SCHOOL OF INFORMATION
UNIVERSITY OF MICHIGAN

Framing Social Movements on Social Media: *Unpacking Diagnostic, Prognostic, and Motivational Strategies*

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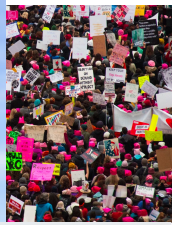
September 17th. Wall Street. Bring Tent.
http://bit.ly/re9ENL
#OCCUPYWALLSTREET

Reply Retweet Favorite



Alyssa Milano
@Alyssa_Milano
Follow

If you've been sexually harassed or assaulted write 'me too' as a reply to this tweet.

> Me too.
>
> Suggested by a friend: "If all the women who have been sexually harassed or assaulted wrote 'Me too.' as a status, we might give people a sense of the magnitude of the problem."

1:21 PM - 15 Oct 2017

24,725 Retweets **53,346** Likes

Human Rights Campaign
26 March 2013

Who's wearing red tomorrow? Show your support for marriage equality -- make your profile image red for tomorrow and check out www.hrc.org/StandForMarriage for more ways to get involved!

Like · Comment · Share 19,543 678 70,652 Shares

Social movements create meaning through framing

- “Schemata of interpretation” that help people “locate, perceive, identify, and label” new information [Goffman, 1974]
- Collective action frames are further "intended to mobilize potential adherents and constituents, to garner bystander support, and to demobilize antagonists” [Snow & Benford, 1988]
- Effective framing is important (perhaps, necessary) for social movement success [Della Porta & Diani, 2006]

Core Framing Tasks [Snow & Benford, 1988; Benford & Snow, 2000]

- **Diagnostic**: identifying social problems, their causes, and who to blame or hold responsible.
- **Prognostic**: articulating proposed solutions, plans of attack, and strategies for carrying out that plan
- **Motivational**: persuading people to participate in the movement through “calls to action”

How do people use **diagnostic**, **prognostic**, and **motivational** framing in Twitter messages related to social movements?

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Our analysis unpacks relationships between framing, sociocultural context, and discursive processes

Roadmap

Dataset &
Annotation

Roadmap

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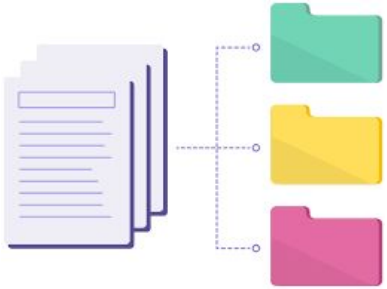
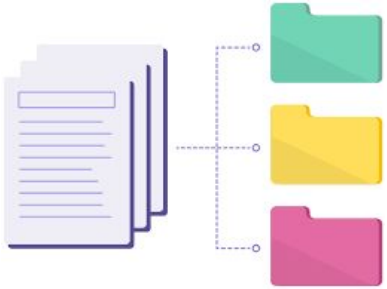
Annotation



Classification

Roadmap

Dataset & Annotation

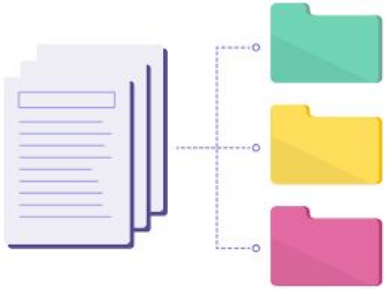


Classification

Analysis: Sociocultural Context

Roadmap

Dataset & Annotation



Classification

Analysis: Sociocultural Context

Analysis: Linguistic Properties

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Data Collection [from Bozarth & Budak, 2022]

- Decahose tweets from movements focused on 3 issues: ***guns***, ***immigration***, and ***LGBTQ rights*** from 2018-2019
  - Both progressive movements & conservative countermovements
  - 2 months for each issue (1 high protest activity, 1 average level)

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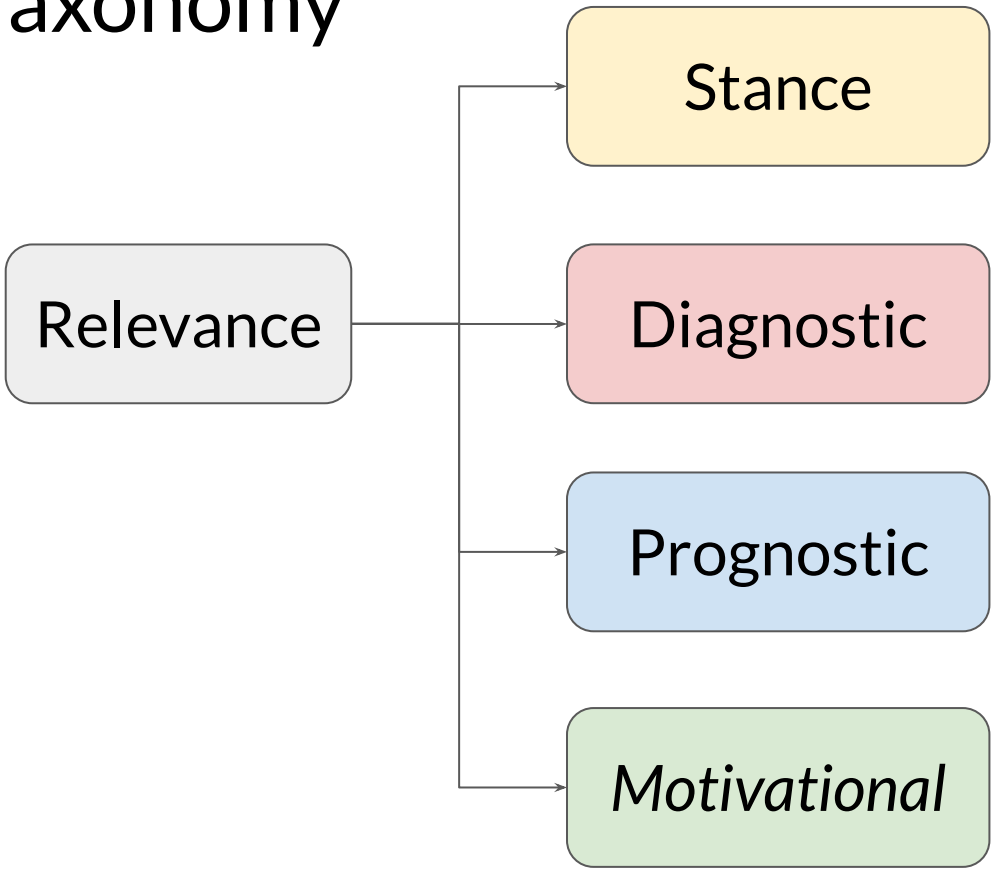
  - 822K for guns, 763K for immigration, 268K for LGBTQ

Guns

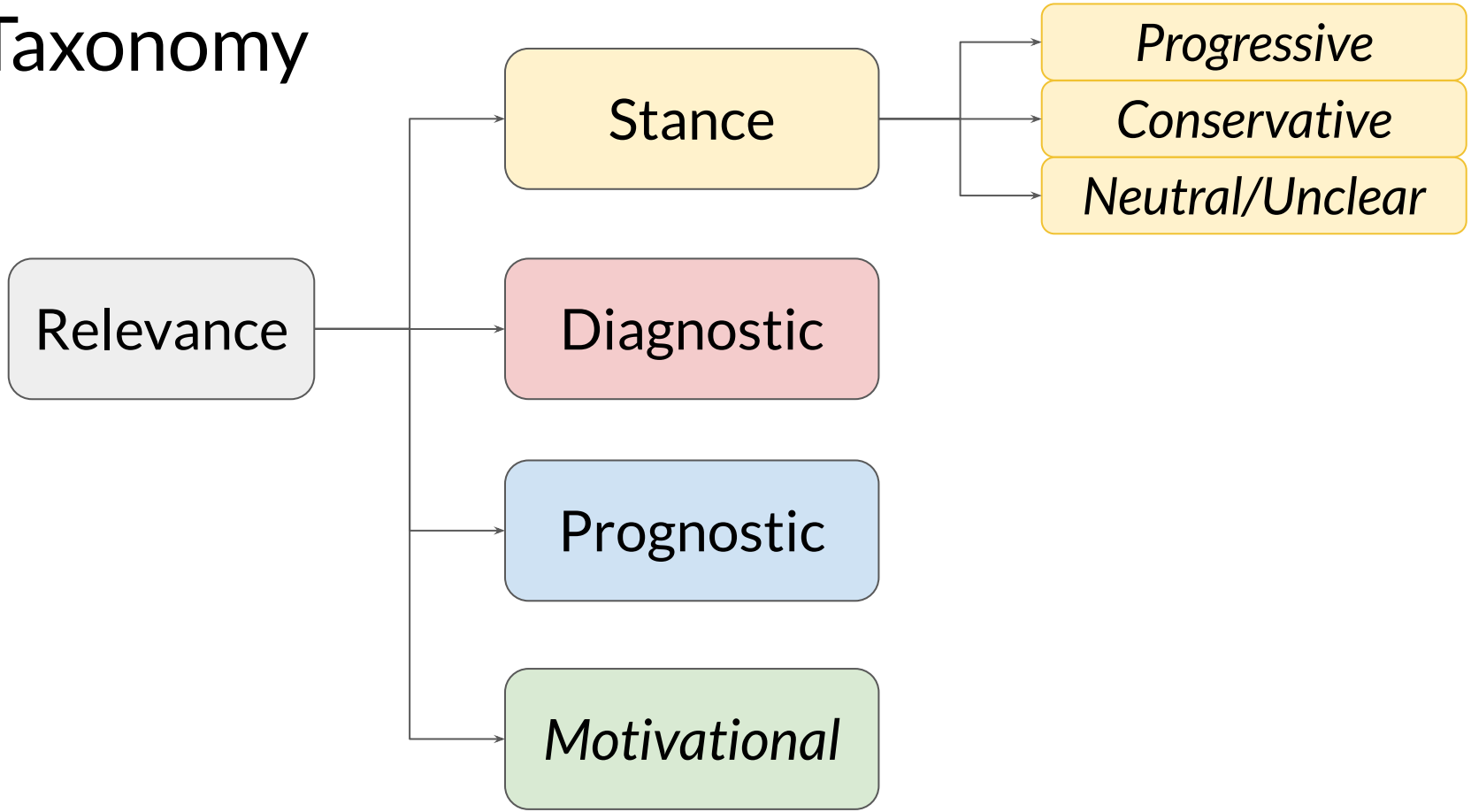
Immigration

LGBTQ

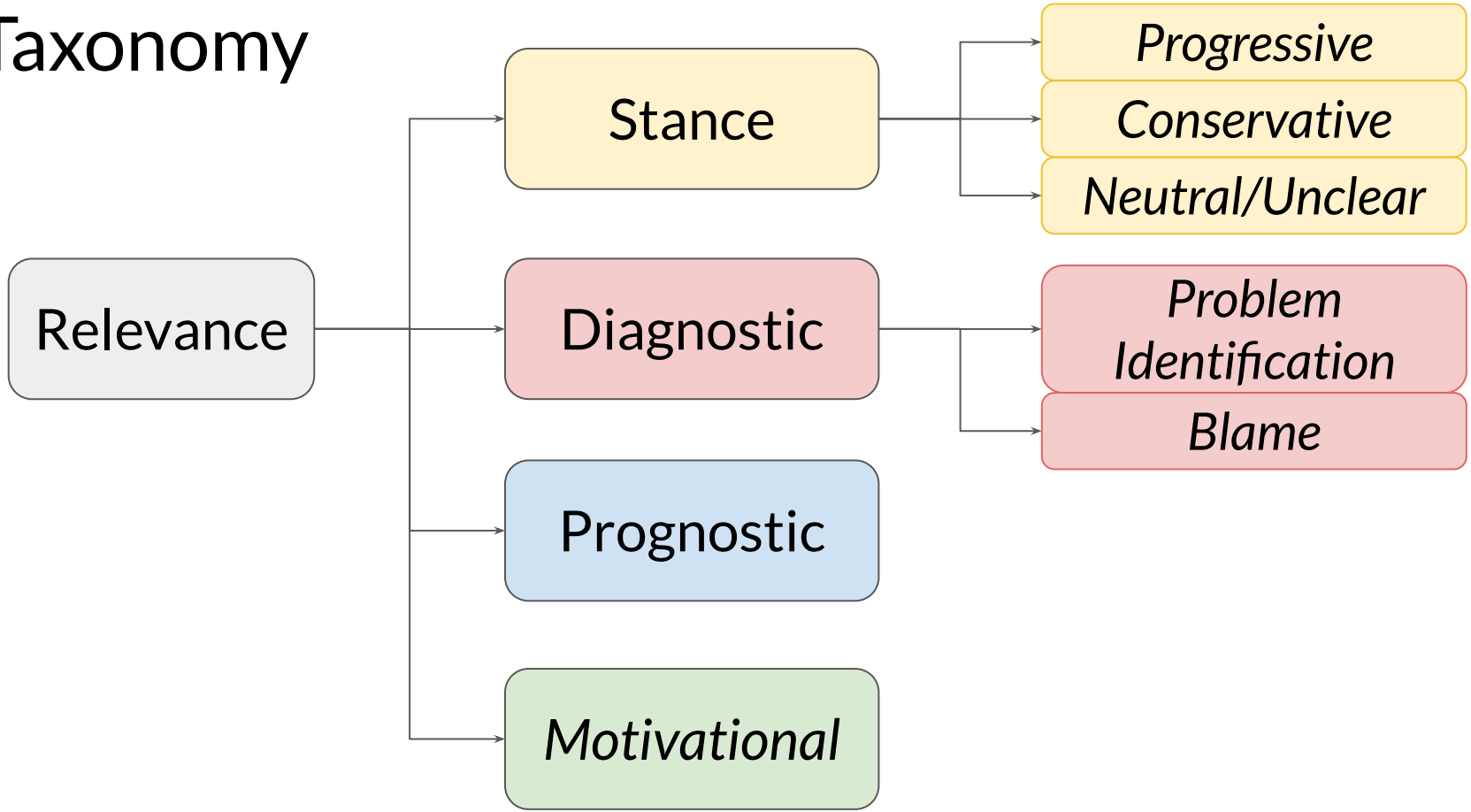
Taxonomy



Taxonomy


Relevance
Stance
Progressive
Conservative
Neutral/Unclear
Diagnostic
Prognostic
Motivational

Taxonomy


Relevance
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Problem Identification
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Prognostic
Motivational

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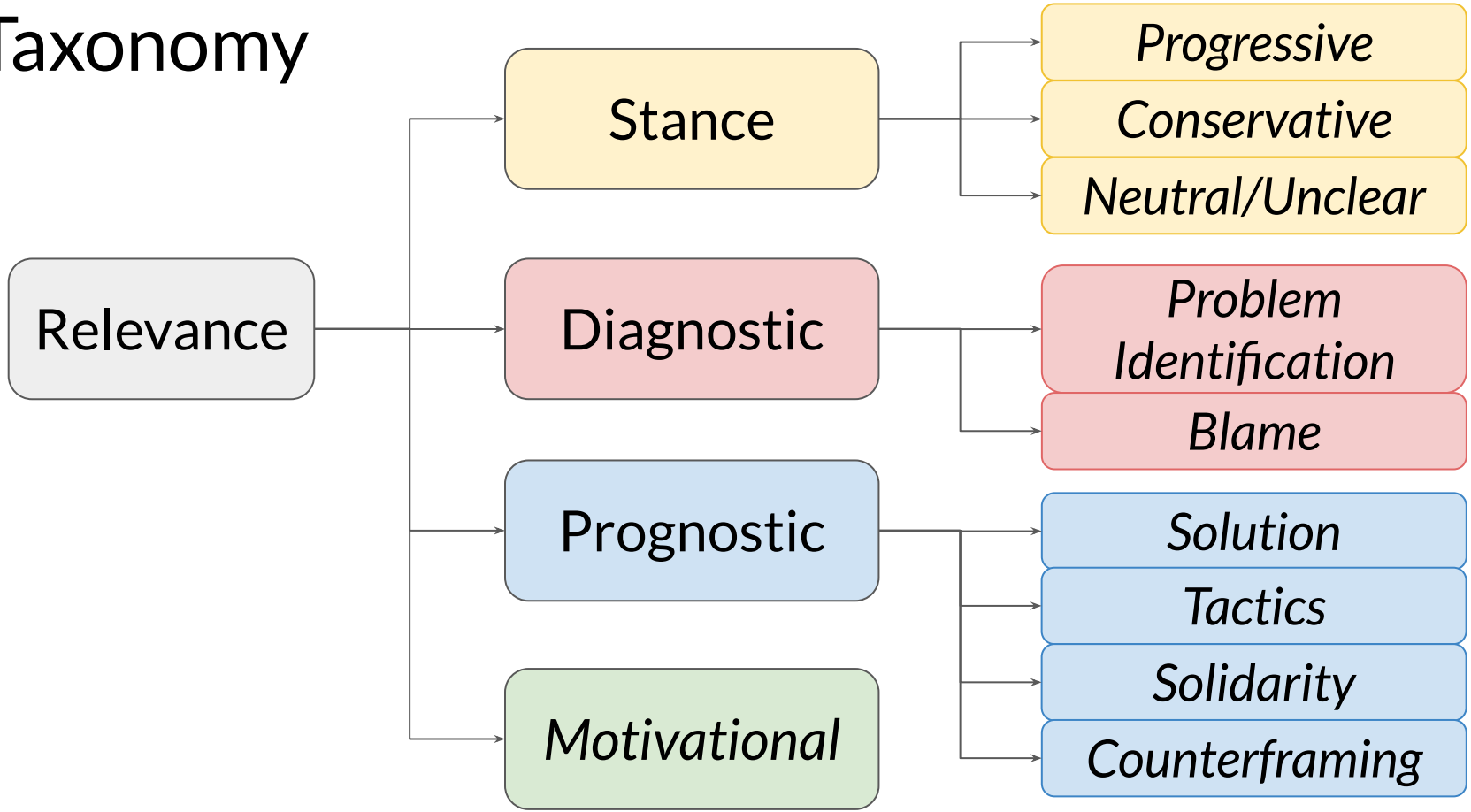
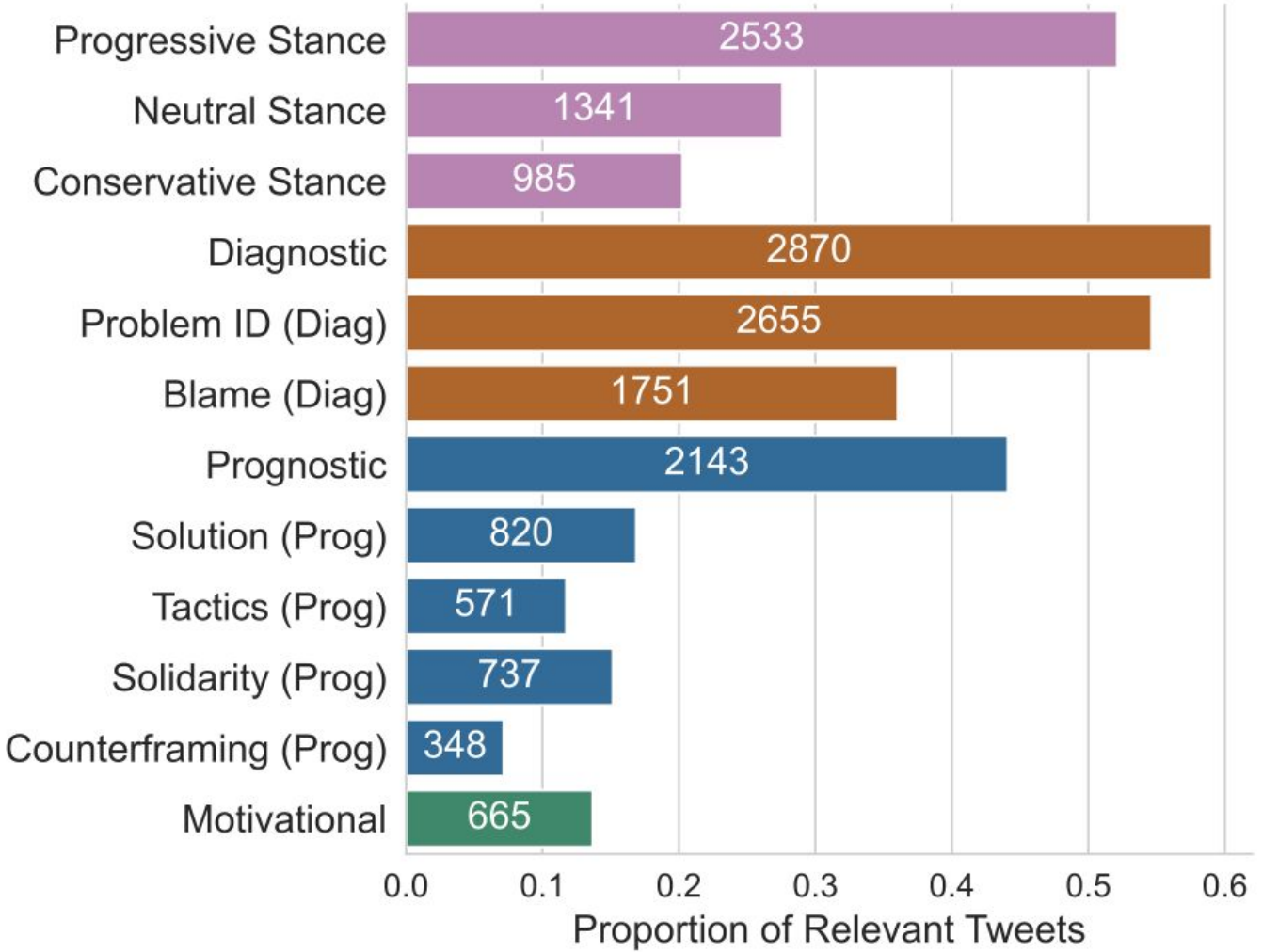

Relevance
Stance
Progressive
Conservative
Neutral/Unclear
Diagnostic
Problem Identification
Blame
Prognostic
Solution
Tactics
Solidarity
Counterframing
Motivational

Annotation Procedure

- Preliminary codebook based on theory & initial 150 tweets
- Annotator Training
  - 2 annotators independently labeled 150 tweets, evenly split between issues and activity periods.
  - All disagreements resolved via consensus-coding
  - Sufficient agreement reached after 5 rounds (Krippendorff $\alpha \geq .7$)
- Annotators independently coded remaining data
- **6,000 tweets** in labeled dataset, evenly split between movements and activity periods
- **4,859 (81%)** coded as *relevant*, labeled for stance & frames

Labeled Data Statistics



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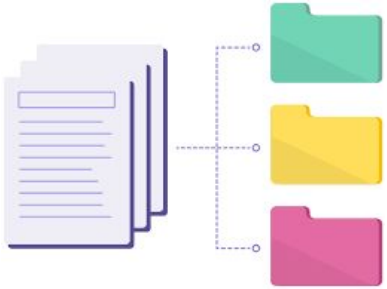
Dataset & Annotation

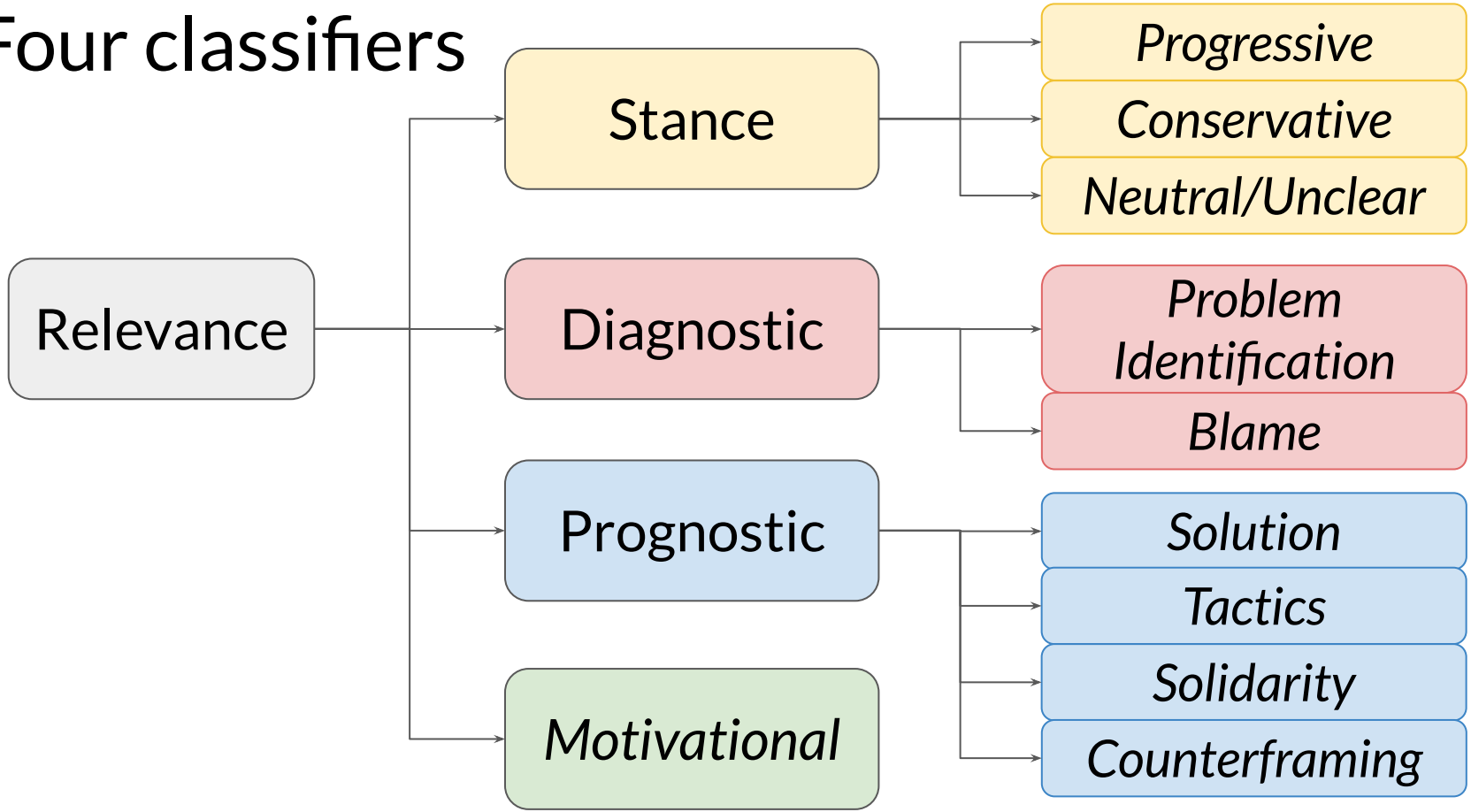


Classification

Analysis: Sociocultural Context

Analysis: Linguistic Properties

Four classifiers



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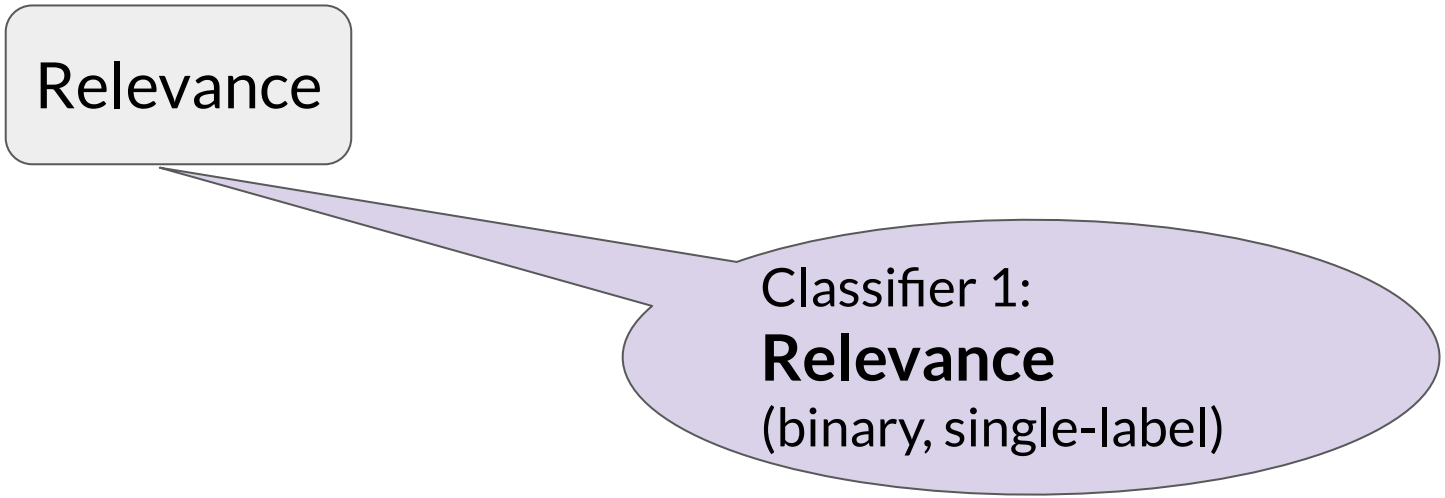

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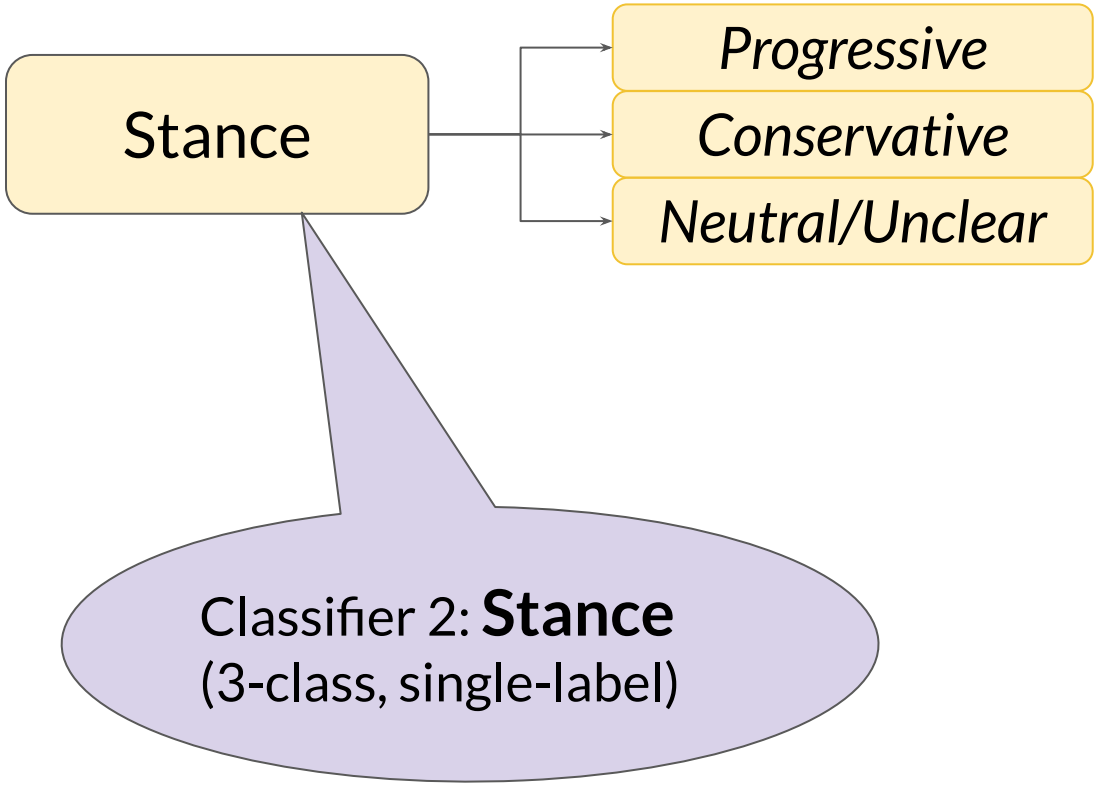

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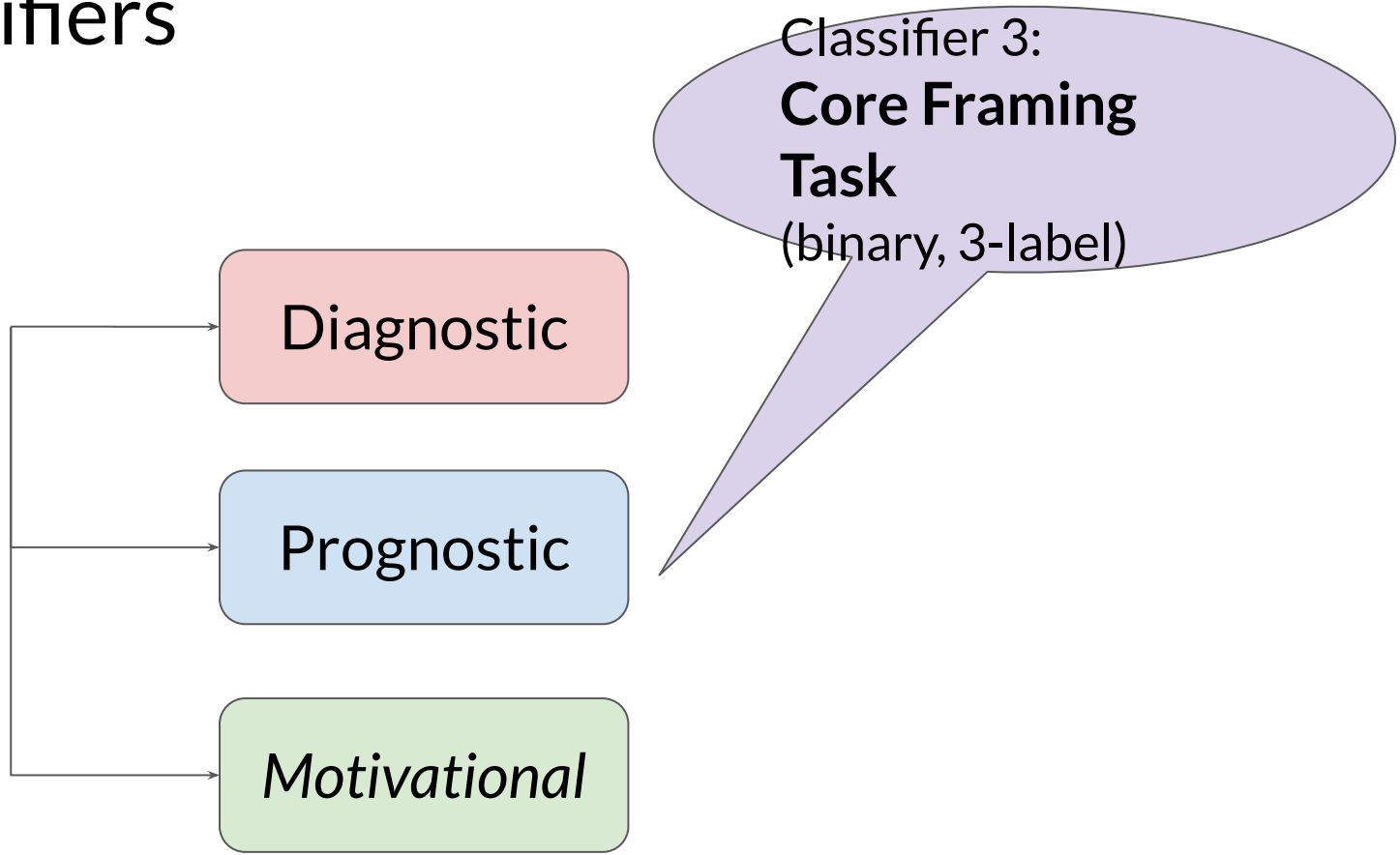


Four classifiers

Classifier 4:
Frame Elements
Categories we coded for
(binary, 7-label)

Motivational

Problem Identification

Blame

Solution

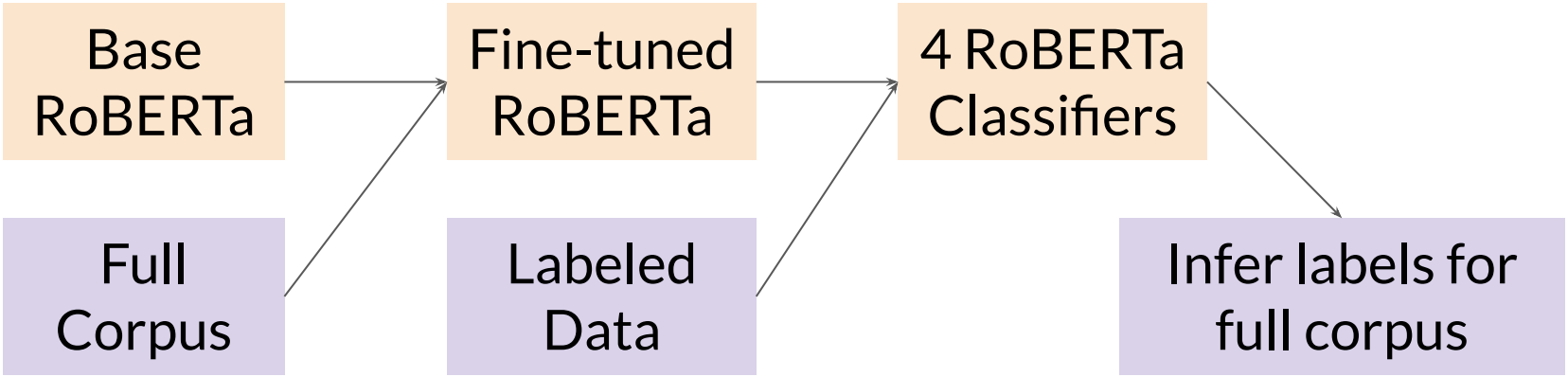
Tactics

Solidarity

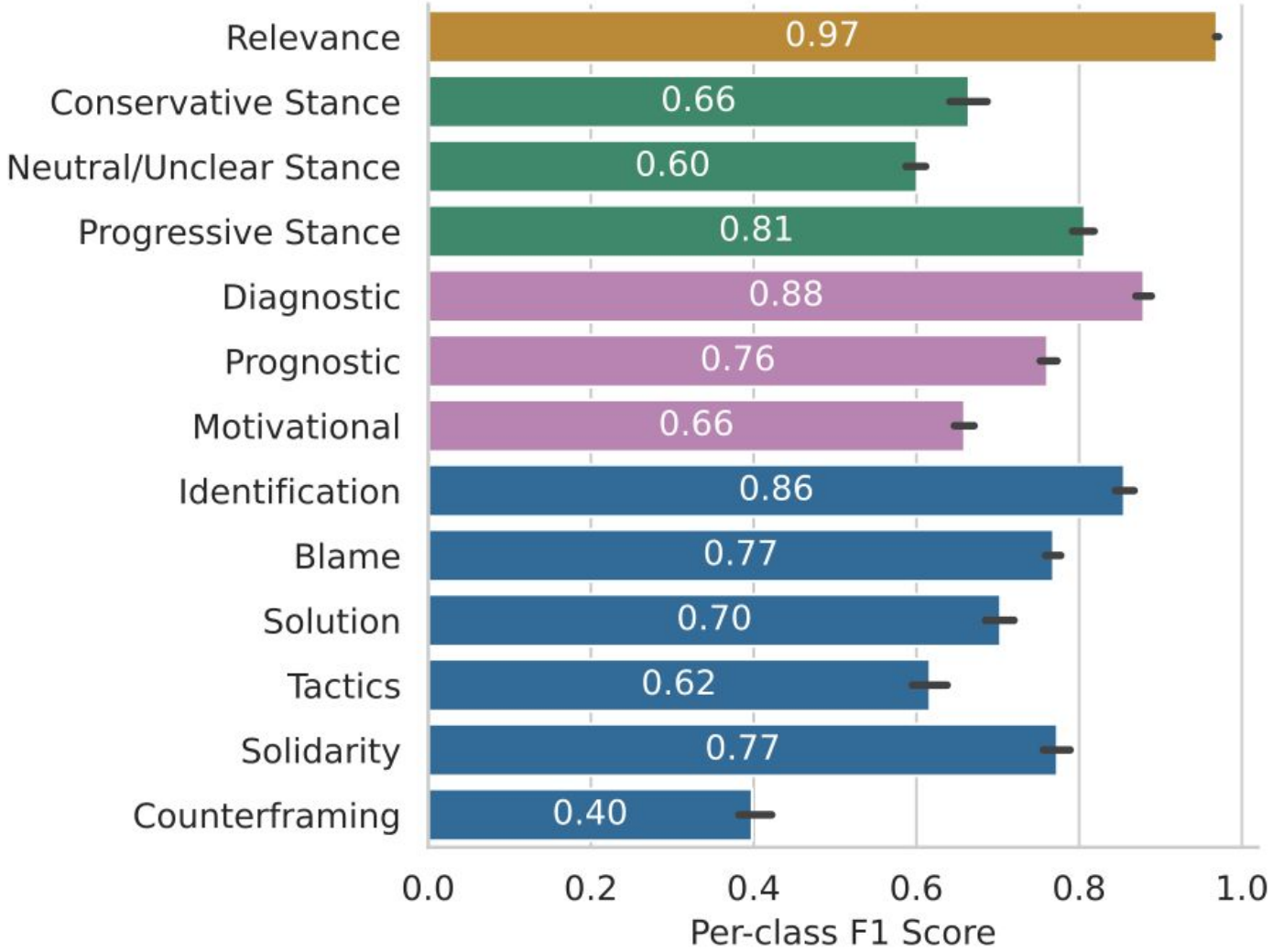
Counterframing

Model Setup

- Fine-tuned RoBERTa [Liu et al., 2019] on full corpus to better recognize linguistic patterns in social movement tweets
- Trained movement-specific and combined models
- 80% train, 20% test, 5-fold cross-validation



Model Results



Roadmap

Dataset & Annotation

Classification

Analysis: Sociocultural Context

Analysis: Linguistic Properties

Sociocultural Dimensions of Frame Variation

- Movements are situated in time and space
  - Cross-movement diffusion and variation [Carroll & Ratner, 1996]
  - Movement/countermovement frame contests [Stewart et al., 2017]
  - Relationship with offline collective action [Ellingson, 1995]
- Diverse roles and relationships within movements
  - Stakeholder roles (news media, SMOs) [Earl, 2015; Hunt & Gruszczynski, 2023]
  - Target Audiences [Jasper & Poulsen, 1995]
  - Modes of interaction on social media [Garimella et al., 2016]

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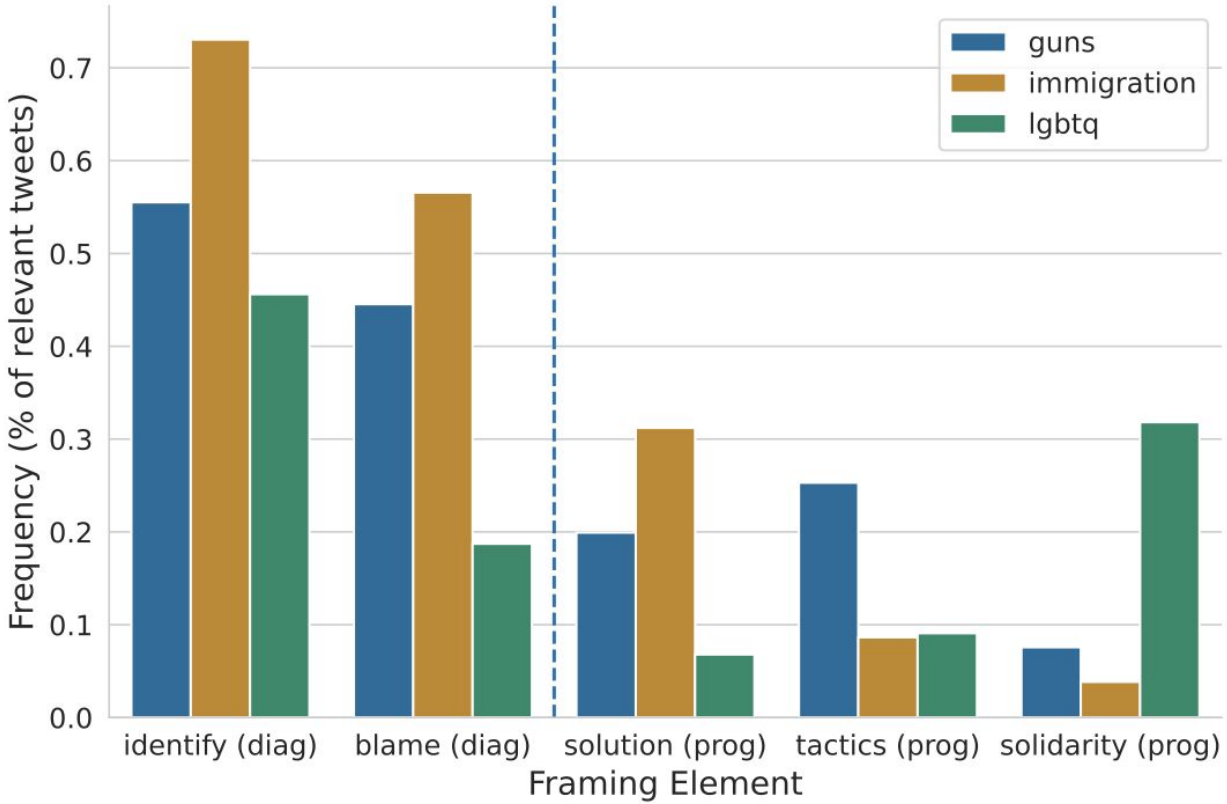
Analysis 1: How does attention to each core framing task vary across social and cultural contexts?

Movements attend to different framing elements

- *Immigration*: diagnostic, solution
- *Guns*: tactics
- *LGBTQ*: solidarity

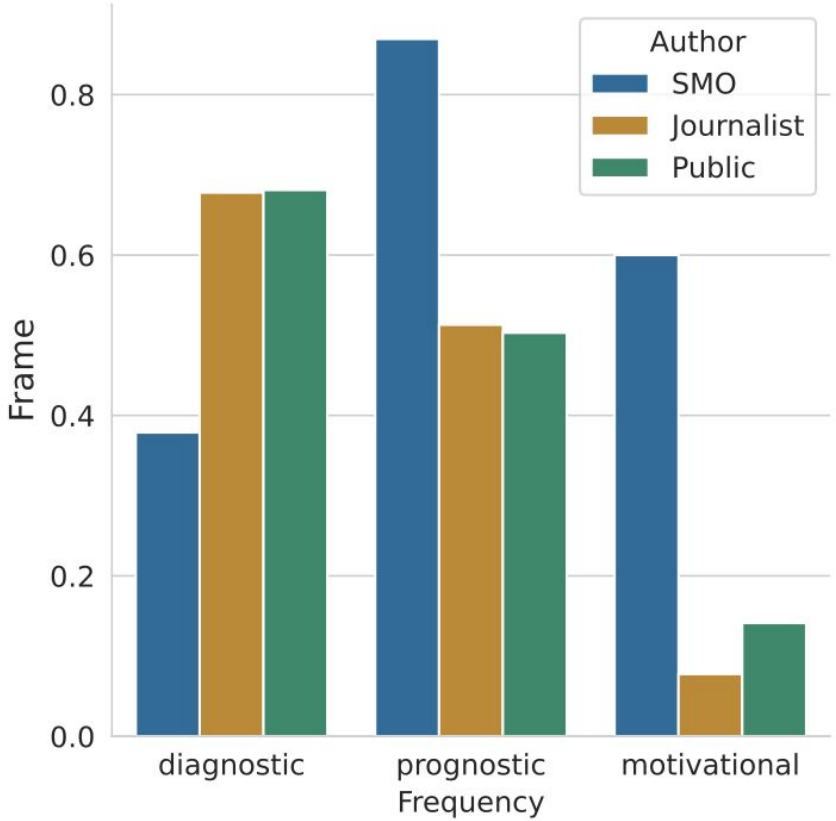
Remains unclear if patterns are stable across time or specific to particular months of data



Core framing tasks across stakeholder groups

- Labeled authors as journalists, social movement organizations (SMOs), or others (public)
- Out of **1.48M** relevant tweets:
- **4,218** relevant tweets from journalists, using existing lists of journalist accounts [Tauberg, 2022; Gotfredsen, 2023]
- **5,817** relevant tweets from SMOs retrieved from *organizer* field of CCC database & Twitter Search API [Bozarth & Budak, 2022]

More **prognostic** & **motivational** framing for SMOs



- Are **SMOs** relevant in the digital age [Earl, 2015]?
- Pattern suggests **SMOs** play a unique role
- **Journalists** and **public** are remarkably similar

Roadmap

Dataset & Annotation

Classification

Analysis: Sociocultural Context

Analysis: Linguistic Properties

Identifying linguistic properties in frames

- Log-odds with informative Dirichlet prior for each core framing task within each movement [Monroe et al, 2008]
  - Features statistically overrepresented in one corpus relative to another
- Features: tokens, adjectives, verbs, subject-verb-object
  - SpaCy for tokenization, part-of-speech tagging, and dependency parsing
- Selected top 15 of each feature for qualitative analysis
- Today: a preview of commonalities across movements

Analysis 2: What linguistic features constitute framing tasks?

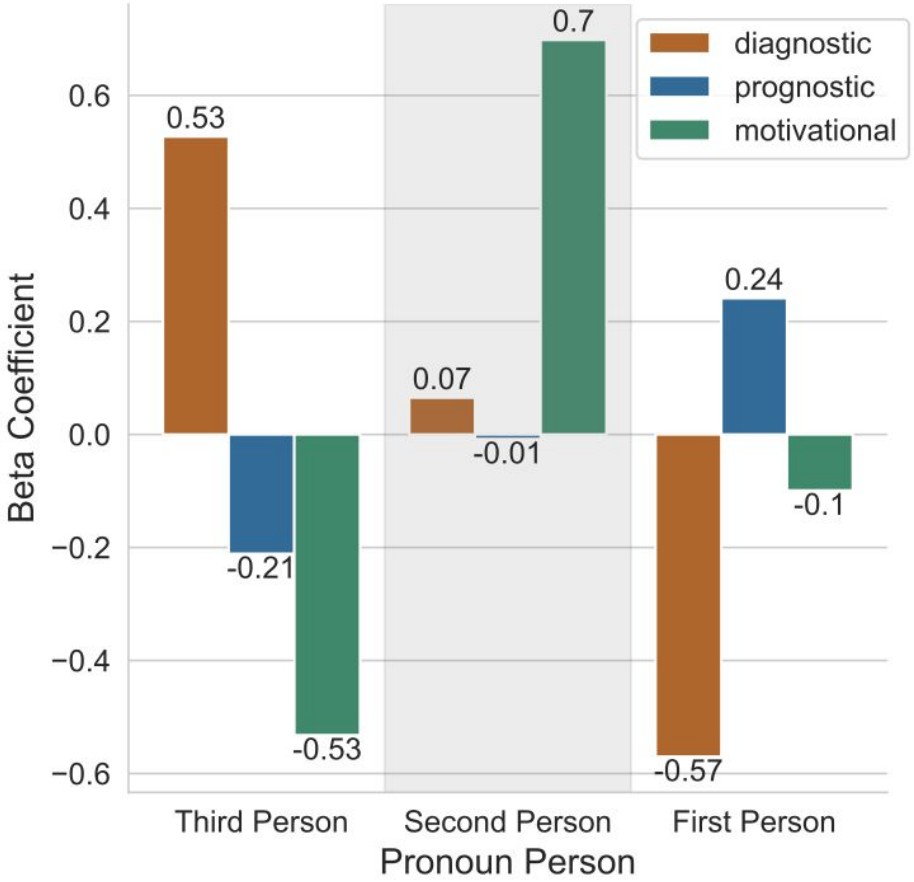
Pronoun person suggestive of boundary framing

From log-odds:

- **Diagnostic**: 3rd Person (*they, their*)
- **Prognostic**: 1st Person (*we, our*)
- **Motivational**: 2nd Person (*you, your*)

From logistic regression model:

- Relationship between a pronoun's person and framing tasks in the tweet?
- Fixed Effects: core framing tasks and movements (as controls)
- DVs: pronoun person



Moral considerations across movements & frames

- **Diagnostic**: adjectives that expressing moral disapproval
  - Guns: *bad*, *sick*, *disgusting*
  - Immigration: *inhumane*, *cruel*, *evil*, *sick*, *wrong*, *disgusting*
  - LGBTQ: *bad*, *wrong*, *disgusting*, *hateful*

- **Prognostic**: deontic modals of obligation, necessity, intent
  - *Need*, *should*, *will*, *must* are among the top 15 verbs most associated with tweets with prognostic framing across all three movements.

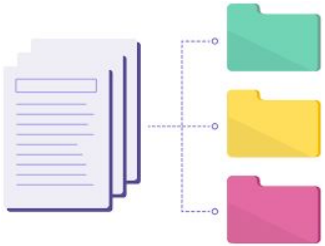
Analysis of verbs and their arguments

- **Violence** and **neglect** are commonly identified problems
  - Violence: *Kill*, *attack*, *destroy*, *murder*
  - Neglect: *fail*, *ignore*, *lie*, *refuse*, *care*, *deny*, *defend*

- All movements engage in motivational framing by:
  - Emphasizing the **necessity** of the movement (*need*, *do_something*)
  - Encouraging readers to **join** the movement (*join*, *join_today*, *join_us*)
  - Pass/support **legislation** (*pass_legislation*, *support_bill*, *tell_congress*)

Framing Social Movements on Social Media: *Unpacking Diagnostic, Prognostic, and Motivational Strategies*

Dataset & Annotation



Classification

Analysis: Sociocultural Context

Analysis: Linguistic Properties

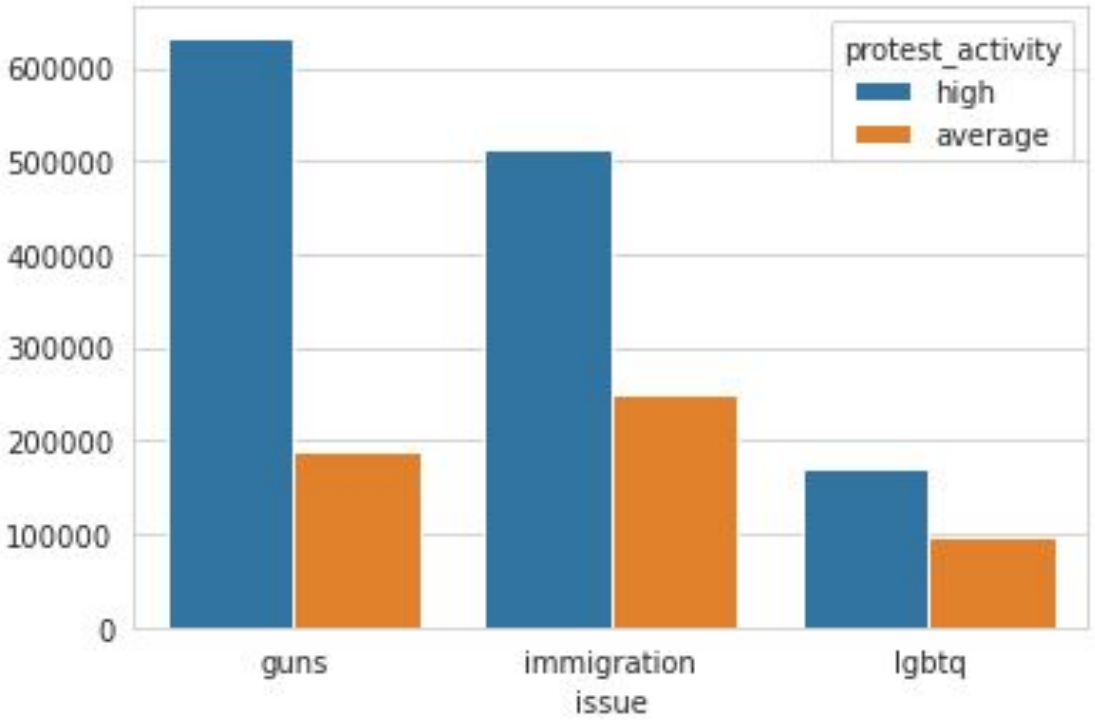
Thank you!

Contact: juliame@umich.edu

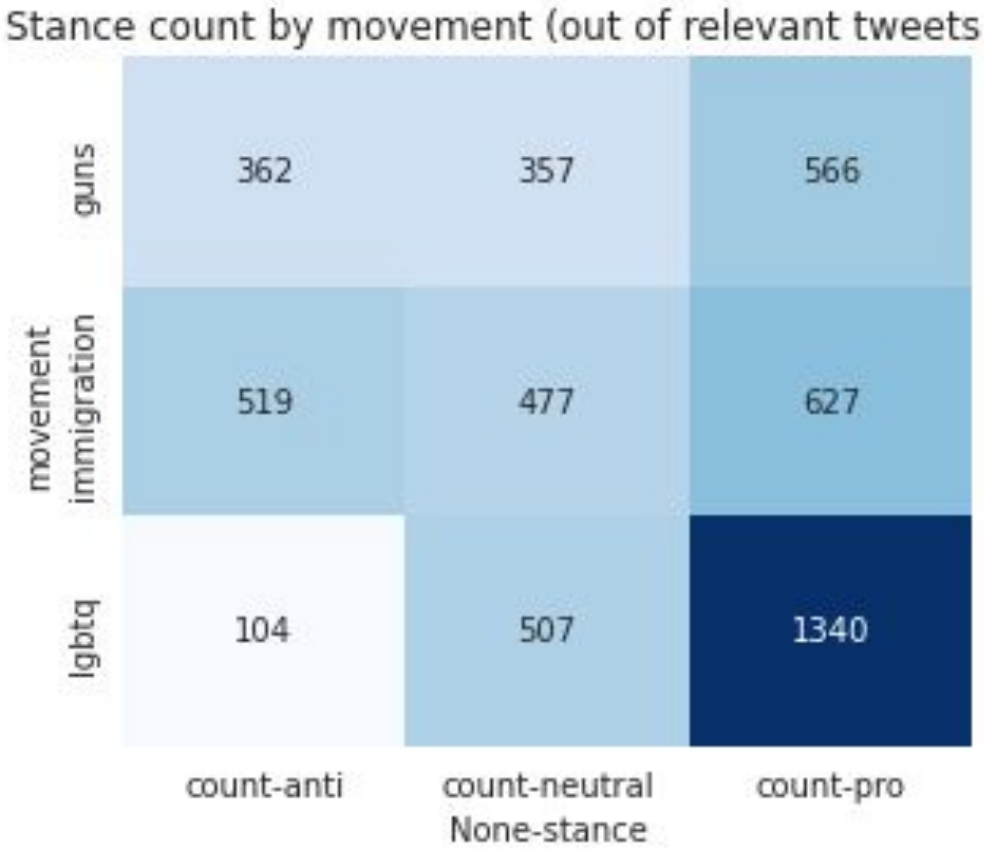
Extra Slides

Full Dataset Statistics

- 1.85M tweets total
- 822K for guns
- 763K for immigration
- 268K for LGBTQ



Stance Distribution



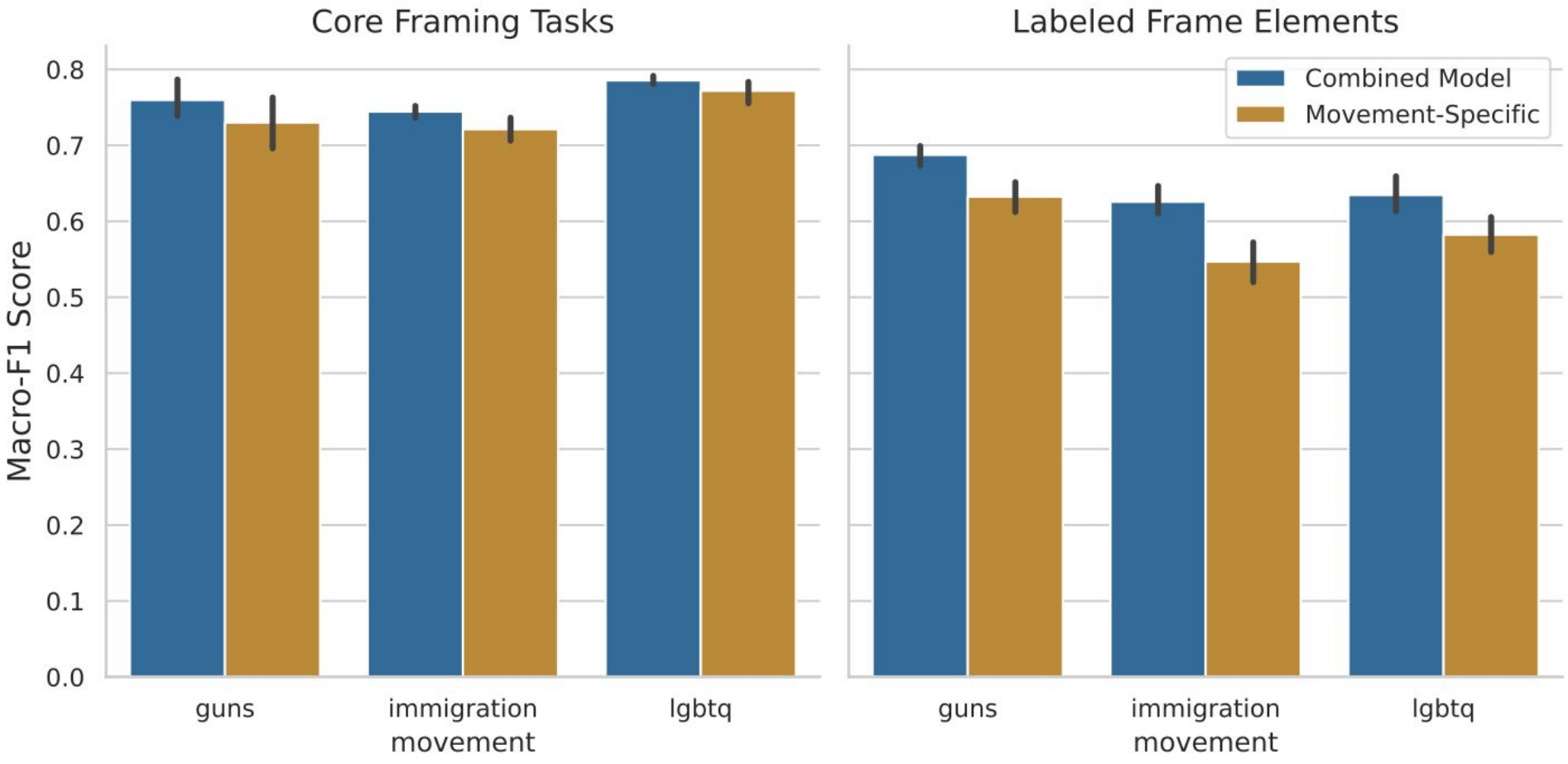
Pro = progressive side (gun control, pro-immigration, pro-LGBTQ)

Anti = conservative side (gun rights, anti-immigration, anti-LGBTQ

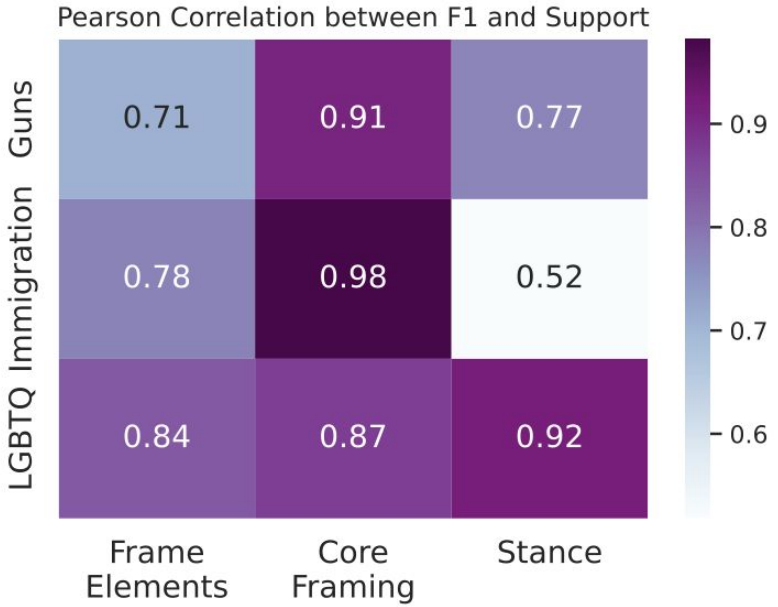
Frame frequency in annotated dataset

Task	Count	Proportion of total
relevance	4859	0.810
diagnostic	2870	0.478
identify	2655	0.442
prognostic	2143	0.357
blame	1751	0.292
solution	820	0.137
solidarity	737	0.123
motivational	665	0.111
tactics	571	0.095
counter	348	0.058

Combined model outperforms movement-specific models

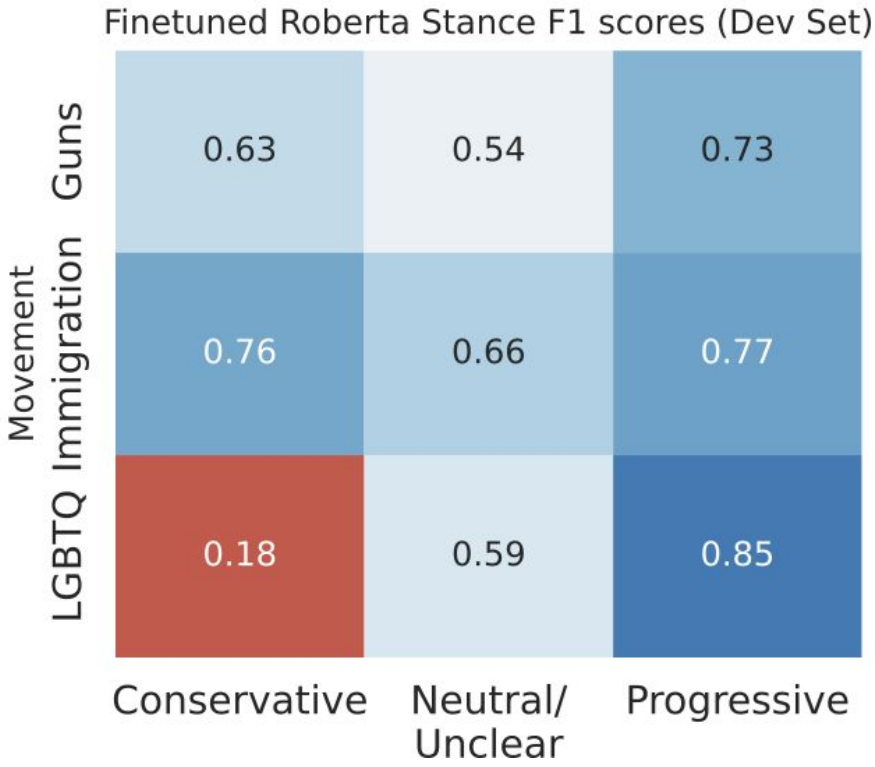


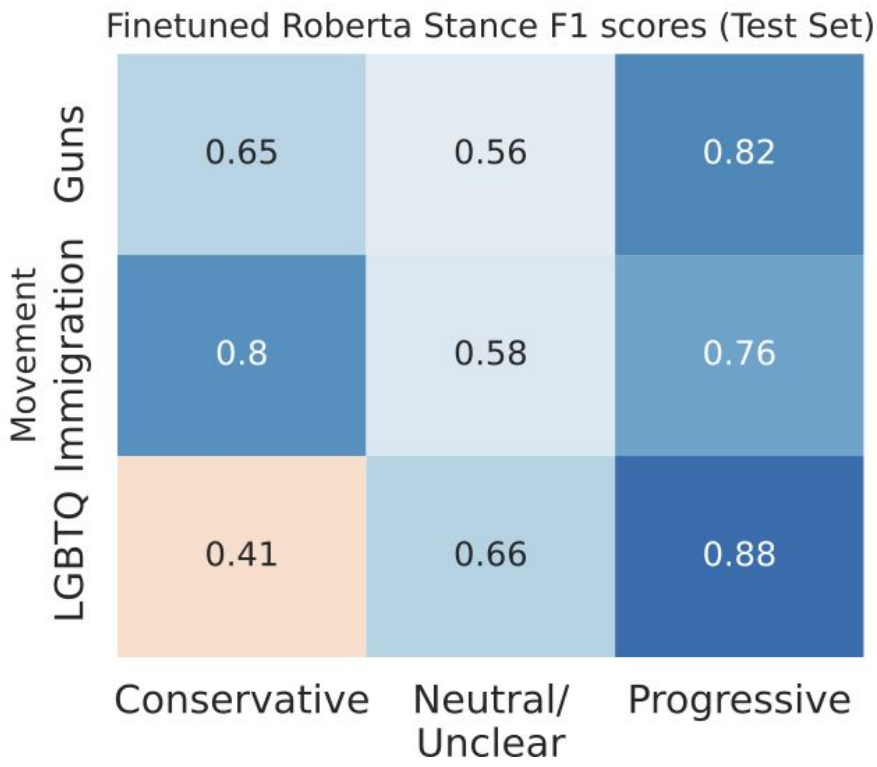
Data sparsity still hinders model performance

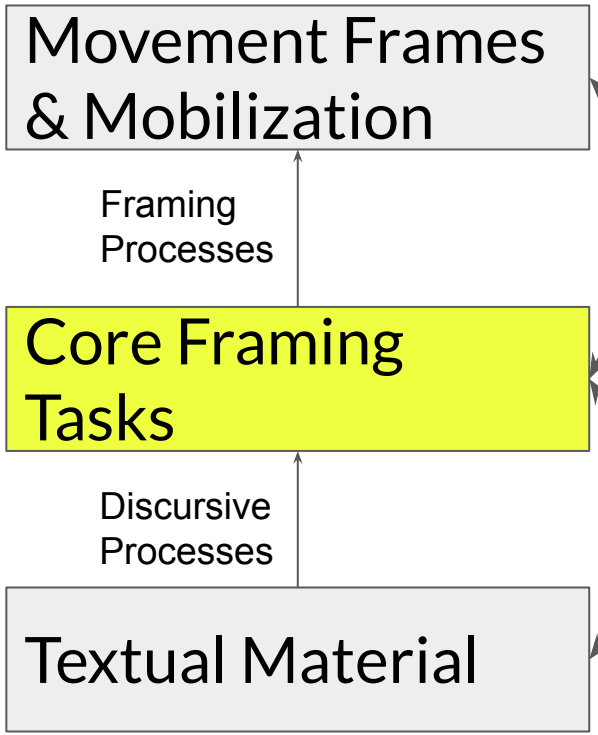


- Pearson correlation between F1 & Support: **0.78**
- Potential future work: data augmentation, active learning

Performance varies across movements (here: stance)



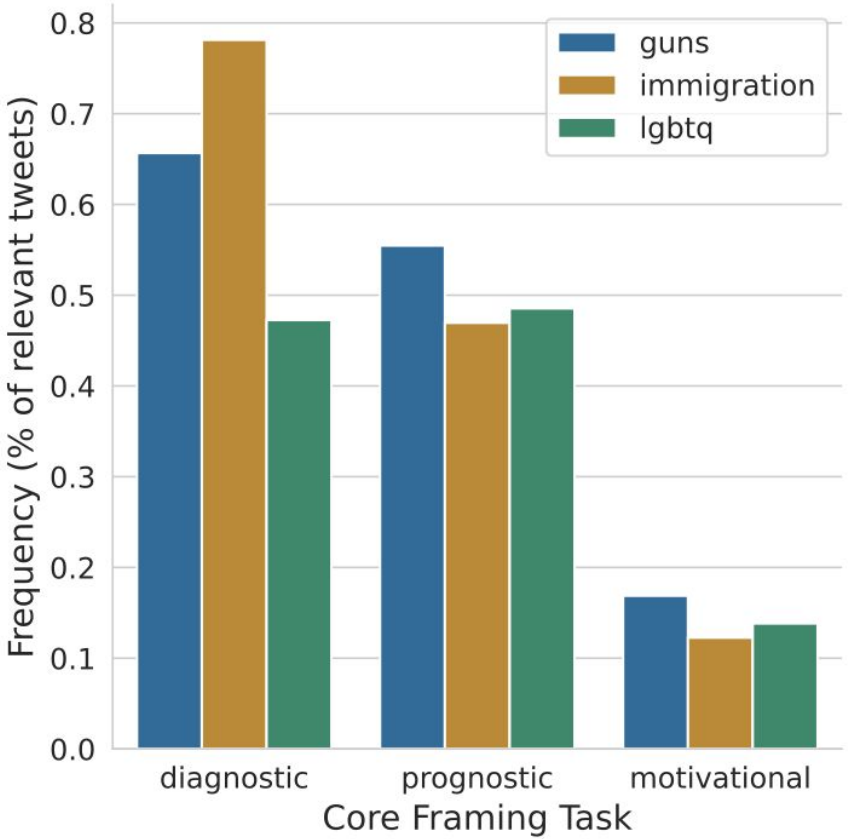




Analysis 1: How does attention to each core framing task vary across social and cultural contexts?

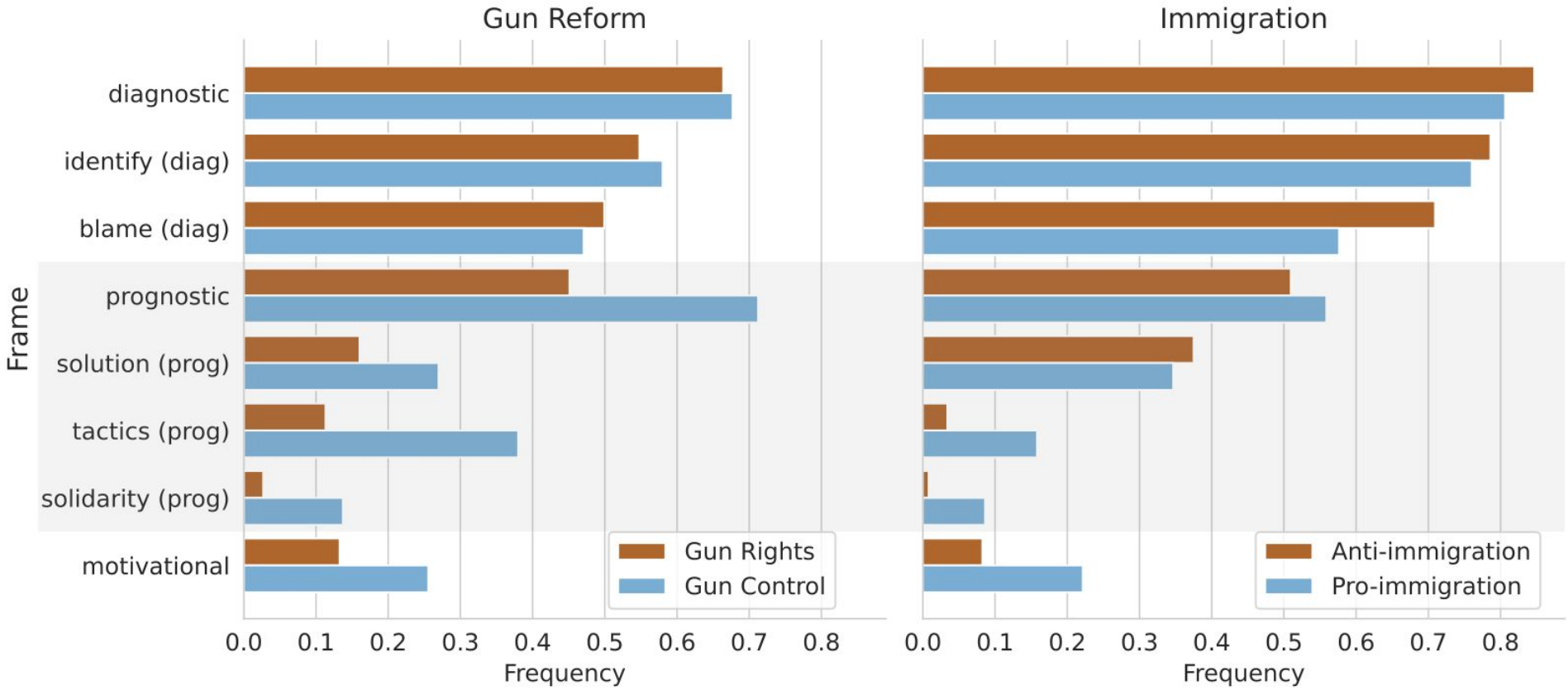
Analysis 2: What words, events, topics, and grammatical features constitute each framing task?

Cross-movement frame variation

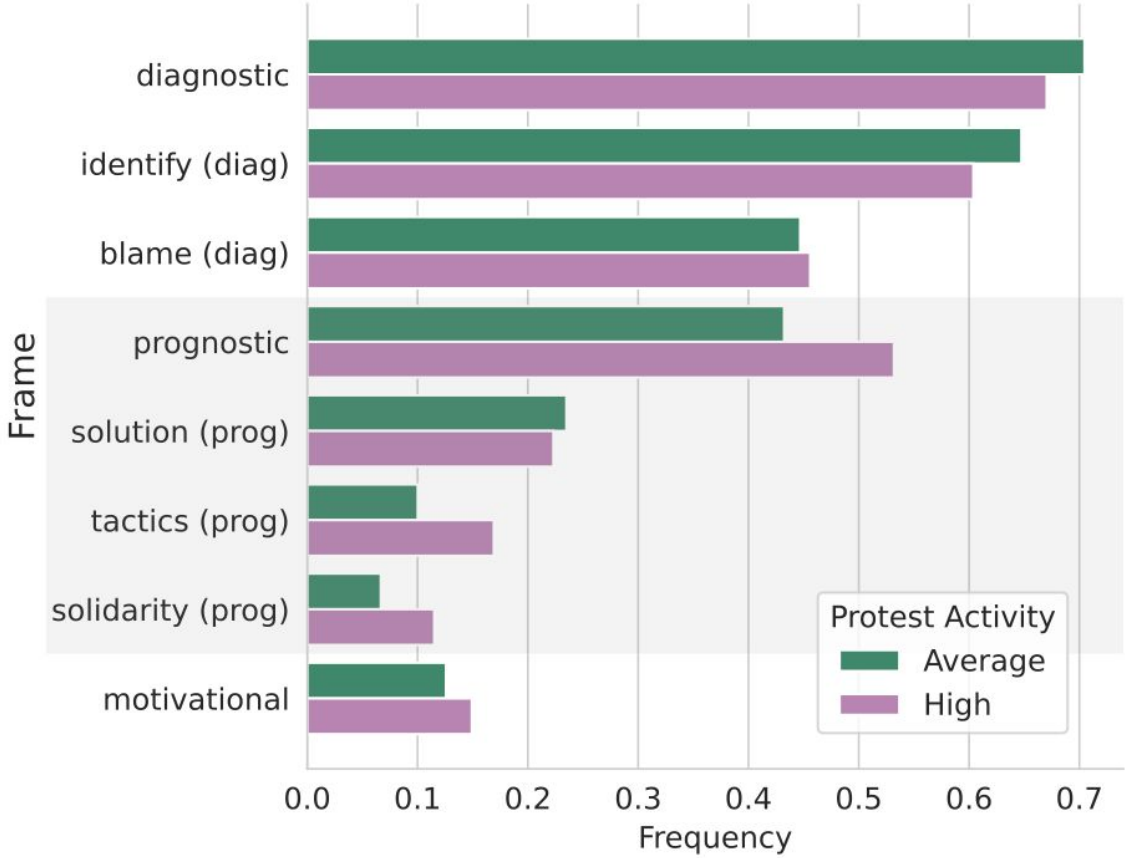


- *Immigration* uses the most diagnostic framing
- *Guns* uses the most prognostic framing

Movement/countermovement framing

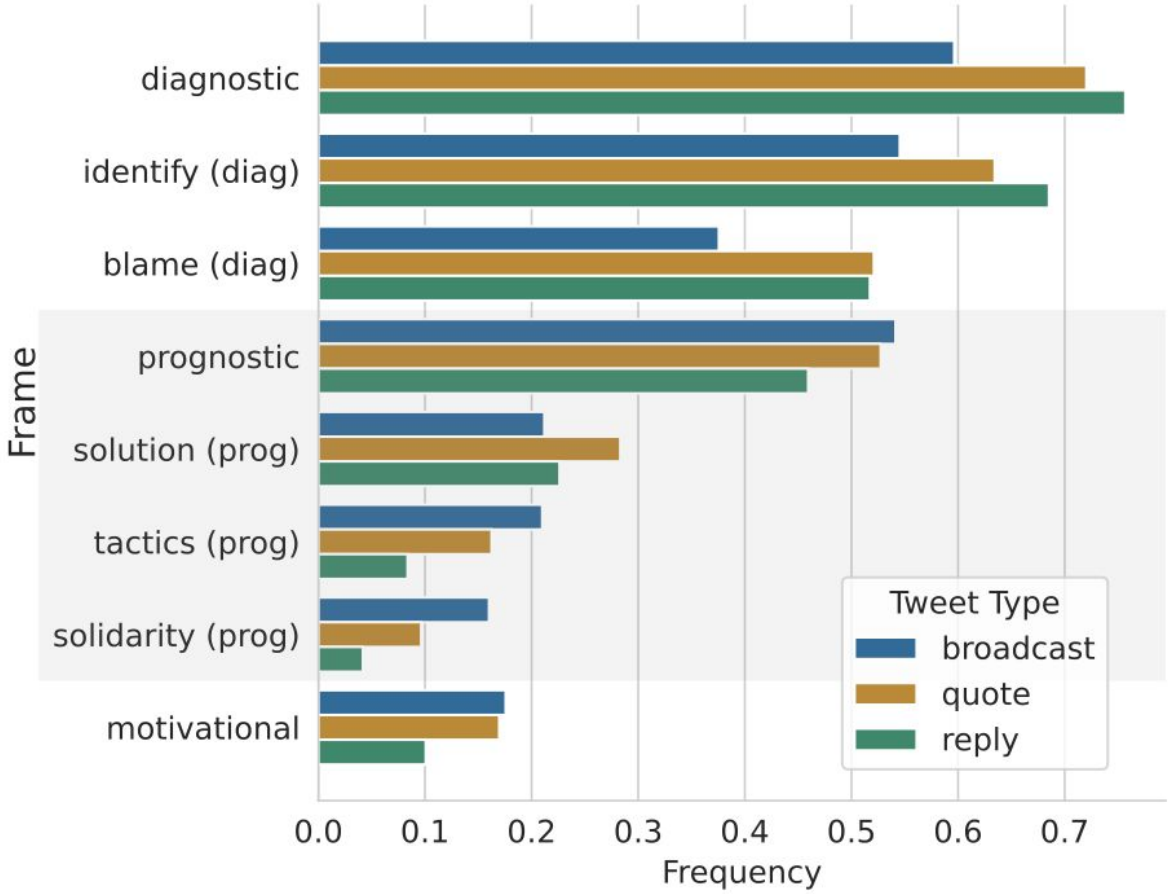


More **prognostic** and **motivational** in high-activity months



Framing strategies vary across modes of interaction

- Broadcasts, replies, quotes have different intended audiences and discursive goals
- Diagnostic: **quotes & replies**
- Prognostic & motivational: **broadcasts & quotes**
- Stable patterns across movements



More frame alignment for same ideology across movements vs movement/countermovement

- Entropy between distributions of labels (core framing tasks and frame elements) across movement and stance
- Monte Carlo estimation

	movement-stance	Entropy	ci
Shared ideology	Pro-immigration & Pro-gun control	0.0492	0.0002
Shared ideology	Anti-immigration & Anti-gun control	0.0517	0.0001
Shared issue	Pro-gun control & Anti-gun control	0.0898	0.0003
Shared issue	Pro-immigration & Anti-immigration	0.0972	0.0003

Lowest frame alignment between SMOs and others

Highest alignment journalists + others within movement

High alignment betw journalists across movements

movement-group	entropy	ci
(immigration-journalist, immigration-other)	0.024	0.004
(guns-journalist, guns-other)	0.051	0.005
(lgbtq-journalist, lgbtq-other)	0.062	0.007
(guns-journalist, lgbtq-journalist)	0.085	0.006
(immigration-journalist, lgbtq-journalist)	0.133	0.008
(immigration-journalist, guns-journalist)	0.144	0.008
(immigration-smo, lgbtq-smo)	0.153	0.008
(immigration-smo, immigration-other)	0.193	0.019
(lgbtq-smo, lgbtq-other)	0.194	0.013
(guns-smo, lgbtq-smo)	0.196	0.009
(lgbtq-smo, lgbtq-journalist)	0.213	0.013
(immigration-smo, immigration-journalist)	0.247	0.019
(immigration-smo, guns-smo)	0.457	0.021
(guns-smo, guns-journalist)	0.536	0.020
(guns-smo, guns-other)	0.593	0.022

Codebook Diagnostic Examples

Parkland survivor David Hogg to McCain: 'Why do you take so much money from the NRA?'

@realDonaldTrump You are traumatizing children and babies with YOUR policy. End your policy of ripping children and babies from their immigrant parents today and reunify all children and babies with their parents. Let parents out of jail. Seeking asylum not crime.

@KamalaHarris The racist socialist who only cares about illegals and not the American people! #WalkAway #MAGA #LiberalismIsAMentalDisease

It's called denial, these conservative families always deny their own children their right to exist as transgender or gay etc... We (LGBT+) all go through it; abuse, violence & even suicide is all too common, but we are all so engage in ourselves that we hardly feel the pain!

Codebook Prognostic Examples

The fight for trans equality must be recognised as a class struggle. #Trans people are frozen out of work – this will change only if we move beyond the vicious and obsessive arguments about the boundaries of identity

You know what US students can do besides getting shot and being afraid of getting shot ? They MARCH and plan to CHANGE and save people's LIVES. Bravo the Youth #MarchForOurLives

@PhillipLuttazi @RedWaveRising6 @NRA That is why we should stand up for their right to protect themselves, not just let them be victims.

Happy Pride Month!!!

Codebook Prognostic Examples

@GeorgeTakei Thank you deeply for telling your story on @TheLastWord with Lawrence! You are a hero to many! I'm so sorry for what this nation put you and your family through. #ReunificationNOW #FamiliesBelongTogether 💔😢 We love you, George!

This is how unspeakable bravery and heroism look. #MarchForOurLives @Emma4Change

@AdvocateProject @SenateDems @realDonaldTrump That is simply not true. There's mountains of evidence to the contrary. Just as the story was women were too emotional to serve - proven false- these stories that transgender persons are too emotional are a load of bullshit.

Codebook motivational examples

A new poll found that ~69% of Americans think that gun laws should be tightened. ~2% of Americans belong to the #NRA Who do politicians, particularly #Republicans, listen to? Who do they really represent? Let's change that. #Vote2018 #NoGOP #NoNRA

If you're in one of these states trying to plan an event in which CA state employees can participate, ask your state lawmakers to get rid of the laws that enable anti-LGBT discrimination. Even if you DON'T want CA state employees to come to your state, do that.

Please sign this petition for LGBT rights: <URL>

Common linguistic features of diagnostic framing

- Out-group focus with third-person: *they*, *their*, *is*, *are*
- Verbs naming violence
  - Kill, attack, destroy, etc. across all movements
  - More speech verbs for LGBTQ (*say*, *call*, *misgender*)
- Verbs suggest that neglecting a problem is a problem itself
  - Guns: *fail*, *ignore;* Immigration: *lie*, *refuse*, *care*; LGBTQ: *refuse*, *deny*, *defend*
- Adjectives that express moral disapproval
  - Guns: *bad*, *sick*, *disgusting*;
  - Immigration: *inhumane*, *cruel*, *evil*, *sick*, *wrong*, *disgusting*
  - LGBTQ: *bad*, *wrong*, *disgusting*, *hateful*

Prognostic framing linguistic features

- Modal verbs of obligation, necessity, and future intent
  - *Need*, *should*, *will*, *must* are among the verbs most associated with prognostic framing in all three categories
- Subject-verb and verb-object pairs suggest different solutions and tactics across movements
  - Guns: *sign_petition*, *find_march*, *join_today*, *ban_weapon*, *vote_them*, *pass_legistlation*
  - Immigration: *build_wall*, *stop_separation*, *elect_you*, *add_name*, *secure_border*
  - LGBTQ: *celebrate_pride*, *show_support*, *raise_awareness*

Motivational framing features

- All movements engage in motivational framing by
  - Emphasizing the necessity of the movement (*need*, *do_something*)
  - Encouraging readers to join the movement (*join*, *join_today*, *join_us*)
  - Calls to pass / support legislation (*pass_legislation*, *support_bill*, *tell_congress)*
- But many calls to action vary across movements
  - Voting for guns and immigration, not LGBTQ
  - Education for LGBTQ and immigration, not guns
  - Donation for LGBTQ and immigration, not guns