



# Yelp Reviewer Sentiment Around COVID-19

Sentiment is lower in reviews that mention the pandemic & after lockdown

Katie Ritz • June 2020

<https://www.adorama.com/alc/category/how-to/photo/>



# Coronavirus has completely changed the restaurant industry almost overnight

## Many restaurants have had to swiftly pivot to a carry-out strategy to survive mandated closures

BI Business Insider

### How coronavirus is devastating restaurants across US - Business Insider

3 million out of work, \$25 billion lost: 8 figures reveal how the coronavirus pandemic is devastating restaurants across America. Kate Taylor.

Mar 31, 2020



BI Business Insider

### What it's like to eat at a restaurant during the coronavirus pandemic - Business Insider

And around 8:30 pm, Alex let us know that the kitchen would soon close. dining out eating at restaurant pandemic coronavirus 12. Irene Jiang/ ...

4 hours ago



E Eater

### Restaurants and Bars Across the U.S. Face Mandated Closures Due to Coronavirus Pandemic

Spain and France closed down all restaurant and bar activities over the weekend to prevent the spread of the novel coronavirus, the Republic of ...

Mar 19, 2020



LA Los Angeles Times

### Many U.S. restaurants close as coronavirus relief falls short

Beloved American restaurants shut down as coronavirus relief falls short. Majordomo restaurant in L.A.'s Chinatown. Parent company Momofuku ...

1 week ago

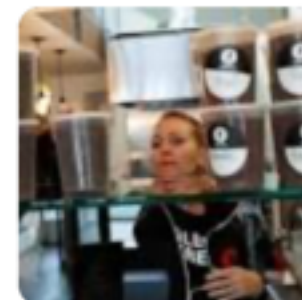


Reuters

### For U.S. small restaurants, coronavirus impact is swift and brutal

The rapidly escalating coronavirus outbreak in the United States has begun to decimate the restaurant industry as an increasing number of ...

Mar 19, 2020



PH The Philadelphia Inquirer

### How the coronavirus crisis has upended the restaurant business, leaving us with a changed landscape

How the coronavirus crisis has upended the restaurant business, leaving us with a changed landscape. by Michael Klein, Updated: March 17, ...

Mar 17, 2020



BBC News

### Coronavirus: When will pubs, bars, cafes and restaurants reopen?

Coronavirus: When will pubs, bars, cafes and restaurants reopen? By Lora Jones Business reporter, BBC News. 11 June 2020. Share this with Facebook; Share ...

3 days ago

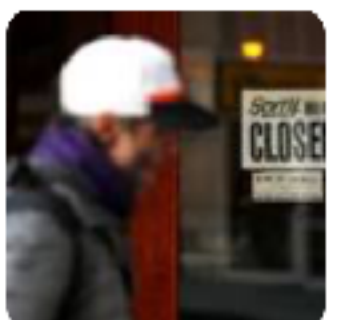


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### By the Numbers: COVID-19's Devastating Effect on the Restaurant Industry

By the Numbers: COVID-19's Devastating Effect on the Restaurant ... how much the novel coronavirus has warped American food culture in the ...

Mar 24, 2020



# **How has the COVID-19 outbreak affected how customers view restaurants?**

**Using scraped Yelp data for 25 counties with the highest number of deaths attributed to COVID-19 (as of April 14, 2020), I examined review sentiment using NLTK's VADER toolkit, TF-IDF and KMeans clustering to identify coronavirus-like terms and sentiment associated with coronavirus-like terms.**

**Coronavirus-like terms cluster together, and that cluster has significantly worse sentiment than other clusters of reviews. Additionally, broadly comparing reviews from before the lockdown to after the lockdown (approximately March 15, 2020) showed worsening overall sentiment after lockdown.**

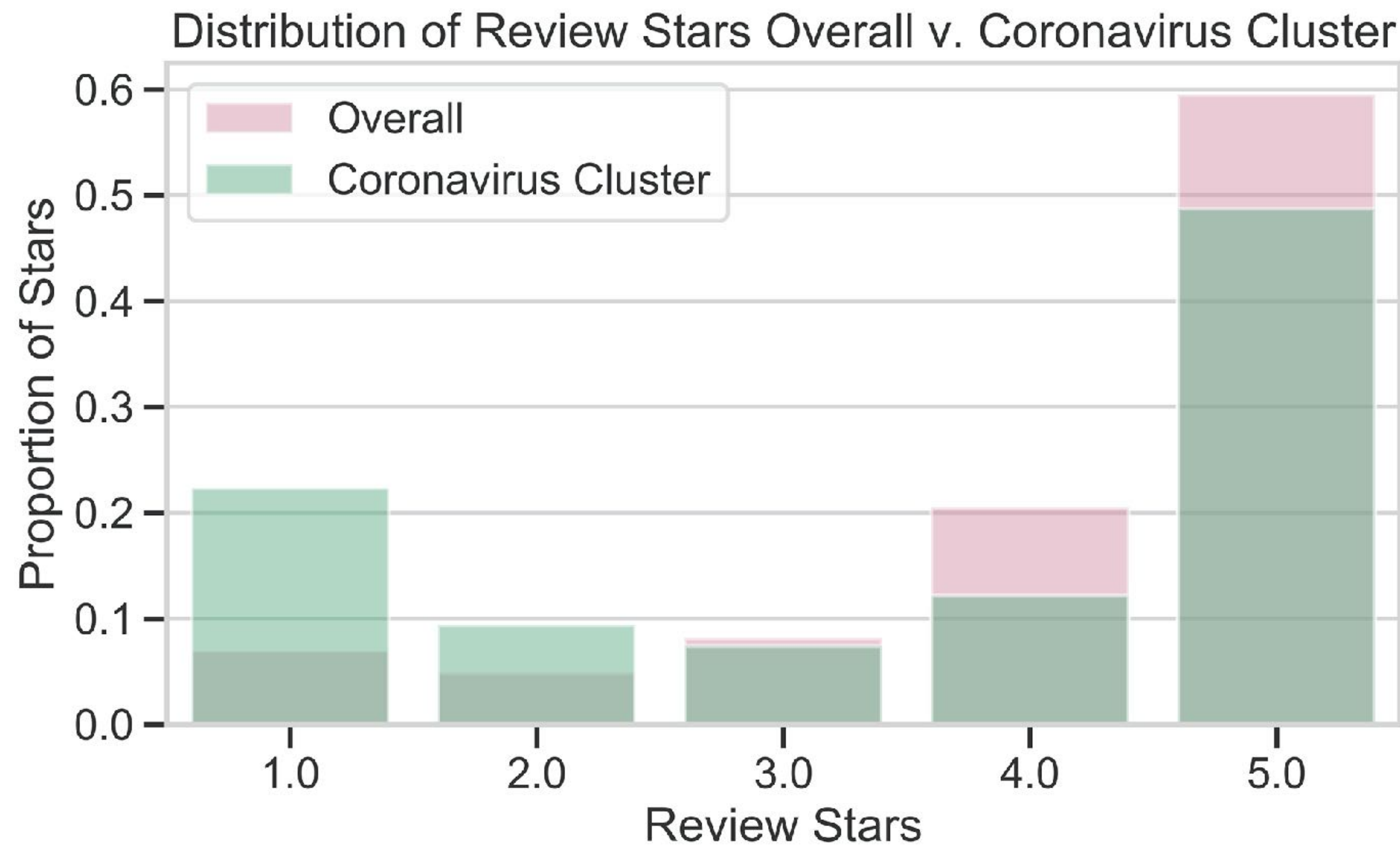


# Coronavirus-Like Terms

**Terms clustering with terms such as "covid", "coronavirus", "corona", "covid-19", "virus", "pandemic", and "quarantine"**



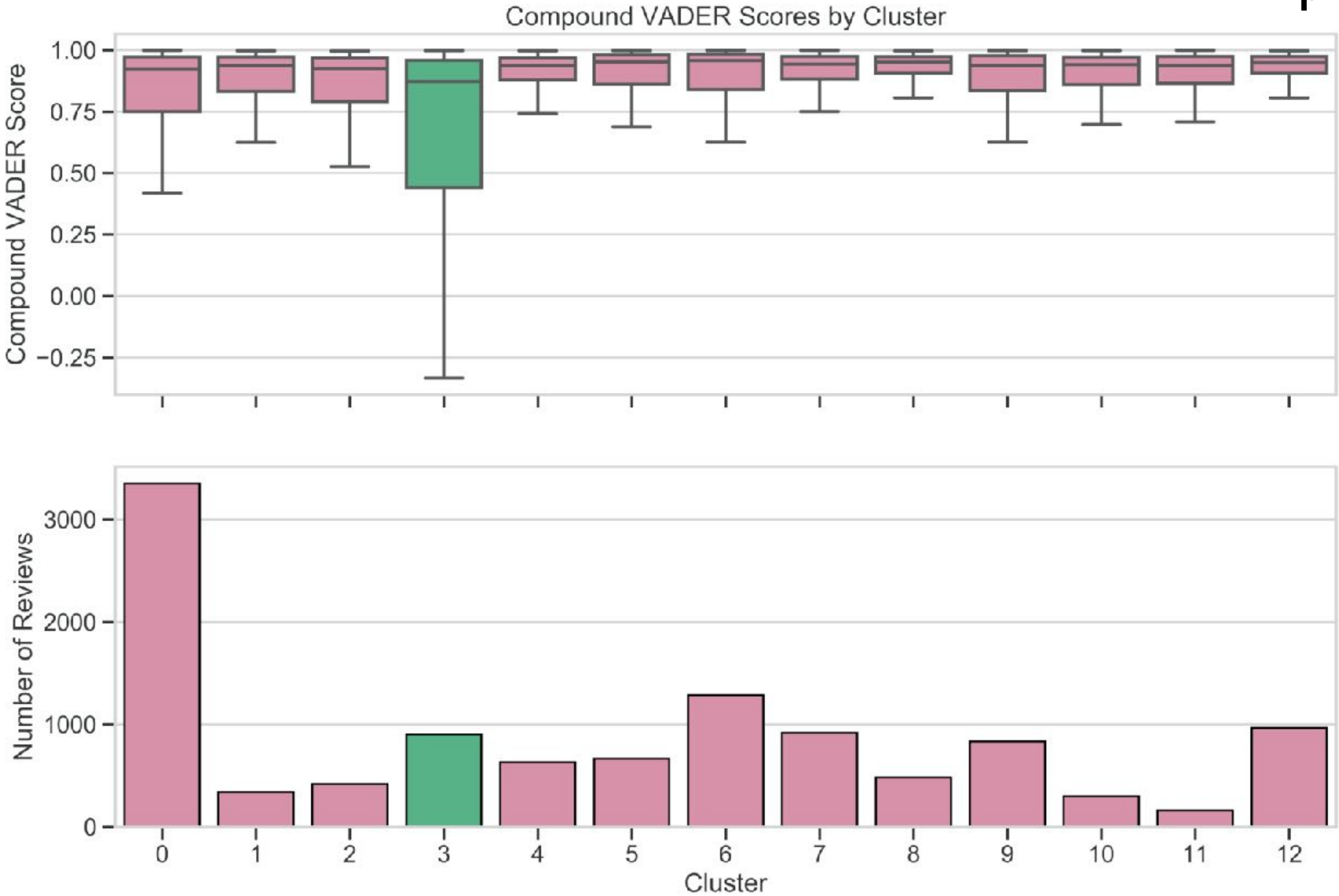
# Review stars decrease in reviews mentioning the pandemic





# Compound VADER scores decrease in coronavirus-like reviews

$p < 0.001$



# Future Directions

- Re-scrape Yelp to include reviews from more recent weeks (mid-April 2020 to present)
- Examine terms associated with negative reviews about the pandemic to make recommendations regarding potential improvements (see below: terms in 1-star reviews in the coronavirus cluster)



# Future Directions

- Remove restaurant stop words, such as “place”, “food”, and “good” to see if it’s easier to identify terms associated with coronavirus-like terms
- Add analyses of neutral sentiment to see what types of terms don’t detract from or contribute to strong review sentiment



# Applications

**The methods in this analysis could be applied broadly to other applications, such as identifying pain points or anomalies in other text data related to sentiment – one such example could be identifying trends in negative reviews by region to see if those trends differ by city. More broadly, this could be applied to customer review data for non-restaurant brands.**