Dataminr®

COVID-19: U.S. COUNTY STUDY SUMMARY

April 23, 2020

Executive Summary

RESULTS SUMMARY:

Dataminr has detected growth in clusters of eyewitness, on-the-ground, first-hand public social media posts in 22 small metropolitan and rural counties[1] across eight states in the U.S., where exponential growth in COVID-19 official case count has yet to occur. Dataminr's study also shows that growth in major urban counties across the same eight states of Dataminr-detected clusters of eyewitness, on-the-ground, first-hand public social media posts on COVID-19 has been a leading indicator of virus outbreak hotspots **6-13 days** prior to exponential growth in COVID-19 official case counts.

STUDY METHOD SUMMARY

Dataminr's AI Platform detected social media COVID-19 clusters comprised of public social media posts ranging from people indicating they tested positive, people indicating they are experiencing symptoms, people indicating they have been exposed but not tested, first-hand accounts of confirmed cases from relatives, friends, and colleagues as well as COVID-19 related supply shortages and closures.

1 Small metropolitan and rural counties classified as non major urban areas per the National Center for Health Statistics (NCHS)

Key Findings

01

In the following eight U.S. states — **Florida, Georgia, Indiana, Michigan, Ohio, South Carolina, Tennessee, Texas** — Dataminr has observed **22 small metropolitan and rural counties**[1], as of April 22nd, where exponential growth in public social media clusters has started, yet there has not yet been exponential growth in cases, suggesting an impending case spike:

- Bay (FL)
- Charleston (SC)
- Chatham (GA)
- Clarke (GA)
- Escambia (FL)
- Greenville (SC)
- Hamilton (TN)
- Hidalgo (TX)
- Horry (SC)
- Jackson (MI)
- Jefferson (TX)
- Lubbock (TX)
- Lucas (OH)
- Manatee (FL)
- Monroe (IN)
- Montgomery (OH)
- Polk (FL)
- St. Joseph (IN)
- Summit (OH)
- Tippecanoe (IN)
- Vigo (IN)
- Volusia (FL)

02

Dataminr's study also shows that growth in major urban counties across the same eight states of Dataminr-detected clusters of eyewitness, on-the-ground, first-hand public social media posts on COVID-19 has been a leading indicator of virus outbreak hotspots **6-13 days** prior to exponential growth in COVID-19 official case counts. These include:

- Davidson County (TN)
- Franklin County (OH)
- Fulton County (GA)
- Marion County (IN)
- Miami-Dade County (FL)
- Harris County (TX)
- Richland County (SC)
- Wayne County (MI)

03

The study suggests that county-level data patterns appear to be following the same pattern identified previously in U.S. states. In a March 30th study, Dataminr identified 14 U.S. states where the data suggested there could be an impending spike in case counts based on growth trends in eyewitness social media clusters. Within one week of the publication of the study, the exponential case spike occurred in all 14 states.

Definitions

Study utilizes county and area classification by the National Center for Health Statistics (NCHS):

LARGE URBAN AND MAJOR POPULATION CENTERS:

counties defined by the NCHS as major urban areas; Located within MSAs (metropolitan statistical areas) with a population over 1,000,000. These include large central metro and large fringe metro classifications.

SMALL METROPOLITAN AND RURAL COUNTIES:

counties defined by the NCHS as non-major urban areas; Located within MSAs (metropolitan statistical area) with a population under 999,999. These include medium metro, small metro, micropolitan, and noncore classifications.

Link to source: https://www.cdc.gov/nchs/data/series/sr_02/sr02_166.pdf

1 Small metropolitan and rural counties classified as non major urban areas per the National Center for Health Statistics (NCHS)

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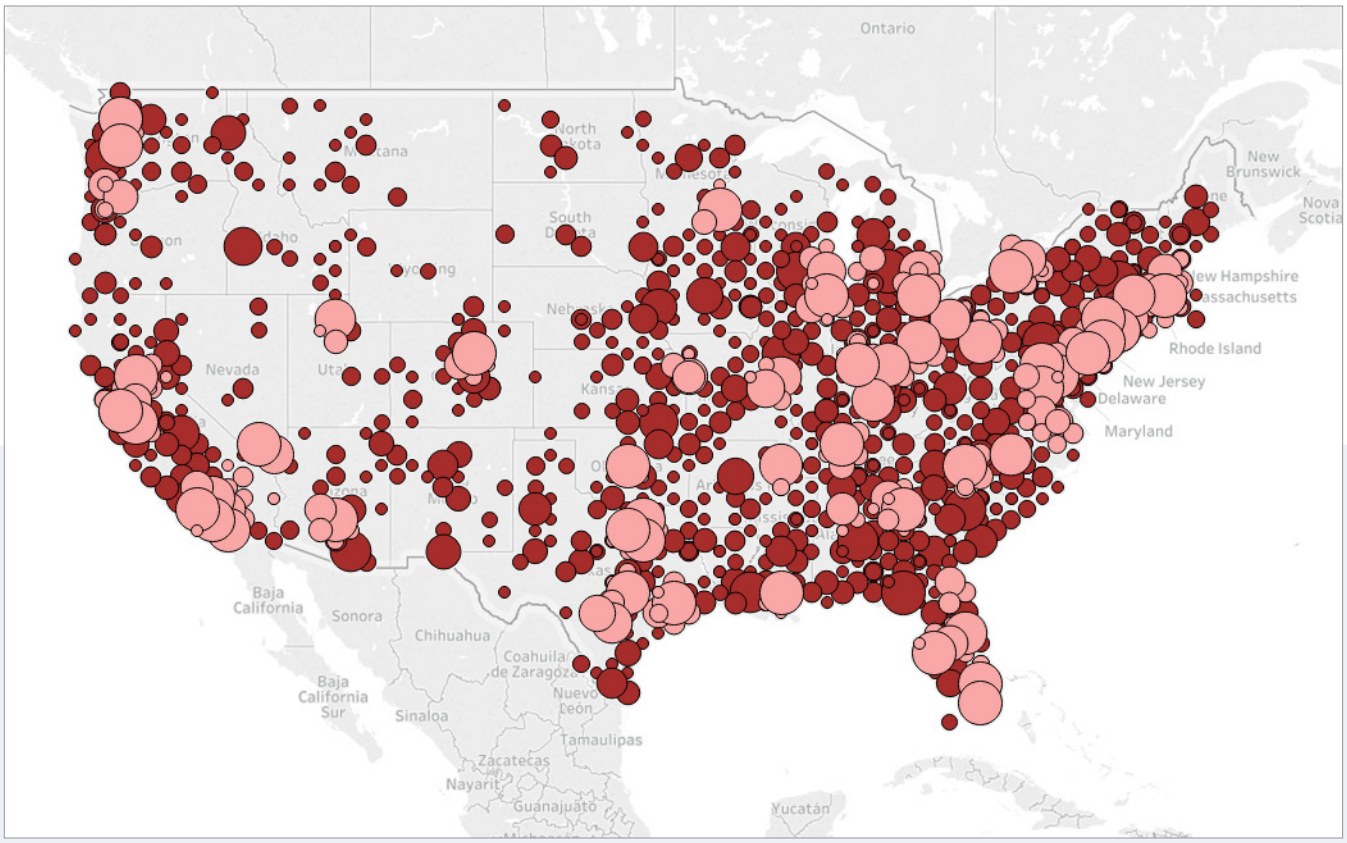
US SOCIAL MEDIA COVID-19 CLUSTERS

COVID-19 Public Social Media Eyewitness Cluster Growth is Occurring in Advance of Official Case Count Growth Across the United States



Lower Severity ● ● ● ● ● Higher Severity

Major Urban ● ● Non-Major Urban

April 21, 2020

Note: These alert clusters represent clusters of organic, on-the-ground public social media posts ranging from people indicating they tested positive for CV, people indicating they are experiencing symptoms of CV, people indicating they have been exposed to CV but not tested, and first hand accounts of confirmed CV cases from relatives, friends, and colleagues as well as related supply shortages and closures. Note: Small metropolitan and rural counties classified as non major urban areas per the National Center for Health Statistics (NCHS)

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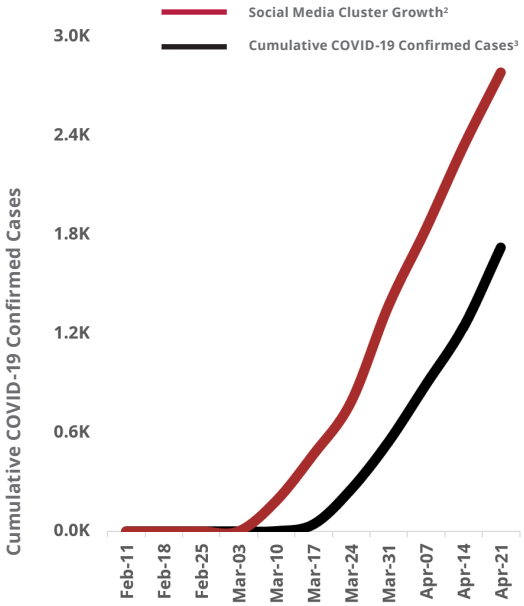
MAJOR URBAN COUNTY CASE STUDIES

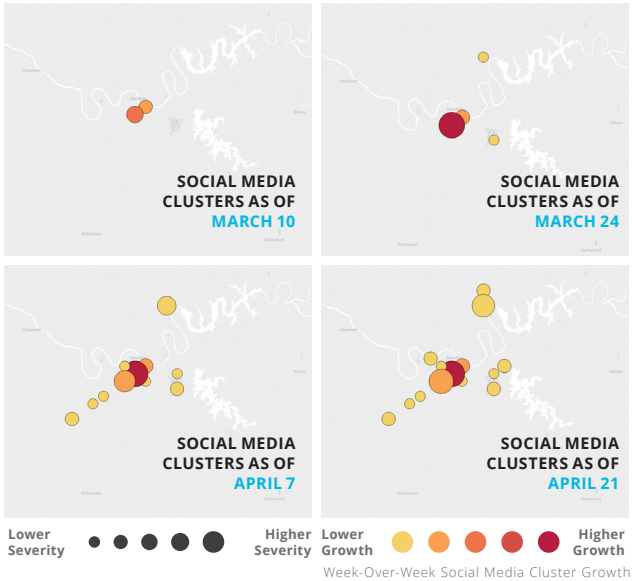
COVID-19 Outbreak Counties

Case Study: Davidson County, TN

Exponential growth in social media clusters occurred **12 days** prior to exponential growth in COVID-19 case count (Distance Correlation=0.81)[1]

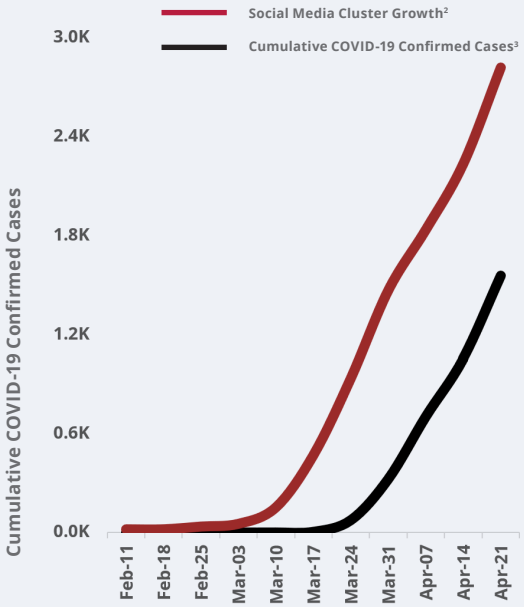


COVID-19 Social Media Clusters Detected

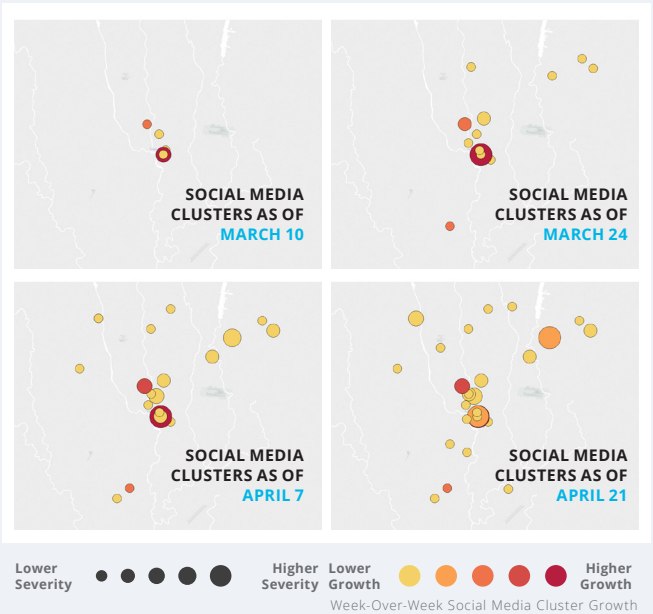


Case Study: Franklin County, OH

Exponential growth in social media clusters occurred **10 days** prior to exponential growth in COVID-19 case count (Distance Correlation=0.77)[1]



COVID-19 Social Media Clusters Detected



Note: Social Media Cluster Growth in above graph is depicted on a secondary scale

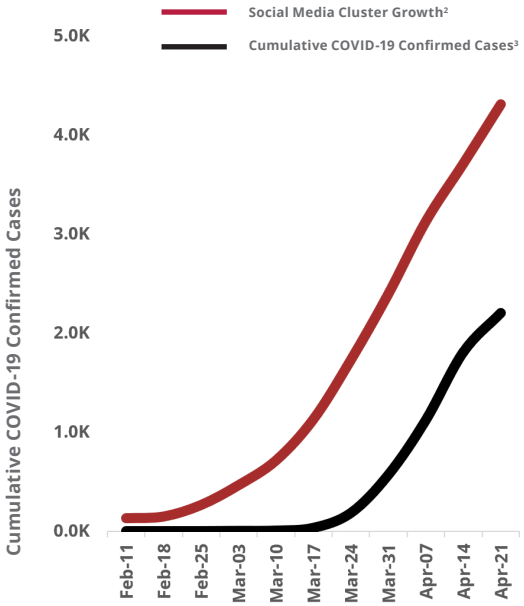
1 Distance Correlation is a similarity measure in [0,1] that measures non-linear correlations between time two series

2 These alert clusters represent clusters of organic, on-the-ground public social media posts ranging from people indicating they tested positive for CV, people indicating they are experiencing symptoms of CV, people indicating they have been exposed to CV but not tested, and first hand accounts of confirmed CV cases from relatives, friends, and colleagues as well as related supply shortages and closures.

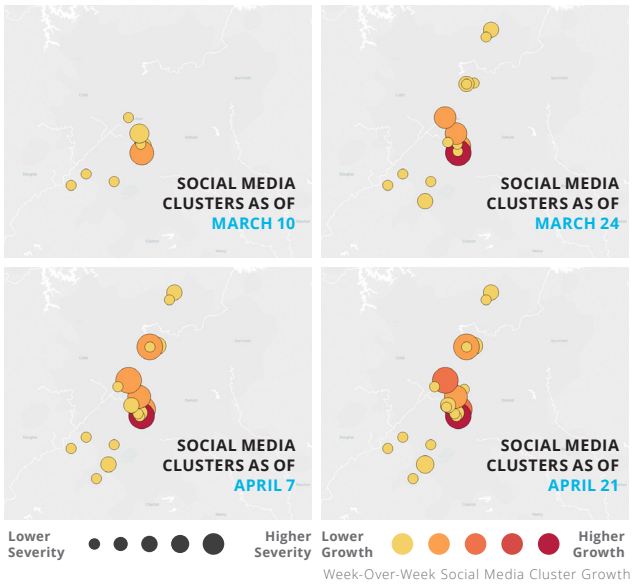
3 Data sourced from Johns Hopkins CSSE, World Health Organization, CDC for research purposes

Case Study: Fulton County, GA

Exponential growth in social media clusters occurred **7 days** prior to exponential growth in COVID-19 case count (Distance Correlation=0.69)[1]

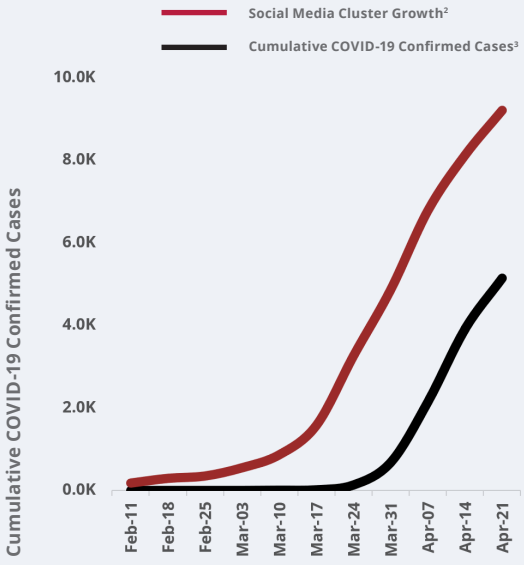


COVID-19 Social Media Clusters Detected

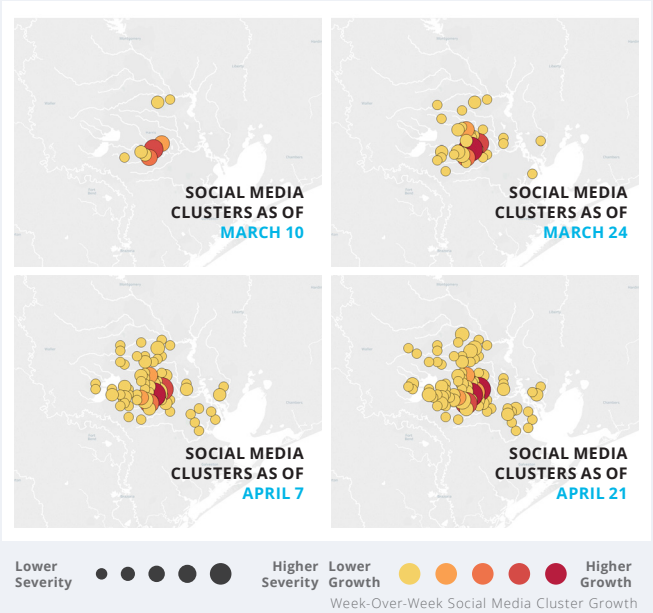


Case Study: Harris County, TX

Exponential growth in social media clusters occurred **8 days** prior to exponential growth in COVID-19 case count (Distance Correlation=0.77)[1]



COVID-19 Social Media Clusters Detected



Note: Social Media Cluster Growth in above graph is depicted on a secondary scale

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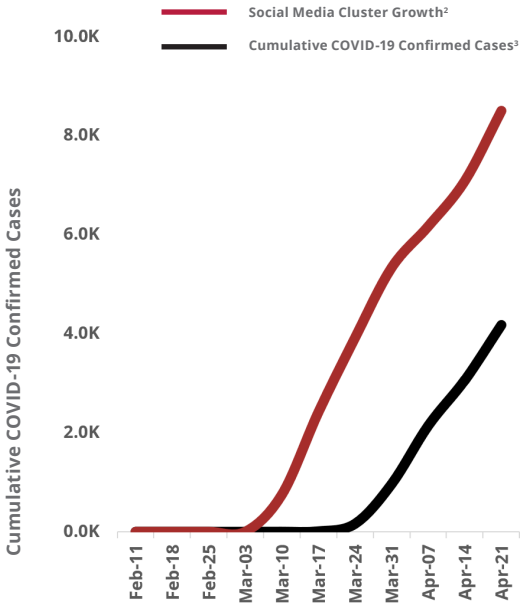
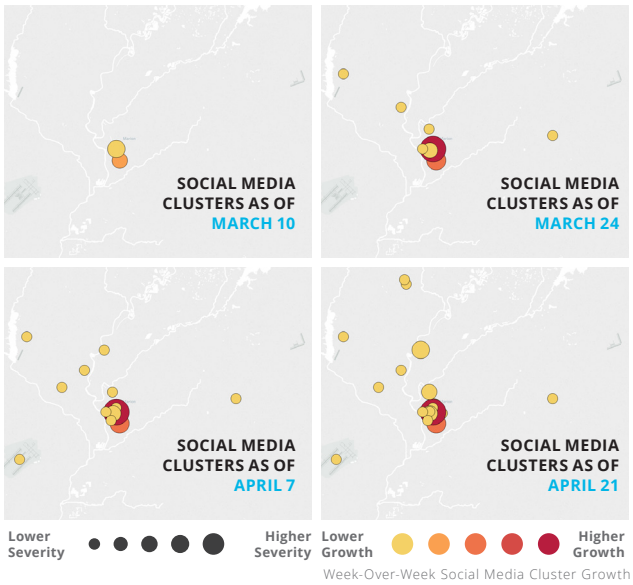
3 Data sourced from Johns Hopkins CSSE, World Health Organization, CDC for research purposes

Case Study: Marion County, IN

Exponential growth in social media clusters occurred **13 days** prior to exponential growth in COVID-19 case count (Distance Correlation=0.70)[1]

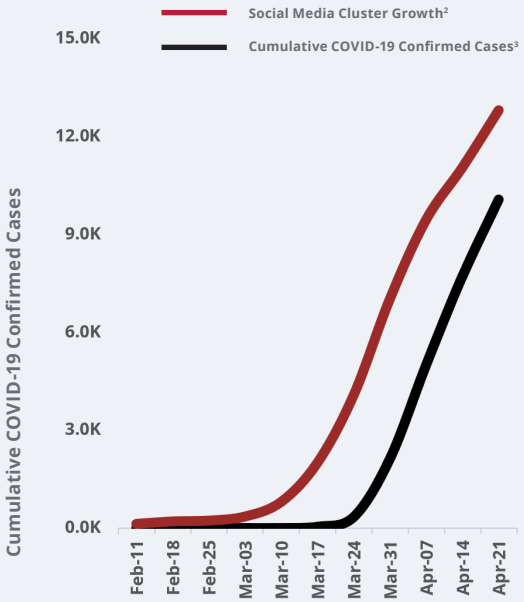


COVID-19 Social Media Clusters Detected

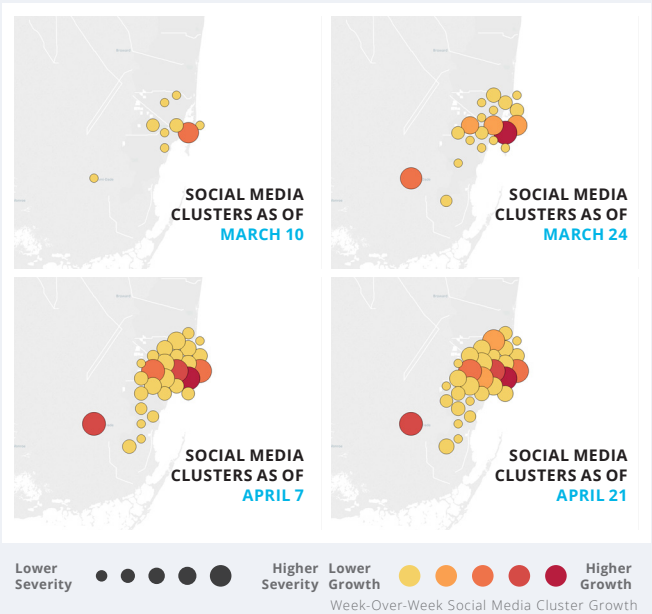


Case Study: Miami-Dade County, FL

Exponential growth in social media clusters occurred **10 days** prior to exponential growth in COVID-19 case count (Distance Correlation=0.83)[1]



COVID-19 Social Media Clusters Detected



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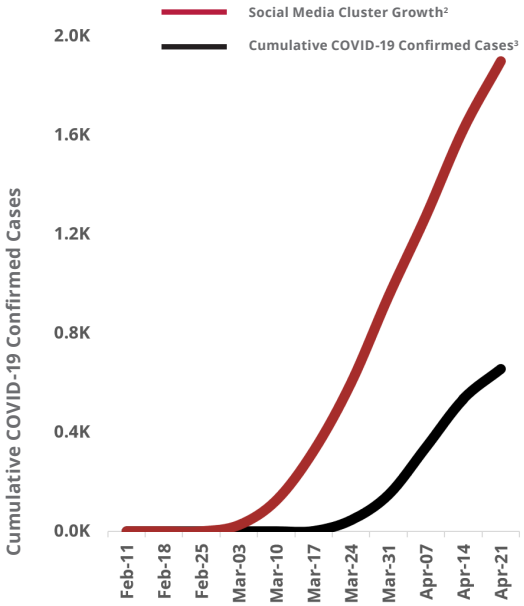
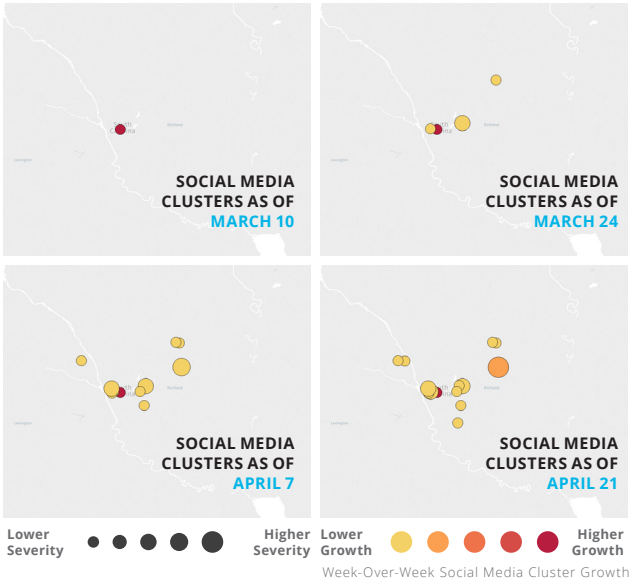
3 Data sourced from Johns Hopkins CSSE, World Health Organization, CDC for research purposes

Case Study: Richland County, SC

Exponential growth in social media clusters occurred **13 days** prior to exponential growth in COVID-19 case count (Distance Correlation=0.74)[1]

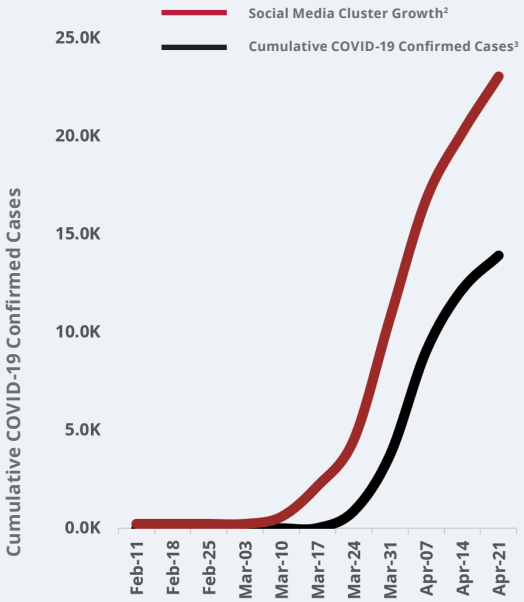


COVID-19 Social Media Clusters Detected

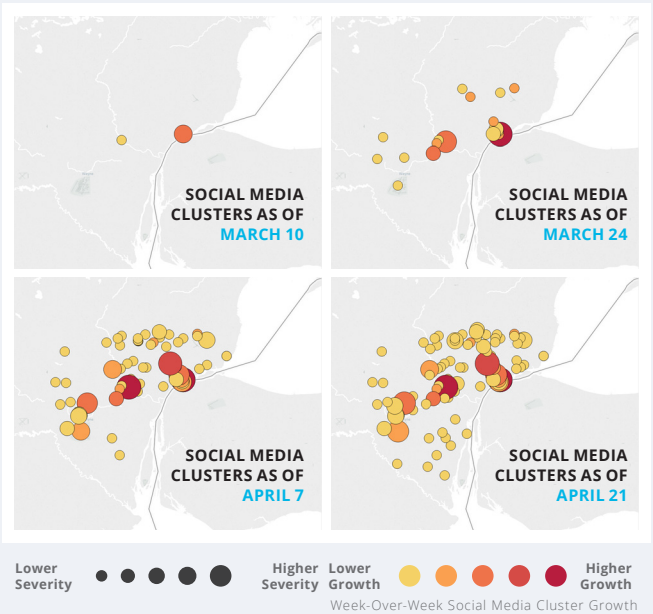


Case Study: Wayne County, MI

Exponential growth in social media clusters occurred **6 days** prior to exponential growth in COVID-19 case count (Distance Correlation=0.83)[1]



COVID-19 Social Media Clusters Detected



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SMALL METROPOLITAN AND RURAL COUNTY CASE STUDIES

Pre COVID-19 Outbreak Counties

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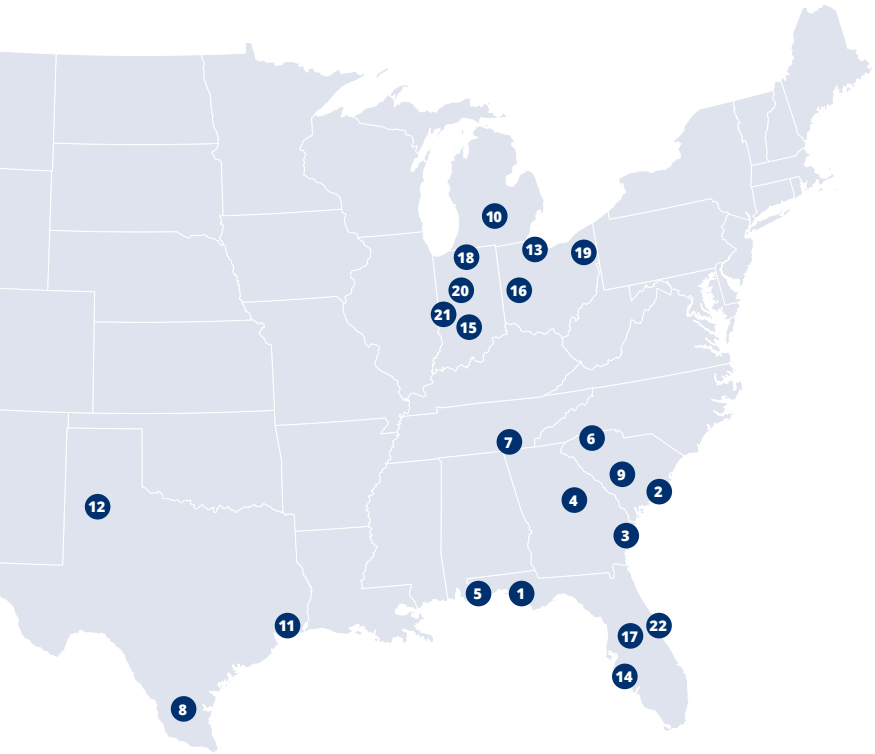
SMALL METROPOLITAN AND RURAL COUNTY CASE STUDIES

Pre COVID-19 Outbreak Counties

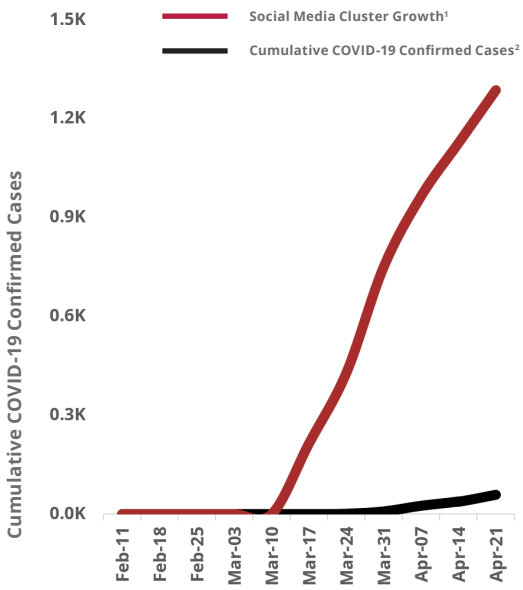
Pre COVID-19 Outbreak Small Metropolitan and Rural Counties Showing Exponential Social Media Cluster Growth

As of April 22, there is exponential social media cluster growth in 22 small metropolitan and rural area counties in the U.S. that do not yet have a spike in COVID-19 case counts, **suggesting an impending case spike:**

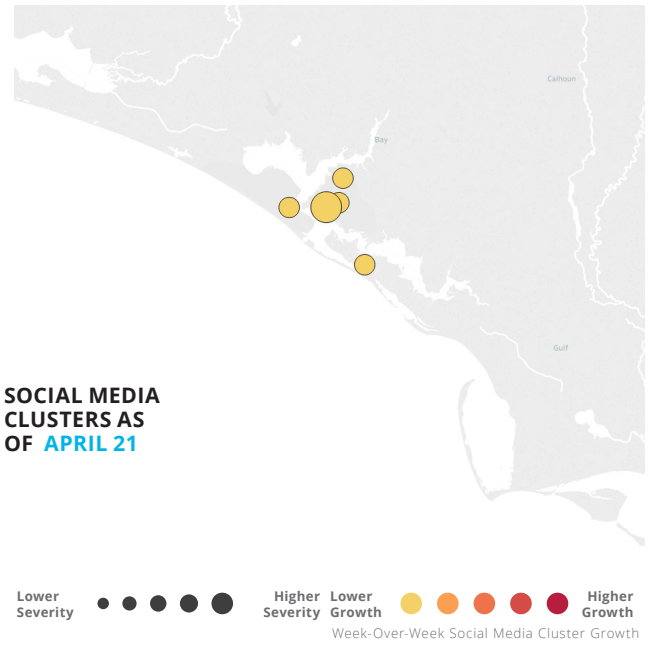


1. BAY COUNTY, FL
2. CHARLESTON COUNTY, SC
3. CHATHAM COUNTY, GA
4. CLARKE COUNTY, GA
5. ESCAMBIA COUNTY, FL
6. GREENVILLE COUNTY, SC
7. HAMILTON COUNTY, TN
8. HIDALGO COUNTY, TX
9. HORRY COUNTY, SC
10. JACKSON COUNTY, MI
11. JEFFERSON COUNTY, TX
12. LUBBOCK COUNTY, TX
13. LUCAS COUNTY, OH
14. MANATEE COUNTY, FL
15. MONROE COUNTY, IN
16. MONTGOMERY COUNTY, OH
17. POLK COUNTY, FL
18. ST. JOSEPH COUNTY, IN
19. SUMMIT COUNTY, OH
20. TIPPECANOE COUNTY, IN
21. VIGO COUNTY, IN
22. VOLUSIA COUNTY, FL

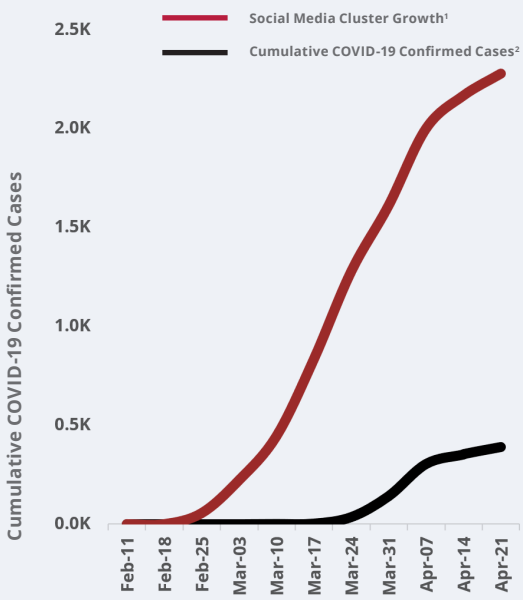
Case Study: Bay County, FL



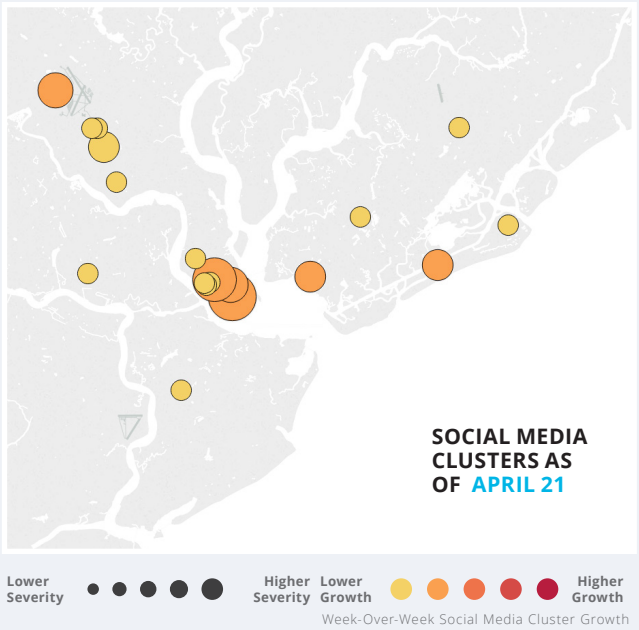
COVID-19 Social Media Clusters Detected



Case Study: Charleston County, SC



COVID-19 Social Media Clusters Detected



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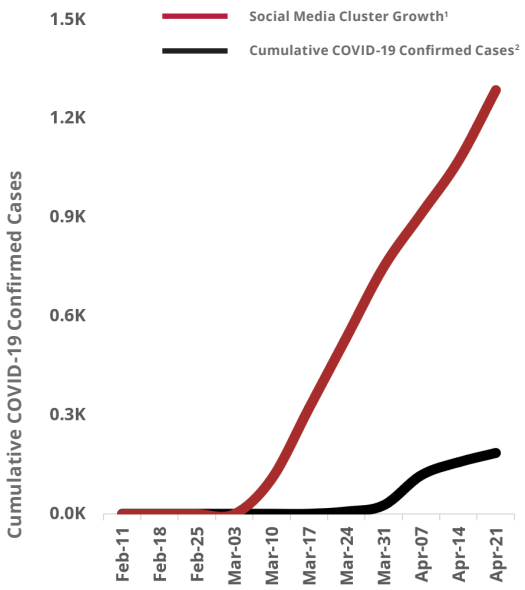
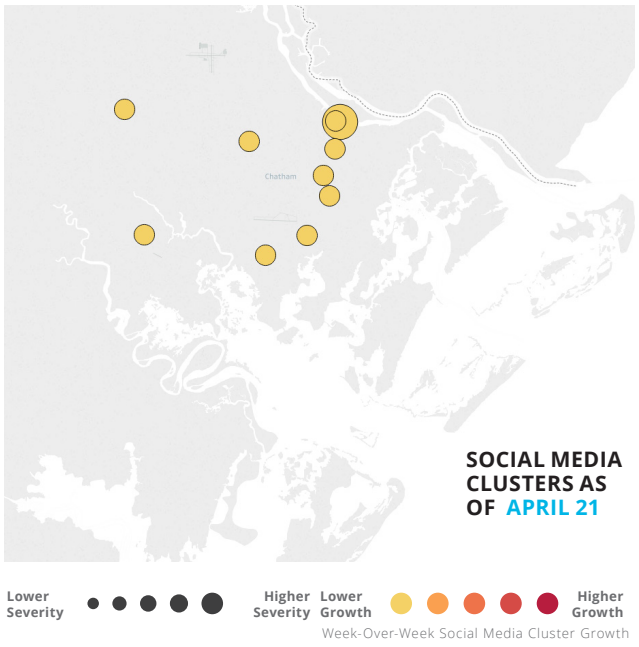
2 Data sourced from Johns Hopkins CSSE, World Health Organization, CDC for research purposes

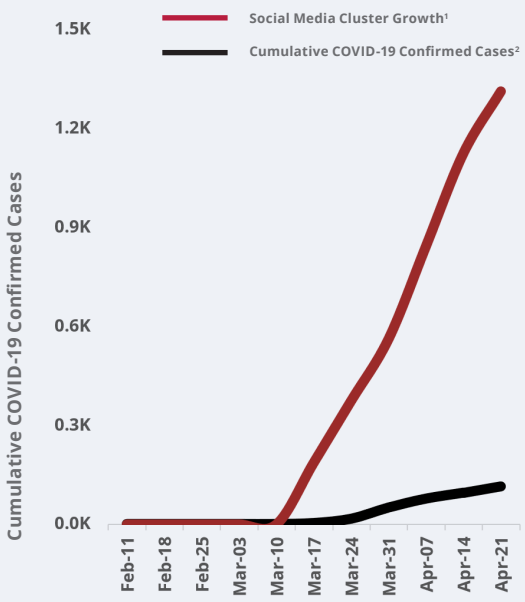
Case Study: Chatham County, GA



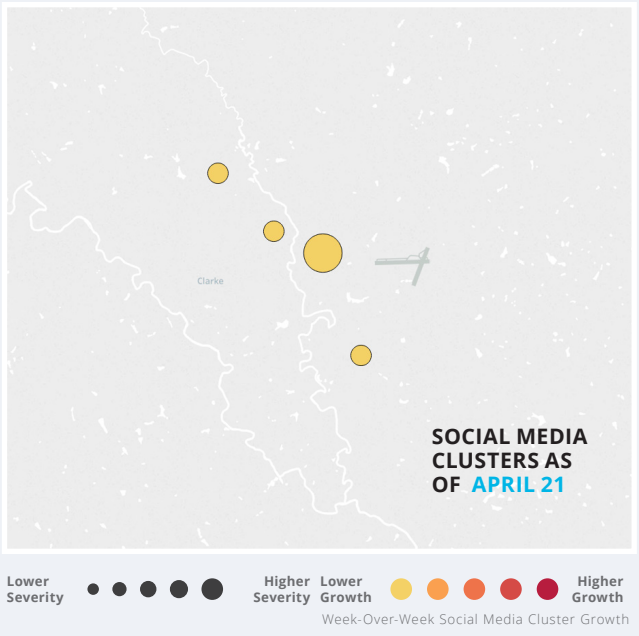
COVID-19 Social Media Clusters Detected



Case Study: Clarke County, GA



COVID-19 Social Media Clusters Detected



Note: Social Media Cluster Growth in above graph is depicted on a secondary scale

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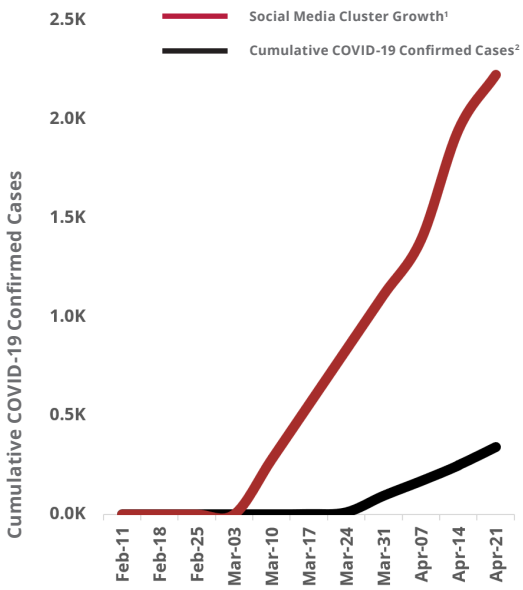
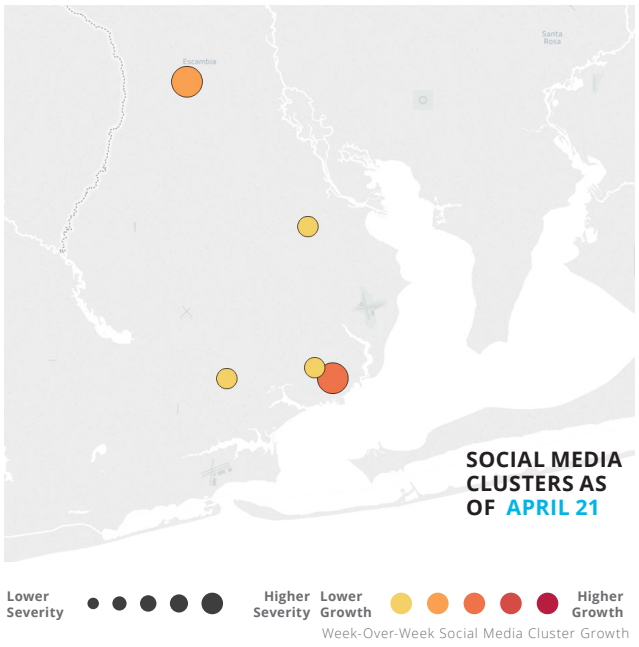
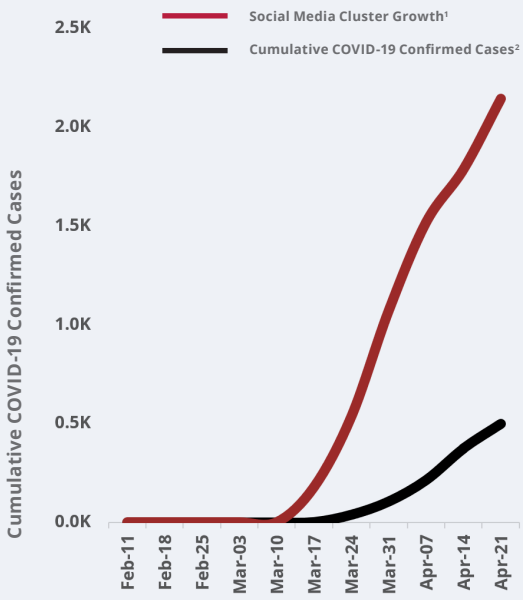
Case Study: Escambia County, FL



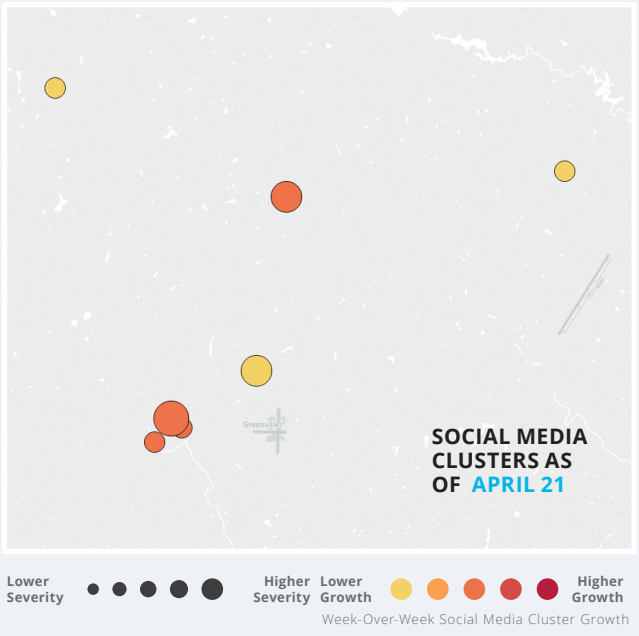
COVID-19 Social Media Clusters Detected



Case Study: Greenville County, SC



COVID-19 Social Media Clusters Detected



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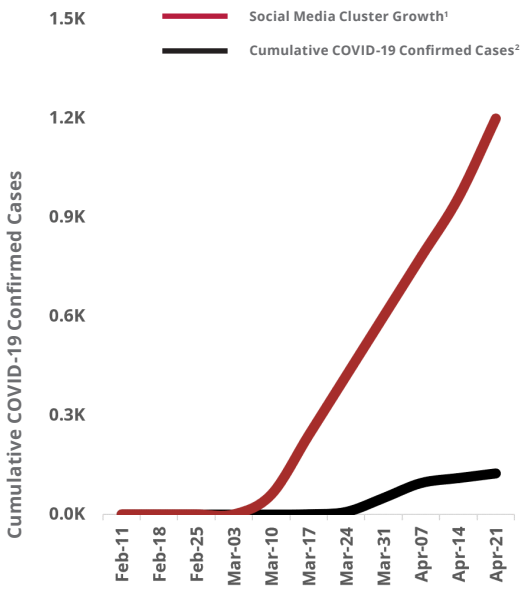
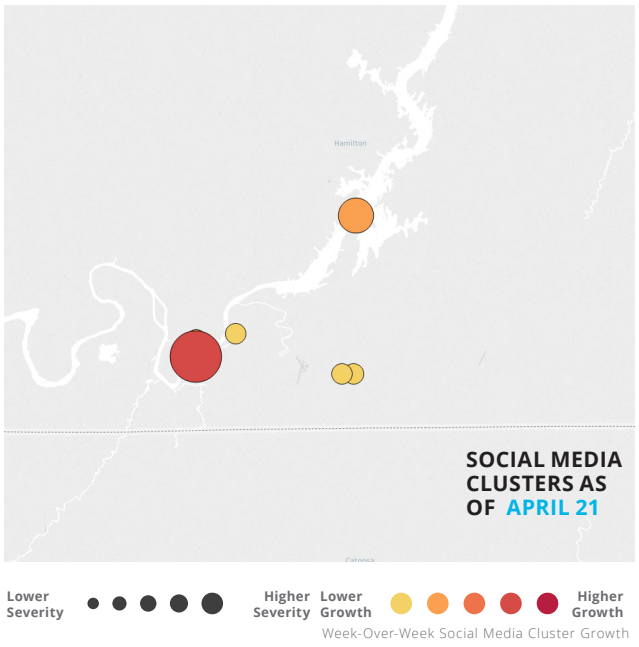
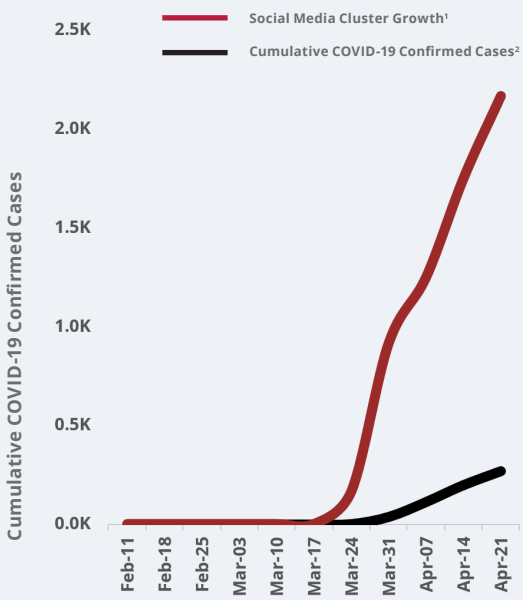
Case Study: Hamilton County, TN



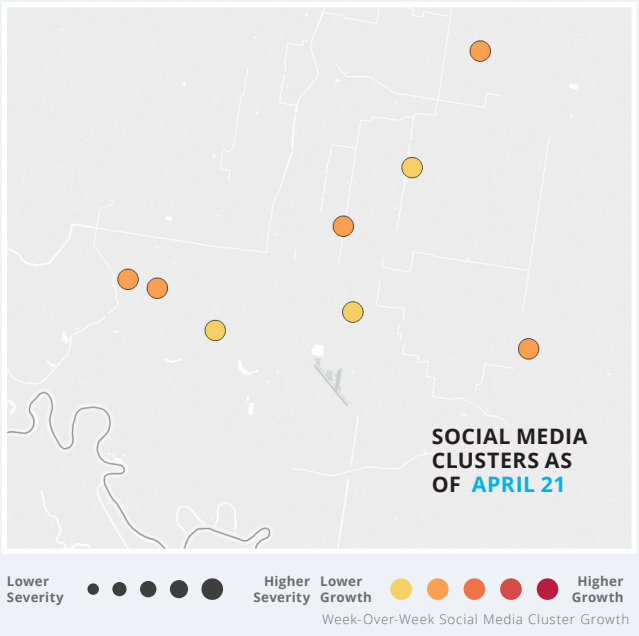
COVID-19 Social Media Clusters Detected



Case Study: Hidalgo County, TX



COVID-19 Social Media Clusters Detected



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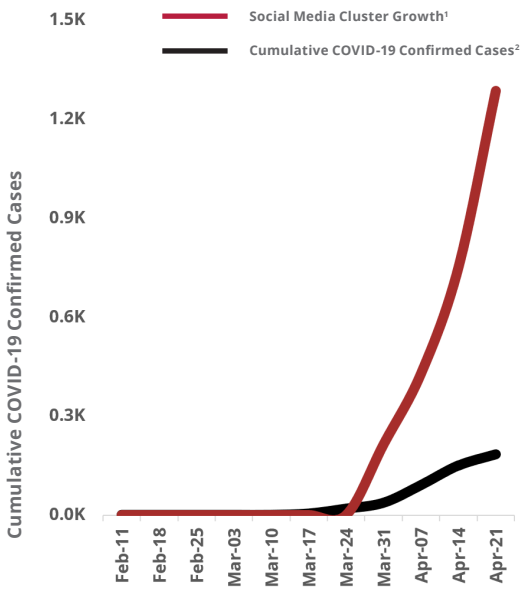
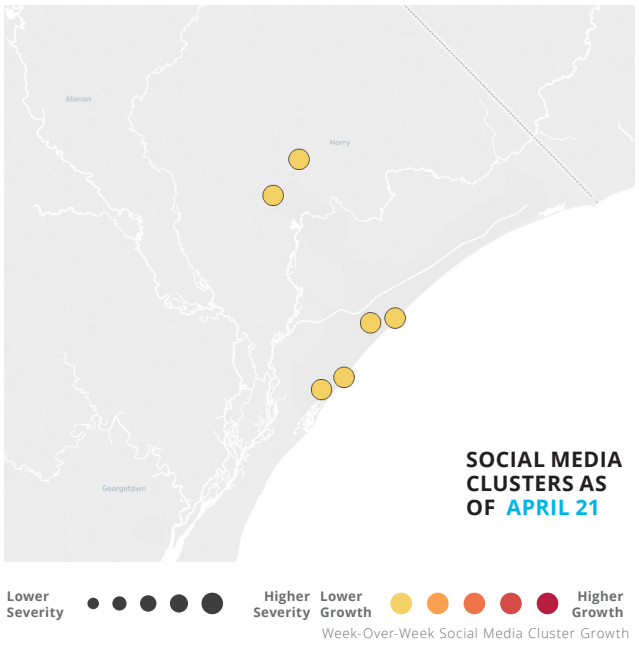
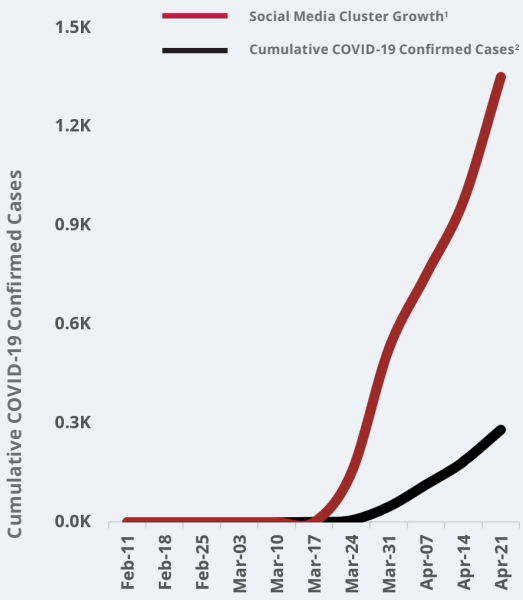
Case Study: Horry County, SC



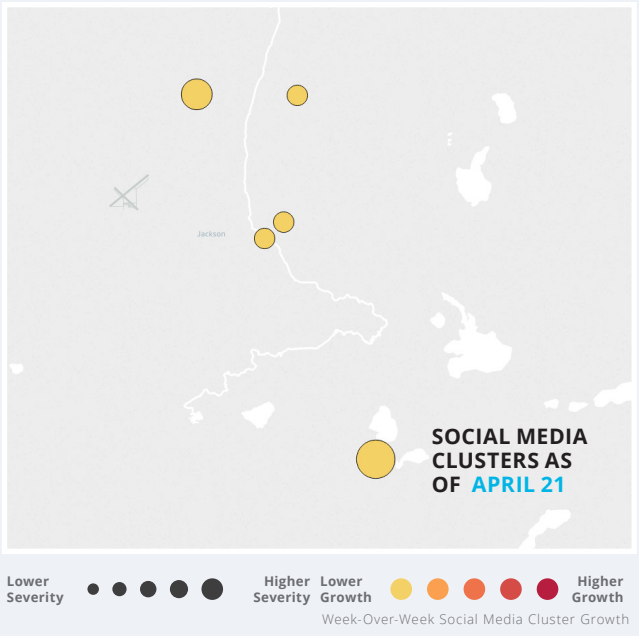
COVID-19 Social Media Clusters Detected



Case Study: Jackson County, MI



COVID-19 Social Media Clusters Detected



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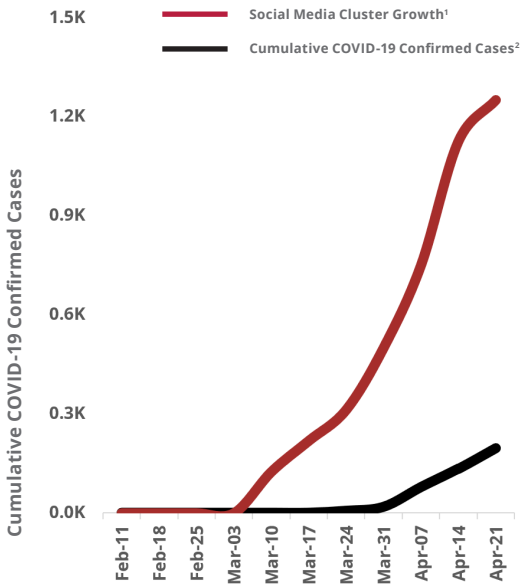
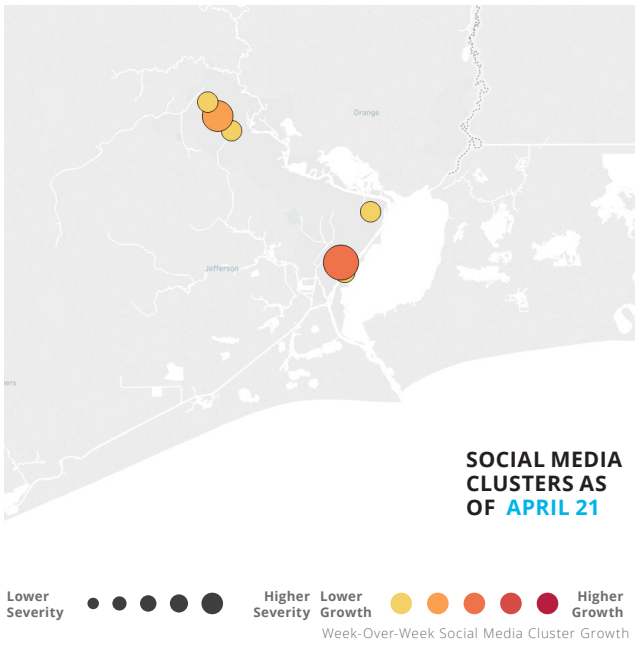
2 Data sourced from Johns Hopkins CSSE, World Health Organization, CDC for research purposes

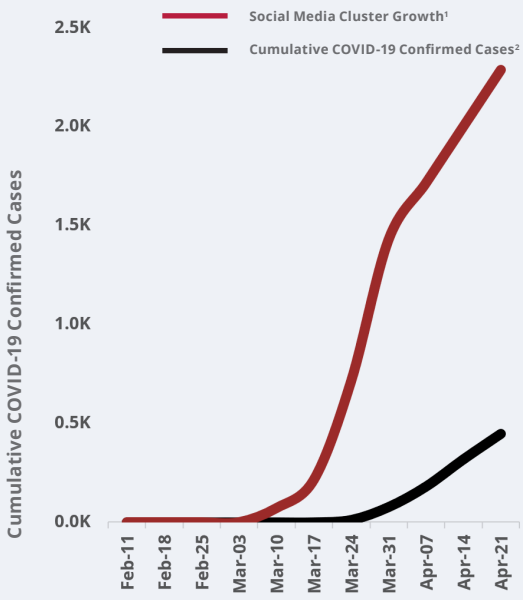
Case Study: Jefferson County, TX



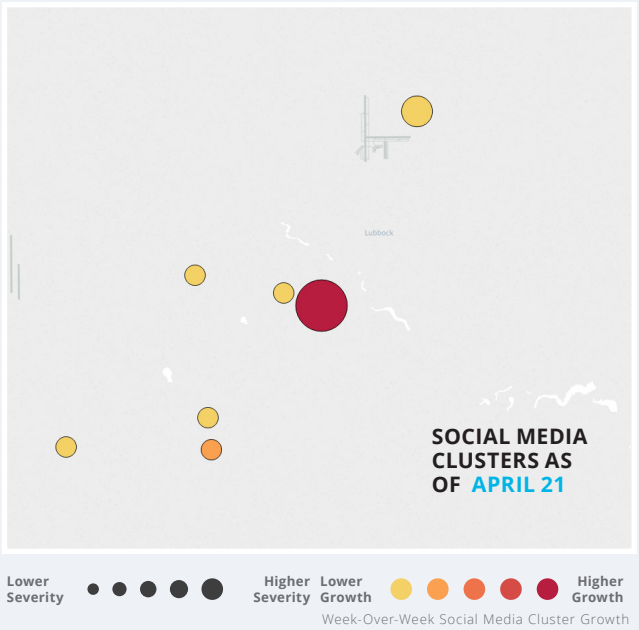
COVID-19 Social Media Clusters Detected



Case Study: Lubbock County, TX



COVID-19 Social Media Clusters Detected

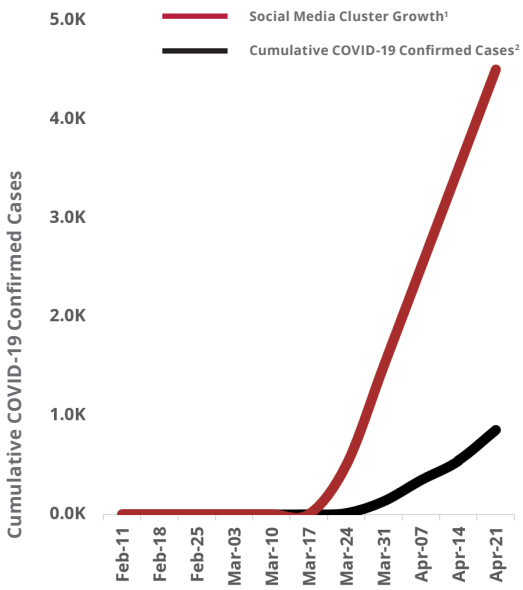


Note: Social Media Cluster Growth in above graph is depicted on a secondary scale

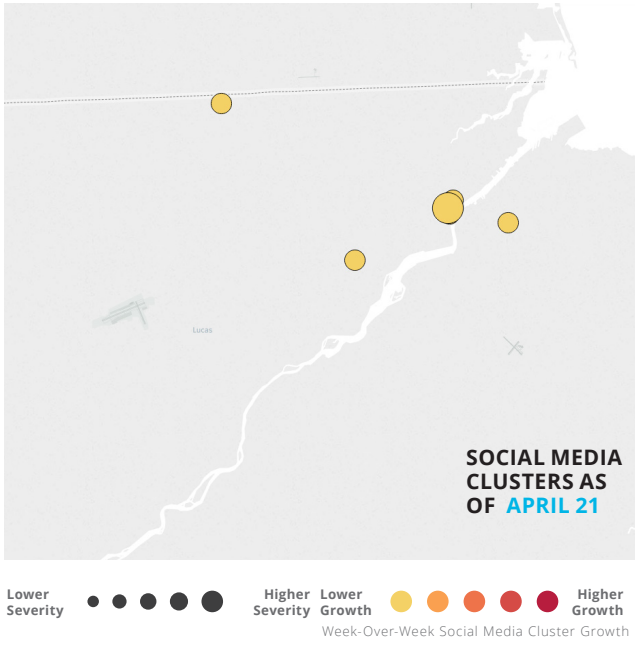
1 These alert clusters represent clusters of organic, on-the-ground public social media posts ranging from people indicating they tested positive for CV, people indicating they are experiencing symptoms of CV, people indicating they have been exposed to CV but not tested, and first hand accounts of confirmed CV cases from relatives, friends, and colleagues as well as related supply shortages and closures.

2 Data sourced from Johns Hopkins CSSE, World Health Organization, CDC for research purposes

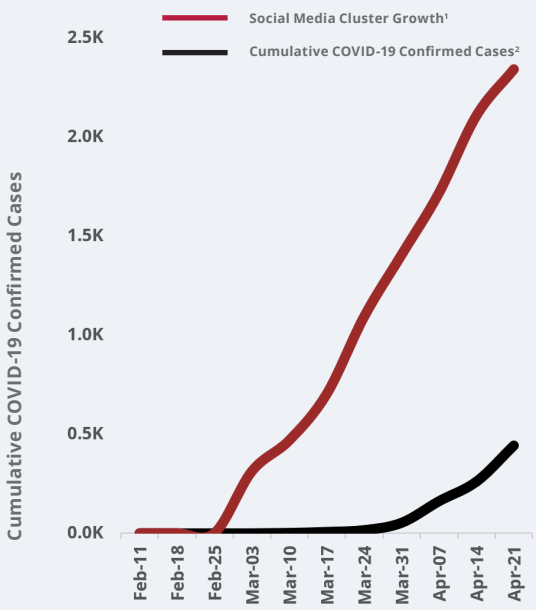
Case Study: Lucas County, OH



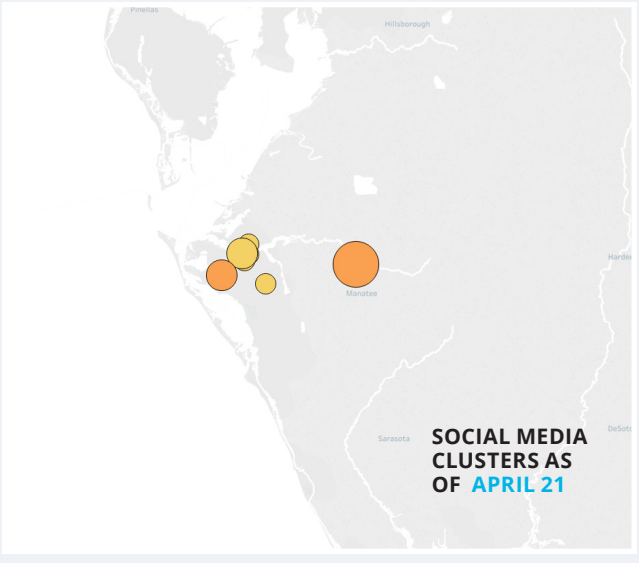
COVID-19 Social Media Clusters Detected



Case Study: Manatee County, FL



COVID-19 Social Media Clusters Detected



Note: Social Media Cluster Growth in above graph is depicted on a secondary scale

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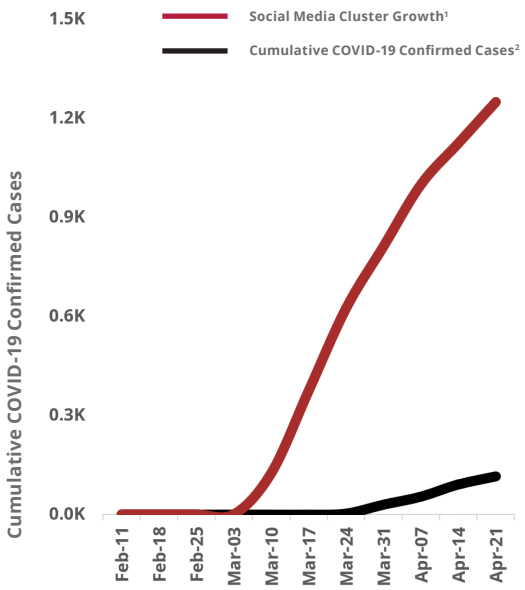
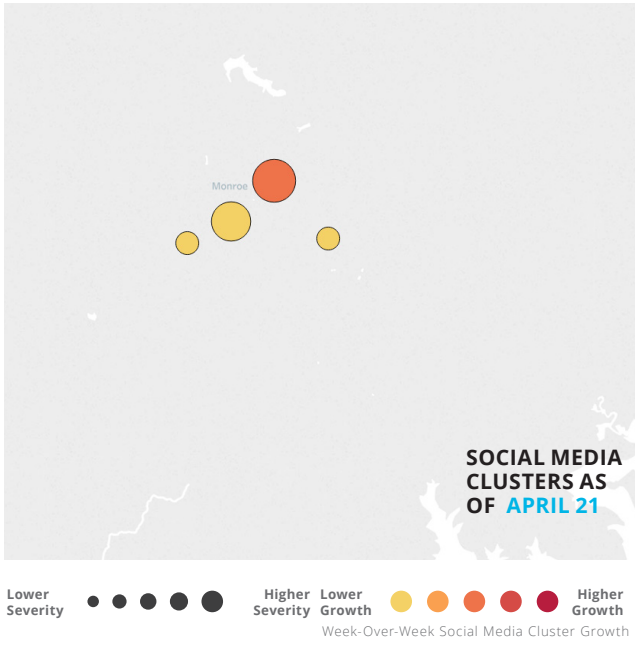
2 Data sourced from Johns Hopkins CSSE, World Health Organization, CDC for research purposes

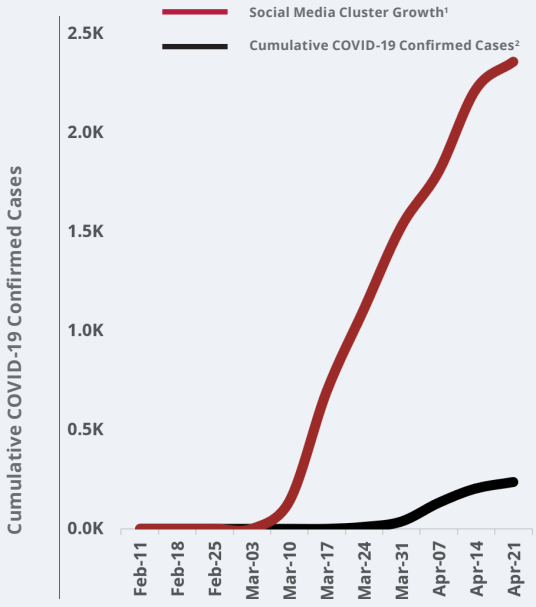
Case Study: Monroe County, IN



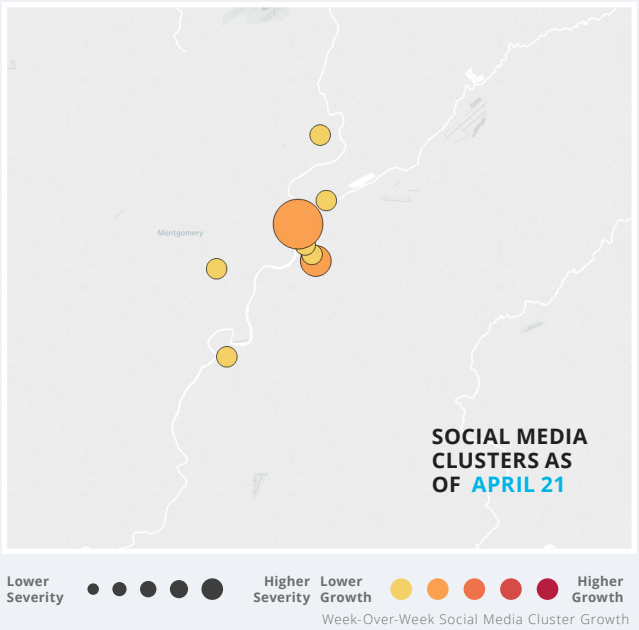
COVID-19 Social Media Clusters Detected



Case Study: Montgomery County, OH



COVID-19 Social Media Clusters Detected



Note: Social Media Cluster Growth in above graph is depicted on a secondary scale
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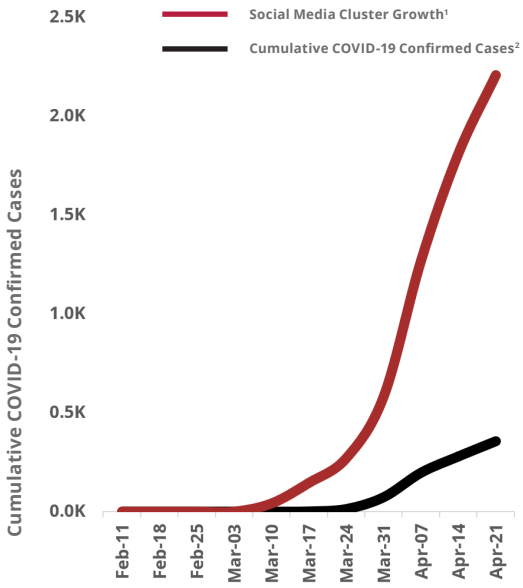
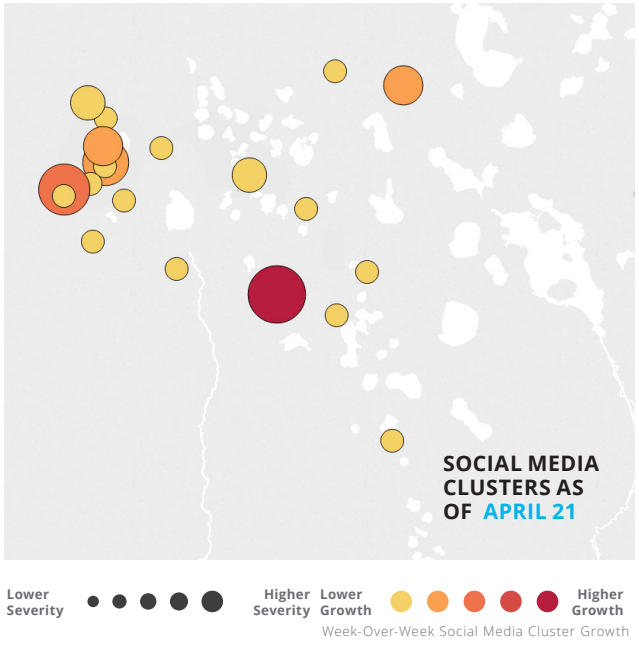
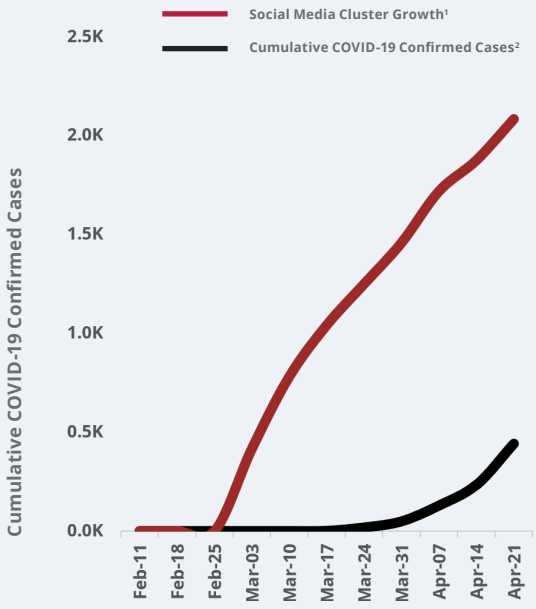
Case Study: Polk County, FL



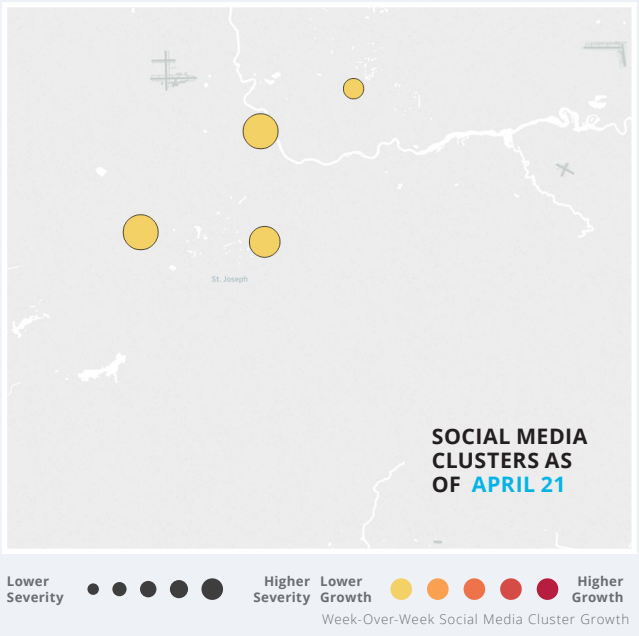
COVID-19 Social Media Clusters Detected



Case Study: St. Joseph County, IN



COVID-19 Social Media Clusters Detected



Note: Social Media Cluster Growth in above graph is depicted on a secondary scale

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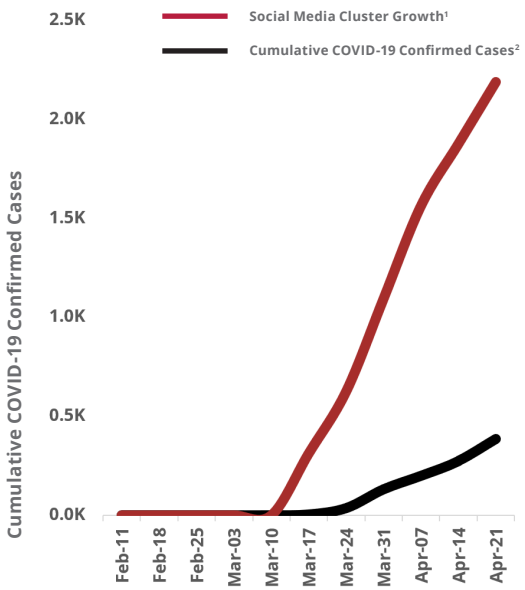
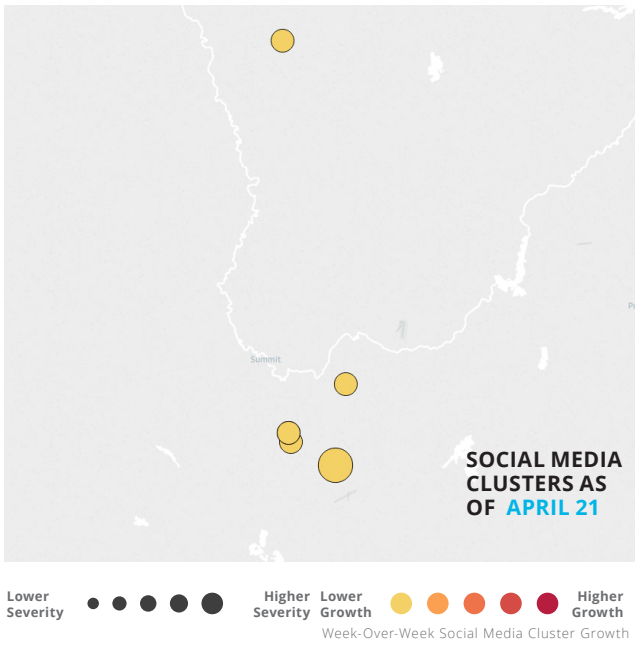
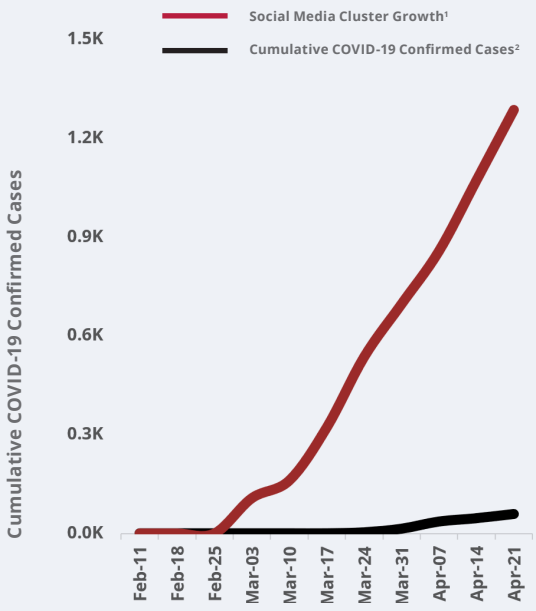
Case Study: Summit County, OH



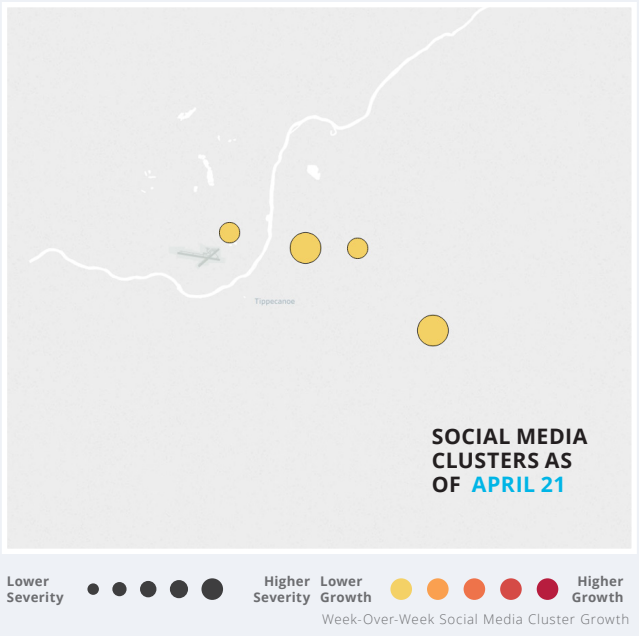
COVID-19 Social Media Clusters Detected



Case Study: Tippecanoe County, IN



COVID-19 Social Media Clusters Detected



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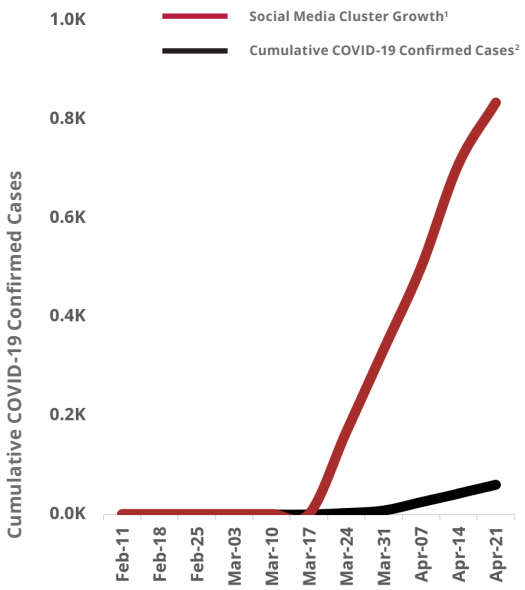
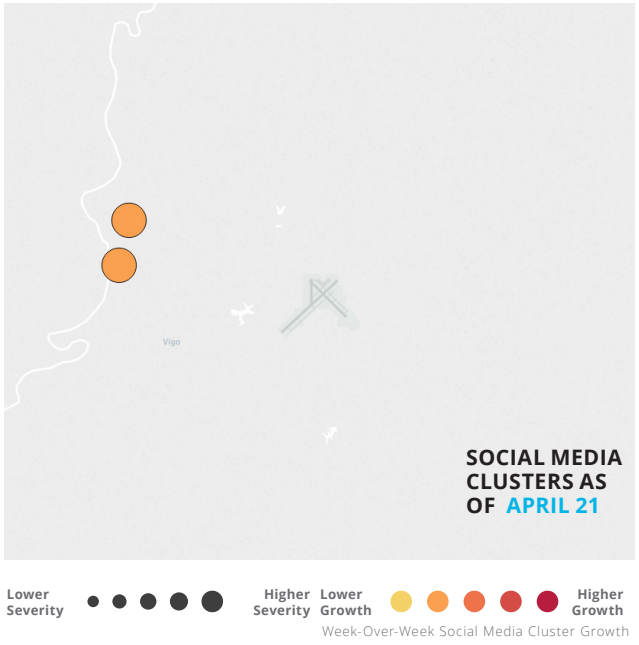
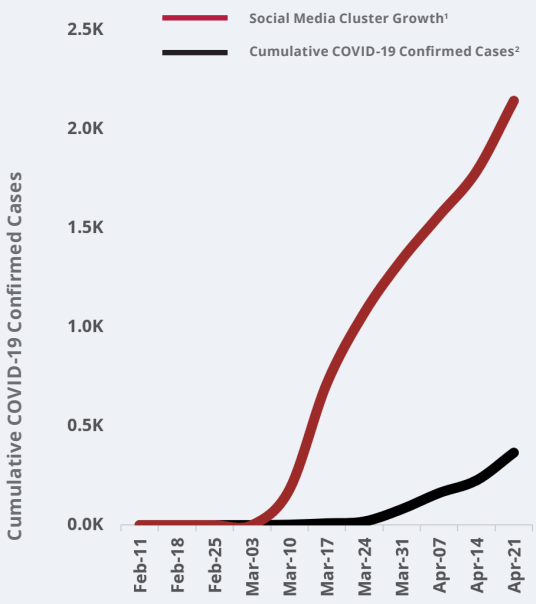
Case Study: Vigo County, IN



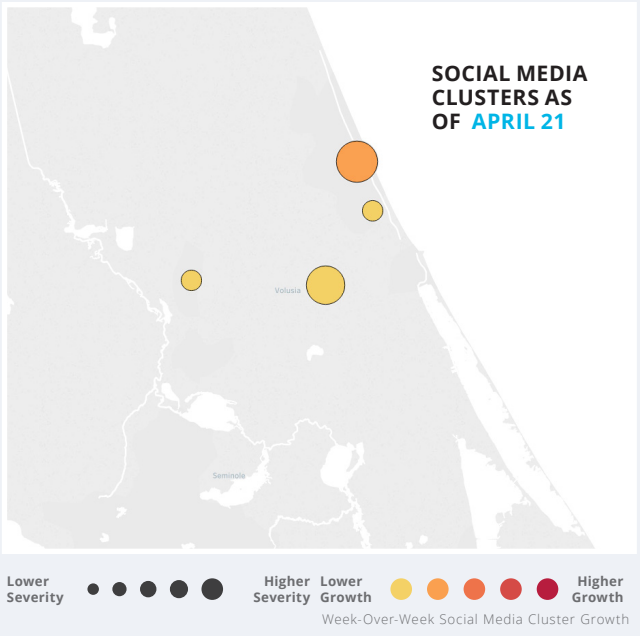
COVID-19 Social Media Clusters Detected



Case Study: Volusia County, FL



COVID-19 Social Media Clusters Detected



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