

The Use of Twitter to Communicate COVID-19: A Content Analysis of Tweets from CDC, WHO, and Major News Media

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Presentation Outline

- #1, Background
- #2, Objectives
- #3, Methodology
- #4, Results and Discussion
- #5, Conclusion
- #6, References



1.

Background



- Twitter -- growing field of interest for **Public health communication research**²
- Understanding the purpose and the content of the messaging
- **Increased use** by News Media & Public health Agencies (PHA)
- Information cascade

Information dissemination



- Twitter to provide **near-real time updates** and **guidance** on infectious disease outbreaks
- Previous studies on other outbreaks: Zika³, H1N1⁴, and Ebola⁵
- Few studies on **early stages** of novel IDO

Infectious Disease Outbreaks (IDO)



- Previously **2019 Novel Coronavirus** (2019-nCoV)¹
- 01/31 – WHO declared public health emergency¹
- 02/11 – official name: COVID-19 was announced¹
- 03/11 - WHO declared a **pandemic**¹

Early Stages of COVID-19

WHAT IS THIS STUDY ABOUT?

A **content analysis** on the materials and messages disseminated by major **news media organizations (NMO)** and **public health agencies (PHA)** in the **early stages** (Jan – Mar) of COVID-19 pandemic

2.

Objectives

1

Content Comparison: PHA vs NMO
International vs US

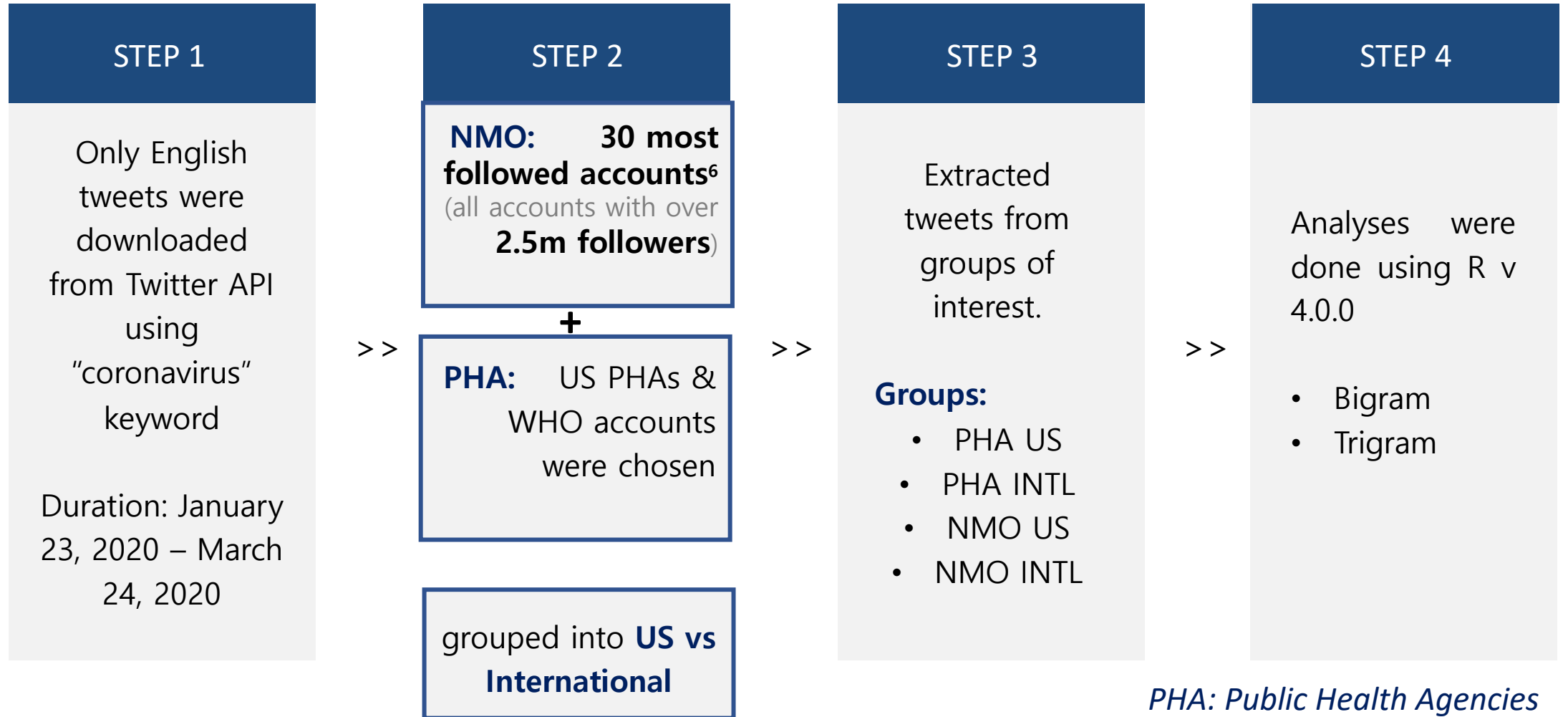
2

Temporal Content Analysis: Jan, Feb, Mar
(PHA vs NMO)

3

Volume & Amplification Comparison

3. Methodology



*PHA: Public Health Agencies
NMO: News Media Organizations*

3.

Sample Twitter Accounts of Interest

@CDCGlobal
@CDCEmergency, @CDCgov
@HHSGov, @NIH, @NIAID

N = 300

PHA_US

@WHO, @WHOWPRO, @WHOSEARO,
@DrTedros, @Pahoemergencies,
@WHO_Europe, etc.

PHA_Intl

N = 1232

N = 20119

NMO_US

@CNBRK, @CNN, @Nytimes, @reuters,
@WSJ, @time, @ABC, @washingtonpost,
@ap, @telegraph, @cbcnews,
@independent, etc.

NMO_Intl

N = 20689

@XHNews, @BBCBreaking,
@rt_com, @france24_en,
@france24, @ajenglish, @skynewsbreak,
@skynews, @guardian, @bbcworld etc.

N Represents number of tweets in the dataset

| PHA_US | PHA_Intl |
|-----------------------|------------------|
| Public health | 1 death |
| Press briefing | Public health |
| Respiratory illnesses | Western pacific |
| Task force | Mainland china |
| Considered low | Pacific region |
| Medical conditions | Hong kong |
| Preparedness measures | Macao sar |
| Talking preparedness | Drtedros whowpro |
| Daily precautions | Daily sitreps |

| NMO_US | NMO_Intl |
|--------------------|--------------------|
| Amid coronavirus | Amid coronavirus |
| Cruise ship | Death toll |
| Death toll | Cruise ship |
| Tested positive | Coronavirus fears |
| Coronavirus fears | Coronavirus crisis |
| President trump | Live updates |
| Live updates | Ndtv 24x7 |
| Coronavirus crisis | Live blog |
| White house | Coronavirus death |

*Red: Unique to the group

** words referencing the disease/ virus itself (e.g: covid 19, 2019 ncov) are removed from the list

Top 10 Bigrams:
word pairs

1 Content Comparison:
PHA vs NMO

- **For the NMO:** the most frequently used words seem to be **in concordance**
- **For the PHA: More variance** between these two groups
 - International: the keywords seem to encompass location of the case updates (e.g: Western pacific, Mainland China etc.)
 - US: More contextual – e.g: Daily precautions, Respiratory illnesses

**Top 10 Bigrams:
word pairs**

1 Content Comparison:
PHA vs NMO

| PHA US | NMO US |
|----------------------------------|----------------------------|
| Taking preparedness measures | Public health emergency |
| Simple daily precautions | Wuhan coronavirus outbreak |
| Public health emergency | World health organization |
| 2019 ncov spreads | Coronavirus death toll |
| cdc confirms 3 | Amid coronavirus outbreak |
| PHA INTL | NMO INTL |
| International health regulations | Coronavirus death toll |
| Public health emergency | Death toll rises |
| Health regulations emergency | Public health emergency |
| Regulations emergency committee | Global health emergency |
| | Amid coronavirus outbreak |

SUMMARY

JANUARY

Common topics NMO:

- Public health emergency
- Death toll
- Outbreak

Common topics PHA:

- Precautions
- Health regulations
- Rising cases

**Top 5
Trigrams**

Temporal Content Analysis: Jan, Feb, Mar

| PHA US | NMO US |
|------------------------------|---------------------------|
| Taking preparedness measures | World health organization |
| Simple daily precautions | Diamond princess cruise |
| Fever cough shortness | Princess cruise ship |
| Severe respiratory illness | Coronavirus live updates |
| You've recently returned | Amid coronavirus outbreak |
| PHA INTL | NMO INTL |
| Hong kong sar | Amid coronavirus outbreak |
| Including 1 death | Coronavirus death toll |
| Western pacific region | Diamond princess cruise |
| 1 death Cambodia | Princess cruise ship |
| Pacific region singapore | News agency afp |

SUMMARY

FEBRUARY

Common topics NMO:

- Cruise ship
- Outbreak

Common topics PHA:

- Precautions
- Symptoms
- Travel
- Cases/death
- Location updates

Top 5
Trigrams

Temporal Content Analysis: Jan, Feb, Mar

| PHA US | NMO US |
|-------------------------------|---------------------------|
| Coronavirus task force | Amid coronavirus outbreak |
| Task force hold | Gov Andrew cuomo |
| Underlying medical conditions | Amid coronavirus pandemic |
| Chronic medical conditions | York gov andrew |
| Means avoiding crowded | Coronavirus death toll |
| PHA INTL | NMO INTL |
| Drtedros covid19 coronavirus | Amid coronavirus outbreak |
| Solidarity response fund | Coronavirus death toll |
| 10am manila time | President Donald trump |
| Check daily sitreps | Amid coronavirus scare |
| Covid19 solidarity response | Amid coronavirus crisis |



MARCH

Common topics NMO:

- Governor Cuomo
- Pandemic
- Death

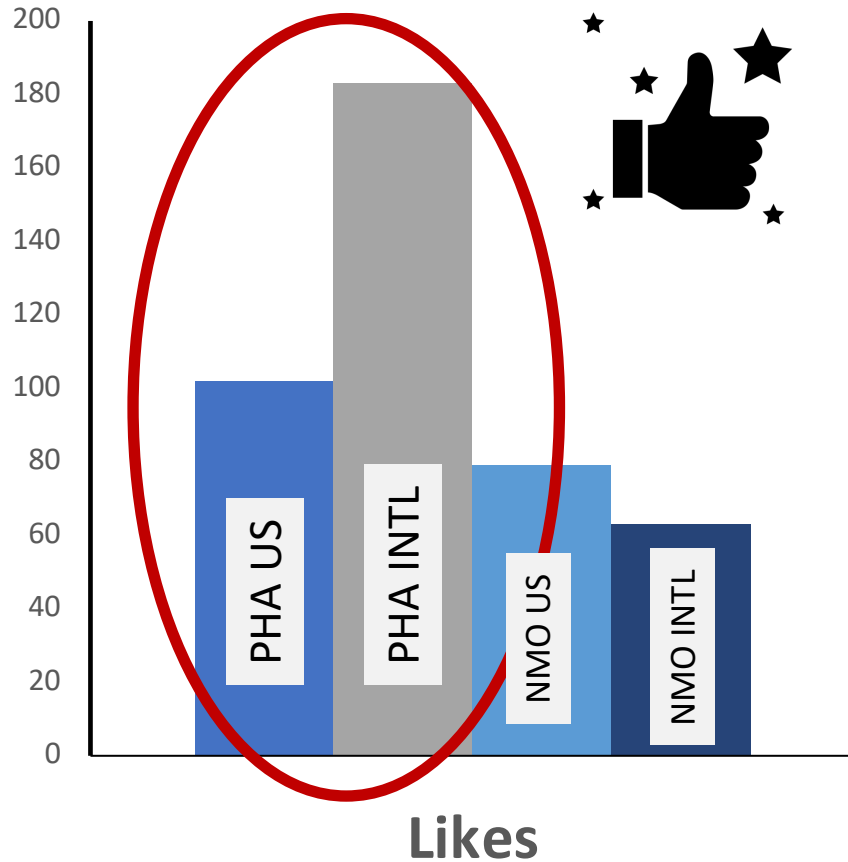
Common topics PHA:

- Task Force
- Underlying conditions
- Social distancing
- Response and reports

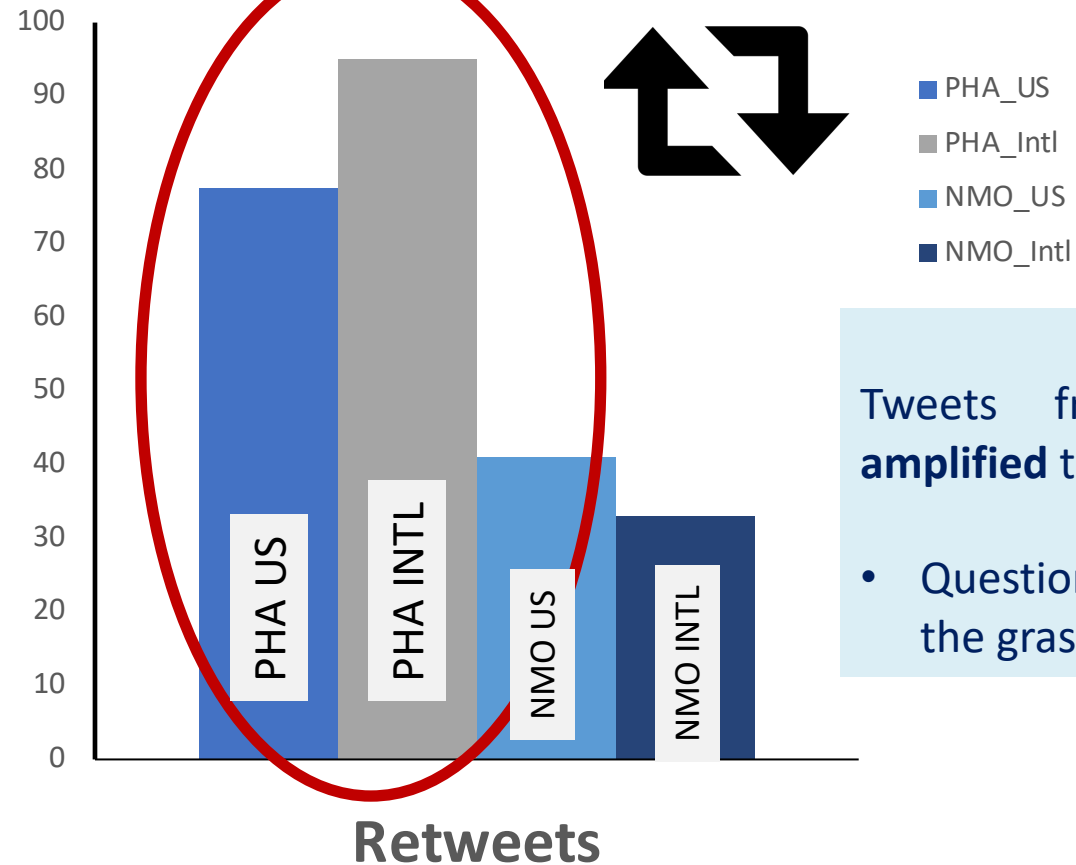
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Results & Discussion

Median number of favorites per tweet



Median number of retweets per tweet



Tweets from **PHAs** are more **amplified** through likes and retweets

- Question: But do they influence the grassroots users more?

3

Volume & Amplification Comparison

Conclusion

- Importance understanding the pattern and themes of public health messages
- Influence the public's insight, opinion and facts
- International vs US: **concordance for NMO**
- **PHA vs NMO:**
 - **PHA:** setting the context of advice & health information
 - **NMO:** Setting the context of the progression of the outbreak & timeline
- **continued partnership between these two groups** could prompt better behavioral change with further reach and influence on the public



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7. Thenounproject & flaticon for their icons

Thank you for
listening!

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