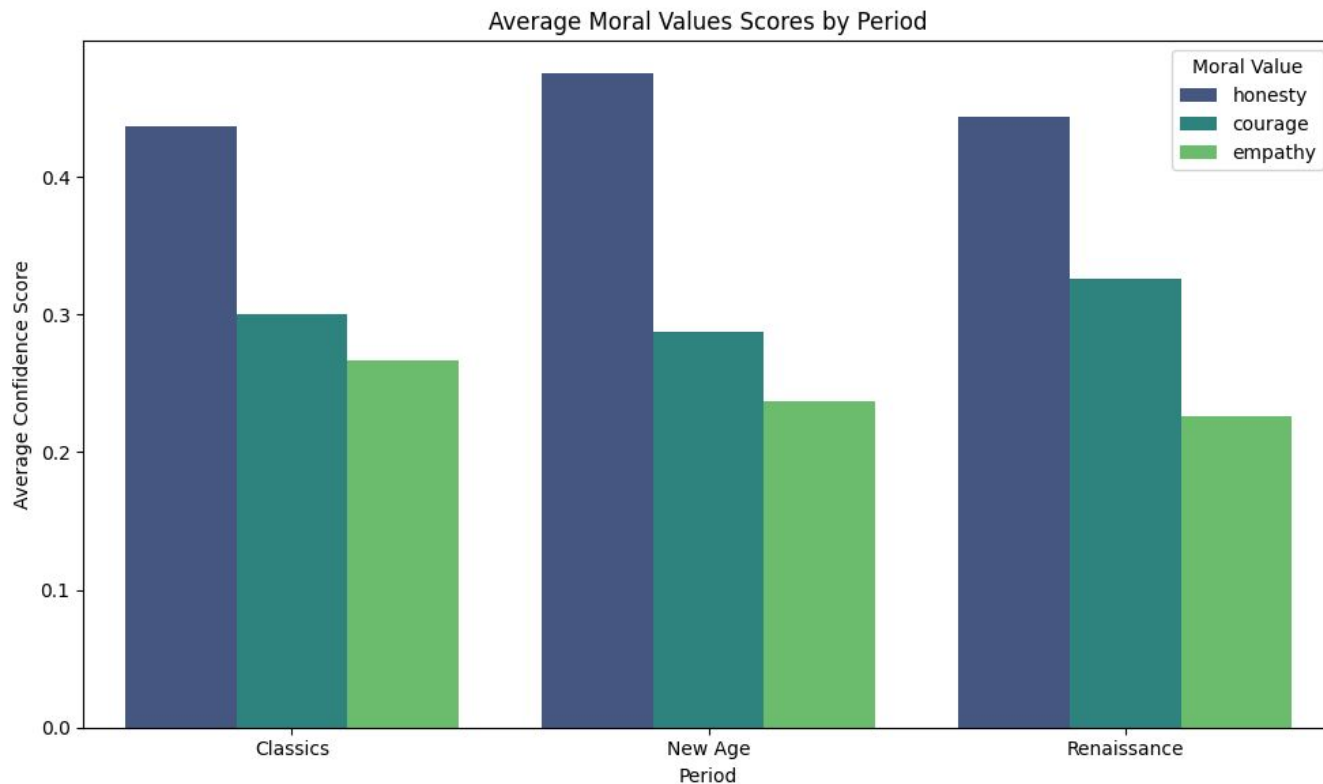
BERT Classification - Racial diversity



Tool 1: BERT Classification - Morality



BERT Classification - Morality



Tool 2: Natural Language Processing - Topic Modelling for Outlier films

3 Outlier films identified in BERT Classification model:

1. Mulan (Feminism, Morality)
2. Pocahontas (Feminism)
3. Hercules (Morality)

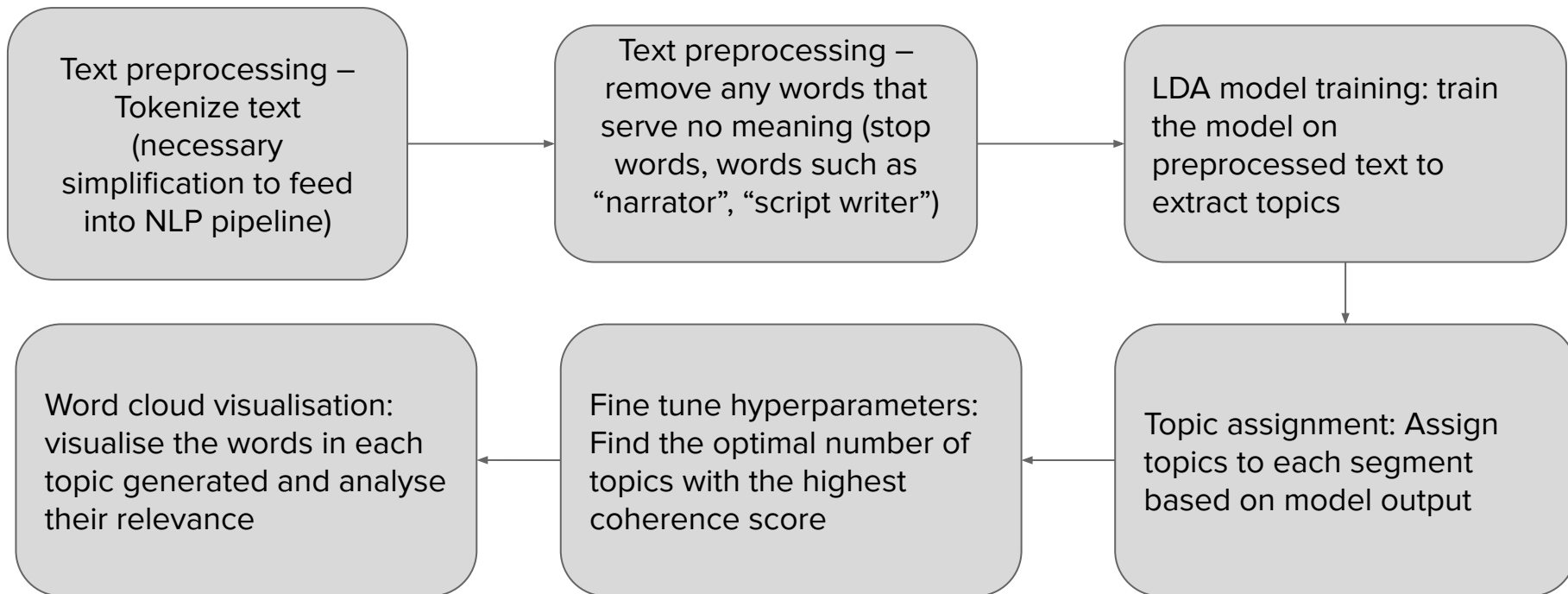
Quantitative Tools - Brief Overview of Tool 2

Rationale - Why Latent Dirichlet Allocation (LDA) model?

- a. Interpretable Topics:** LDA (Latent Dirichlet Allocation) produces easily interpretable topics, making it ideal for analyzing thematic elements in scripts.
- b. Well-Suited for Large, Sparse Text Data:** LDA works effectively on large datasets, handling the sparse nature of text data found in movie scripts.
- c. Probabilistic Topic Assignment:** Assigns topics probabilistically, allowing for nuanced classification where a script segment can relate to multiple themes.
- d. Widely Used & Reliable:** LDA is a proven model in topic modeling, ensuring robust and consistent results.

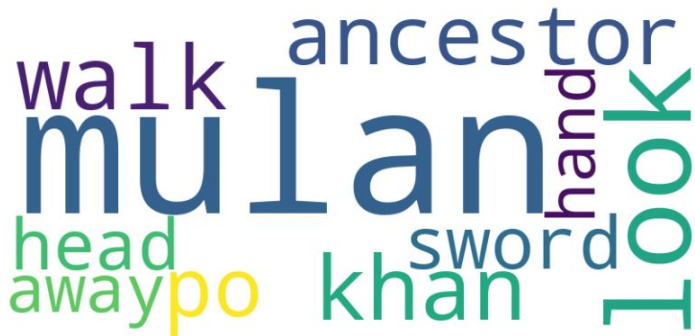
Quantitative Tools - Brief Overview of Tool 2

Analysis framework:



Tool 2: Topic Modelling - Mulan

Topic 1 WordCloud



Interpretation:
Family

Topic 2 WordCloud



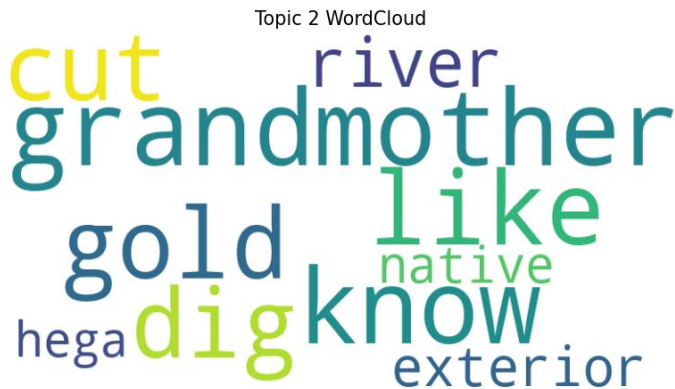
Interpretation:
Warfighting, Action

1. Theme 1 (Family)
2. Theme 2 (Warfighting)
strengthens the alignment
between qualitative and BERT
findings → defying patriarchal
ideals
 - a. Mix of action words (come,
run, step)
3. Theme 2 also explains why
Mulan was an outlier in BERT
analysis for morality → highest
score for courage as it is closely
linked to warfighting.

Tool 2: Topic Modelling - Pocahontas



Interpretation:
Colonial Power,
superiority

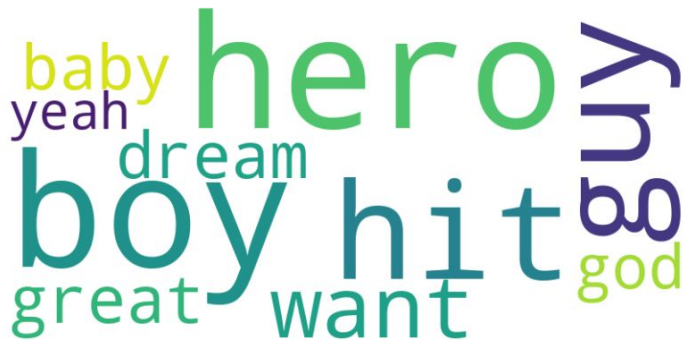


Interpretation:
Family
(intergenerational
culture)

1. Theme 1 (Colonial power)
 - a. “Man” is associated with slang terms (“savage”, “lad”, “native”)
 - b. Explains why BERT’s finding that Pocahontas having an abnormally high Sub-value 2 (Reinforcement of patriarchal ideals” → the stereotype of being wild and unruly
2. Theme 2 (Family)
 - a. Intergenerational culture

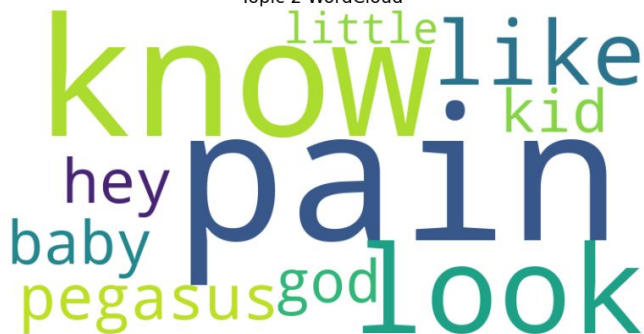
Tool 2: Topic Modelling - Hercules

Topic 1 WordCloud



Interpretation:
Masculine,
aspirations

Topic 2 WordCloud



Interpretation:
Failure, revelation

1. Theme 1: “Dream”
2. Theme 2: “Pain”
 - a. Pain could be associated with fear and failure
 - b. This could indirectly explain BERT’s finding that Hercules scored lowest for Courage → because of the idea of fear and pain
 - c. The entire movie is portrayed in a shallow way due to inaccurate portrayals of the Greek culture, this could have extended to the one-dimensional portrayal of courage as part of masculine expectations for Hercules, especially relating to his heroic aspirations.

Summary for Tool 1 & Tool 2

Q1. How has Disney portrayed the values of female empowerment, racial diversity and moral values in its films over time?

	BERT Classification	Topic modeling (outliers)
Value 1: Feminism	No overall decreasing/increasing trend, consistent	<ul style="list-style-type: none">Pocahontas: Theme 1 (Coloniality) - reinforces patriarchal ideals → highestMulan: Theme 2 (Warfighting) - defies patriarchal ideals → lowest
Value 2: Racial diversity	No overall decreasing/increasing trend, consistent	N/A
Value 3: Morality	Decreasing trend in Sub-value 2 (Empathy), other sub-values are consistent	<ul style="list-style-type: none">Mulan: Theme 2 (Warfighting) → closely links to courage → highestHercules: shallow portrayal of courage → lowest

Tool 3: Log-Linear Regression

- Adjusted for historical inflation rate using US CPI data
- Focused on US domestic market earnings since not all movies have global distribution
- Using **earnings** and **IMDB** as different metrics for success of consumers' sentiments to construct two regressions.
 - **Earnings:** number of people who went to watch the movie, signifying the general level of enjoyment
 - **IMDB:** consumers' evaluation of the quality of the movie

Regression models:

$$\text{Model 1 } \log(\text{US Box Office Earnings}) = \beta_0 + \beta_1 \text{tick} + \beta_2 \text{cross} + \beta_3 \text{dash} + \beta_4 \text{TimePeriod} + \beta_5 \text{IMDBrating}$$

$$\text{Model 2 } \log(\text{IMDB}) = \beta_0 + \beta_1 \text{tick} + \beta_2 \text{cross} + \beta_3 \text{dash} + \beta_4 \text{TimePeriod} + \beta_5 \text{US Box Office Earnings}$$

Log-Linear Regression Results Summary

	(1) Feminism lg(earnings)	(1) Feminism lg(imdb)	(2) Race lg(earnings)	(2) Race lg(imdb)	(3) Morality lg(earnings)	(3) Morality lg(imdb)
Positive Portrayal (Tick)	0.104 (0.06)	0.003 (0.02)	-0.008 (0.07)	0.012 (0.01)	-0.108* (0.05)	-0.023 (0.01)
No Portrayal (Dash)	0.018 (0.06)	-0.001 (0.01)	-0.016 (0.07)	0.002 (0.01)	-0.371* (0.21)	-0.110** (0.04)
Negative Portrayal (Cross)	-0.003 (0.12)	0.008 (0.01)	-0.037 (0.06)	0.021** (0.01)	-0.280* (0.13)	-0.035 (0.03)
Time period: Classics	0.867** (0.16)	-0.002 (0.05)	0.905** (0.14)	-0.067** (0.03)	0.694** (0.18)	-0.082** (0.04)
Time period: Renaissance	0.061 (0.15)	0.012 (0.04)	0.191 (0.13)	-0.009 (0.03)	0.158 (0.11)	-0.022 (0.03)
Time period: New Age	omitted	omitted	omitted	omitted	omitted	omitted
IMDB Score	0.144 (0.11)		0.326** -0.11		0.185 -0.11	
Earnings		6.52×10^{-12} 8.65×10^{-12}		2.24×10^{-11} 1.49×10^{-11}		9.15×10^{-12} 8.29×10^{-12}
Observations	27	27	27	27	27	27

* $p < 0.10$, significant at 90% level

** $p < 0.05$, significant at 95% level

Log-Linear Regression Results - Regression

	<i>logearnings</i>	<i>logimdb</i>	Rationale
Tick-cross-dash	All coefficients are statistically insignificant.	Only Cross in Morality and Dash in Racial Diversity coefficients are statistically significant.	In general, people do not care for portrayal of values in Disney, though there may be backlash when morality is portrayed badly due to children being audience.
Eras	Only Classics coefficient is statistically significant.	Only Classics in Morality and Racial Diversity coefficients are statistically significant.	People in the Classics era really relied on Disney movies for escapism.
IMDB	Only IMDB in Racial Diversity coefficient is statistically significant.	N/A	There is more sensitivity in racial issues which translates to box office.
Earnings	N/A	All coefficients are statistically insignificant.	Fluctuations in earnings do not translate to quality rating.

Limitations

BERT

- Cannot further train and finetune pre-trained BERT model due to the lack of available labelled movie scripts dataset

Topic Modelling

- Cannot further train and finetune pre-trained LDA model due to the lack of available labelled movie scripts dataset

Regression

- Omitted variables
- Possible incorrect functional form specifications
- IMDB could be an unreliable success metric for films published before 1990

Overall Conclusion

Q1. How has Disney portrayed the values of female empowerment, racial diversity and moral values in its films over time?

- a. Qualitative analysis: Portrayal of values get deeper and interdimensional over time across all three values
- b. Quantitative analysis: Relatively constant over time, with some fluctuations for certain movies

Q2. How successful has Disney been in portraying female empowerment, racial diversity and moral values in its films over time?

- a. Regression results: mostly statistically insignificant estimates suggesting that people's main motivation behind watching Disney movies may not be contingent on the ability for movies to portray feminism, racial diversity and moral values. E.g., they may value Disney movies purely for entertainment / because it evokes nostalgia.