

# Professor Review Analysis

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Team members:

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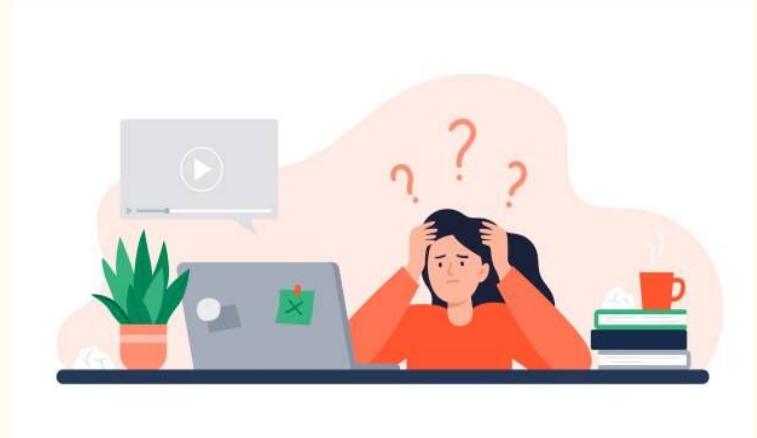
# Motivation

**General features of rating score**

**Rating differences between majors**

**Essential features and how do they contribute interactively to affect rating**

**How schools can improve their teaching staff and maintain a good reputation for teaching**



# Dataset

- Rate My Professor Dataset obtained from github:
  - [https://github.com/x-zhe/RateMyProfessor\\_Sample\\_Dataset](https://github.com/x-zhe/RateMyProfessor_Sample_Dataset)
- Time range from 2000-2018
- Main attributes we use:
  - State
  - Time
  - Department
  - Student star rating
  - Comments

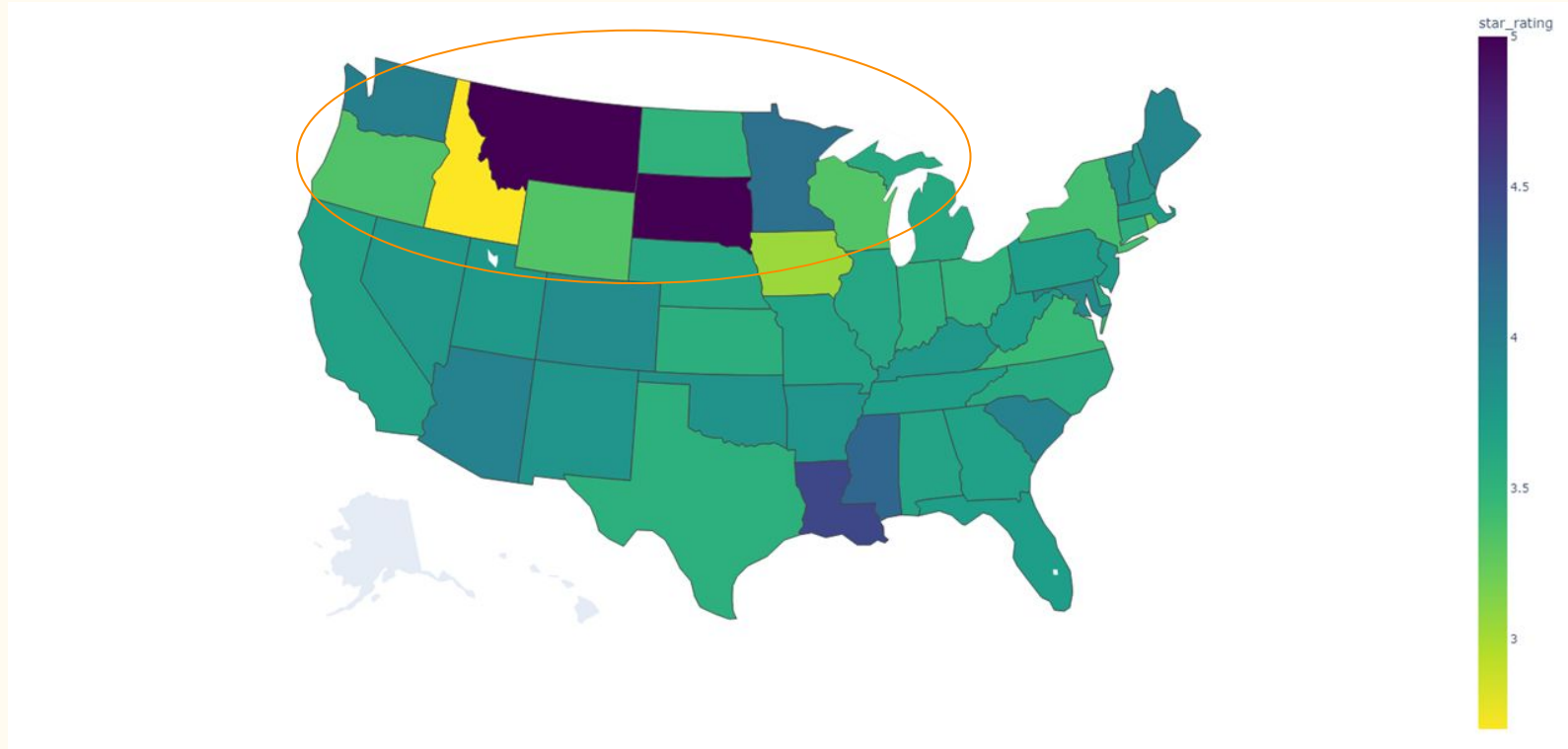
professor_name	school_name	department	local_name	state_name	year_since_f	star_rating	take_again	diff_index	tag_professc	num_studen	post_date	name_online	name_not_o	student_star	student_diffi
Leslie Loone	University Of	Astronomy d	Champaign\	IL	11	4.7		2	Hilarious (2)	26	6/27/17	NAN	ASTR122	5	3
attendance	for_credits	would_take	grades	help_useful	help_not_us	comments	word_comm	gender	race	asian	hispanic	nh_black	nh_white		
Mandatory	Yes	Yes	B	0	0	This class is	44	unknown	hispanic	0.00854844	0.7314959	0.08709476	0.17286097		

# Methodology

- Investigate general features including **geographical rating distribution** and **heatmap** for correlation between tags, ratings and difficulty
- Student text reviews were preprocessed by **cleaning and normalizing the text** - removing unwanted characters, stop words, tokenizing & lemmatization
- For Sentiment Analysis, **NLTK's VADER** (Valence Aware Dictionary and sEntiment Reasoner) library is used. It is an open-source rule-based sentiment analysis tool
- VADER produces **4 main Polarity scores** - Positive, Neutral, Negative & Compound Score
- **Compound score** ~ metric that calculates the sum of all the lexicon ratings which have been normalized between -1 (most extreme negative) and +1 (most extreme positive)

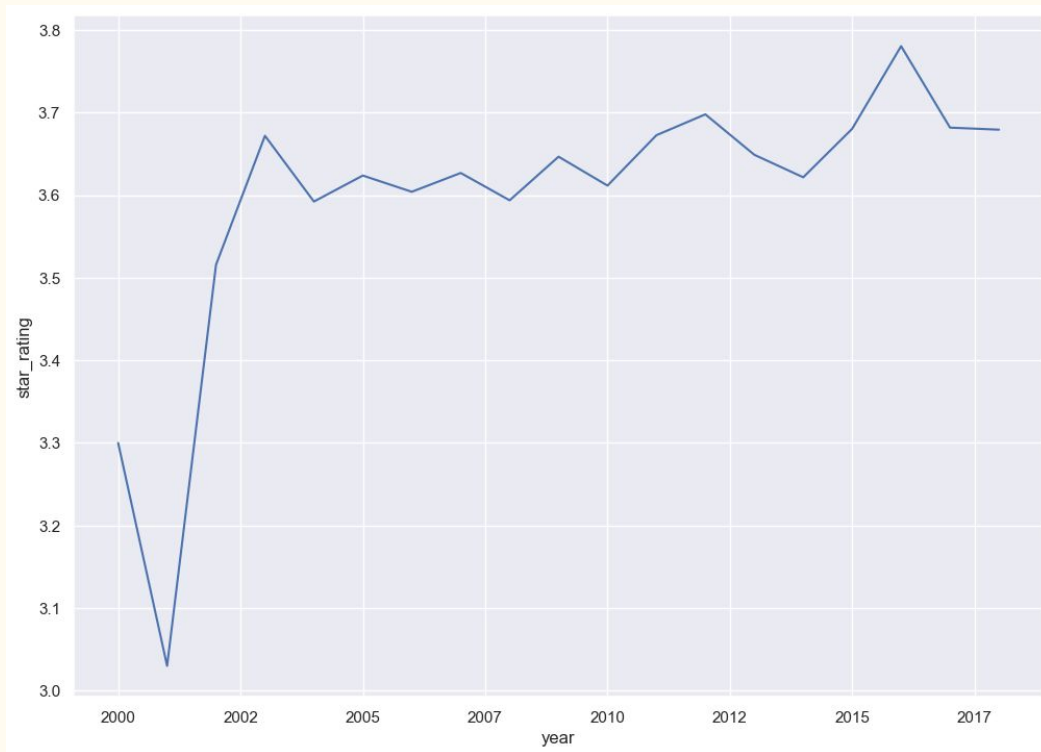
# Evaluation in Northern States is less “stable” than in Southern States

*Star rating in US States*



# Rating changes along the year

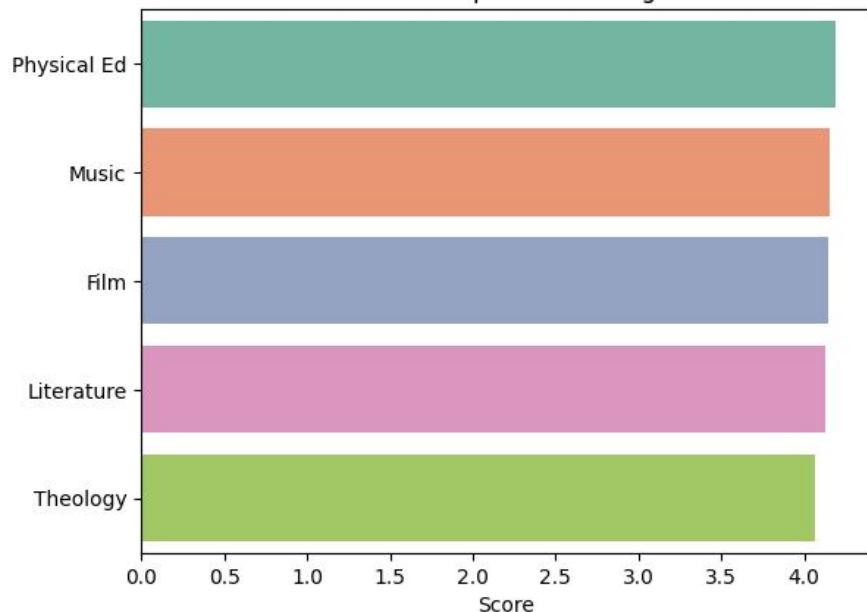
Overall tendency shows to increase slightly, hard to see tendency on department level



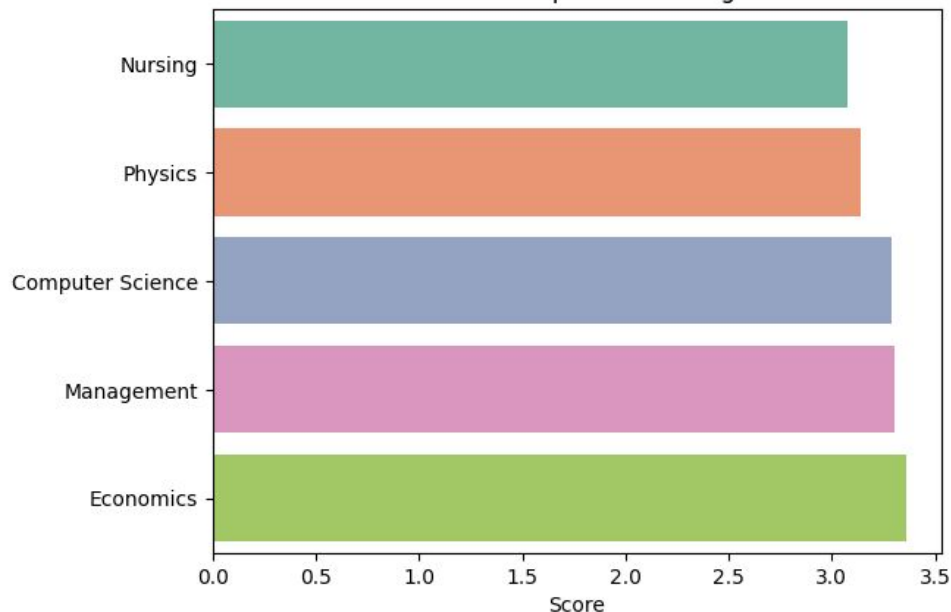
# Creative Major gain more scores than Analytical

5 Highest and 5 Lowest Rating Departments (#evaluation > 100)

Best 5 Department rating

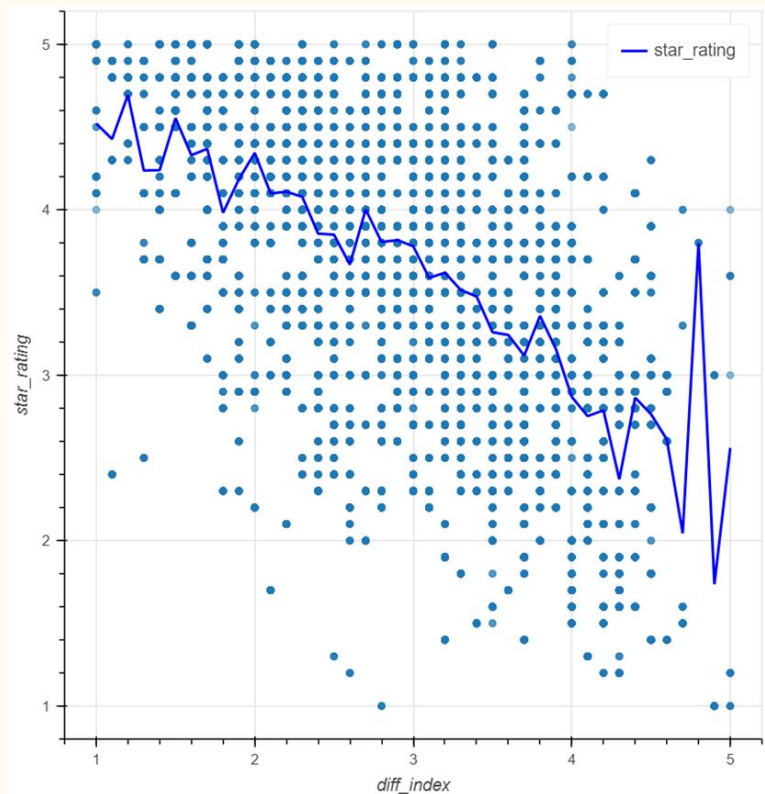
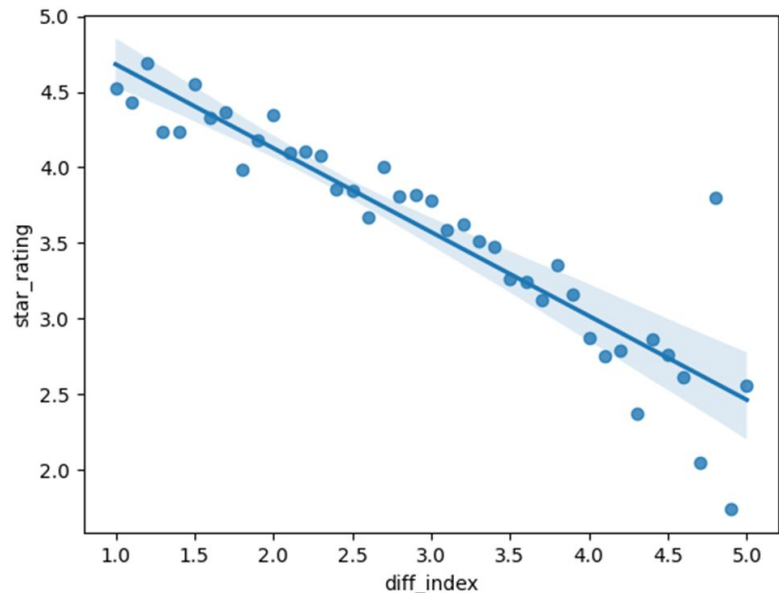


Worst 5 Department rating



# More Difficult? Lower rating score.

Relationship between Difficulty and Star Rating



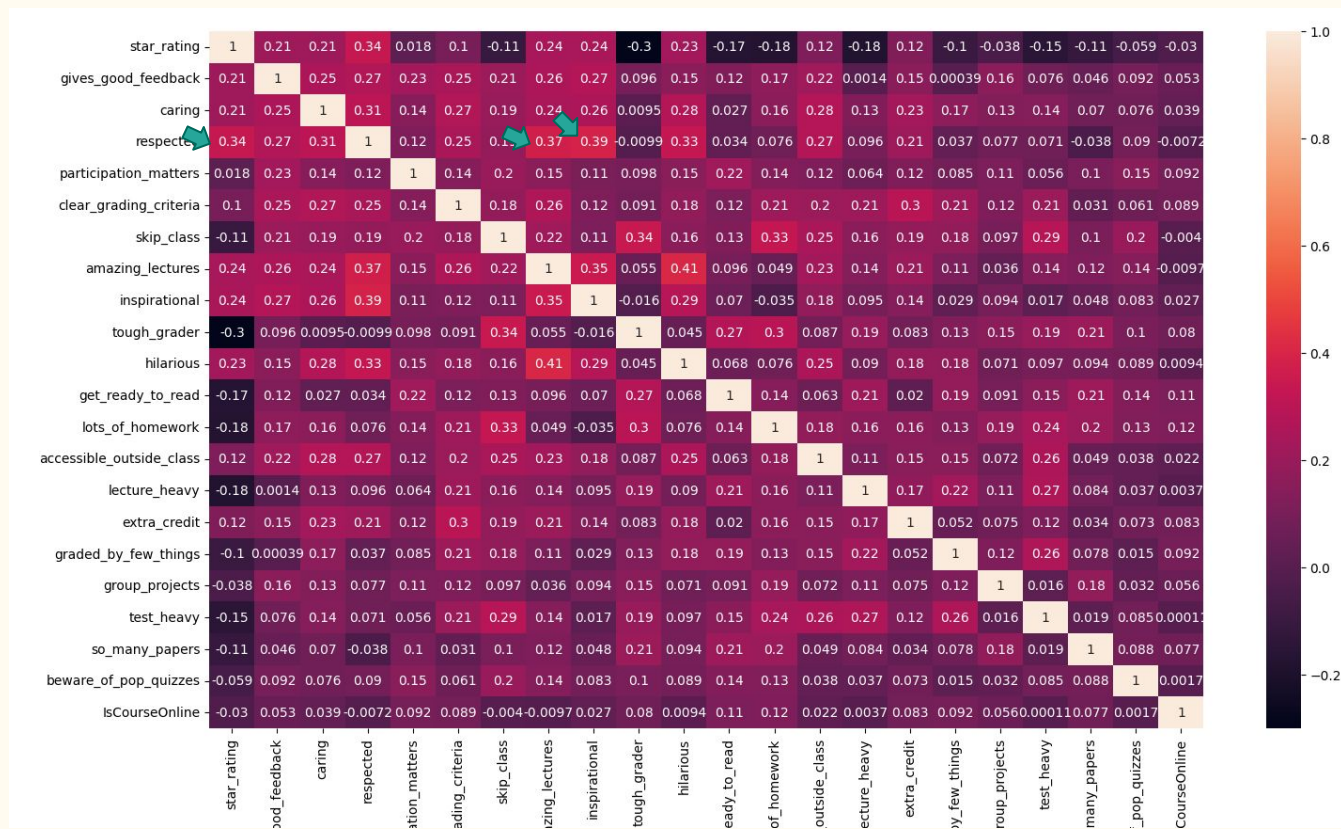


# Topic Modeling: how various tags relate to star\_rating?

Star Rating:

→ Respected  
index(0.34)

→ Amazing(0.37) &  
Inspirational lectures  
(0.39)

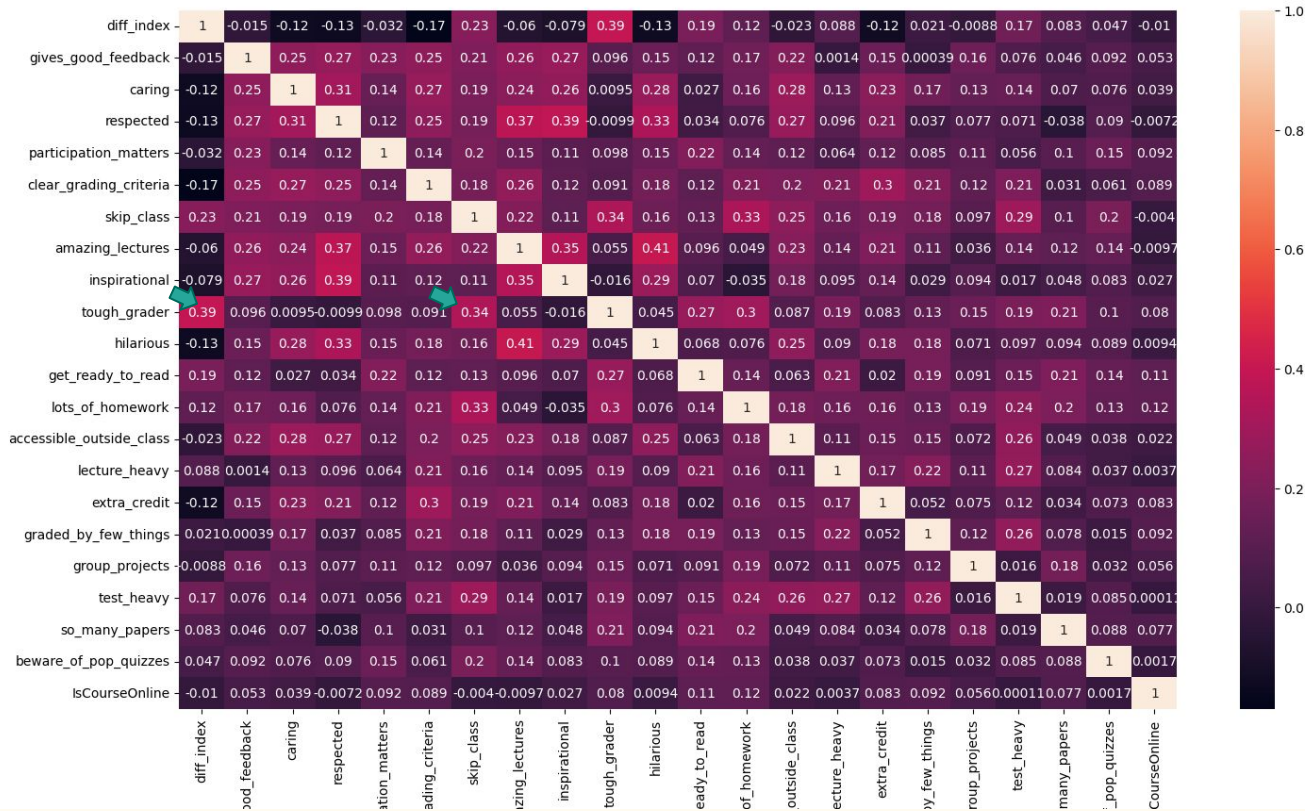


# Topic Modeling: how various tags relate to difficulty

Difficulty:

→ Tough  
grader(0.39)

→ Skipping class  
punishment (0.34)

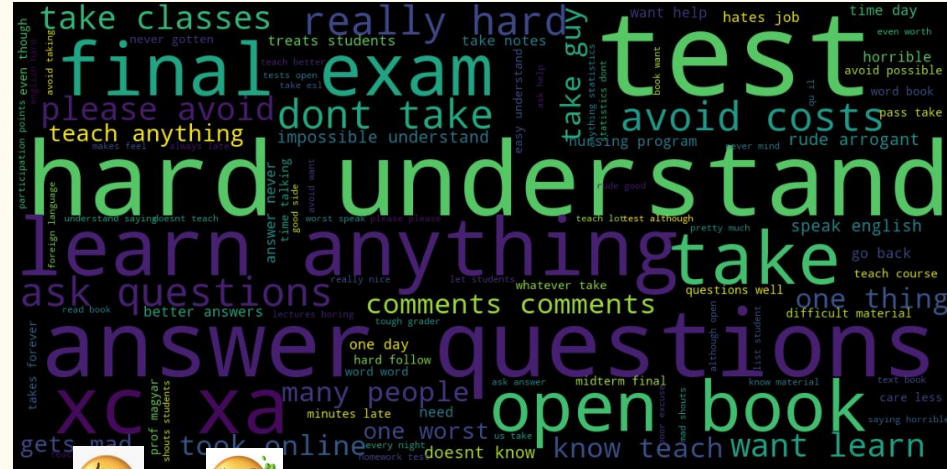


## Word Cloud of Student Reviews

## Top 20 Rated Professors



### Bottom 20 Rated Professors

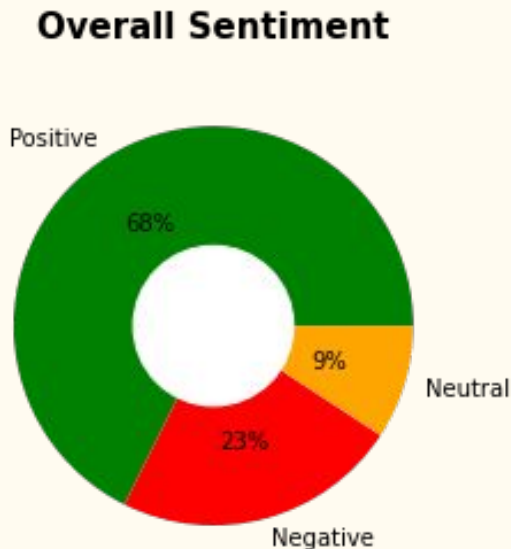




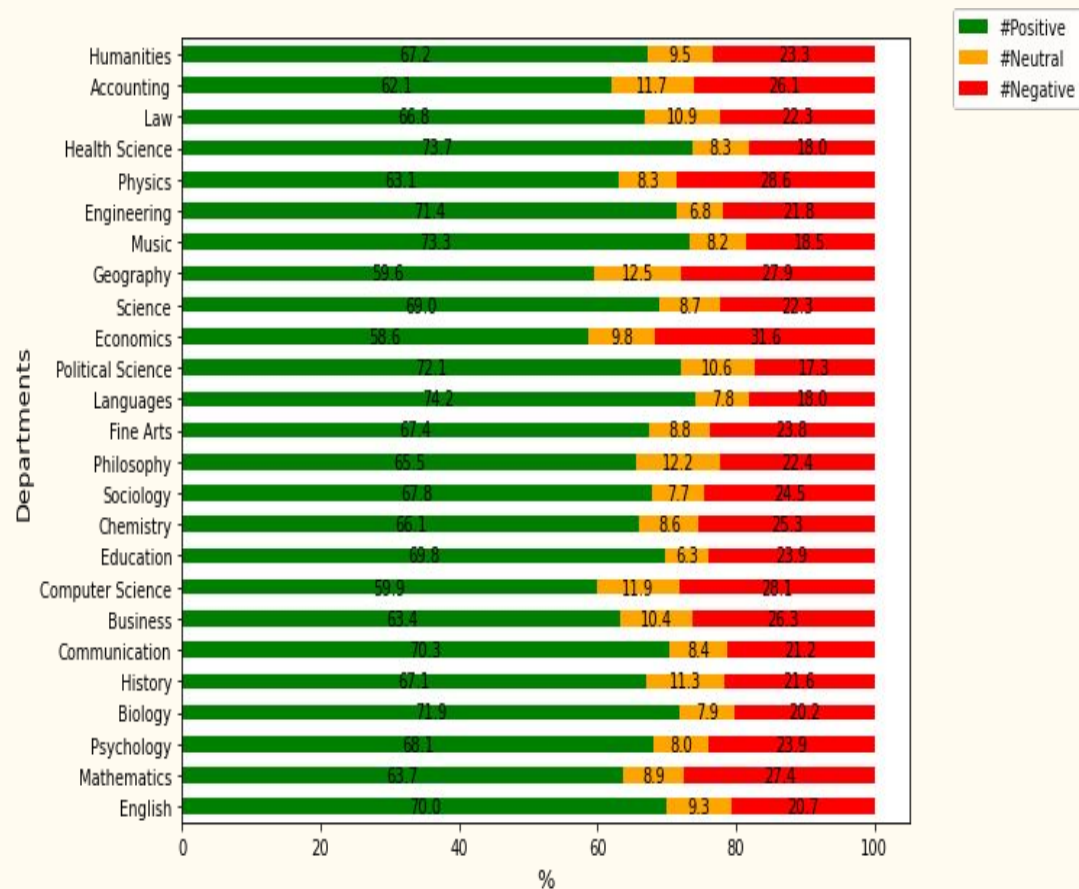
one\_of\_the\_of\_the\_best  
highly\_recommened\_taking\_recommened\_taking\_he  
cares\_about\_his\_about\_his\_students  
teacher\_ve\_ever\_ve\_ever\_had  
need\_it\_no\_it\_no\_comments\_you\_need\_it\_need\_it\_no  
is\_one\_of\_one\_of\_the  
good\_sense\_of\_sense\_of\_humor  
you\_have\_to\_have\_to\_do

[illegible]

# Sentiment Analysis

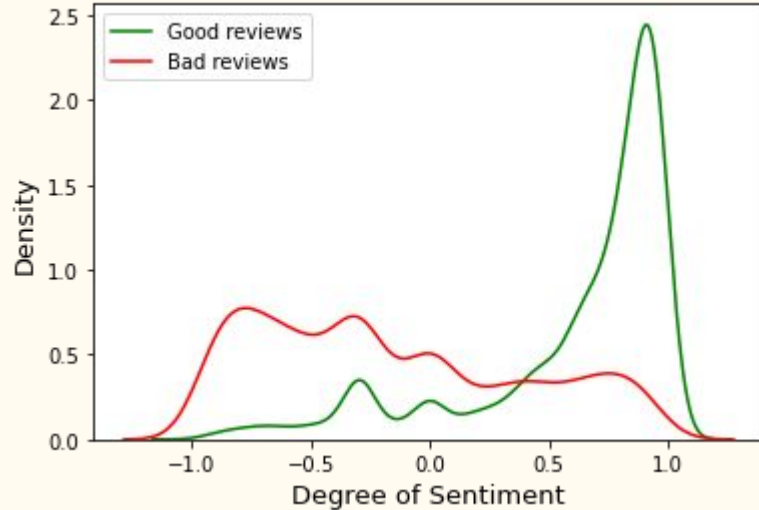


### Sentiment Across Top 25 Most Rated Departments



# How does Sentiment vary with Numerical Rating?

## Correlation b/w Star Rating & Sentiment Score

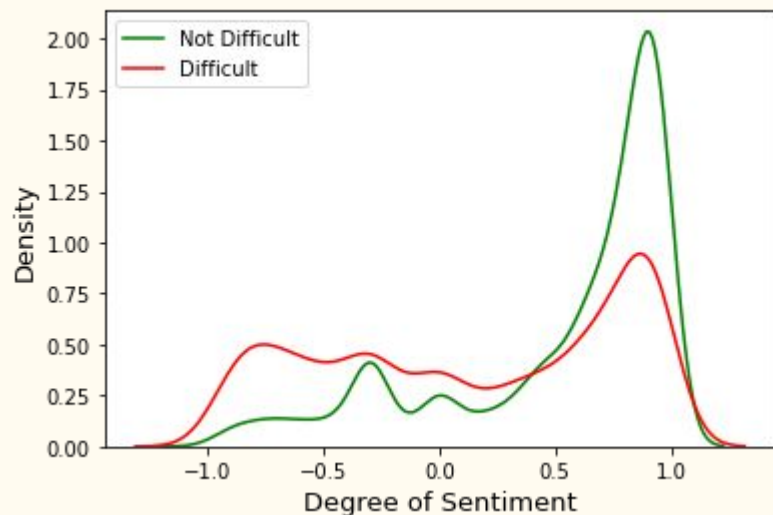


## Distribution of Review Type

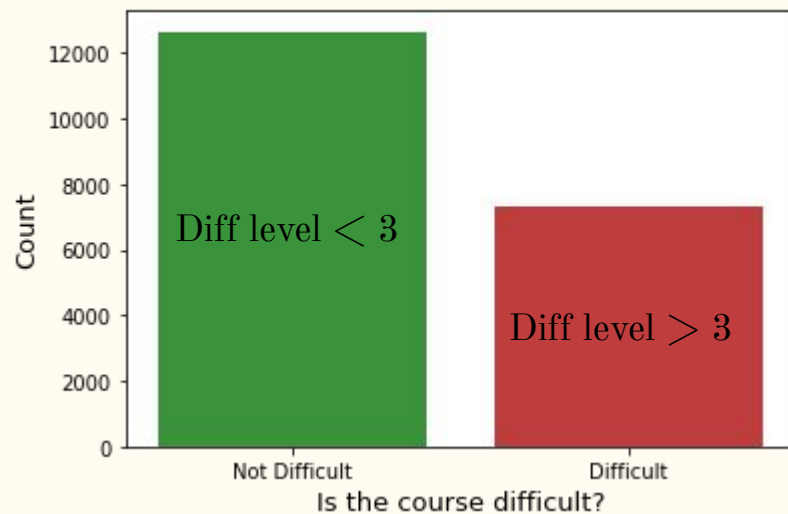


# How does Sentiment vary with Difficulty Score?

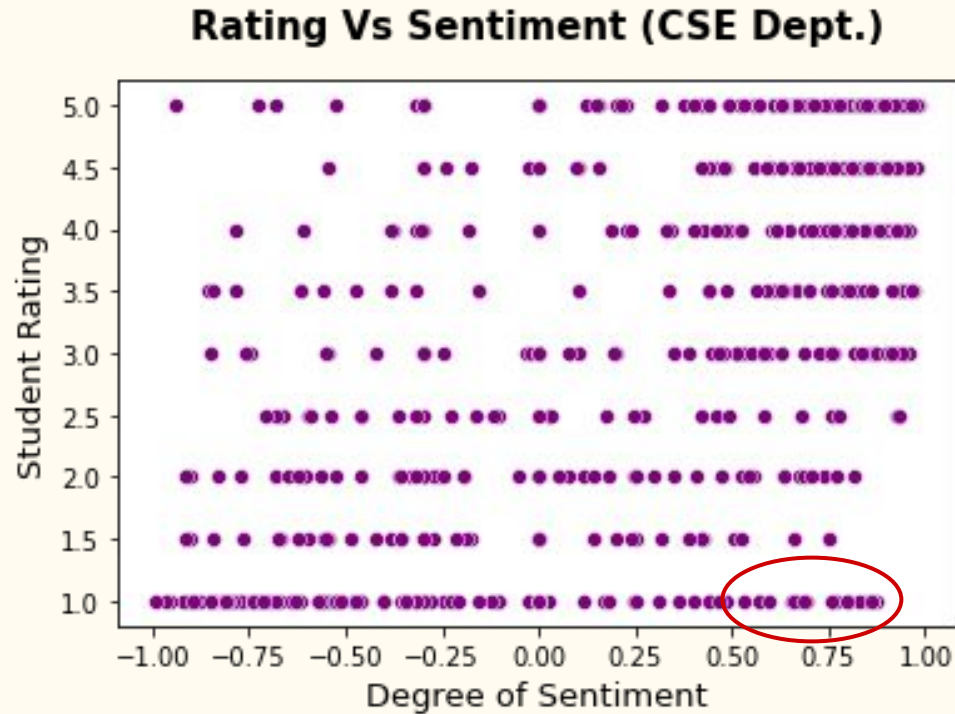
Correlation b/w Difficulty Rating & Sentiment Score



Distribution of Course Difficulty



## Taking a closer look ...





# Deep dive: Low Rating + High Sentiment

Reviews	Rating	neg	neu	pos	compound
"Extremely unintelligent, <b>though well-intentioned</b> . The Hunger class <b>was a breeze</b> if you read the books, but don't expect to learn anything whatsoever from Sanders. He spends most of class time showing videos and telling personal anecdotes. Easily distracted and incapable of clearly answering simple questions. <b>Easy A</b> if that's all you care about."	1.0	0.149	0.633	0.218	0.7686
"The benny lol's show!!! hahaha this class is <b>absolutely amazing!!</b> amazing <b>bcoz u can get an A+ no sweat</b> . just show up and listen to his dumb stories! he'll's cool but i'll'd rather study on my own than to show up for his class."	1.0	0.074	0.726	0.200	0.7551
'I have to agree with the others; <b>it was the easiest A</b> that I ever made but if you want to really know the material then you are out of luck. He is the only one who teaches the Forensic Accounting class.'	1.0	0.000	0.794	0.206	0.7964
"Awful. Makes a very difficult subject even more difficult. Java isn't the easiest subject in the world to learn--and he makes it even more difficult. Some <b>people are great teachers</b> . Some <b>are great business people</b> . You need to know your strengths. Don't care if he's great in business. Lousy at teaching a difficult subject; that I love, java."	1.0	0.208	0.495	0.297	0.8600

# Conclusion

- **Overall rating change** along the year shows slight increase
- **Creative study** is more popular than **analytical study** - non-stem professors and courses tend to be rated higher
- **Higher Difficulty level** will generally lead to negative ratings
- Having a **good sentiment** towards a professor doesn't always make a **course good**, but it does have an effect, and vice versa.
- Due to technology issue, NLTK's VADER library may not correctly identify **sarcastic word sentences**, but in general cases tendency is correctly been observed

Thank you