

# Delete to Compete:

## The Effects of Suppressing Negative Product Reviews



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The views expressed in this presentation are those of the authors and do not necessarily reflect those of the Federal Trade Commission.

# March 1st

5★ My husband loves this so much I bought him a second in a different color for his birthday

5★ I love this!!

5★ Love this. Can dress it up or dress it down

# April 1st

5★ My husband loves this so much I bought him a second in a different color for his birthday

1★ Ordered a medium but it ran small. Emailed customer service twice with no response

5★ I love this!!

1★ CRAP!!!

5★ Love this. Can dress it up or dress it down

1★ I can't believe that you would ship without a box or any type of protection other than a small plastic bag. The amount of money spent definitely warrants better shipping.



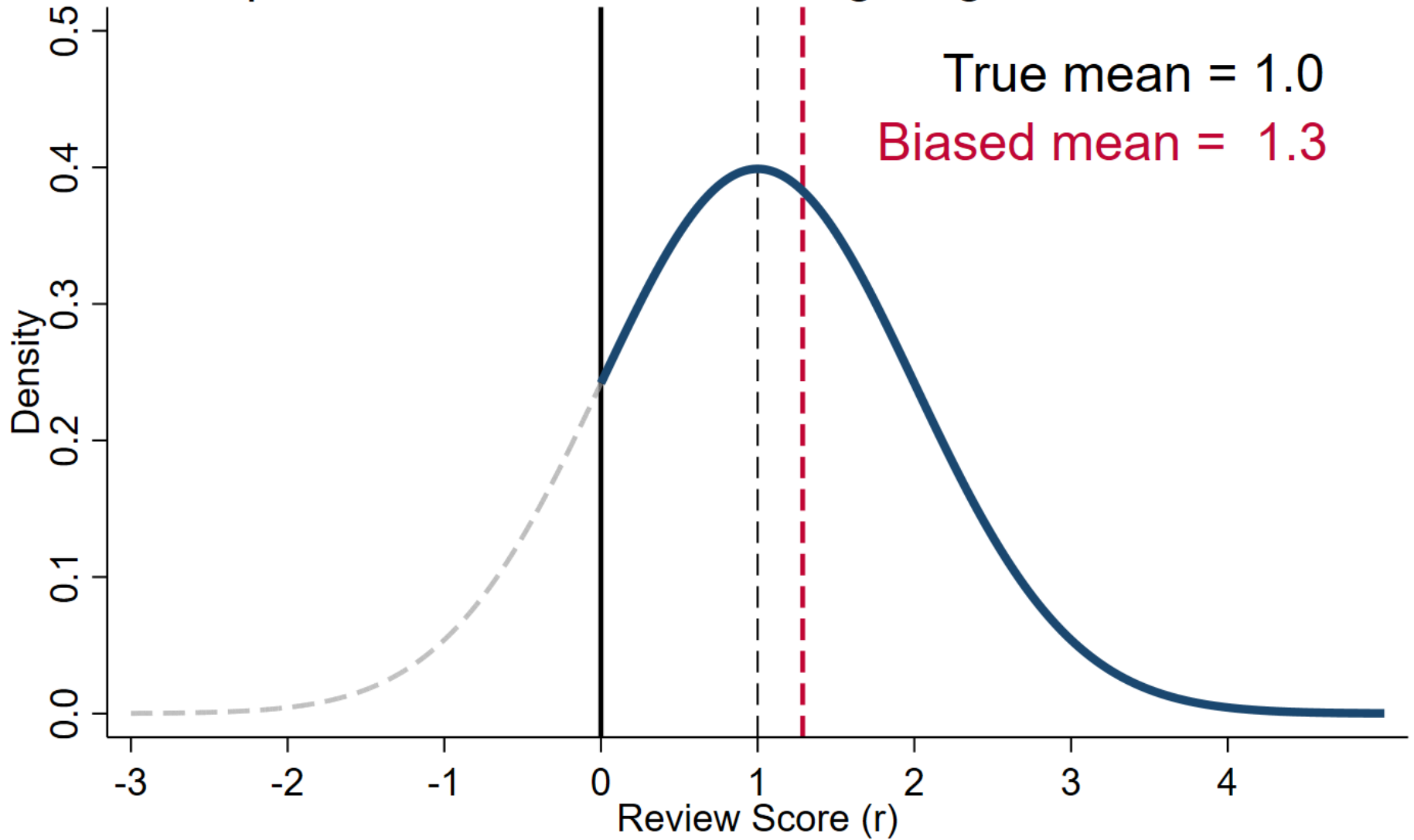
# Introduction

- Natural experiment: some firms were deleting essentially all of their 1-3 star product reviews
- FTC forced them to cease review suppression and display negative reviews
- We observe the next 2 – 4 months

# Theory

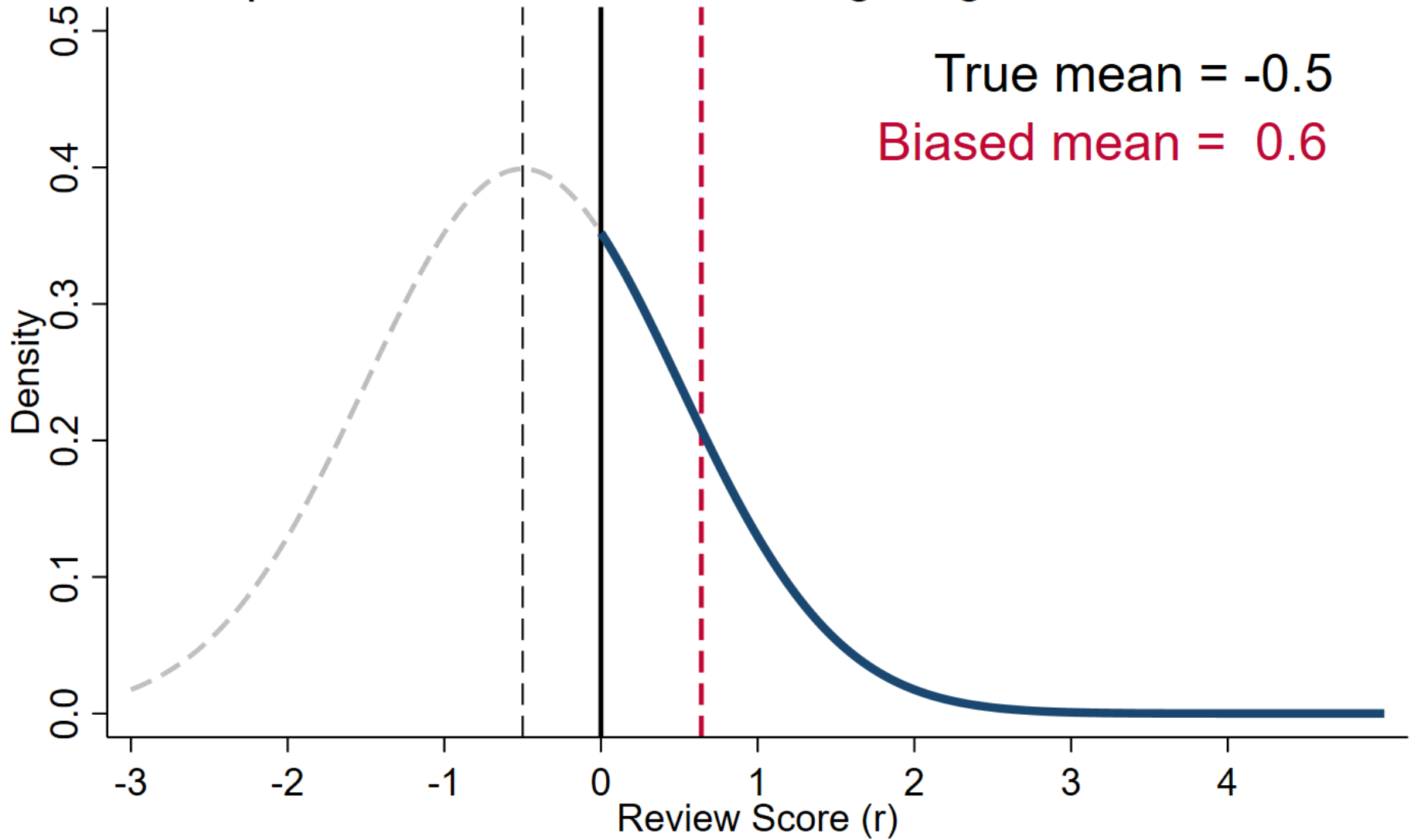
- If reviews are a signal of product quality, and firms hide negative reviews, then...
- Predictions:
  - Sales will decline when negative reviews are posted again
  - Sales will decline even more for low-quality products
  - Refunds will go down, as consumer experience better matches expectations

# Upward Bias from Censoring Negative Reviews



— Displayed reviews ( $r \geq 0$ )    - - - Hidden reviews ( $r < 0$ )

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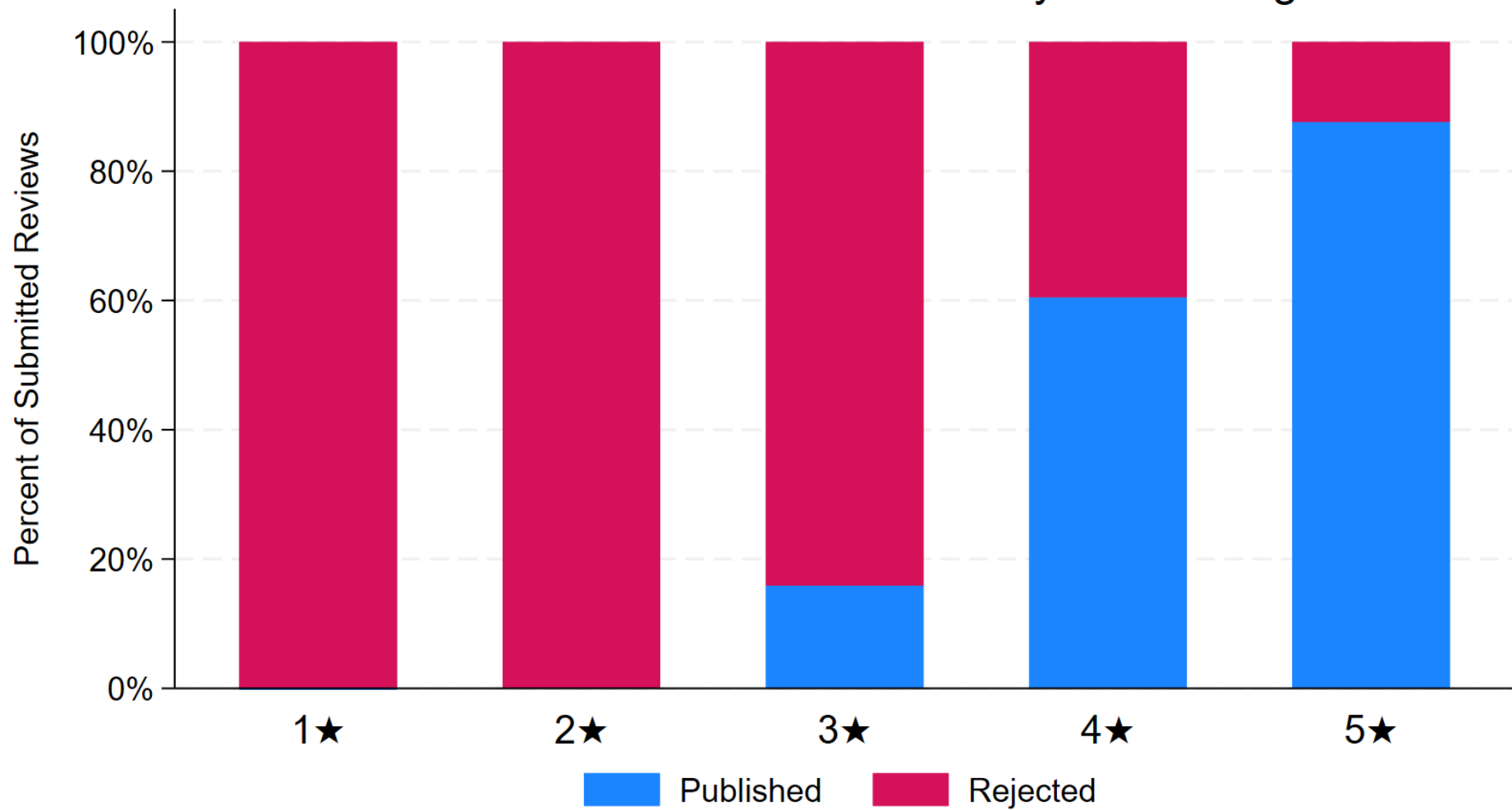
# Data

- 100,000+ Product Variants (SKUs)
- All E-com retailers, some have brick and mortar locations
- 2017 onwards
- 10M – 20M product-day observations
- Price

# Data

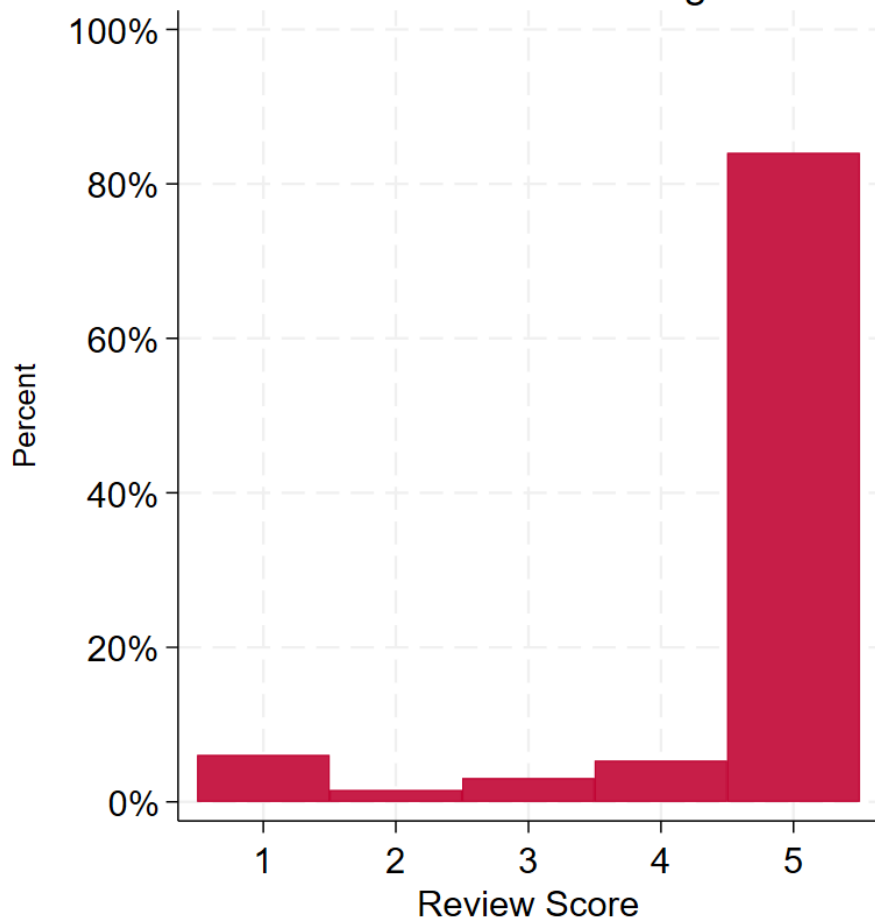
- Reviews were on company website, for its own products
- All companies were using 3<sup>rd</sup> party review management services
- Alleged purpose was to delete off-topic reviews or remove reviews with profanity
  - In practice.....

## Pre-Period Review Outcomes by Star Rating

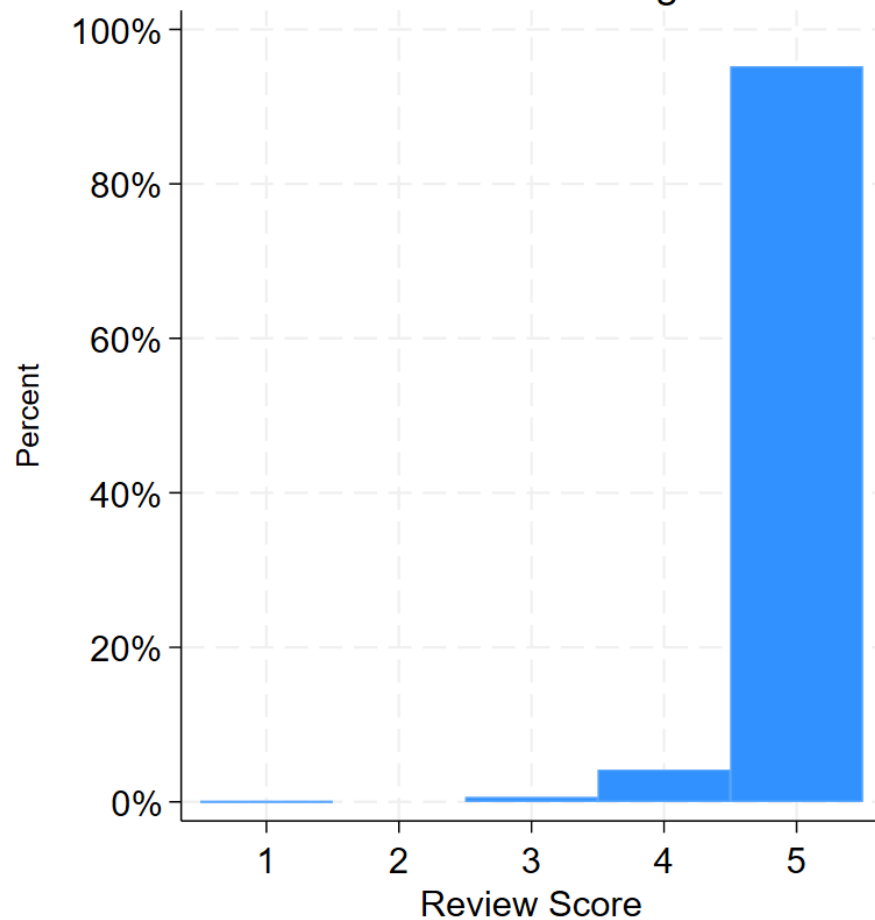


# Pre-Period Rating Distributions: Published vs Submitted

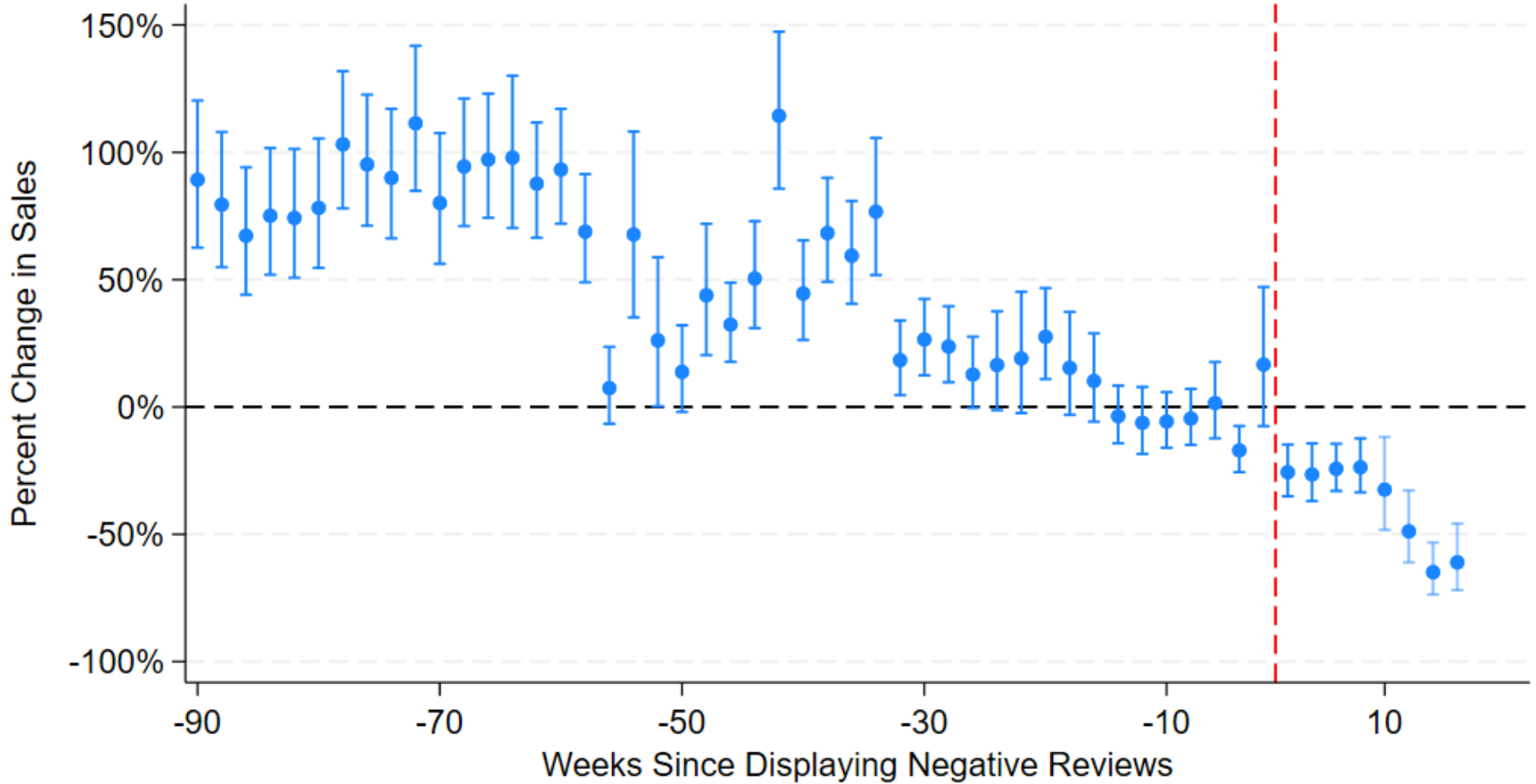
## All Submitted Ratings



## Published Ratings

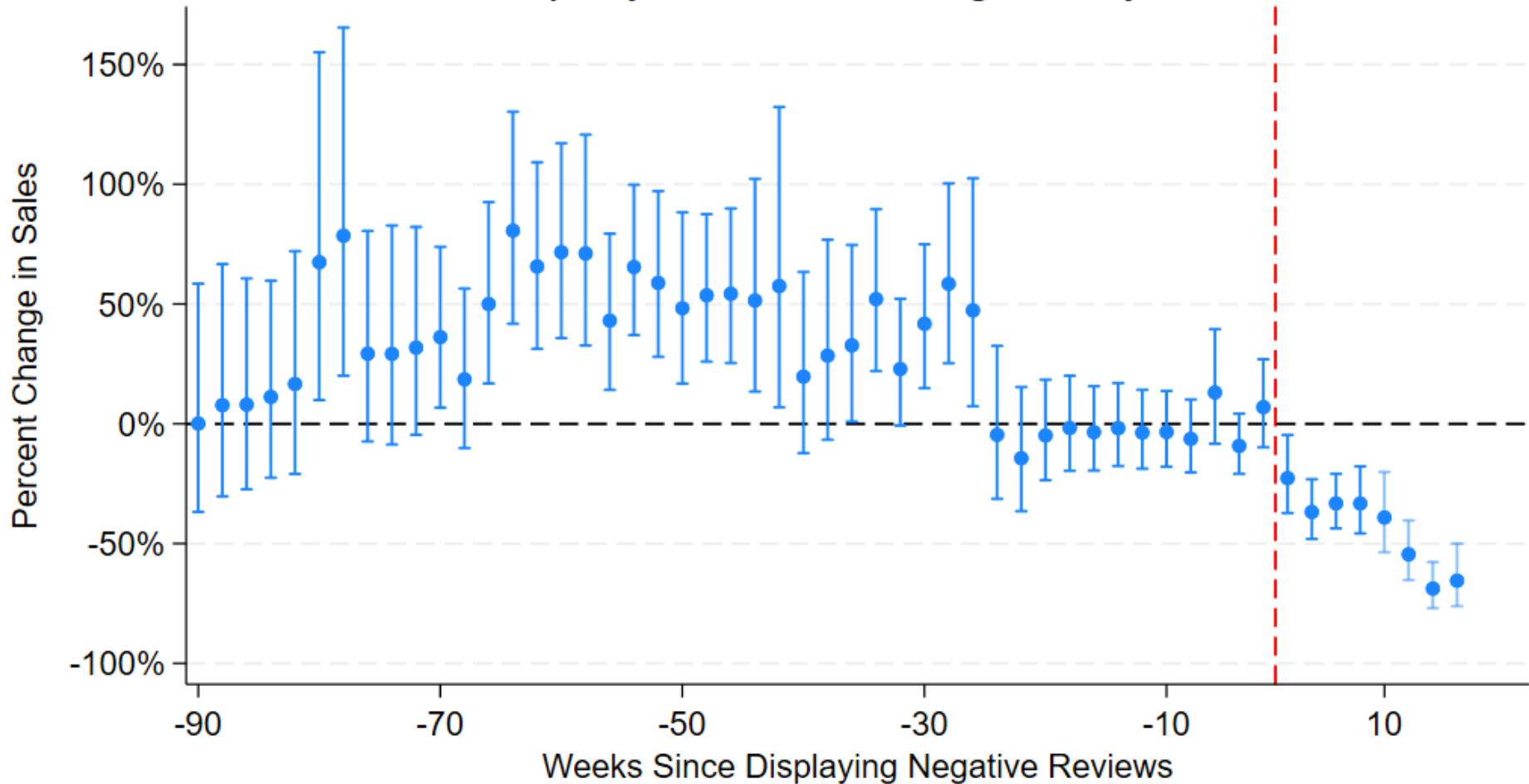


# Percent Change in Sales After Displaying Negative Reviews Weighted by Units



# Percent Change in Sales After Displaying Negative Reviews

## Company-Balanced, Weighted by Units



# Effect by Product Quality

- Observe review scores (star ratings)
- Observe review text if available
- Use Natural Language Processing
  - Classify text as {Positive, Neutral, Negative} sentiment
  - Classify text as {sadness, joy, love, anger, fear, surprise}



# Example

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*Patrick is absolutely crushing this presentation right now. This is unquestionably the best paper I've ever heard, and that purple shirt looks good on him.*

*Five stars. Would not suppress.*

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*Patrick is absolutely crushing this presentation right now. This is unquestionably the best paper I've ever heard, and that purple shirt looks good on him.*

*Five stars. Would not suppress.*

Positive: 0.978

Neutral: 0.017

Negative: 0.004

Joy 0.997

Sadness 0.001

Anger 0.001

Love 0.000

Fear 0.000

Surprise 0.000

$\theta_j$  \* Post \* Event Time $\theta_j =$  Review Score 0.059

Published and Rejected 0.020\*\*\*

 $\theta_j =$  Review Score 0.402

Published Reviews Only 0.110\*\*\*

 $\theta_j =$  Fraction of Pre-Period 0.112

Positive Sentiment Reviews 0.052\*\*

 $\theta_j =$  Fraction of Pre-Period -0.319

Neutral Sentiment Reviews 0.140\*\*

 $\theta_j =$  Fraction of Pre-Period -0.134

Negative Sentiment Reviews 0.075\*

$\theta_j$  \* Post \*Event Time

$\theta_j$ = Fraction of Pre-Period Anger Text Reviews	-0.285 0.130**
$\theta_j$ = Fraction of Pre-Period Sad Text Reviews	-0.391 0.225*
$\theta_j$ = Fraction of Pre-Period Surprise Text Reviews	0.485 0.287*
$\theta_j$ = Fraction of Pre-Period Joy Text Reviews	0.100 0.063
$\theta_j$ = Fraction of Pre-Period Fear Text Reviews	0.587 0.648
$\theta_j$ = Fraction of Pre-Period Love Text Reviews	-0.071 0.089

# Refunds

- Observe if there is a refund to an order
  - Caveat: Don't observe reason or amount
  - Can't distinguish if it's a shipping or product refund
- For each product, take the percentage of orders with a refund
- Refunds decline by 9% after negative reviews

# Conclusion

- Review suppression:
  - Biases quality signals
  - 40% - 43% effect on sales
  - Bigger impact for low-quality products
  - Refunds decline by 9%
- External validity limitation: firms in sample might be the ones with the most to gain from suppression  $\Rightarrow$  over-estimate
- Only observed firms for 2 - 4 months. Might not observe full effect over time  $\Rightarrow$  under-estimate



**Thank You**