

# Uncovering Abuse

with

Natural Language Processing and  
Logistic Classification

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\*Trigger Warning: contains some graphic language, along with tokens of and references to physical/emotional abuse

# 20 people/minute

are physically abused by an intimate partner in the US

# What is Abuse?

- Physical:
  - Violence, sexual violence
- Psychological:
  - Harassment, humiliation, blame, stalking
- Economical:
  - Employment related, coerced debt

# The Problem

- Relationship between intimate partner violence and depression and suicidal behavior
  - Spread of trauma
- Inability or difficulty in taking initial action
  - Reticence
  - Intimidation
  - Embarrassment
  - Trauma
- Can often go unrecognized
- Identify language patterns
  - Start by getting more resources to mental health professionals

# The Data

- r/Relationships

- Help with interpersonal relationship advice
- Ex: cheating, communication problems, sexual challenges, lactose intolerance, etc
- Posts sampled
  - Past month, previous month, previous to two months
  - At least 100 comments

- r/AbusiveRelationships

- Community for people who have been in or are currently in an abusive relationship
- Ex: resource sharing, venting, empathy, support
- Posts sampled
  - Past month, previous month, previous to two months
  - At least 3 comments

# The Model

- Predicting the presence of abuse through text
- Comparison of posts in two subreddits:
  - r/Relationships
  - r/AbusiveRelationships
  - Searching for common words and terms between the two groups
- Natural language processing identifies key words/phrases
- Logistic Regression classifies post as abuse/nonabuse

# 92%

Accurate with classifying posts sampled  
from r/Relationships and r/AbusiveRelationships

# Common Words: No Overlap

- r/Relationships

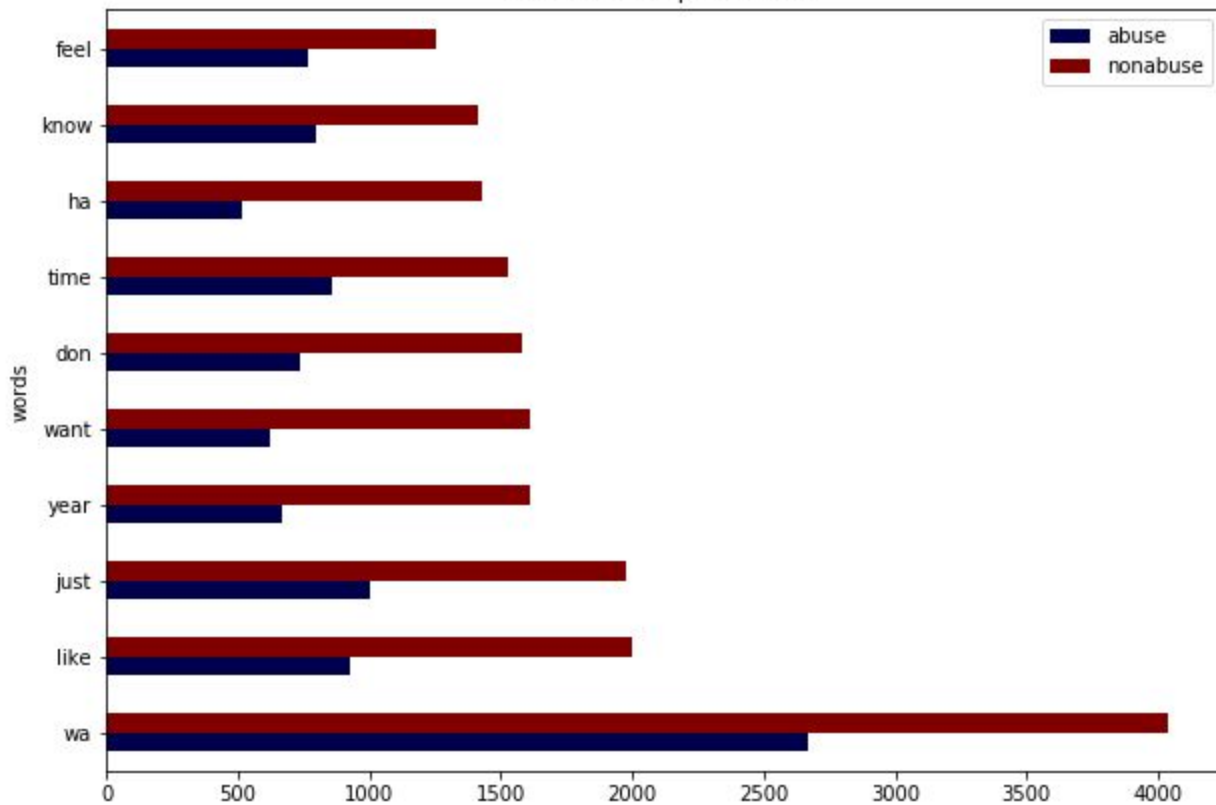
dr, tl dr, tl, wife, sister, bf, christmas, daughter, brother, amp x200b, x200b, tldr, spend, gf, basically, marriage, conversation, morning, game, taking, dinner, weekend, group, college, weird, food, fine, use, 10, worried

- r/AbusiveRelationships:

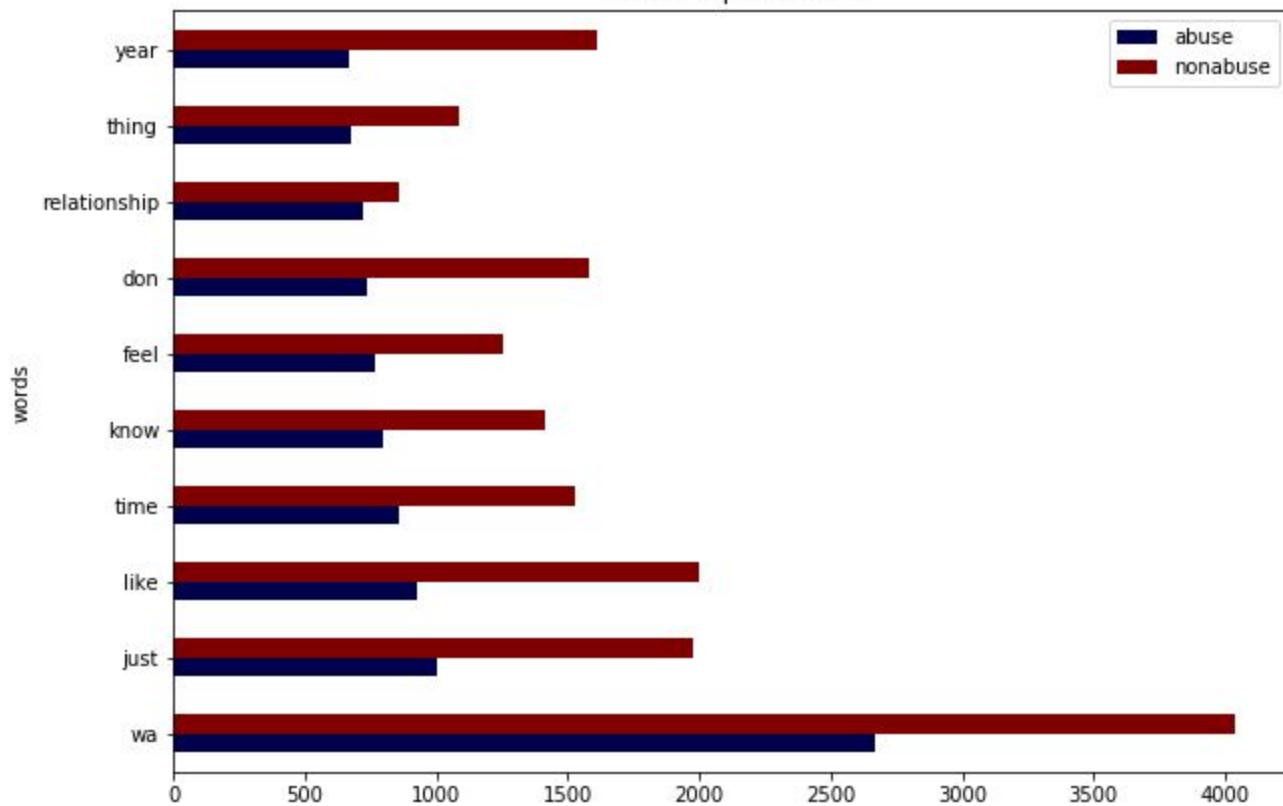
Abusive, abuse, abusive relationship, hit, emotionally, scared, face, abuser, self, kill, fucking, physically, story, dog, fault, physical, anxiety, loved, abused, crazy, argument, afraid, worse, emotional, dont, contact, mental, door, behavior, control



Nonabuse: Top 30 Words



Abuse: Top 30 Words



# Conclusion

- Distinguishing is possible, though language is nuanced
  - Combination and presence of words and phrases
  - Organization
  - Sentiment and context
  - Combination approach could be most effective
- Warning signs
  - More obvious warning words: control, abuse, anxiety, afraid, mental, kill, scared, hit, etc
  - Physical signs: conspicuous bruises, sprains, repeat injuries
  - Emotional signs: fear, inconsistent/trouble sleeping, substance abuse, depression, anxiety

# Resources

- Local (Seattle):
  - Advocacy groups, shelters, counseling, etc
    - <https://www.seattle.gov/cityattorney/crime-victim-assistance/getting-help>
  - Stalking
    - <https://www.seattle.gov/cityattorney/crime-victim-assistance/stalking-help>
- National Domestic Violence Hotline
  - 1-800-799-7233
  - <https://www.thehotline.org/>

# Sources

<https://ncadv.org/statistics>

[https://assets.speakcdn.com/assets/2497/domestic\\_violence\\_and\\_economic\\_abuse\\_ncadv.pdf](https://assets.speakcdn.com/assets/2497/domestic_violence_and_economic_abuse_ncadv.pdf)

[https://assets.speakcdn.com/assets/2497/domestic\\_violence\\_and\\_psychological\\_abuse\\_ncadv.pdf](https://assets.speakcdn.com/assets/2497/domestic_violence_and_psychological_abuse_ncadv.pdf)

<https://www.verywellmind.com/signs-someone-is-being-abused-66535>