**COVID-19 Twitter Communication of Major Societal Stakeholders: Health Institutions,**

**the Government, and the News Media**

**A picture containing text, map, outdoor

Description automatically generatedSupplementary data**

***Supplementary Figure S1. Selection of the optimal number of topics (k=19; corpus: government health agencies Twitter accounts – all Tweets).***

**A picture containing chart

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***Supplementary Figure S2. Structural topic modeling of twitter communication (corpus: government health agencies Twitter accounts – all Tweets).***

**Diagram

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***Supplementary Figure S3. Selection of the optimal number of topics (k=23; corpus: hospital Twitter accounts – all Tweets).***

**Chart

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***Supplementary Figure S4. Structural topic modeling of twitter communication (corpus: hospital Twitter accounts – all Tweets).***

**Diagram

Description automatically generated**

***Supplementary Figure S5. Selection of the optimal number of topics (k=22; corpus: journals Twitter accounts – all Tweets).***

**Diagram

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***Supplementary Figure S6. Structural topic modeling of twitter communication (corpus: hospital Twitter accounts – all Tweets).***

**Diagram

Description automatically generated**

**Supplementary Figure S7. Selection of the optimal number of topics (k=24; corpus: print media Twitter accounts – all Tweets).**

**Scatter chart

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***Supplementary Figure S8. Structural topic modeling of twitter communication (corpus: print media Twitter accounts – all Tweets).***

**Diagram

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***Supplementary Figure S9. Selection of the optimal number of topics (k=22; corpus: broadcast media Twitter accounts – all Tweets).***

**Chart, scatter chart

Description automatically generated**

**Supplementary Figure S10. Structural topic modeling of twitter communication (corpus: broadcast media Twitter accounts – all Tweets).**

**Diagram

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**Supplementary Figure S11. Selection of the optimal number of topics (k=12; corpus: government health agencies Twitter accounts – COVID-19 related Tweets).**

**Diagram, engineering drawing

Description automatically generated**

***Supplementary Figure S12. Selection of the optimal number of topics (k=16; corpus: hospital Twitter accounts – COVID-19 related Tweets).***

**Diagram

Description automatically generated**

***Supplementary Figure S13. Selection of the optimal number of topics (k=6; corpus: journal Twitter accounts – COVID-19 related Tweets).***

**Diagram

Description automatically generated**

***Supplementary Figure S14. Selection of the optimal number of topics (k=23; corpus: print media Twitter accounts – COVID-19 related Tweets).***

**Diagram, engineering drawing

Description automatically generated**

***Supplementary Figure S15. Selection of the optimal number of topics (k=19; corpus: broadcast media Twitter accounts – COVID-19 related Tweets).***

***Supplementary Table S1. Prediction of user engagement (A-favoring a tweet, and B-retweeting) by post features on CDC, Mayo clinic, New England Journal of Medicine (NEJM), New York Times (NYT), CNN, and Fox News Twitter accounts.***

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Independent variables** | **Favorites** | | | | | | **Retweets** | | | | | |
| **CDC** | **NEJM** | **Mayo** | **NYT** | **CNN** | **Fox News** | **CDC** | **NEJM** | **Mayo** | **NYT** | **CNN** | **Fox News** |
|  | β (SE) | β (SE) | β (SE) | β (SE) | β (SE) | β (SE) | β (SE) | β (SE) | β (SE) | β (SE) | β (SE) | β (SE) |
| Visual link | -0.39(0.46) |  |  | -0.03(0.15) |  | 1.47(1.01) | -0.12(0.47) |  |  | -0.16(0.12) |  | 0.71(1.01) |
| Video | 0.55(0.42) |  |  | 0.04(0.31) |  |  | **1.36(0.43)** |  |  | -0.33(0.3) |  |  |
| Photo | 0.3(0.31) |  |  | -0.15(0.22) |  | 0.86(1.42) | **0.82(0.31)** |  |  | -0.24(0.2) |  | 0.81(1.42) |
| Infographic | **0.88(0.32)** |  |  | -0.48(0.25) | -0.11(0.5) |  | **1.49(0.32)** |  |  | -0.14(0.24) | 0.12(0.5) |  |
| Text only |  |  |  | **0.67(0.27)** | **-0.59(0.28)** | 1.68(1.19) |  |  |  | 0.44(0.25) | **-0.79(0.28)** | 0.65(1.17) |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Omnibus test (df) | 10 |  |  | 12 | 9 | 9 | 10 |  |  | 12 | 9 | 9 |
| Likelihood ratio chi-square | **86.0** |  |  | **207.1** | **362.4** | **32.3** | **100.3** |  |  | **172.3** | **196.1** | 14.0 |
| Significance | p<0.001 |  |  | p<0.001 | p<0.001 | p<0.001 | p<0.001 |  |  | p<0.001 | p<0.001 | p=0.124 |
| Goodness of fit (df) | 161 |  |  | 699 | 990 | 67 | 161 |  |  | 699 | 990 | 67 |
| Pearson chi-square | 154 |  |  | **2851** | **3016** | **120.3** | **200** |  |  | **2557** | **4649** | 69.2 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Significance legend | p<0.001 |  | p<0.05 |  | p<0.01 |  | β - Regression coefficient | |  | SE - Standard Error | |  |