COVID-19 and Vaccines:
A Twitter Study About Qatar

QCRI
معهد قطر لبحوث الحوسبة
Qatar Computing Research Institute
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HAMAD BIN KHALIFA UNIVERSITY

Twitter Analysis

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Twitter Analysis

- **Data Collection**
- Automatic Analysis
  - Disinformation
  - Propagandistic Content
  - Use of Propaganda Techniques
  - Framing

Twitter Analysis: Data

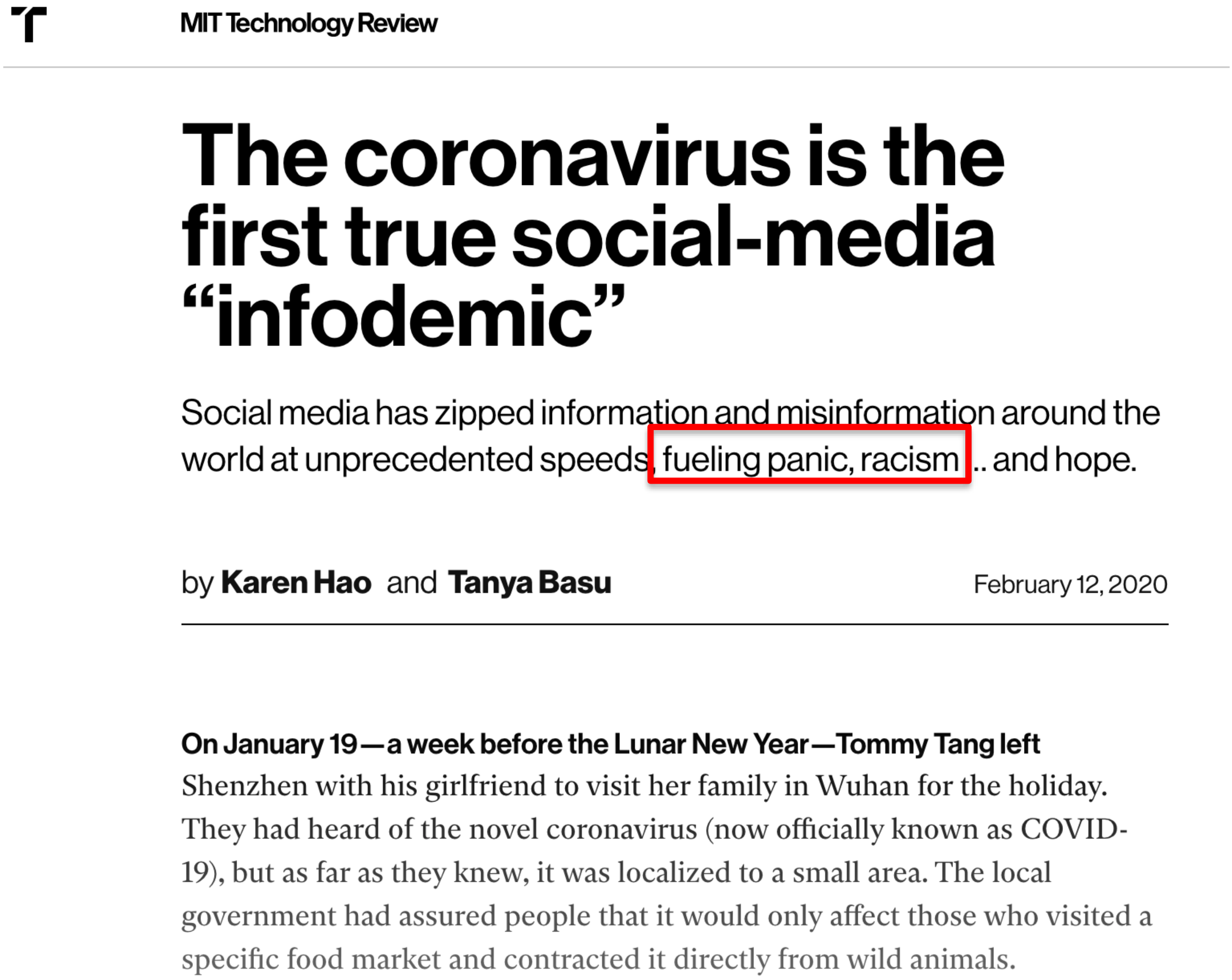
- We collected and analyzed tweets
  - about COVID-19 and vaccines
  - originating from Qatar
  - in English and Arabic
  - from two periods
    - February’2020 – August’2020
    - November’2020 – January’2021

Twitter Analysis

- Data Collection
- **Automatic Analysis**
  - Disinformation
  - Propagandistic Content
  - Use of Propaganda Techniques
  - Framing

“We’re not just fighting a pandemic;
we’re fighting an infodemic.”

World Health
Organization



MIT Technology Review

The coronavirus is the first true social-media “infodemic”

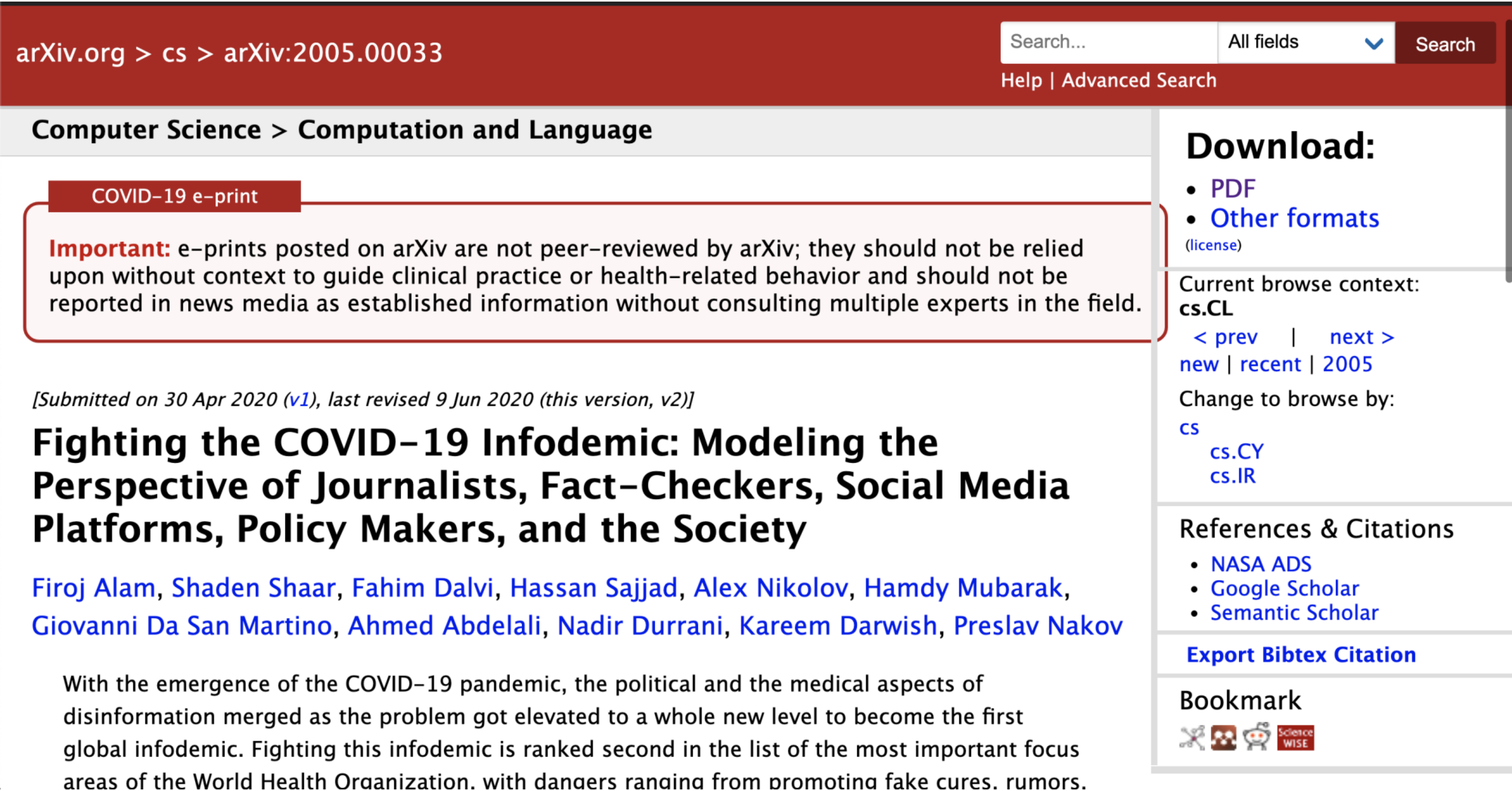
Social media has zipped information and misinformation around the world at unprecedented speeds, fueling panic, racism ... and hope.

by **Karen Hao** and **Tanya Basu** February 12, 2020

On January 19—a week before the Lunar New Year—Tommy Tang left Shenzhen with his girlfriend to visit her family in Wuhan for the holiday. They had heard of the novel coronavirus (now officially known as COVID-19), but as far as they knew, it was localized to a small area. The local government had assured people that it would only affect those who visited a specific food market and contracted it directly from wild animals.

https://www.technologyreview.com/2020/02/12/844851/the-coronavirus-is-the-first-true-social-media-infodemic/

https://arxiv.org/abs/2005.00033


arXiv.org > cs > arXiv:2005.00033
Search...
All fields
Search
Help | Advanced Search
Computer Science > Computation and Language
Download:
PDF
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Current browse context:
cs.CL
< prev | next >
new | recent | 2005
Change to browse by:
cs
cs.CY
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Export Bibtex Citation
Bookmark

COVID-19 e-print

Important: e-prints posted on arXiv are not peer-reviewed by arXiv; they should not be relied upon without context to guide clinical practice or health-related behavior and should not be reported in news media as established information without consulting multiple experts in the field.

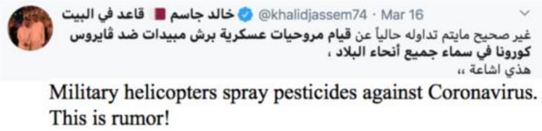
[Submitted on 30 Apr 2020 (v1), last revised 9 Jun 2020 (this version, v2)]

Fighting the COVID-19 Infodemic: Modeling the Perspective of Journalists, Fact-Checkers, Social Media Platforms, Policy Makers, and the Society

Firoj Alam, Shaden Shaar, Fahim Dalvi, Hassan Sajjad, Alex Nikolov, Hamdy Mubarak, Giovanni Da San Martino, Ahmed Abdelali, Nadir Durrani, Kareem Darwish, Preslav Nakov

With the emergence of the COVID-19 pandemic, the political and the medical aspects of disinformation merged as the problem got elevated to a whole new level to become the first global infodemic. Fighting this infodemic is ranked second in the list of the most important focus areas of the World Health Organization, with dangers ranging from promoting fake cures, rumors,

Fighting the COVID-19 Infodemic: Holistic Approach

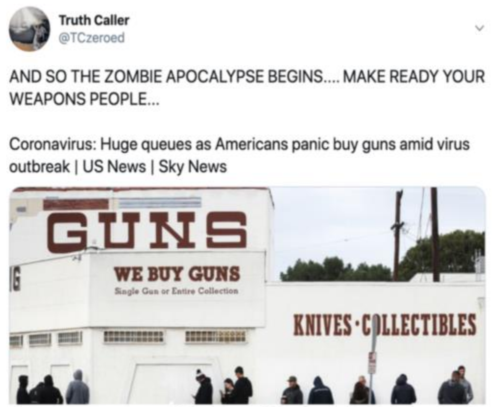


قاعد في البيت 🟥 خالد جاسم @khalidjassem74 · Mar 16

غير صحيح مايتم تداوله حالياً عن قيام مروحيات عسكرية برش مبيدات ضد ڤايروس كورونا في سماء جميع أنحاء البلاد ،
هذي اشاعة ،،

Military helicopters spray pesticides against Coronavirus. This is rumor!

(a) rumor in Arabic and English

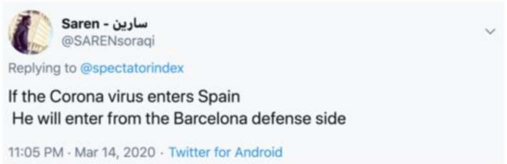


Truth Caller
@TCzeroed

AND SO THE ZOMBIE APOCALYPSE BEGINS.... MAKE READY YOUR WEAPONS PEOPLE...

Coronavirus: Huge queues as Americans panic buy guns amid virus outbreak | US News | Sky News

(b) spreading panic



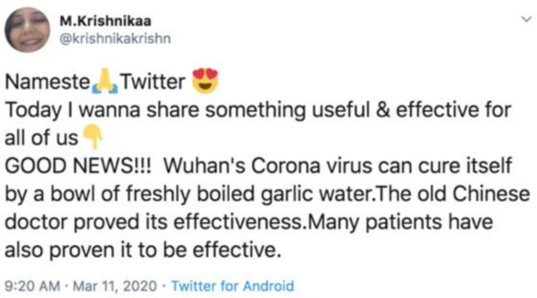
Saren - سارين
@SARENsoraqi

Replying to @spectatorindex

If the Corona virus enters Spain
He will enter from the Barcelona defense side

11:05 PM · Mar 14, 2020 · Twitter for Android

(c) joke

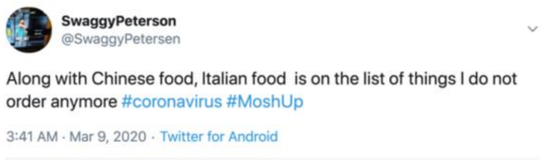


M.Krishnikaa
@krishnikakrishn

Nameste🙏Twitter 😍
Today I wanna share something useful & effective for all of us👇
GOOD NEWS!!! Wuhan's Corona virus can cure itself by a bowl of freshly boiled garlic water.The old Chinese doctor proved its effectiveness.Many patients have also proven it to be effective.

9:20 AM · Mar 11, 2020 · Twitter for Android

(d) bad cure

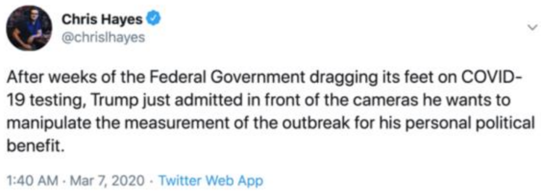


SwaggyPeterson
@SwaggyPetersen

Along with Chinese food, Italian food is on the list of things I do not order anymore #coronavirus #MoshUp

3:41 AM · Mar 9, 2020 · Twitter for Android

(e) xenophobic/racist/prejudices

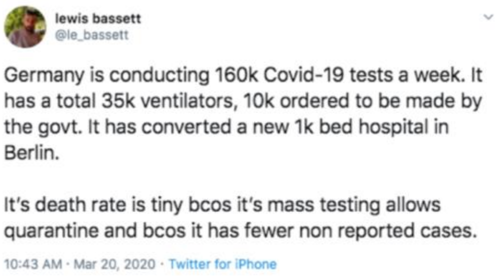


Chris Hayes
@chrislhayes

After weeks of the Federal Government dragging its feet on COVID-19 testing, Trump just admitted in front of the cameras he wants to manipulate the measurement of the outbreak for his personal political benefit.

1:40 AM · Mar 7, 2020 · Twitter Web App

(f) blaming/accusing the authorities



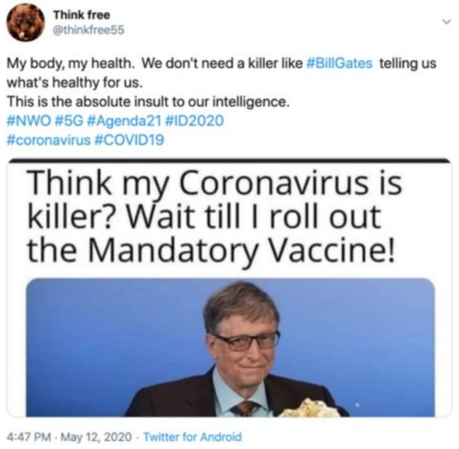
lewis bassett
@le_bassett

Germany is conducting 160k Covid-19 tests a week. It has a total 35k ventilators, 10k ordered to be made by the govt. It has converted a new 1k bed hospital in Berlin.

It's death rate is tiny bcos it's mass testing allows quarantine and bcos it has fewer non reported cases.

10:43 AM · Mar 20, 2020 · Twitter for iPhone

(g) advice/discussion of action taken



Think free
@thinkfree55

My body, my health. We don't need a killer like #BillGates telling us what's healthy for us.
This is the absolute insult to our intelligence.
#NWO #5G #Agenda21 #ID2020
#coronavirus #COVID19

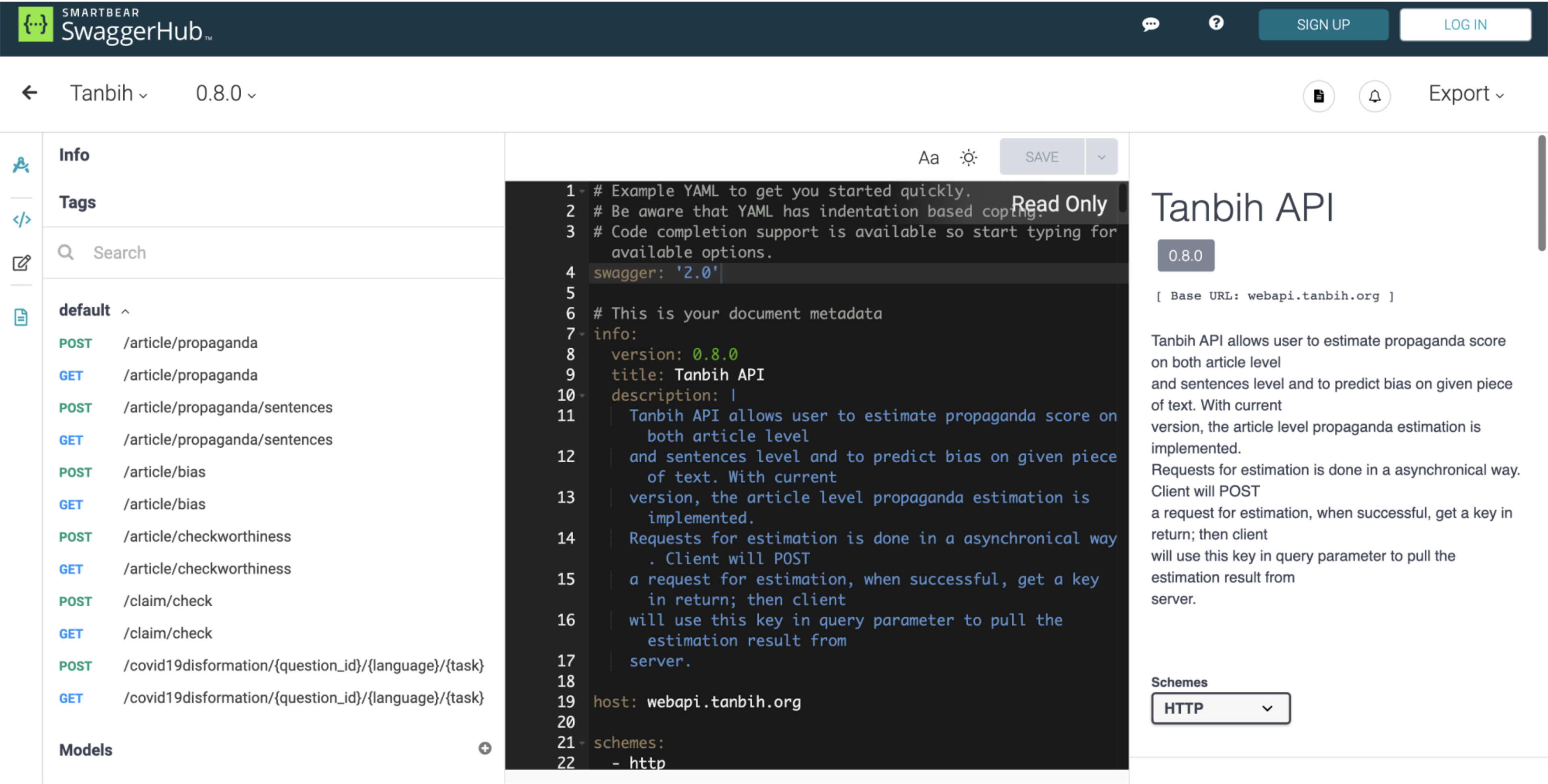
Think my Coronavirus is killer? Wait till I roll out the Mandatory Vaccine!

4:47 PM · May 12, 2020 · Twitter for Android

(h) conspiracies

ArXiv: *Fighting the COVID-19 Infodemic: Modeling the Perspective of Journalists, Fact-Checkers, Social Media Platforms, Policy Makers, and the Society.*
Firoj Alam, Shaden Shaar, Alex Nikolov, Hamdy Mubarak, Fahim Dalvi, Nadir Durrani, Hassan Sajjad, Giovanni Da San Martino, Ahmed Abdelali, Abdulaziz Al-Homaid, Kareem Darwish, Preslav Nakov

https://app.swaggerhub.com/apis/yifan2019/Tanbih/0.8.0#/



default

- POST /article/propaganda
- GET /article/propaganda
- POST /article/propaganda/sentences
- GET /article/propaganda/sentences
- POST /article/bias
- GET /article/bias
- POST /article/checkworthiness
- GET /article/checkworthiness
- POST /claim/check
- GET /claim/check
- POST /covid19disformation/{question_id}/{language}/{task}
- GET /covid19disformation/{question_id}/{language}/{task}

Models

```
# Example YAML to get you started quickly.
# Be aware that YAML has indentation based coping.
# Code completion support is available so start typing for available options.
swagger: '2.0'

# This is your document metadata
info:
  version: 0.8.0
  title: Tanbih API
  description: |
    Tanbih API allows user to estimate propaganda score on both article level
    and sentences level and to predict bias on given piece of text. With current
    version, the article level propaganda estimation is implemented.
    Requests for estimation is done in a asynchronical way. Client will POST
    a request for estimation, when successful, get a key in return; then client
    will use this key in query parameter to pull the estimation result from
    server.

host: webapi.tanbih.org

schemes:
  - http
```

Tanbih API

0.8.0

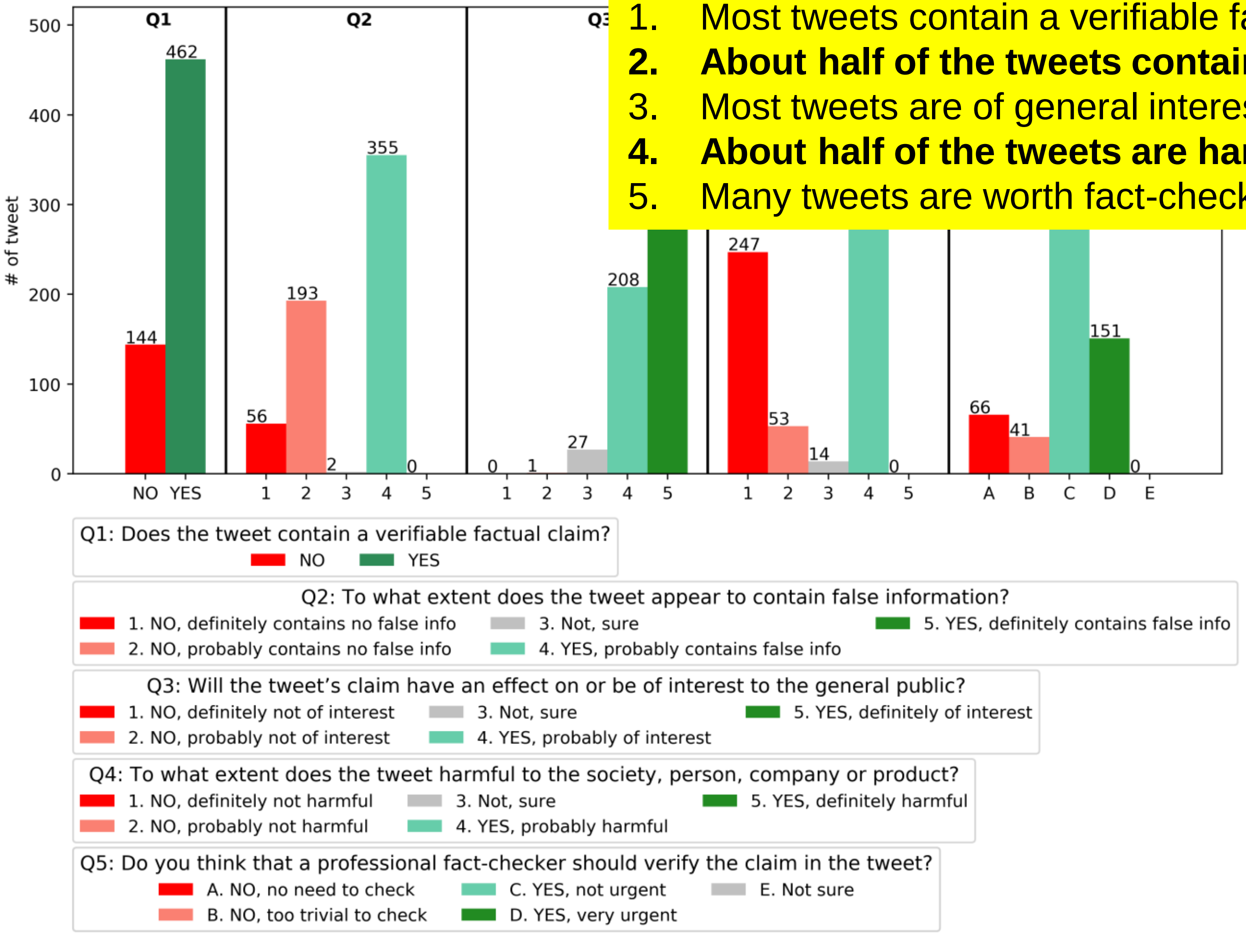
[Base URL: webapi.tanbih.org]

Tanbih API allows user to estimate propaganda score on both article level and sentences level and to predict bias on given piece of text. With current version, the article level propaganda estimation is implemented. Requests for estimation is done in a asynchronical way. Client will POST a request for estimation, when successful, get a key in return; then client will use this key in query parameter to pull the estimation result from server.

Schemes

HTTP

Arabic (February’2020 – August’2020): Q1-Q5



1. Most tweets contain a verifiable factual claim
2. **About half of the tweets contain false information**
3. Most tweets are of general interest
4. **About half of the tweets are harmful**
5. Many tweets are worth fact-checking

Q1: Does the tweet contain a verifiable factual claim?
🟥 NO 🟩 YES

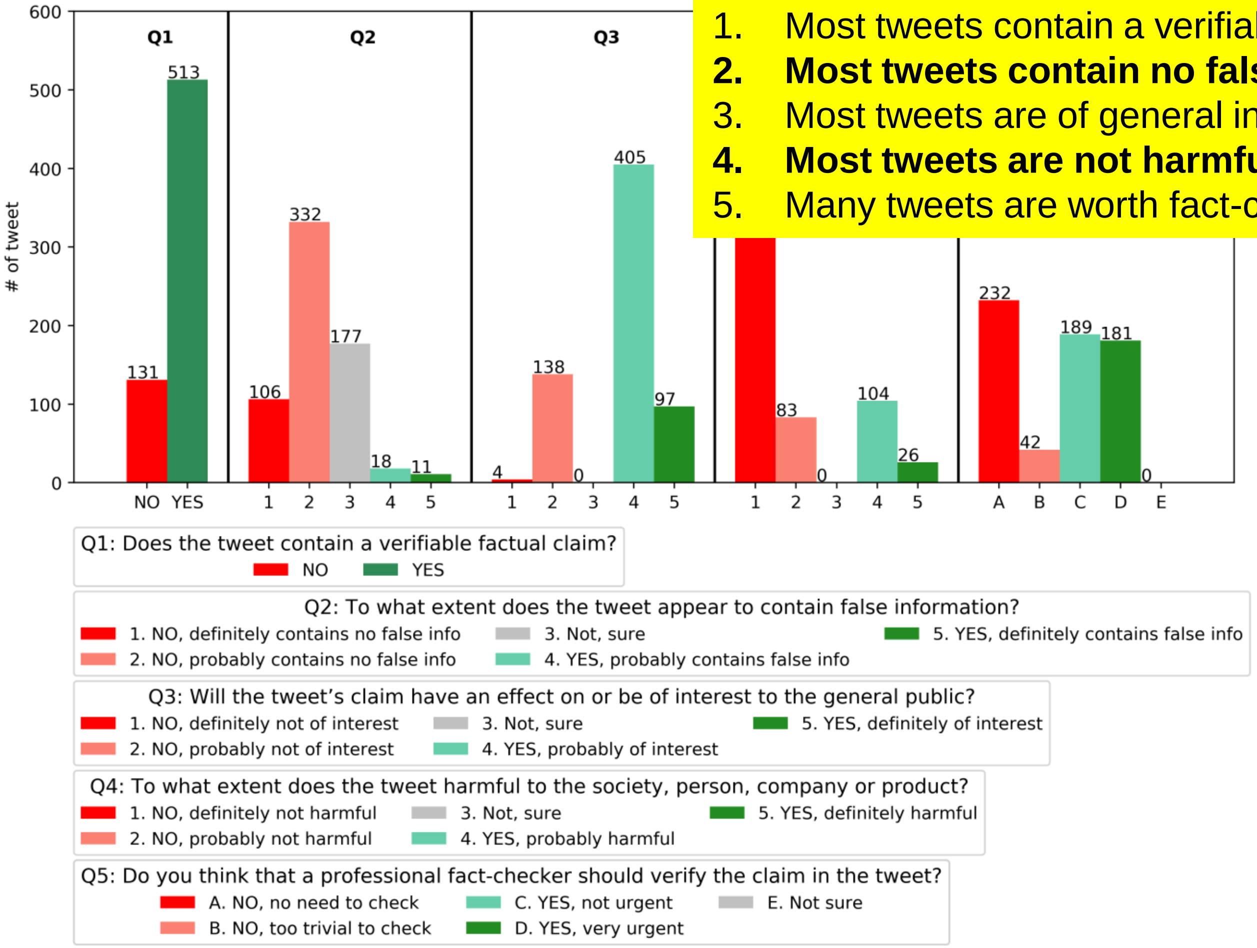
Q2: To what extent does the tweet appear to contain false information?
1. NO, definitely contains no false info
2. NO, probably contains no false info
3. Not, sure
4. YES, probably contains false info
5. YES, definitely contains false info

Q3: Will the tweet’s claim have an effect on or be of interest to the general public?
1. NO, definitely not of interest
2. NO, probably not of interest
3. Not, sure
4. YES, probably of interest
5. YES, definitely of interest

Q4: To what extent does the tweet harmful to the society, person, company or product?
1. NO, definitely not harmful
2. NO, probably not harmful
3. Not, sure
4. YES, probably harmful
5. YES, definitely harmful

Q5: Do you think that a professional fact-checker should verify the claim in the tweet?
A. NO, no need to check
B. NO, too trivial to check
C. YES, not urgent
D. YES, very urgent
E. Not sure

English (February’2020 – August’2020): Q1-Q5



Q1: Does the tweet contain a verifiable factual claim?
NO
YES

Q2: To what extent does the tweet appear to contain false information?
1. NO, definitely contains no false info
2. NO, probably contains no false info
3. Not, sure
4. YES, probably contains false info
5. YES, definitely contains false info

Q3: Will the tweet’s claim have an effect on or be of interest to the general public?
1. NO, definitely not of interest
2. NO, probably not of interest
3. Not, sure
4. YES, probably of interest
5. YES, definitely of interest

Q4: To what extent does the tweet harmful to the society, person, company or product?
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A. NO, no need to check
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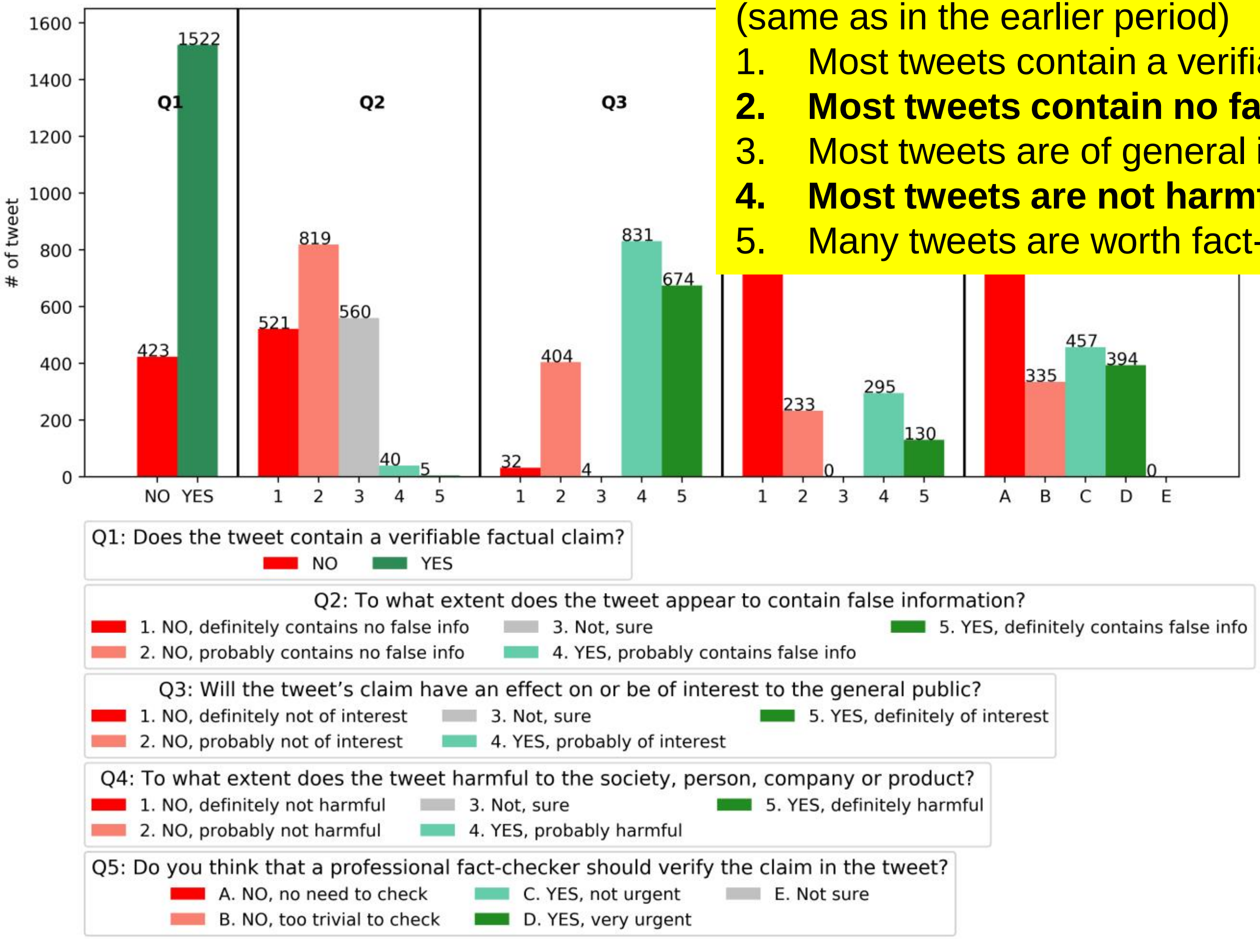
C. YES, not urgent
D. YES, very urgent
E. Not sure

1. Most tweets contain a verifiable factual claim
2. **Most tweets contain no false information**
3. Most tweets are of general interest
4. **Most tweets are not harmful**
5. Many tweets are worth fact-checking

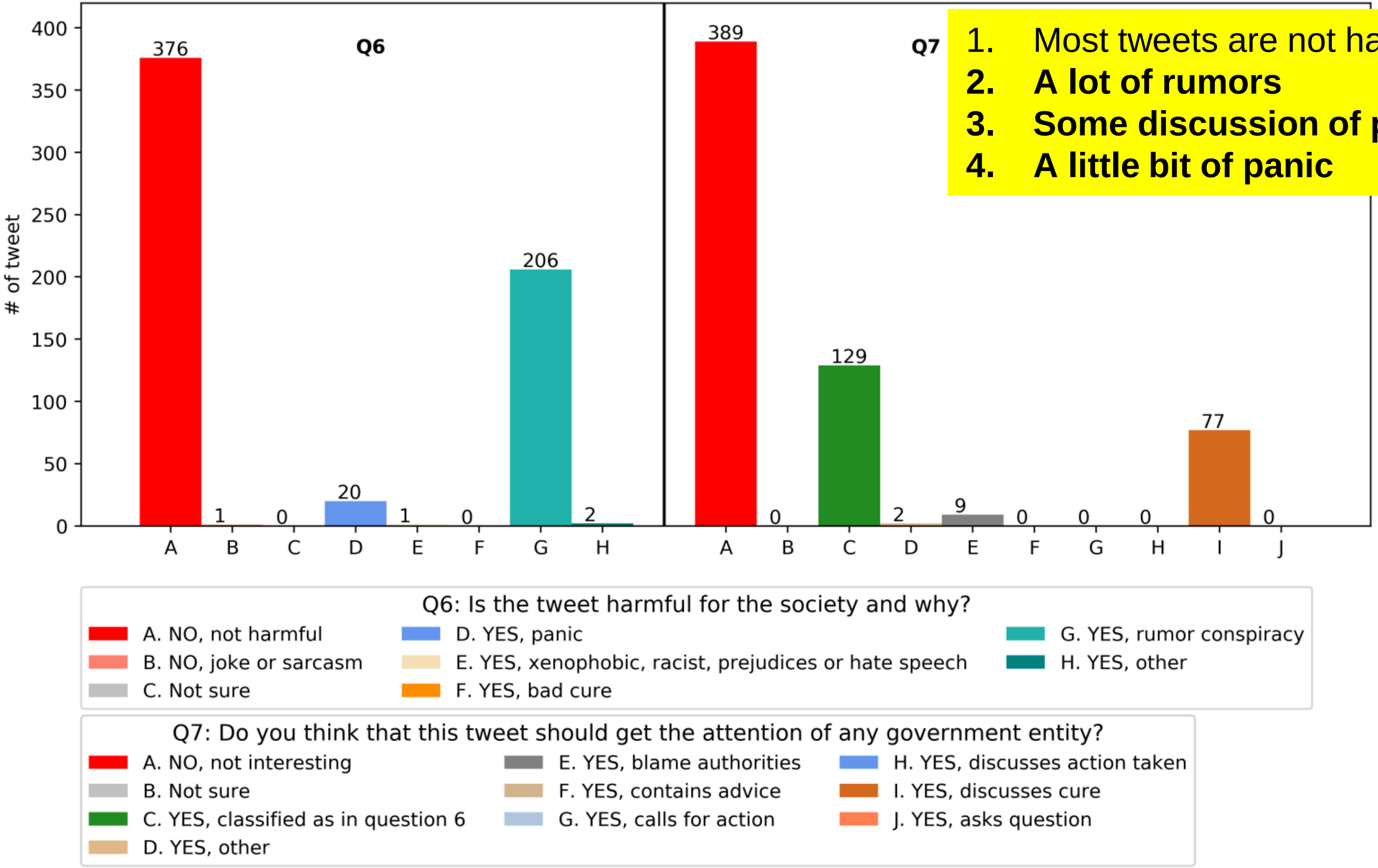
English (November’2020 – January’2021): Q1-Q5

(same as in the earlier period)

1. Most tweets contain a verifiable factual claim
2. **Most tweets contain no false information**
3. Most tweets are of general interest
4. **Most tweets are not harmful**
5. Many tweets are worth fact-checking

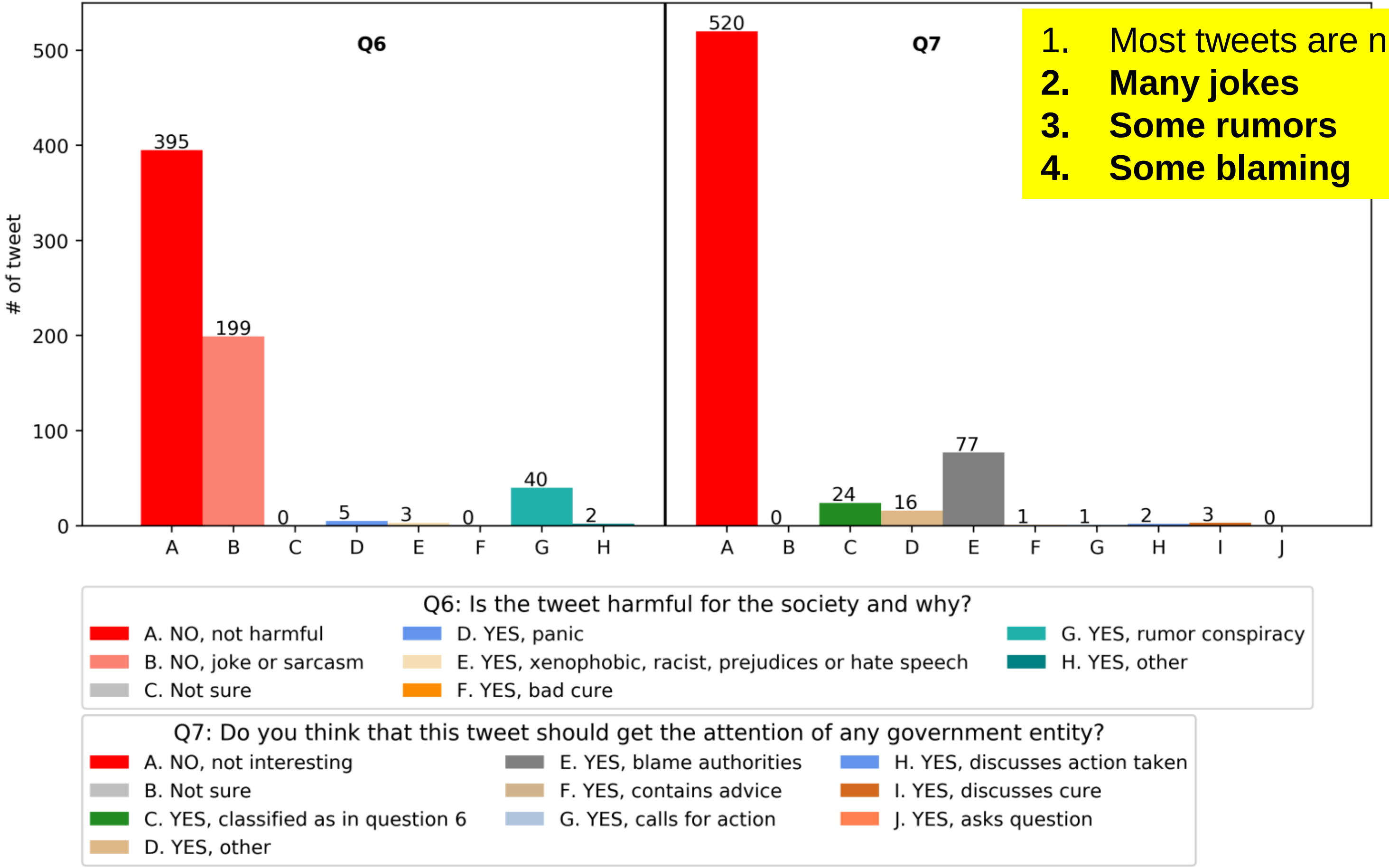


Arabic (February’2020 – August’2020): Q6-Q7



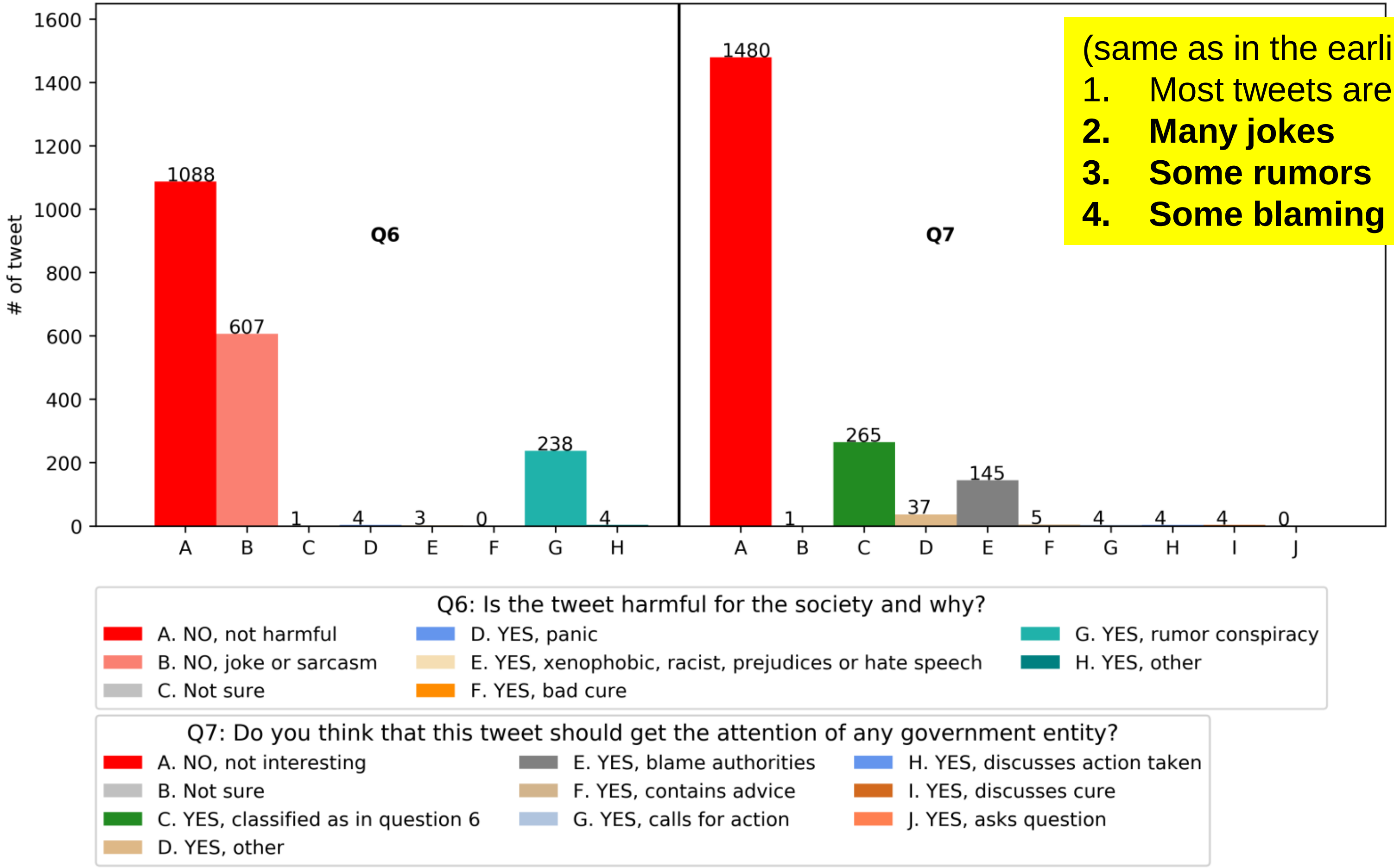
1. Most tweets are not harmful
2. **A lot of rumors**
3. **Some discussion of possible cure**
4. **A little bit of panic**

English (February’2020 – August’2020): Q6-Q7



1. Most tweets are not harmful
2. **Many jokes**
3. **Some rumors**
4. **Some blaming**

English (November’2020 – January’2021): Q6-Q7



(same as in the earlier period)

1. Most tweets are not harmful
2. **Many jokes**
3. **Some rumors**
4. **Some blaming**

Disinformation Analysis: Summary

- **Arabic tweets**
  - a lot of false information
  - a lot of rumors
  - some discussion of possible cure
  - very rarely panic

- **English tweets** (in both periods)
  - mostly factually true
  - many jokes
  - rarely rumors

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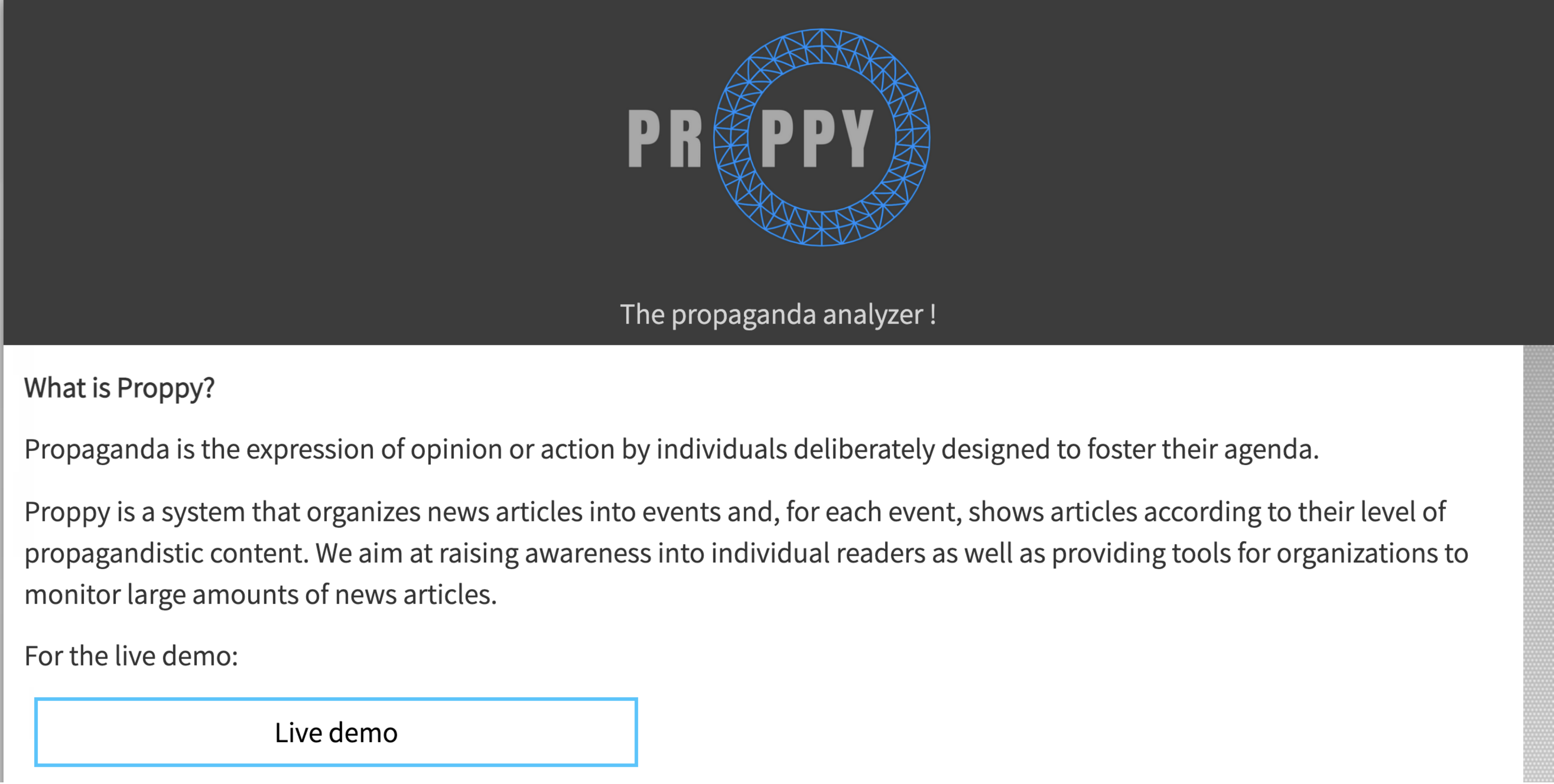
Twitter Analysis

- Data Collection
- Automatic Analysis
  - Disinformation
  - **Propagandistic Content**
  - Use of Propaganda Techniques
  - Framing



The propaganda analyzer !

What is Proppy?

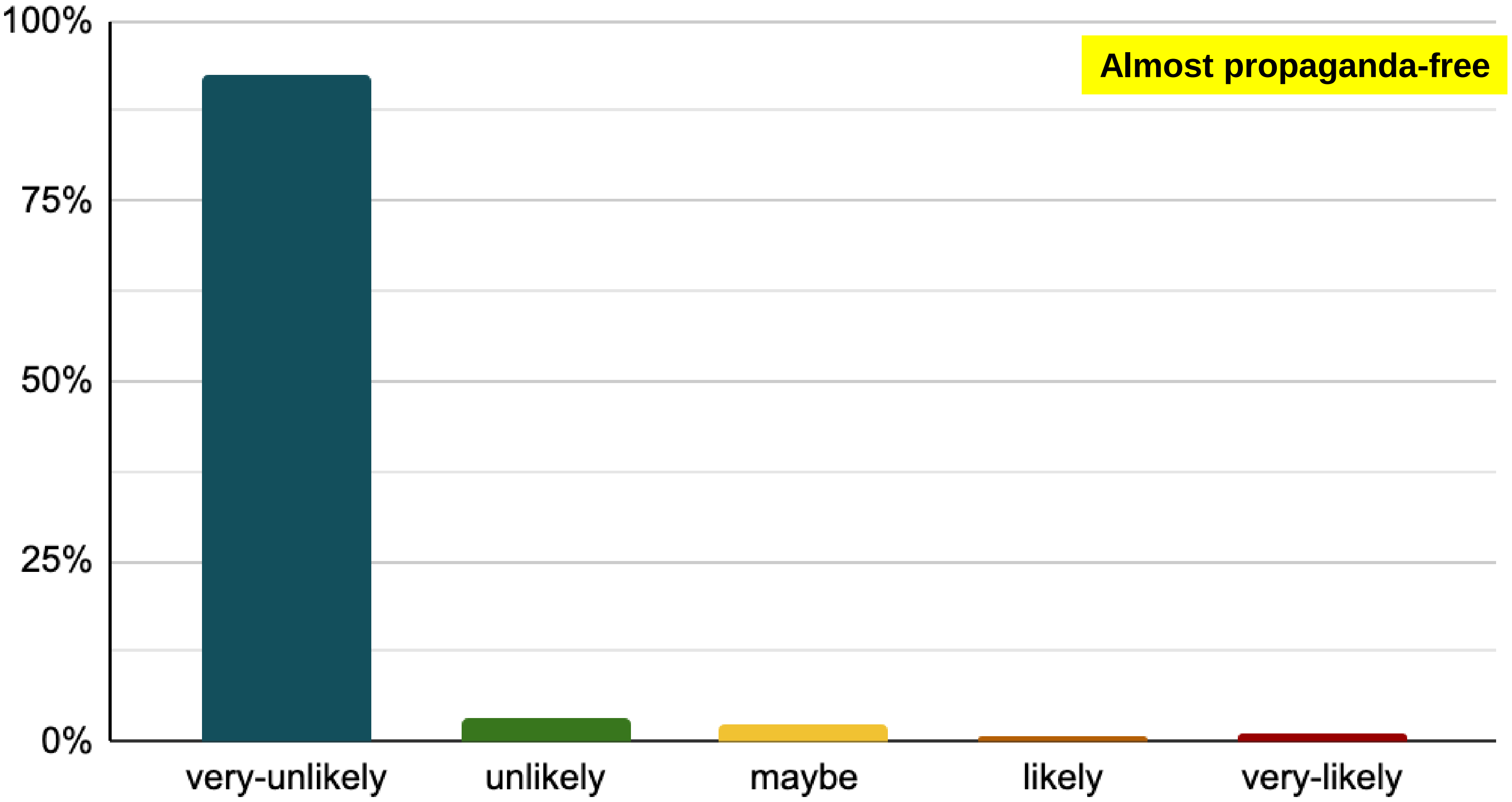
Propaganda is the expression of opinion or action by individuals deliberately designed to foster their agenda.

Proppy is a system that organizes news articles into events and, for each event, shows articles according to their level of propagandistic content. We aim at raising awareness into individual readers as well as providing tools for organizations to monitor large amounts of news articles.

For the live demo:

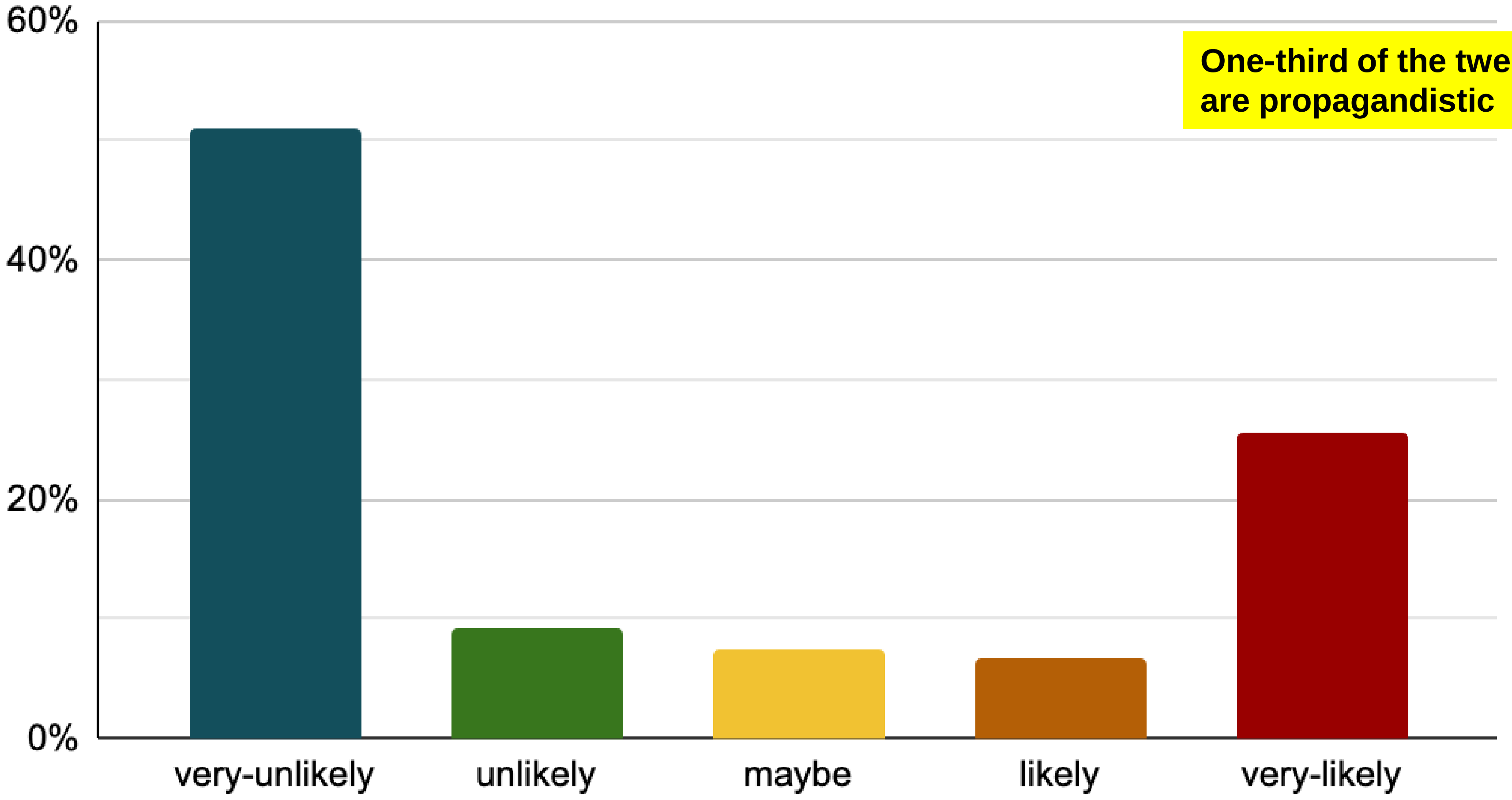
Alberto Barrón-Cedeño, Israa Jaradat, Giovanni Da San Martino, Preslav Nakov:
Proppy: Organizing the news based on their propagandistic content. Inf. Process. Manag. 56(5): 1849-1864 (2019)

Arabic (February’2020 – August’2020): Propaganda



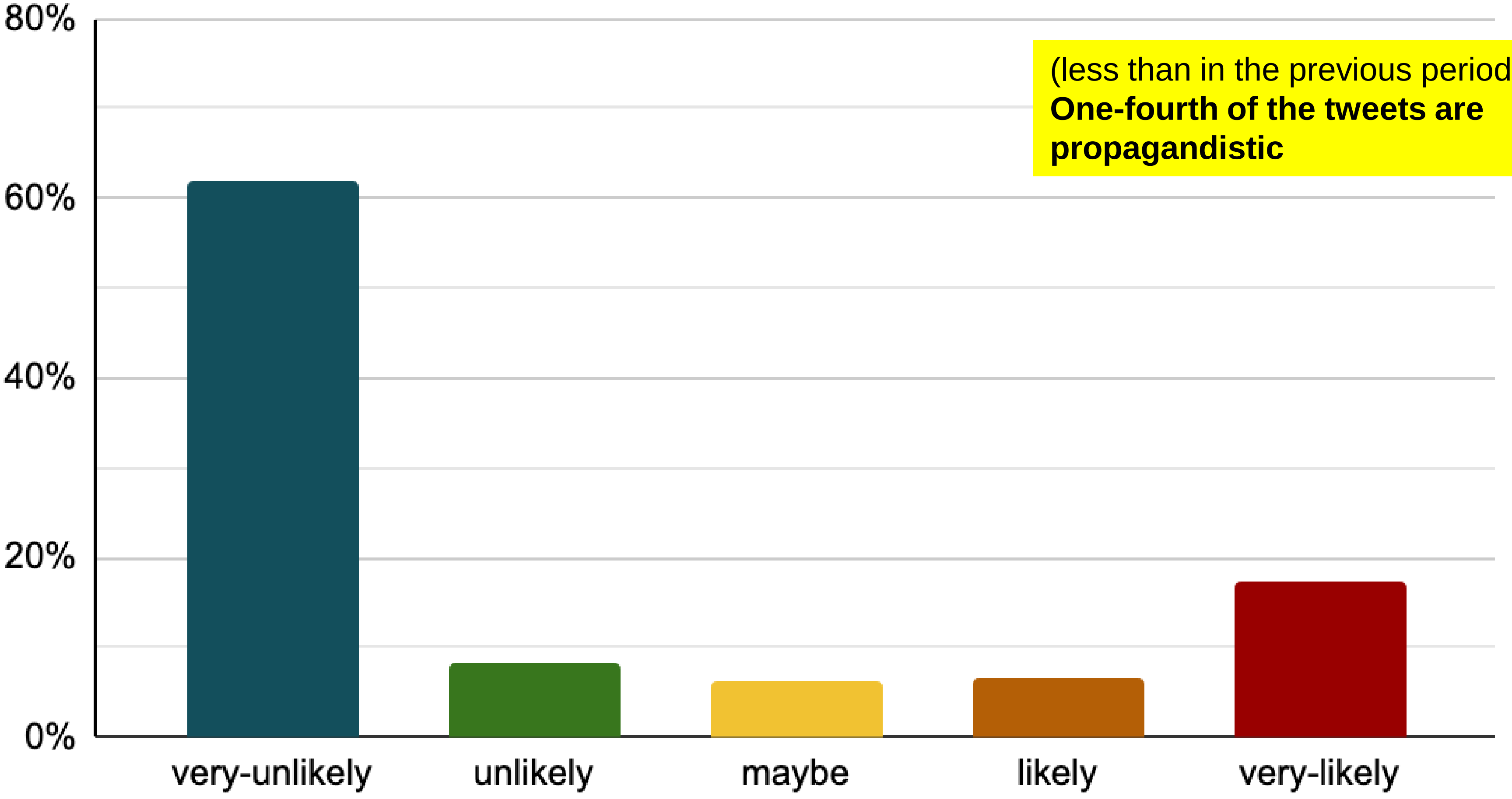
Almost propaganda-free

English (February’2020 – August’2020): Propaganda



One-third of the tweets are propagandistic

English (November’2020 – January’2021): Propaganda



(less than in the previous period)
One-fourth of the tweets are propagandistic

Propaganda Analysis: Summary

- **Arabic tweets**
  - propagandistic tweets are extremely rare
- **English tweets**
  - for February-August’2020, about 1/3 of the tweets are propagandistic
  - for November’2020-January’2021, propaganda goes a bit down to 1/4

Twitter Analysis

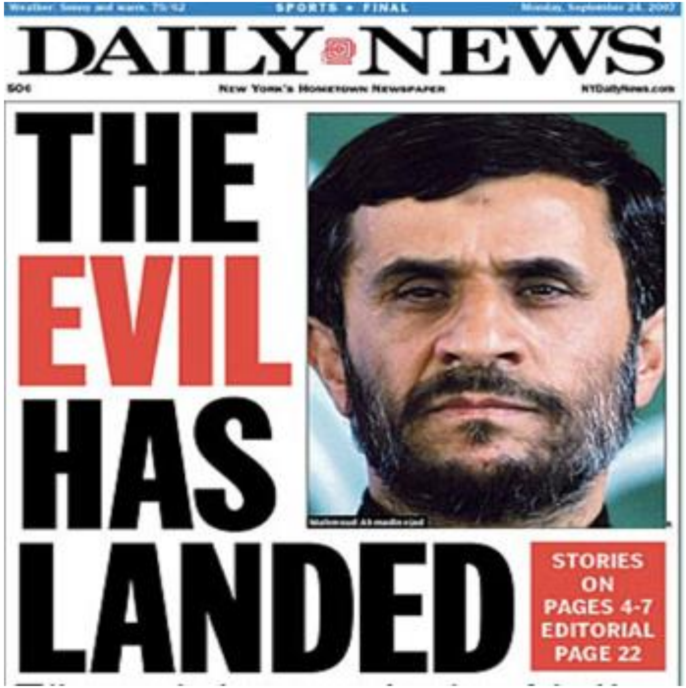
- Data Collection
- Automatic Analysis
  - Disinformation
  - Propagandistic Content
  - **Use of Propaganda Techniques**
  - Framing

Propaganda

- “Expression **deliberately** designed to **influence** the opinions/actions of other individuals or groups with reference to predetermined ends.”

Institute for Propaganda Analysis

Propaganda Techniques



Weather: Sunny and warm. 75/62 SPORTS • FINAL Monday, September 24, 2007

DAILY NEWS

50¢ New York's Hometown Newspaper NYDailyNews.com

THE EVIL HAS LANDED

STORIES ON PAGES 4-7 EDITORIAL PAGE 22

Name Calling

IJCAI-2020: *A Survey on Computational Propaganda Detection.*
Giovanni Da San Martino, Stefano Cresci, Alberto Barrón-Cedeño, Seunghak Yu, Roberto Di Pietro, Preslav Nakov

Propaganda Techniques

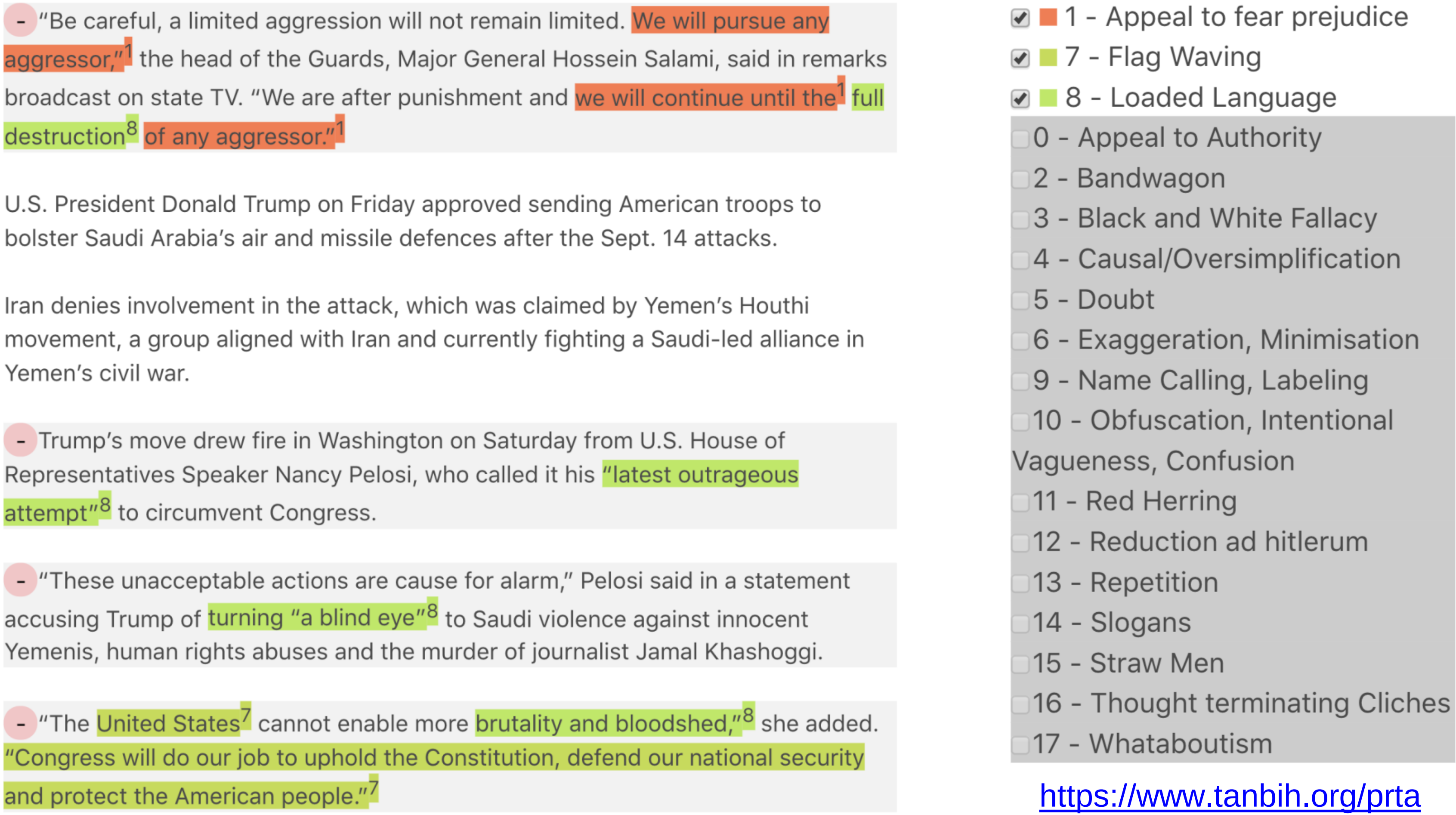
SECRETARY-GENERAL
G. THUNBERG
SWEDEN

Appeal to Fear

“We are in the middle of the sixth mass extinction, with more than 200 species getting extinct every day."

Greta Thunberg

IJCAI-2020: *A Survey on Computational Propaganda Detection.*
Giovanni Da San Martino, Stefano Cresci, Alberto Barrón-Cedeño, Seunghak Yu, Roberto Di Pietro, Preslav Nakov



- "Be careful, a limited aggression will not remain limited. We will pursue any aggressor,"[1] the head of the Guards, Major General Hossein Salami, said in remarks broadcast on state TV. "We are after punishment and we will continue until the[1] full destruction[8] of any aggressor."[1]

U.S. President Donald Trump on Friday approved sending American troops to bolster Saudi Arabia's air and missile defences after the Sept. 14 attacks.

Iran denies involvement in the attack, which was claimed by Yemen's Houthi movement, a group aligned with Iran and currently fighting a Saudi-led alliance in Yemen's civil war.

- Trump's move drew fire in Washington on Saturday from U.S. House of Representatives Speaker Nancy Pelosi, who called it his "latest outrageous attempt"[8] to circumvent Congress.

- "These unacceptable actions are cause for alarm," Pelosi said in a statement accusing Trump of turning "a blind eye"[8] to Saudi violence against innocent Yemenis, human rights abuses and the murder of journalist Jamal Khashoggi.

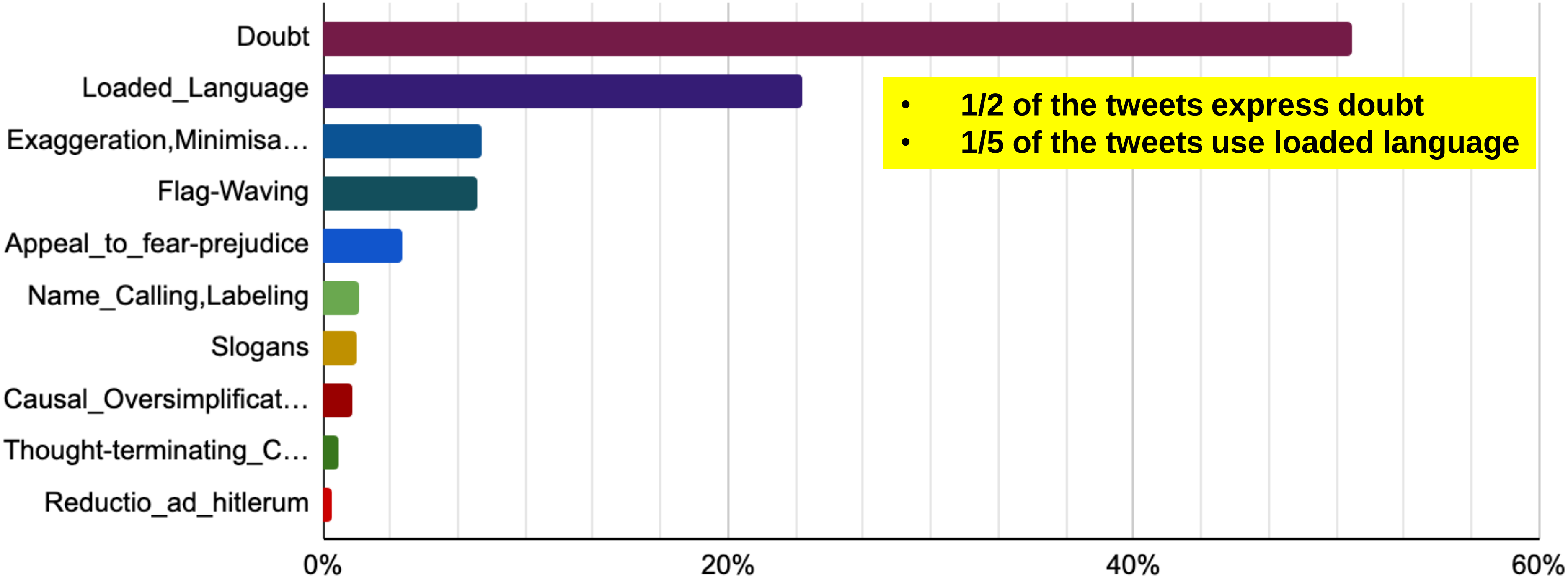
- "The United States[7] cannot enable more brutality and bloodshed,"[8] she added. "Congress will do our job to uphold the Constitution, defend our national security and protect the American people."[7]

☑ 🟥 1 - Appeal to fear prejudice
☑ 🟩 7 - Flag Waving
☑ 🟩 8 - Loaded Language
☐ 0 - Appeal to Authority
☐ 2 - Bandwagon
☐ 3 - Black and White Fallacy
☐ 4 - Causal/Oversimplification
☐ 5 - Doubt
☐ 6 - Exaggeration, Minimisation
☐ 9 - Name Calling, Labeling
☐ 10 - Obfuscation, Intentional Vagueness, Confusion
☐ 11 - Red Herring
☐ 12 - Reduction ad hitlerum
☐ 13 - Repetition
☐ 14 - Slogans
☐ 15 - Straw Men
☐ 16 - Thought terminating Cliches
☐ 17 - Whataboutism

https://www.tanbih.org/prta

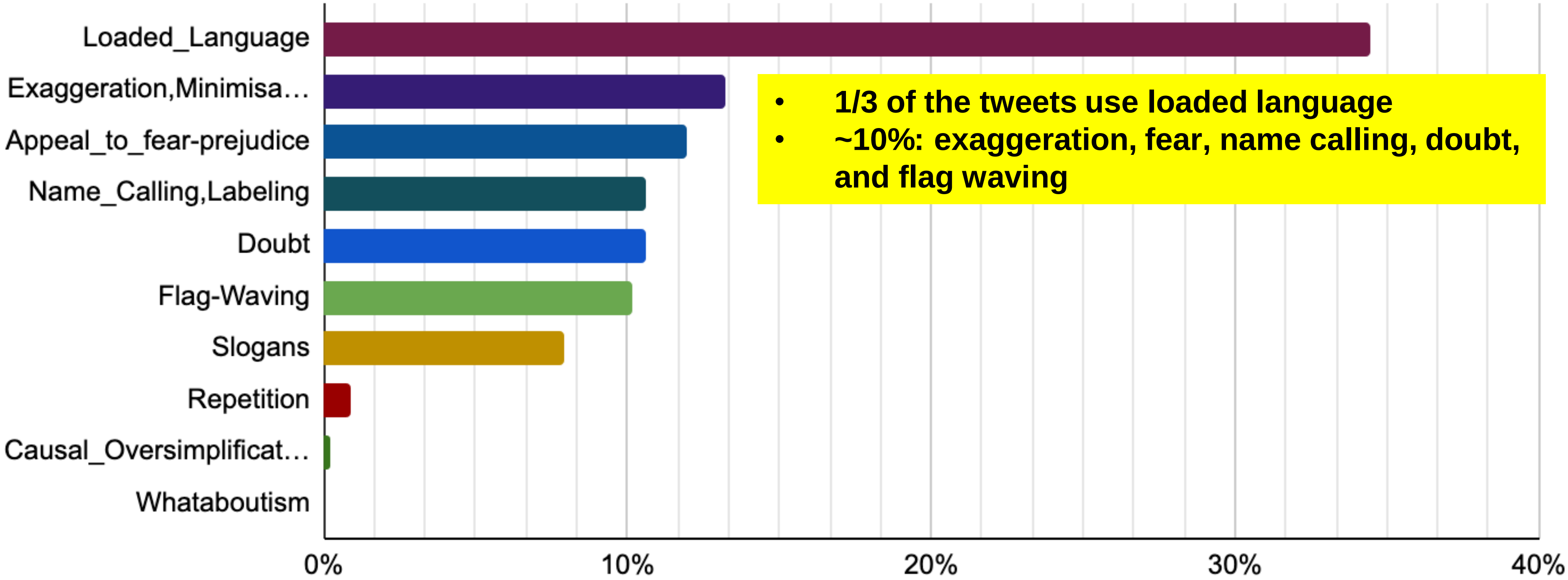
ACL-2020: *Prta: A System to Support the Analysis of Propaganda Techniques in the News.*
Giovanni Da San Martino, Shaden Shaar, Yifan Zhang, Seunghak Yu, Alberto Barrón-Cedeño, Preslav Nakov

Arabic (February'2020 – August'2020): Use of Propagandistic Techniques



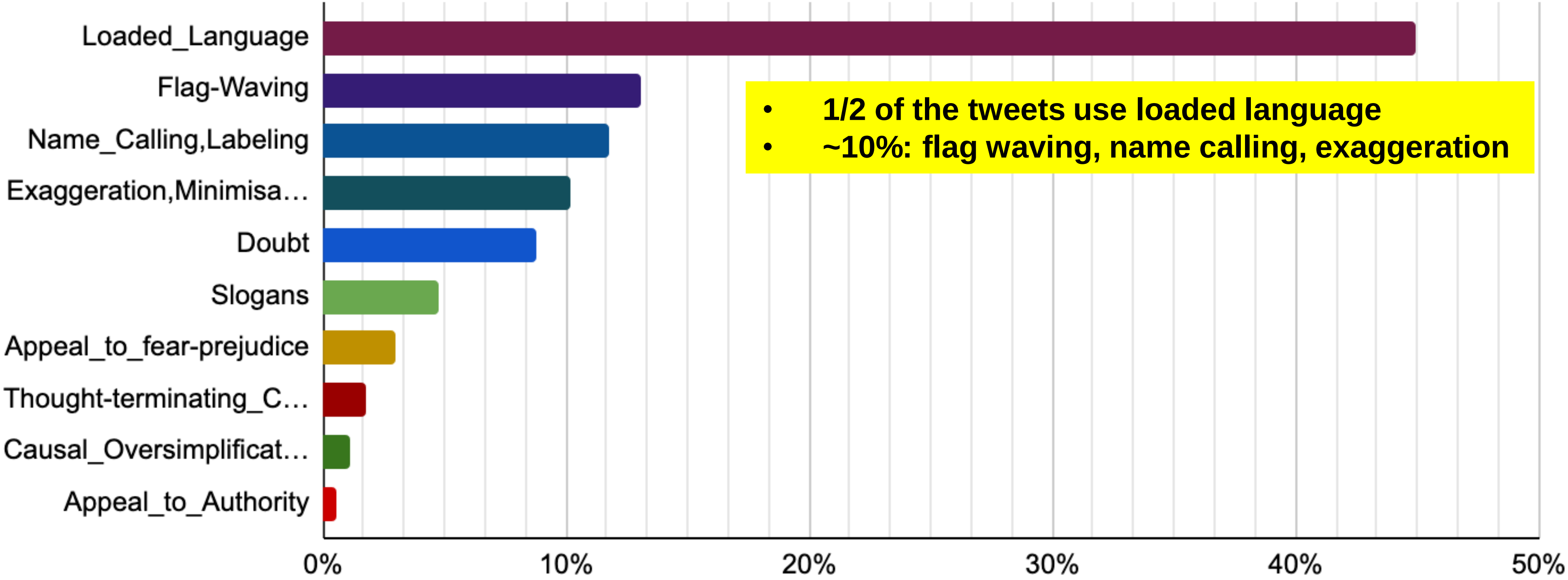
- **1/2 of the tweets express doubt**
- **1/5 of the tweets use loaded language**

English (February'2020 – August'2020): Use of Propagandistic Techniques



- **1/3 of the tweets use loaded language**
- **~10%: exaggeration, fear, name calling, doubt, and flag waving**

English (November’2020 – January’2021): Use of Propagandistic Techniques



- **1/2 of the tweets use loaded language**
- **~10%: flag waving, name calling, exaggeration**

Propaganda Techniques: Summary

- **Arabic tweets**
  - Doubt (1/2 of the tweets)
  - Loaded language (1/5 of the tweets)

- **English tweets**
  - for February-August’2020
    - 1/3 of the tweets use loaded language
    - ~10%: exaggeration, fear, name calling, doubt, and flag waving
  - for November’2020-January’2021
    - 1/2 of the tweets use loaded language
    - ~10%: flag waving, name calling, exaggeration

Twitter Analysis

- Data Collection
- Automatic Analysis
  - Disinformation
  - Propagandistic Content
  - Use of Propaganda Techniques
  - **Framing**

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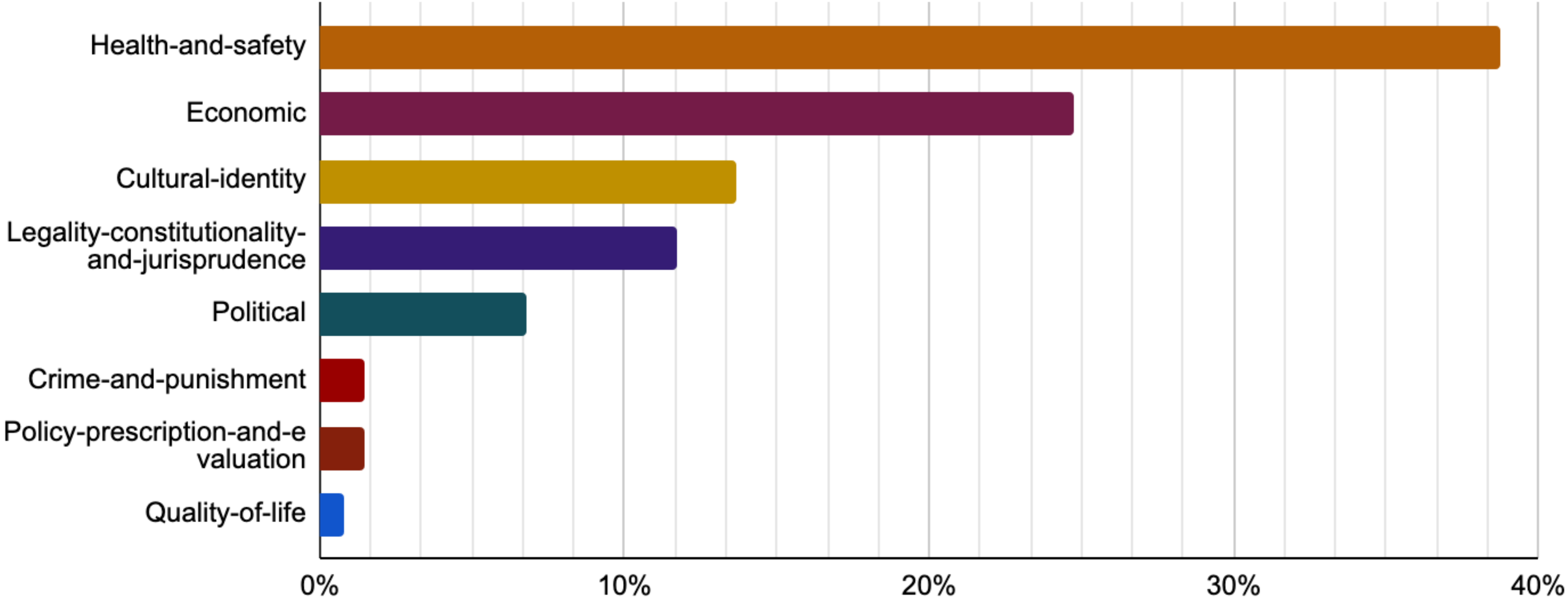
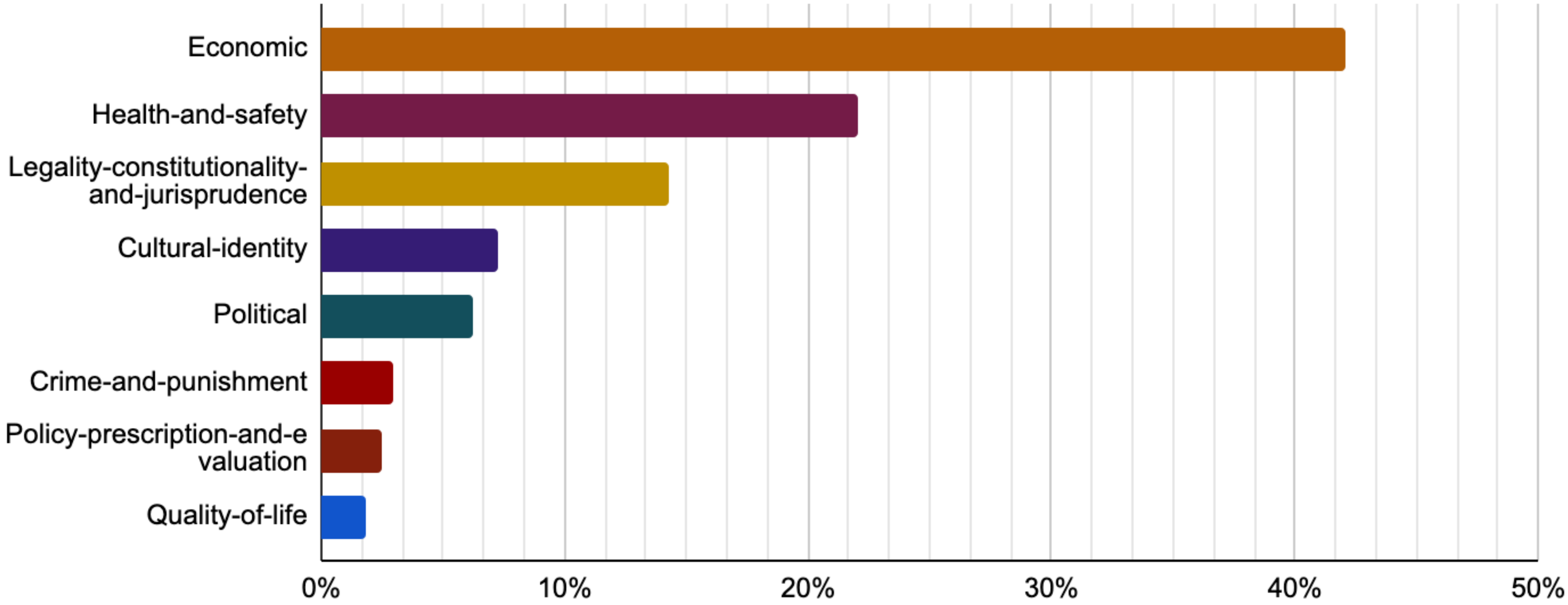
Arabic (February’2020 – August’2020): Framing

- **Health & safety is the dominant perspective**
- **Economy comes second**



English (February’2020 – August’2020): Framing

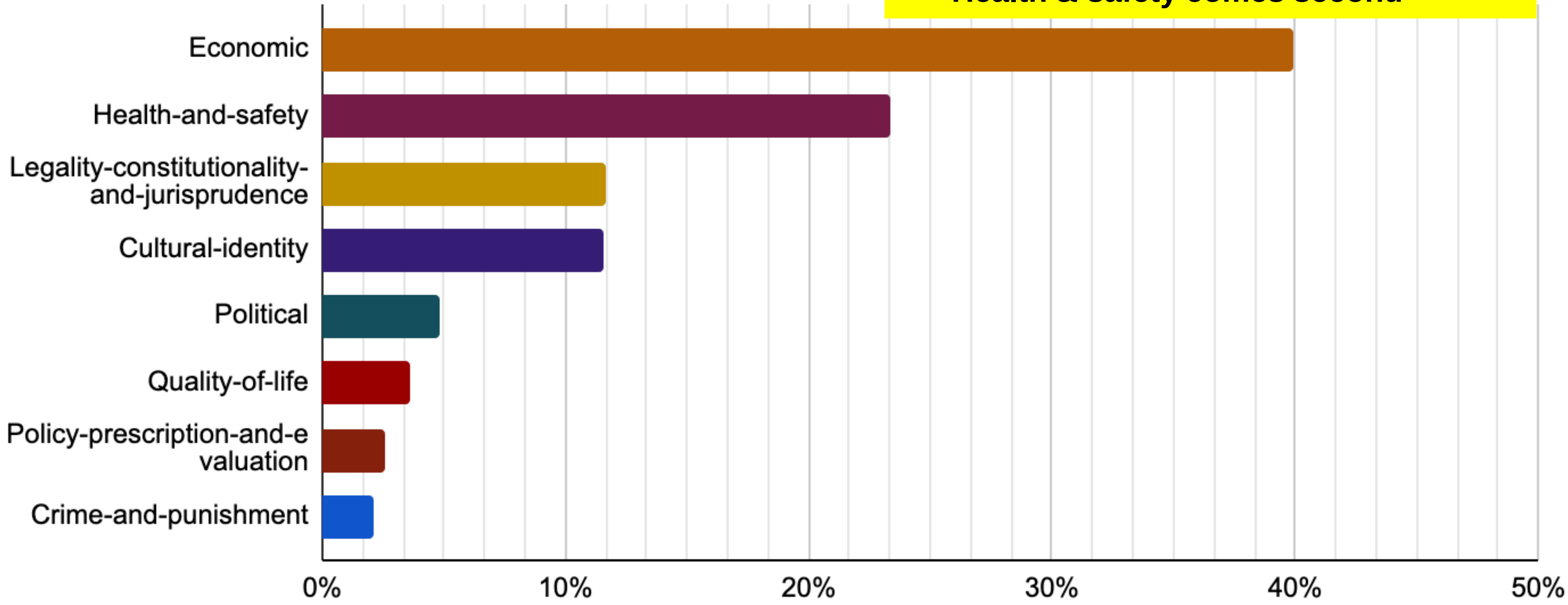
- **Economy is the dominant perspective**
- **Health & safety comes second**



English (November’2020 – January’2021): Framing

(as in the previous period)

- **Economy is the dominant perspective**
- **Health & safety comes second**



Propaganda Techniques: Summary

- **Arabic tweets**
  - Health & safety is the dominant perspective
  - Economy comes second
- **English tweets** (both periods)
  - Economy is the dominant perspective
  - Health & safety comes second

Team & Acknowledgments

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