

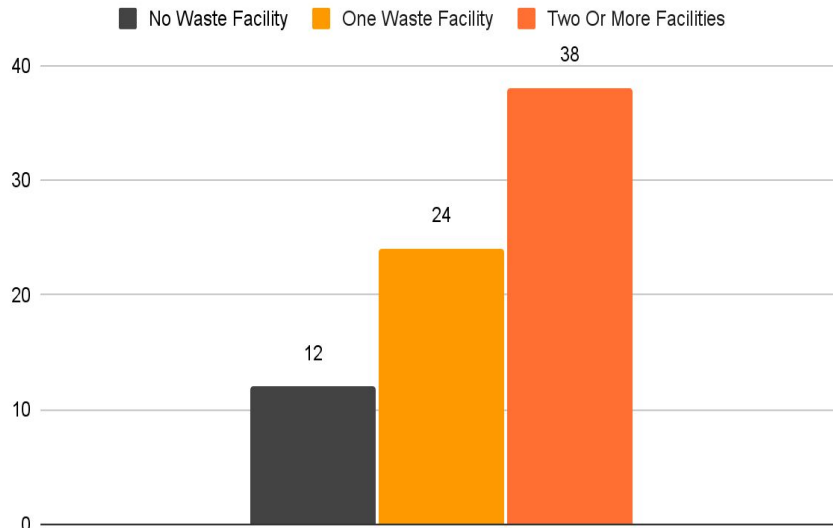
# Environmental Racism In The News: Analyzing Racial Bias In Minority Coverage

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# Where Does Hazardous Waste Go...

**Minority Percentage Near Waste Facilities**



**Three out of every five Black and Hispanic Americans** lived in communities with uncontrolled toxic waste sites.

More than **15 million African Americans** lived in communities with one or more uncontrolled toxic waste sites.

More than **8 million Hispanics** lived in communities with one or more uncontrolled toxic waste sites.

**Approximately half of all Asian/Pacific Islanders and American Indians** lived in communities with uncontrolled toxic waste sites.

# Past Literature On Media Coverage Of Environmental Racism Is Scarce...

*Race and Media Coverage of Hurricane Katrina: Analysis, Implications, and Future Research Questions* by **Samuel R. Sommers et al.**

## Key Findings

- Race was highly likely to be a factor in the biased descriptions of Black survivors of Hurricane Katrina

## Limitations

- Focused only on news coverage of Hurricane Katrina
- Limited dataset size

*How broadcast TV networks covered climate change in 2022* by **Ted Macdonald et al.**

## Key Findings

- People of color have been consistently underrepresented in TV Climate segments for the past 5 years

## Limitations

- Only considered proportion of guest appearances
- Not specific to environmental racism

# Approaching Environmental Racism Coverage In News Articles

Creating An Environmental Racism News Dataset

Analyzing Racial Biases In Environmental Racism News

Web Scrapping For News Articles

Manually label subset of articles

Train classical ML models and neural networks

Automate labeling of remaining news dataset

Analyze proportion of articles covering environmental racism

Sentiment Analysis

Word Embedding Analysis

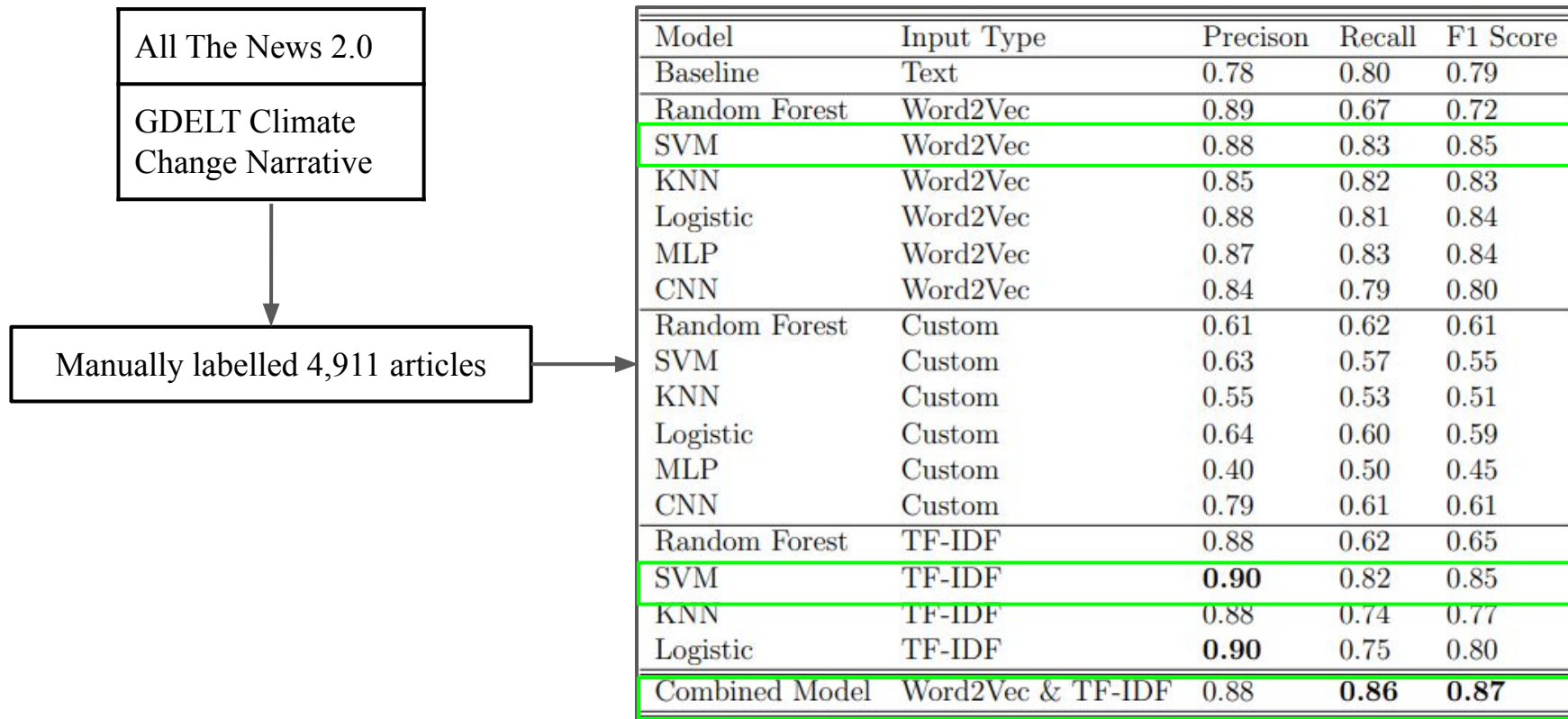
# Data Description

News Datasets	
All The News 2.0	<ul style="list-style-type: none"><li>• Generic news dataset of 2,688,878 articles</li><li>• Collected and cleaned 1,447,502 articles</li></ul>
GDELT Climate Change Narrative	<ul style="list-style-type: none"><li>• Climate change specific dataset of 6,174,022 URLs</li><li>• Scraped and cleaned 1,862,811 articles</li></ul>

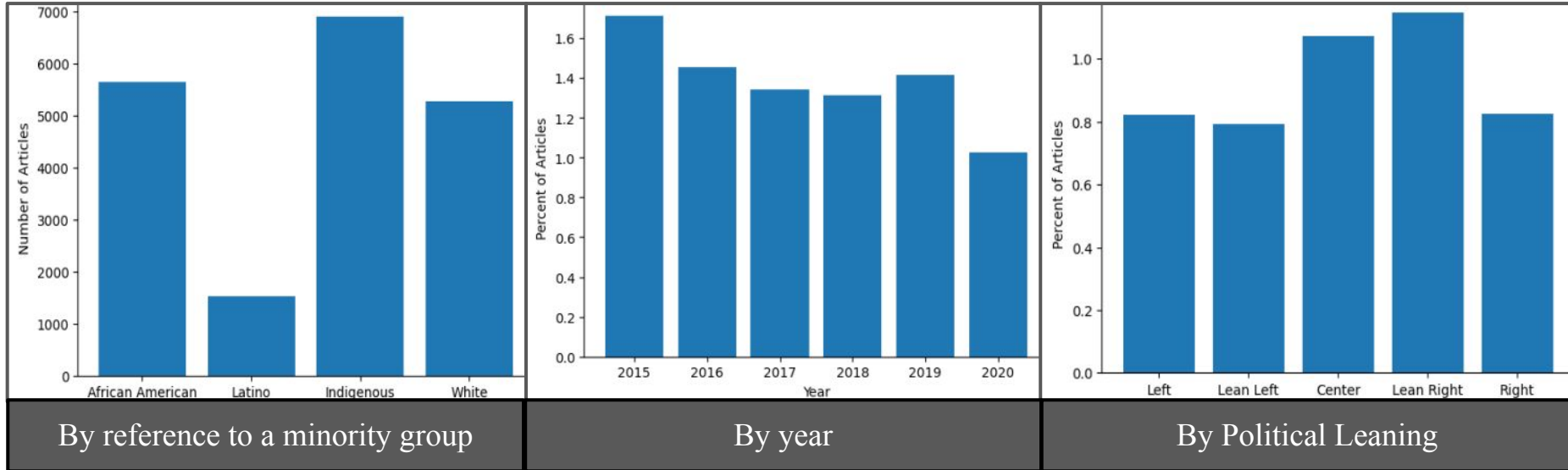
  

Media Bias Dataset	
AllSides Media Bias Dataset	<ul style="list-style-type: none"><li>• Political bias ratings for 900 news media outlets</li><li>• Match URL domains to assign articles a political leaning</li></ul>

# Classifying Environmental Racism Articles



# Environmental Racism News Dataset



**By year, the proportion of articles that cover environmental racism is approximately the same**

**Latinos are significantly underrepresented** in articles about environmental racism

The **proportion of articles that cover cases of environmental racism is the highest for news sites with moderate and right leaning political affiliations**

# Methodology

## Sentiment Analysis

- NRC Lexicon scores words on eight basic emotions (anger, fear, anticipation, trust, surprise, sadness, joy, and disgust) and two sentiments (positive and negative)
- Compare environmental racism corpus with All The News 2.0 (general news corpus)

## Hypothesis Testing

- Apply Welch's ANOVA and compare p values to test for statistically significant differences between groups



# Methodology

## Word Embedding Analysis

- Word2Vec models trained on environmental racism corpus learn word vectors
- Cosine similarities between word vectors serve as measure of semantic similarity

Race Keywords

Black, Latino, Indigenous, White

Stereotype Keywords

Low Status, High Threat

## Hypothesis Testing

- Apply Welch's ANOVA and compare p values to test for statistically significant differences between groups
- If Welch's ANOVA finds statistically significant differences between groups, apply Games-Howell test for pairwise differences and compare p values to find which pairs of groups are statistically different

# Sentiment Analysis

Emotion	Compared to General Media
Fear	Greater mean sentiment score
Anger	Lower mean sentiment score
Trust	Lower mean sentiment score
Surprise	Lower mean sentiment score
Sadness	Lower mean sentiment score
Disgust	Greater mean sentiment score
Joy	Lower mean sentiment score
Anticipation	Lower mean sentiment score
Positive	Greater mean sentiment score
Negative	Greater mean sentiment score

# Word Embedding Analysis

Low Status	Environmental Racism	Comparisons By Political Leaning
Black	Higher bias towards minority	C, R > D
Latino	Higher bias towards minority	R > C > D
Indigenous	Lower bias towards minority	R, C > D

High Threat	Environmental Racism	Comparisons By Political Leaning
Black	Higher bias towards minority	R, C > D
Latino	Lower bias towards minority	C > R, D
Indigenous	Lower bias towards minority	R > C > D

# Conclusions

- **Latinos are significantly underrepresented** in articles about environmental racism
- Articles covering environmental racism are **more likely to evoke emotions of fear, disgust, and negativity**
- **African Americans are more likely to be associated with high threat stereotypes** in articles covering environmental racism
- **African Americans and Latinos are more likely to be associated with low status stereotypes** in articles covering environmental racism
- **Democratic leaning news sites have the lowest bias scores** across both stereotypes and all three minority groups