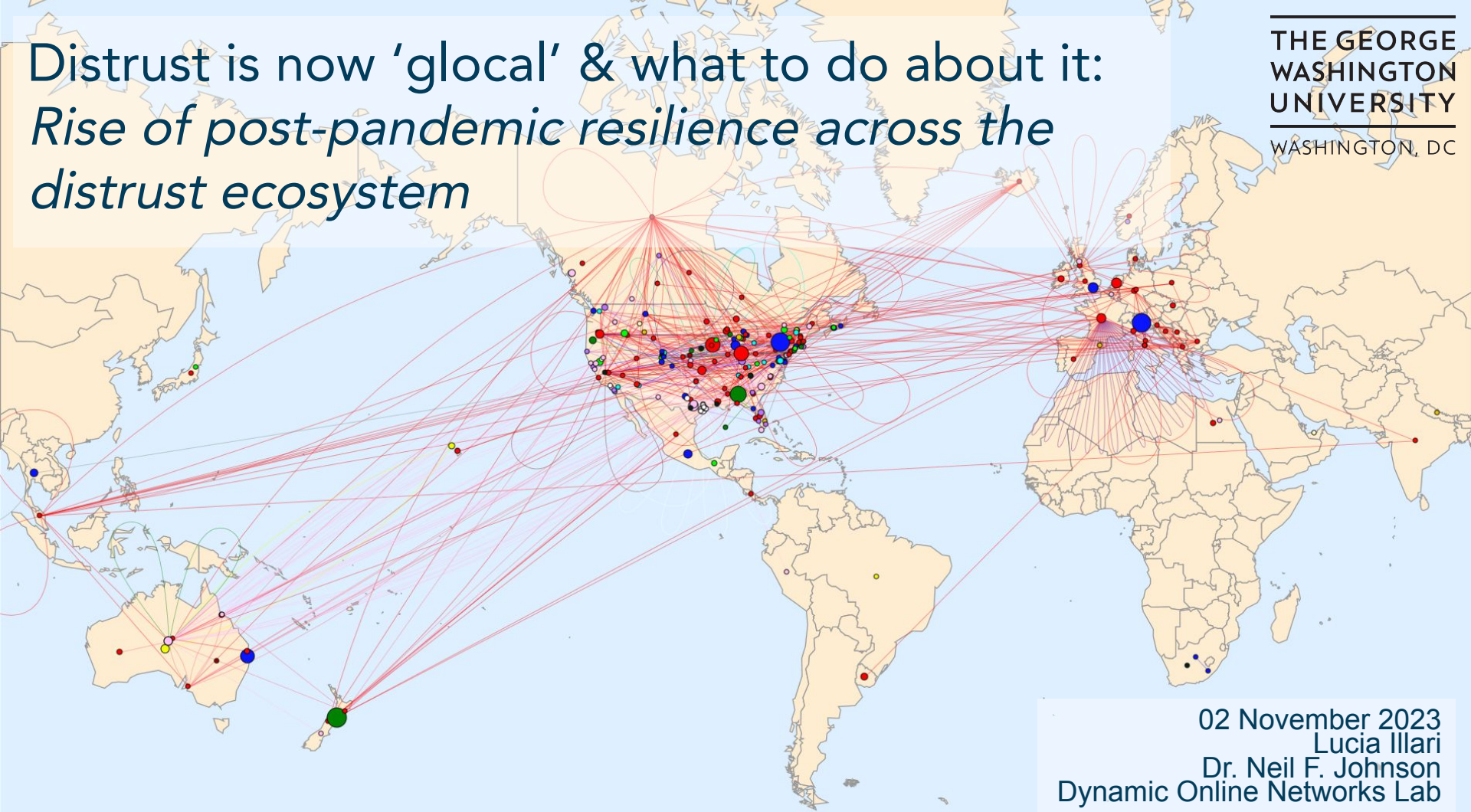
Distrust is now ‘glocal’ & what to do about it:
Rise of post-pandemic resilience across the distrust ecosystem



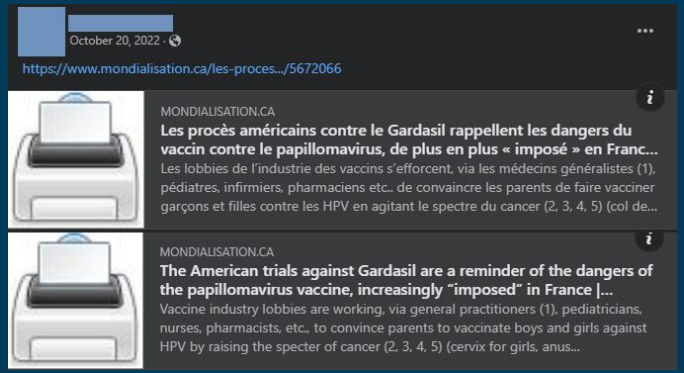
THE GEORGE WASHINGTON UNIVERSITY
WASHINGTON, DC

02 November 2023

Lucia Illari
Dr. Neil F. Johnson
Dynamic Online Networks Lab

- Distrust of (health) expertise is a growing public threat
- We analyzed post-pandemic ecosystem of ~100M users that pre-Covid was focused on distrust of vaccines
- We find topics & geographic scales are now entangled
- Problem: because of funding etc., current mitigations
  - focus only on specific topics
    e.g. Covid-19, climate, but not both
  - focus only on specific geographical scales
    e.g. global, local, but not both

Solution: public messaging will be more effective if it becomes 'glocal'
i.e. mix topics & geographic scales!



Pre-Covid ecosystem of 100M users on Facebook focused on distrust of vaccines

The online competition between pro- and anti-vaccination views

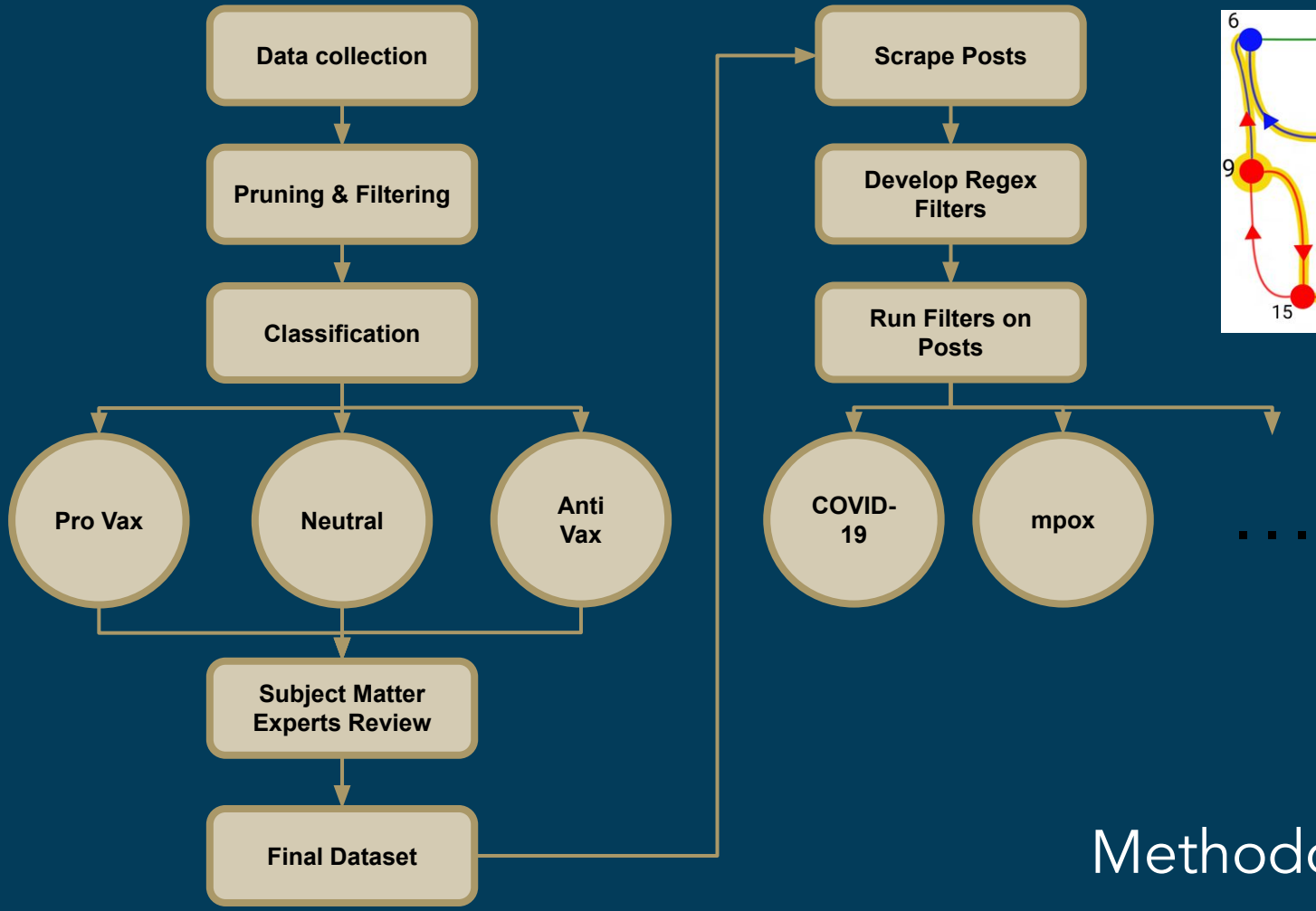
nature

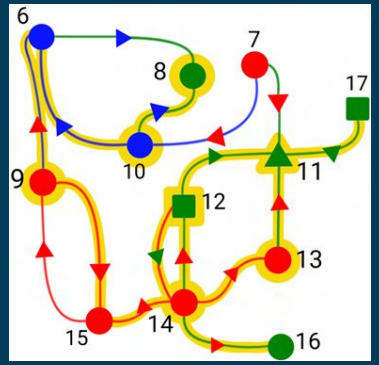
Our network:

- community affiliation network
- page (community) forms connections by following or liking another page (community)
- enduring endorsement between pages

Others' networks:

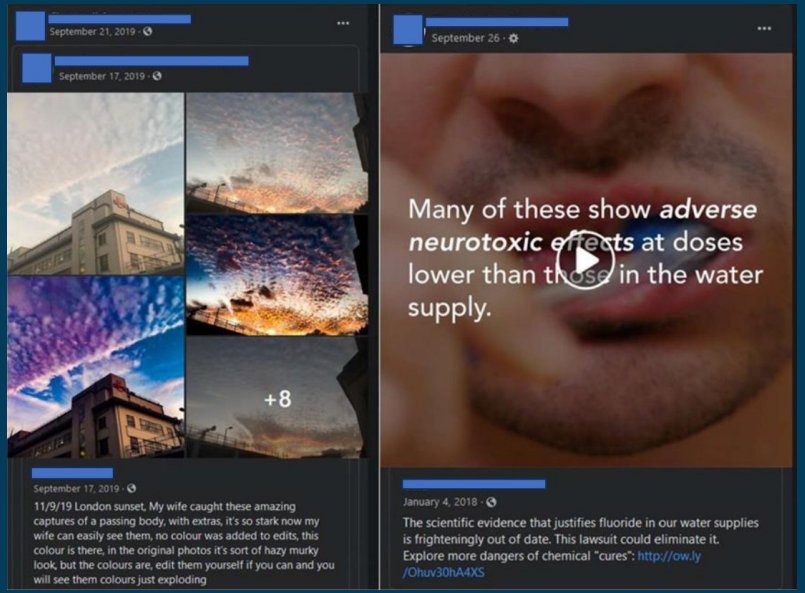
- mention network
- page (community) mentions another page (community) fleetingly via URL links in posts
- transient hyperlink network, questionable relevance



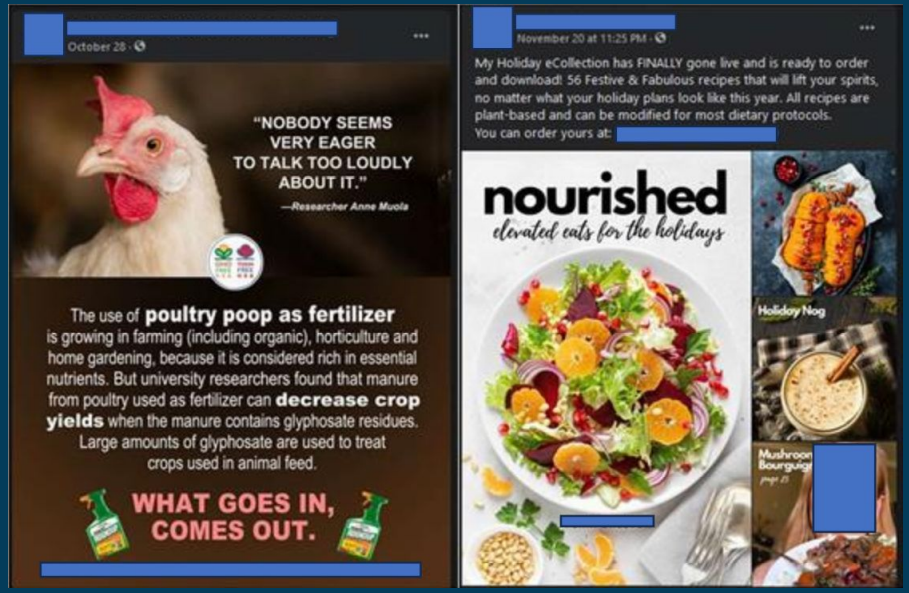


Methodology

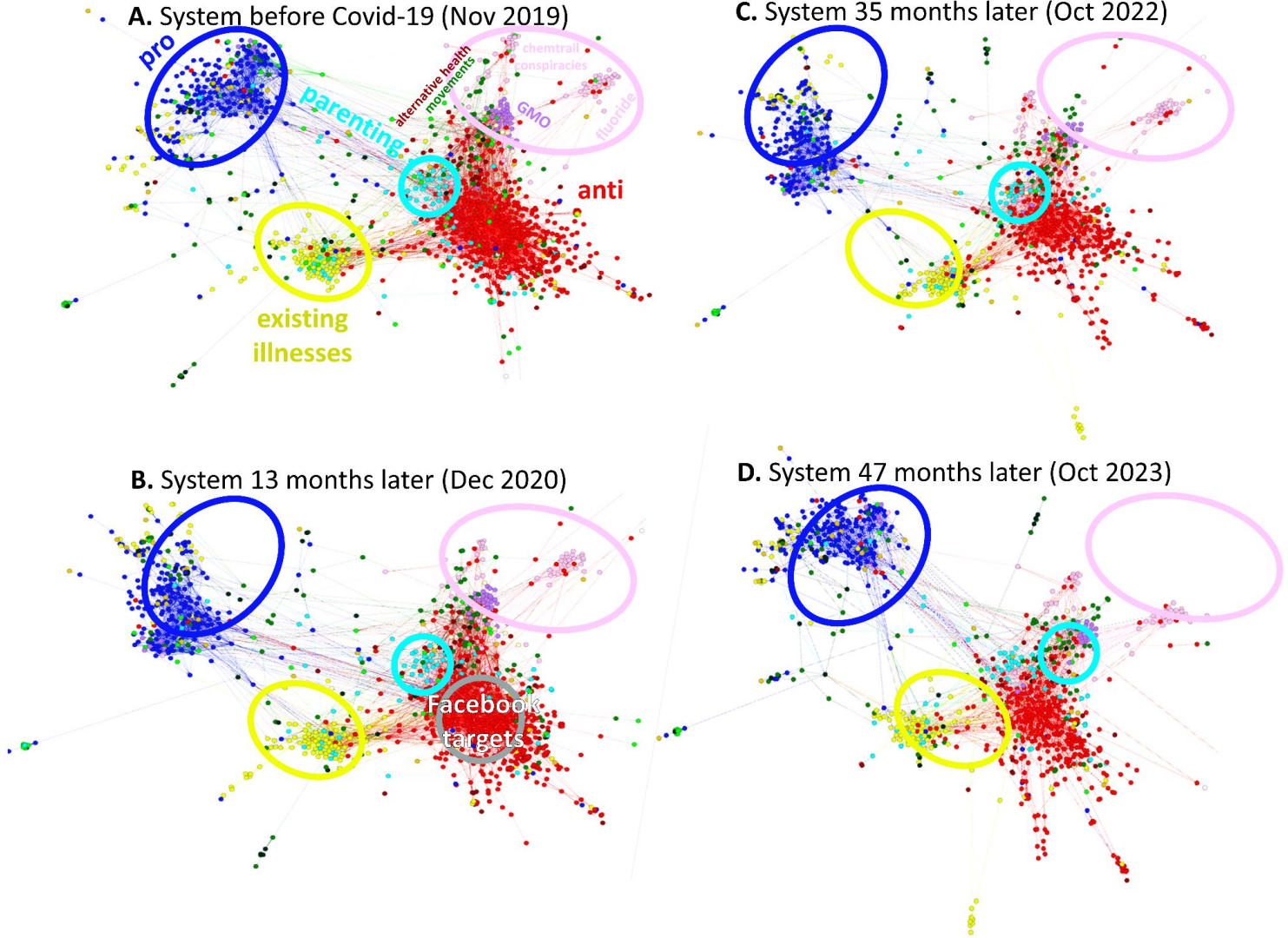
Examples of neutral pages (communities) i.e. not explicitly pro-vax or anti-vax

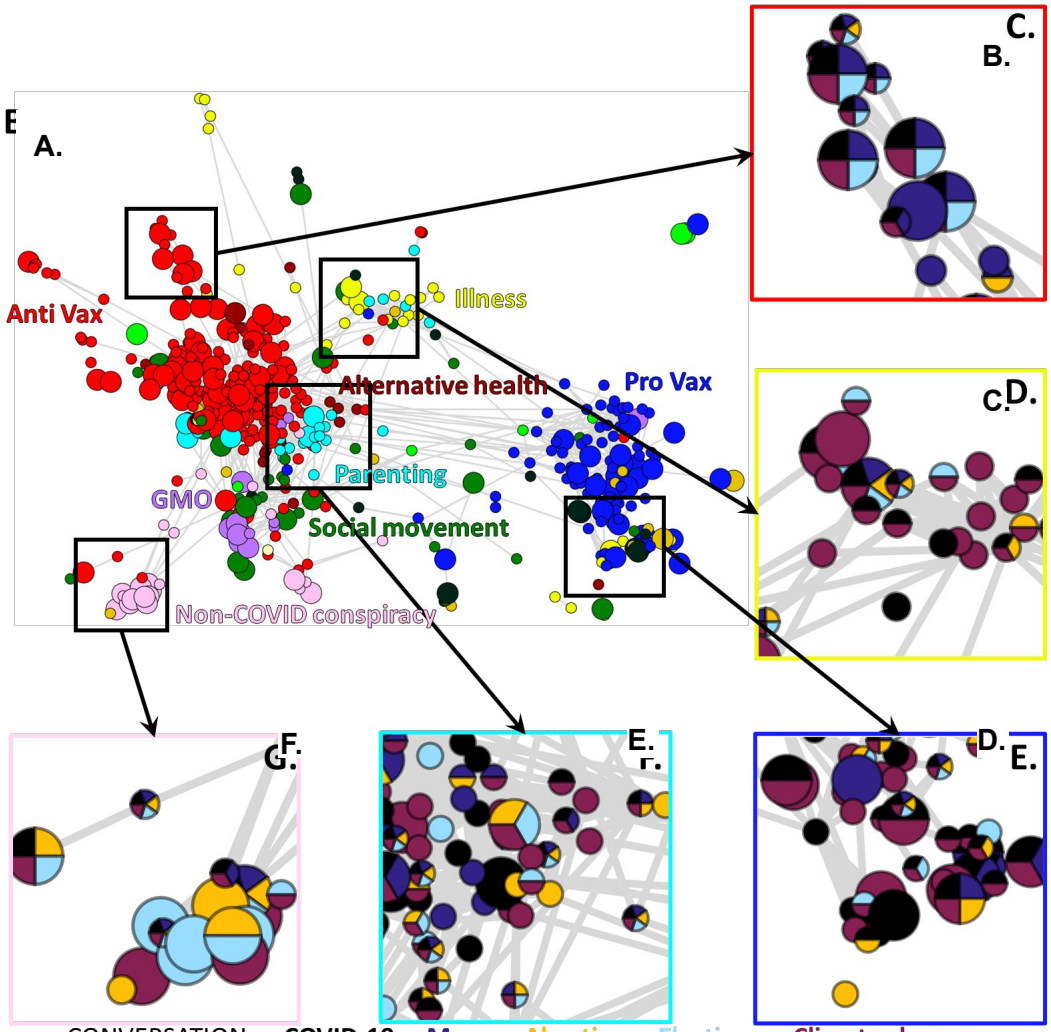


non-vax conspiracy communities

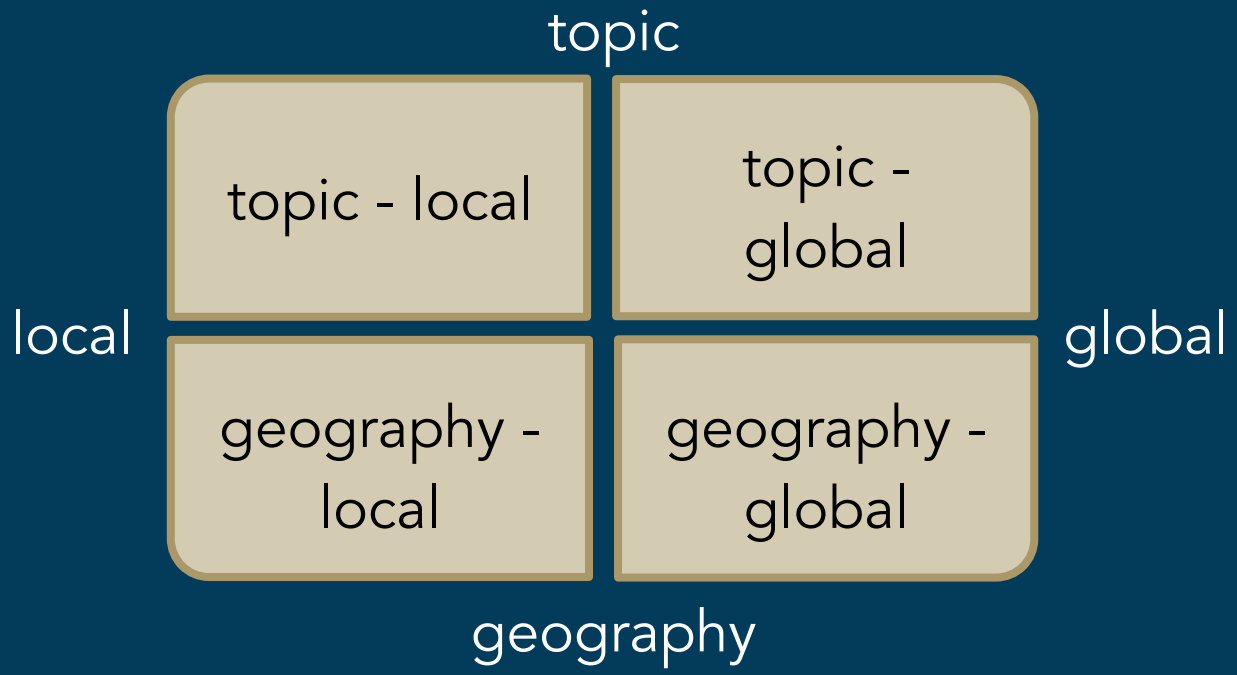


organic food communities

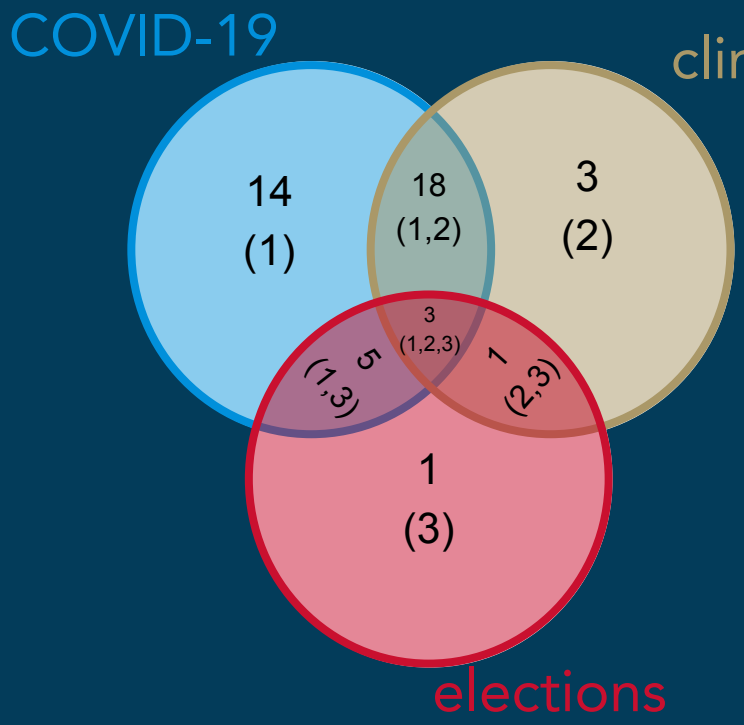

A. System before Covid-19 (Nov 2019)
pro
parenting
alternative health movements
chemtrail conspiracies
GMO
fluoride
anti
existing illnesses
B. System 13 months later (Dec 2020)
Facebook targets
C. System 35 months later (Oct 2022)
D. System 47 months later (Oct 2023)

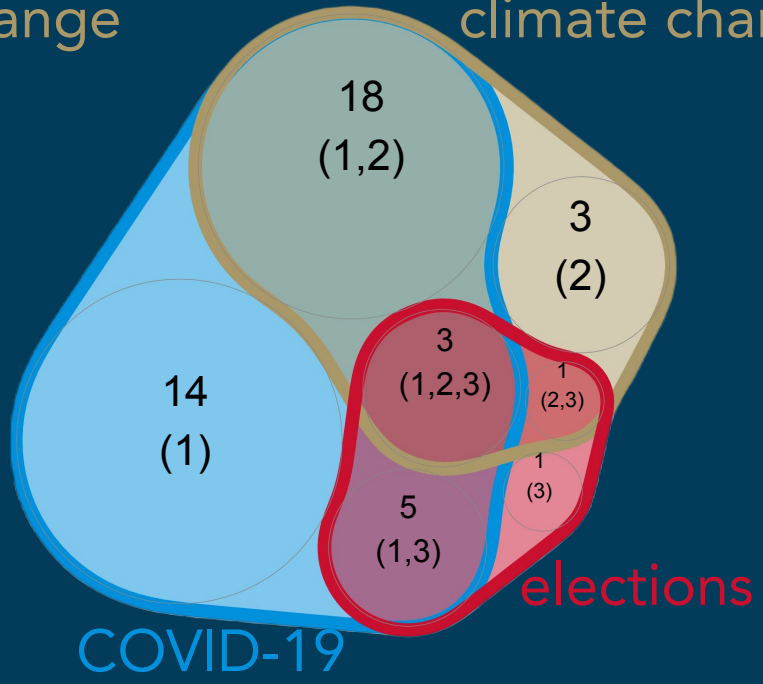

A.
B.
C.
D.
E.
F.
G.
Anti Vax
Illness
Alternative health
Pro Vax
Parenting
GMO
Social movement
Non-COVID conspiracy
CONVERSATION: COVID-19 Mpox Abortion Elections Climate change

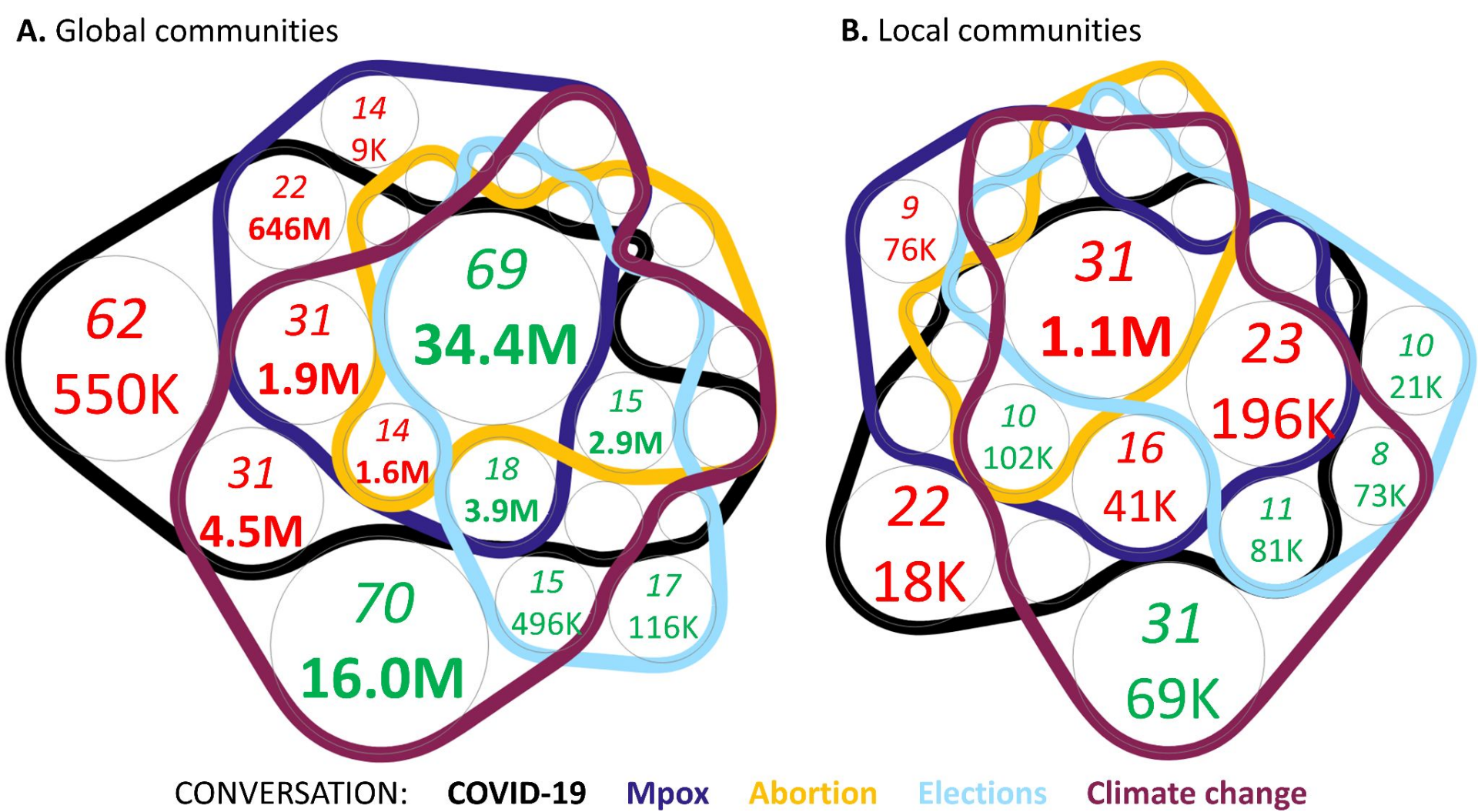
“Glocal”


topic
topic - local
topic - global
local
global
geography - local
geography - global
geography

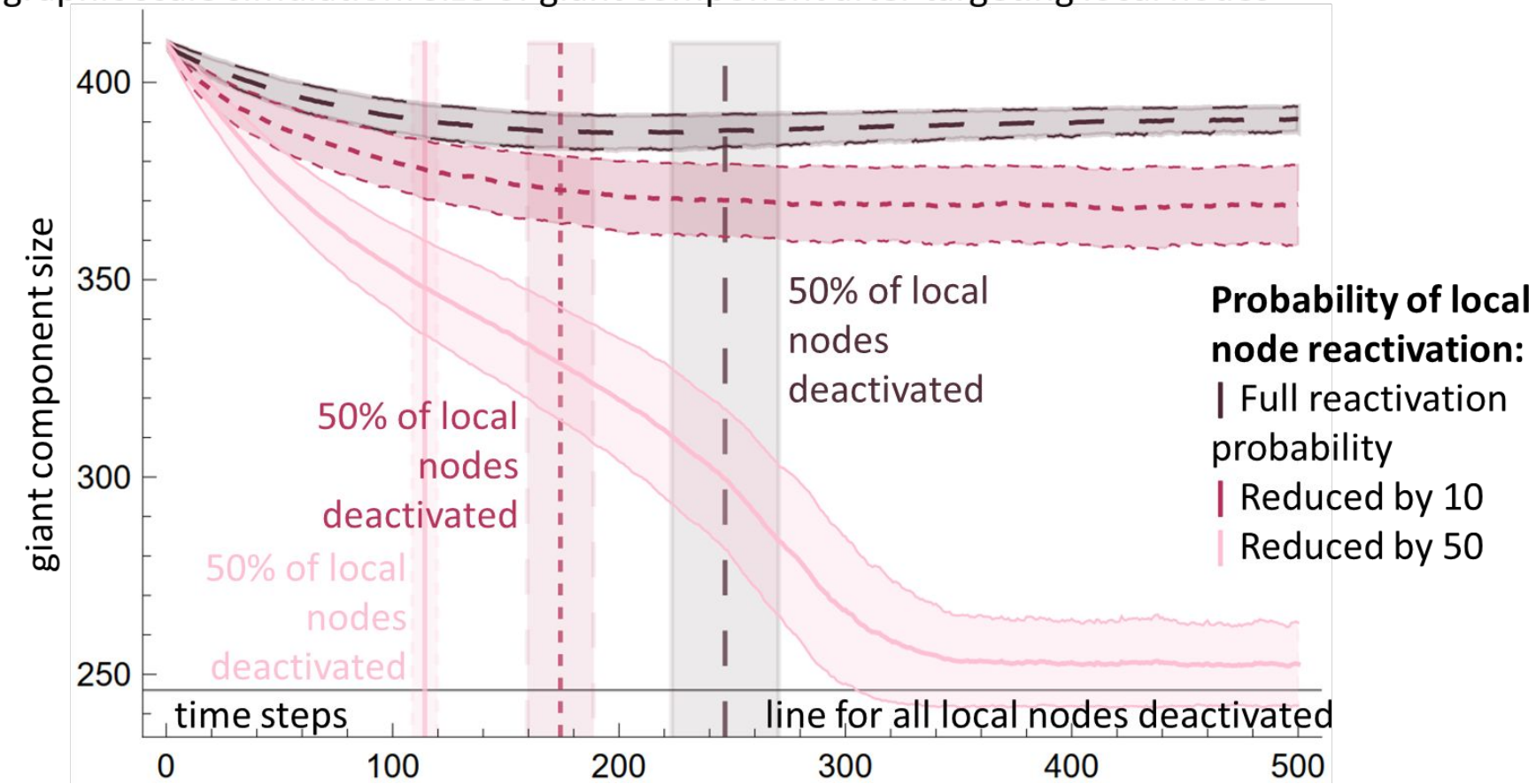
Venn Diagrams vs. n-Venn Diagrams





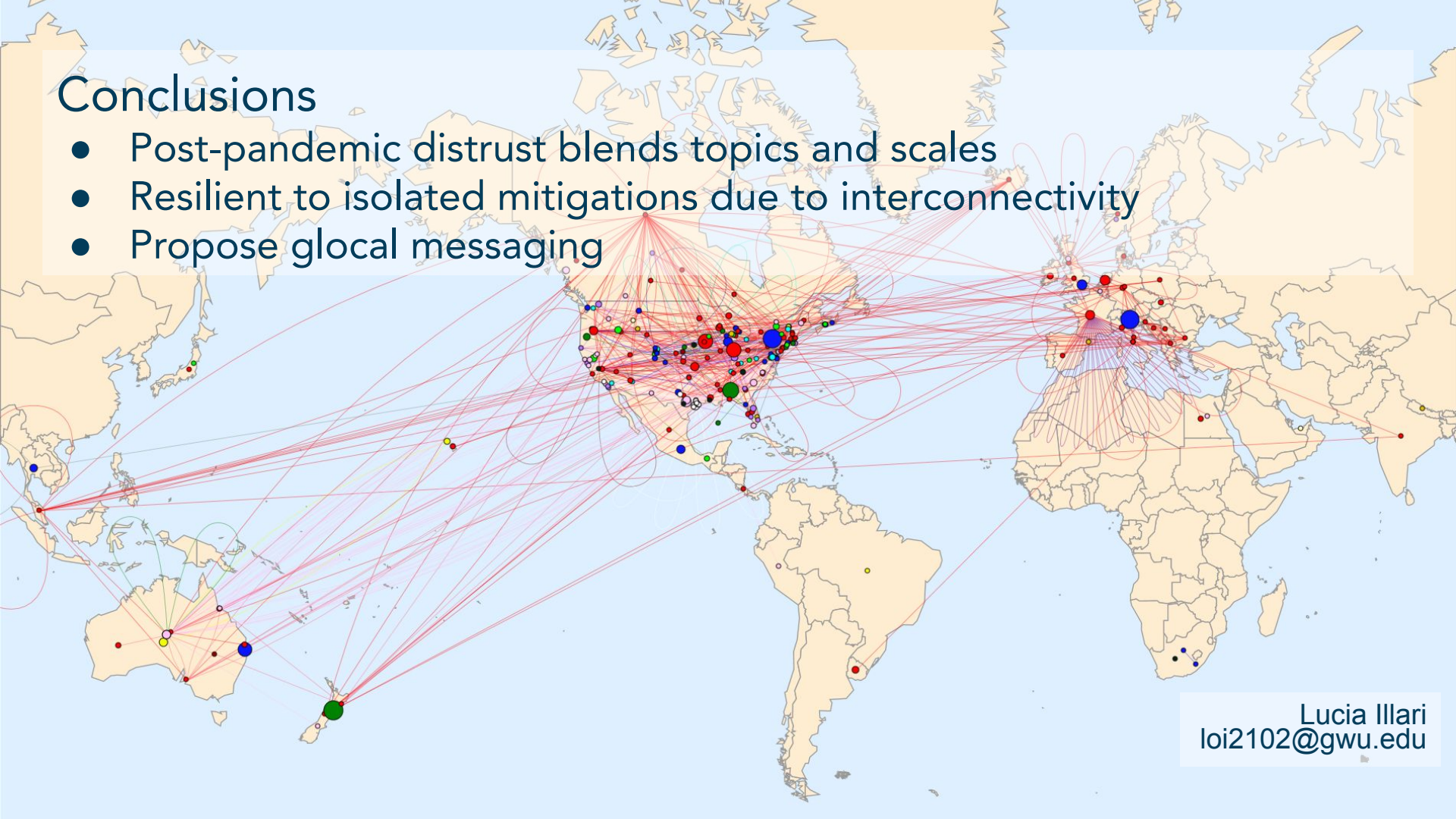

A. Global communities
14
9K
22
646M
62
550K
31
1.9M
69
34.4M
15
2.9M
14
1.6M
31
4.5M
18
3.9M
15
496K
17
116K
70
16.0M
B. Local communities
9
76K
31
1.1M
23
196K
10
21K
10
102K
16
41K
8
73K
22
18K
11
81K
31
69K
CONVERSATION:
COVID-19
Mpox
Abortion
Elections
Climate change

Geographic scale simulation: Size of giant component after targeting local nodes



Conclusions

- Post-pandemic distrust blends topics and scales
- Resilient to isolated mitigations due to interconnectivity
- Propose glocal messaging



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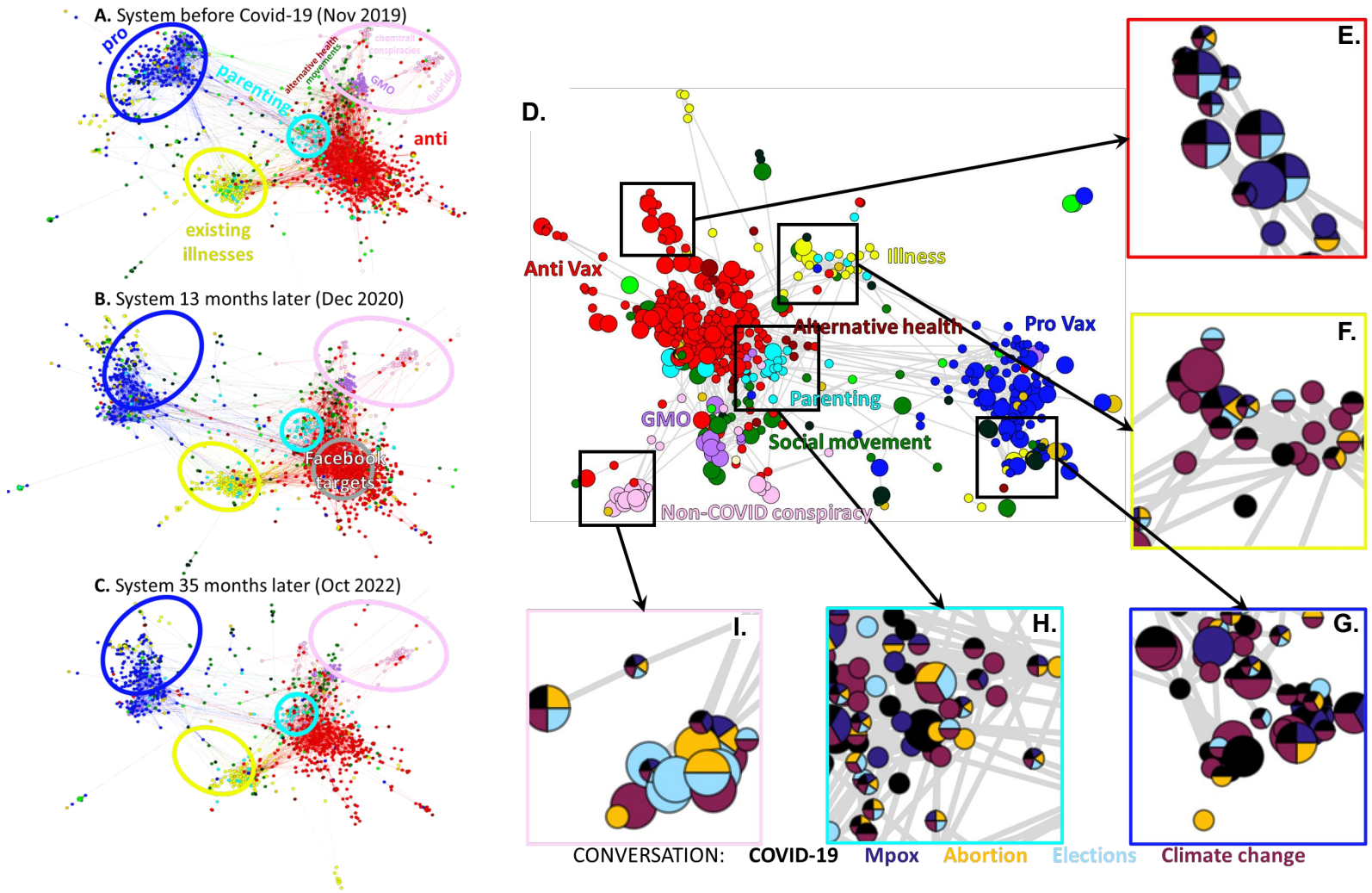
Extra Slides

Methods

- Analyzed Facebook vaccine discourse dataset of ~100M users pre-pandemic
- Interlinked pro/anti/neutral vaccine communities
- Post-pandemic filtering by 5 key topics (COVID, mpox, climate, elections, abortion)
  - e.g. “corona virus” became “(c|k|[(])+orona(no|[[:punct:]]|\\s){,4}(virus\\>|vírus)”
- Enabled analyzing blending of issues within and across network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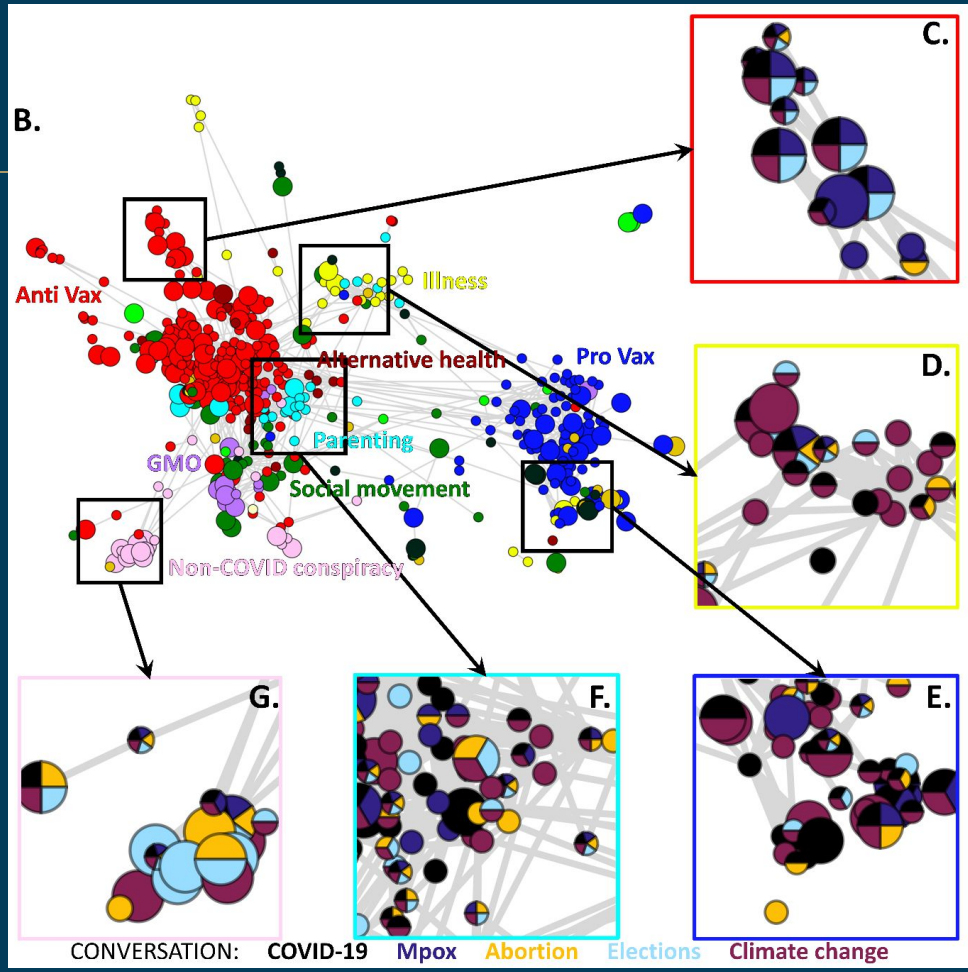
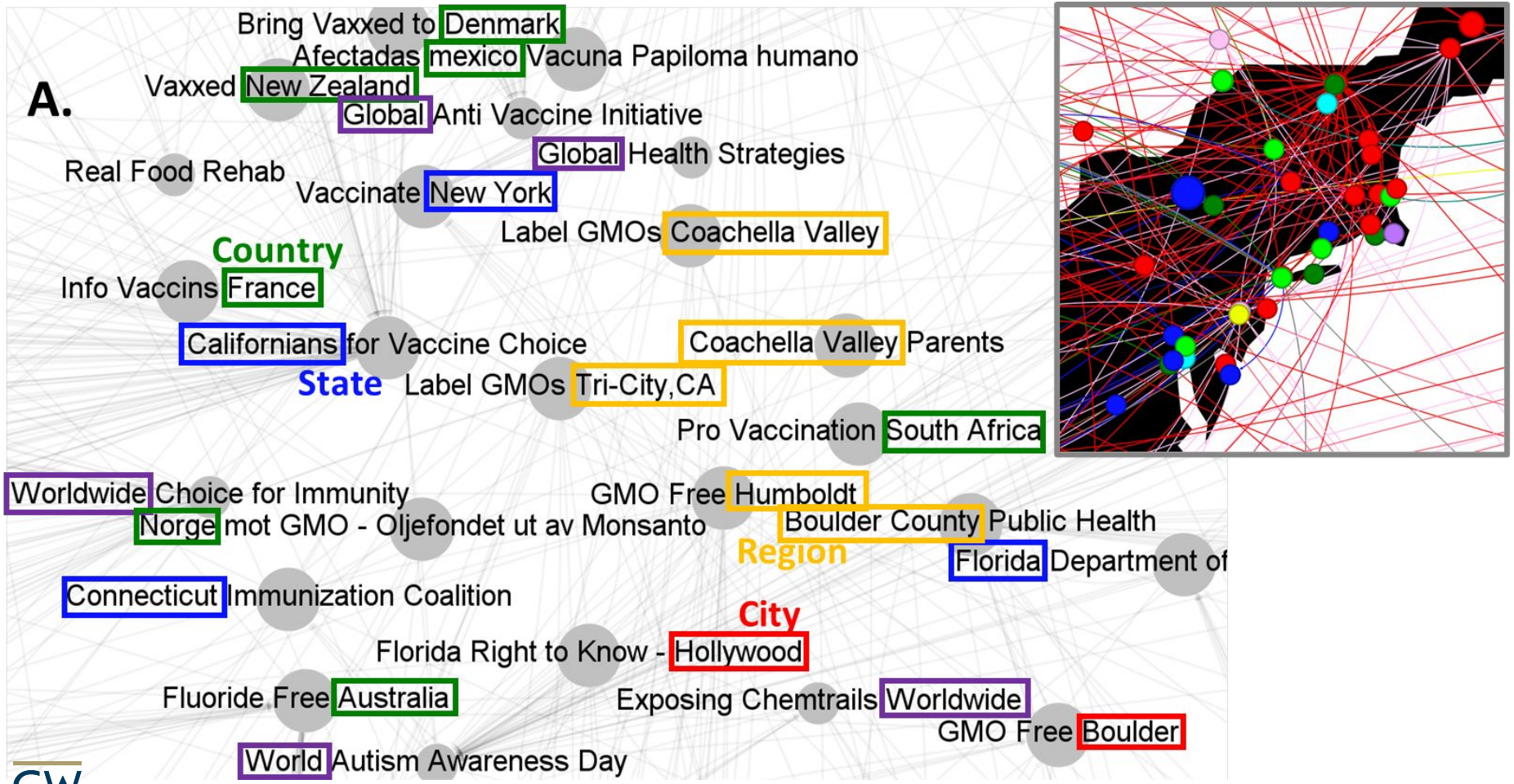
Social movement
Non-COVID conspiracy
E.
F.
G.
H.
I.
CONVERSATION:
COVID-19
Mpox
Abortion
Elections
Climate change

Results

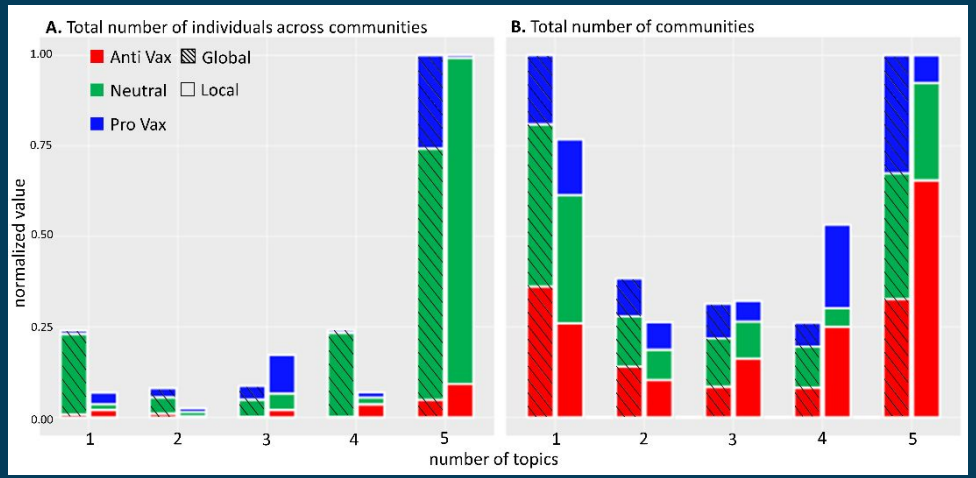
- Post-pandemic interconnection of topics and geographic scales
- Distinct issues blended within and across communities
- Reinforcement of distrust across topics and localities
- Entanglement confers resilience to targeted interventions
- Example: election distrust reinforces COVID distrust
- Multi-scale nature makes ecosystem resistant to isolated efforts




A.
Bring Vaxxed to Denmark
Afectadas mexico Vacuna Papiloma humano
Vaxxed New Zealand
Global Anti Vaccine Initiative
Global Health Strategies
Real Food Rehab
Vaccinate New York
Label GMOs Coachella Valley
Country
Info Vaccins France
Californians for Vaccine Choice
Coachella Valley Parents
State
Label GMOs Tri-City,CA
Pro Vaccination South Africa
Worldwide Choice for Immunity
GMO Free Humboldt
Norge mot GMO - Oljefondet ut av Monsanto
Boulder County Public Health
Region
Florida Department of
Connecticut Immunization Coalition
City
Florida Right to Know - Hollywood
Fluoride Free Australia
Exposing Chemtrails Worldwide
GMO Free Boulder
World Autism Awareness Day

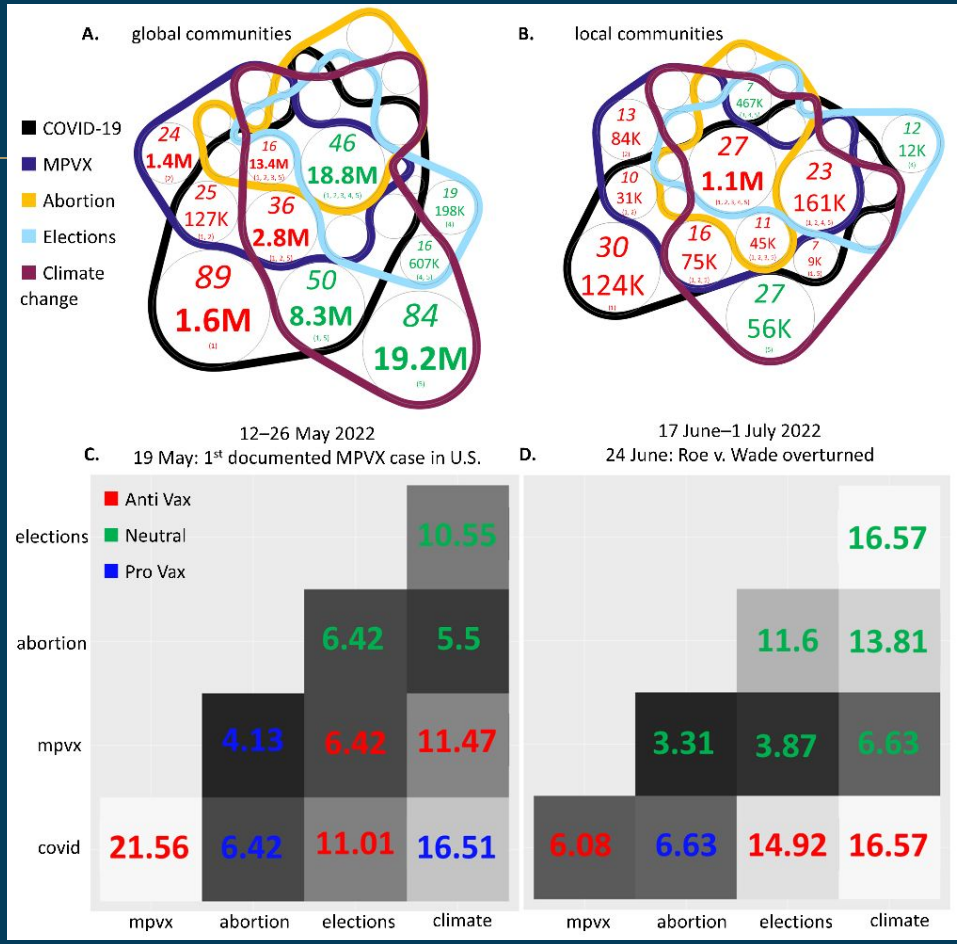
Results

- Distrust spreads across increasing number of topics
- Individuals exhibit wider topic engagement than communities
- Local communities overrepresented across all topics

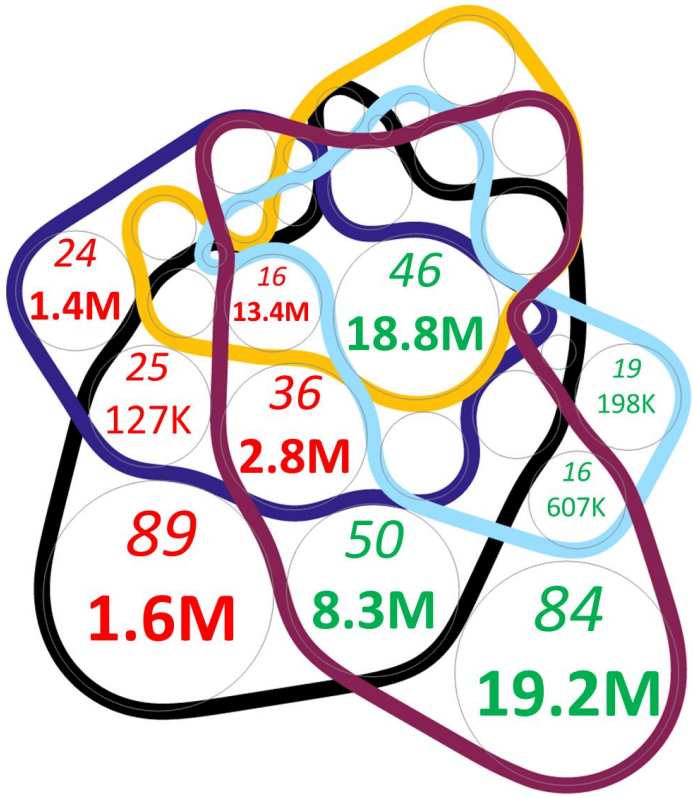


Results

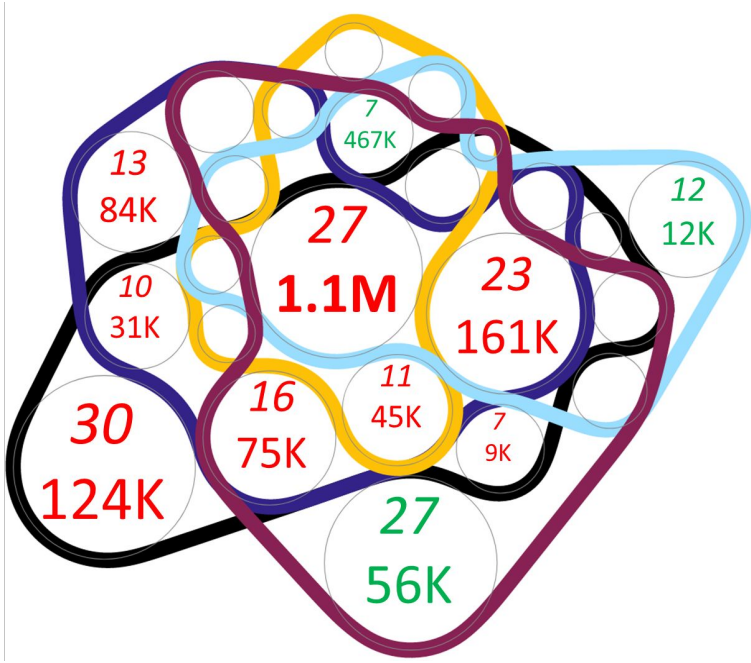
- Discussing all 5 topics was 3rd most common, 19.9M individuals
- Significant COVID-19 and climate change overlap
- Dialog overall led by anti- and neutral groups
- Heatmaps reveal topic pairs around key events
- Strategic topic blending resembles viral interference



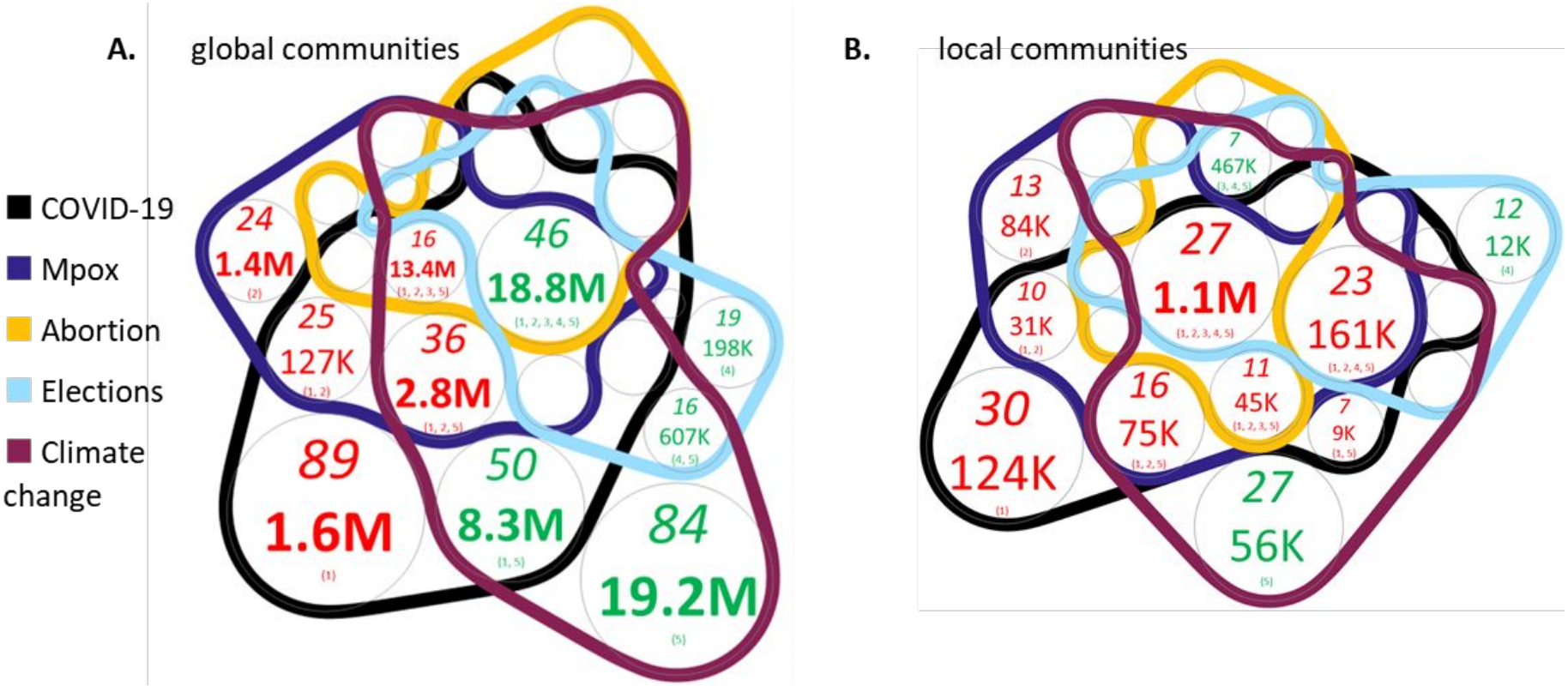
A. global communities

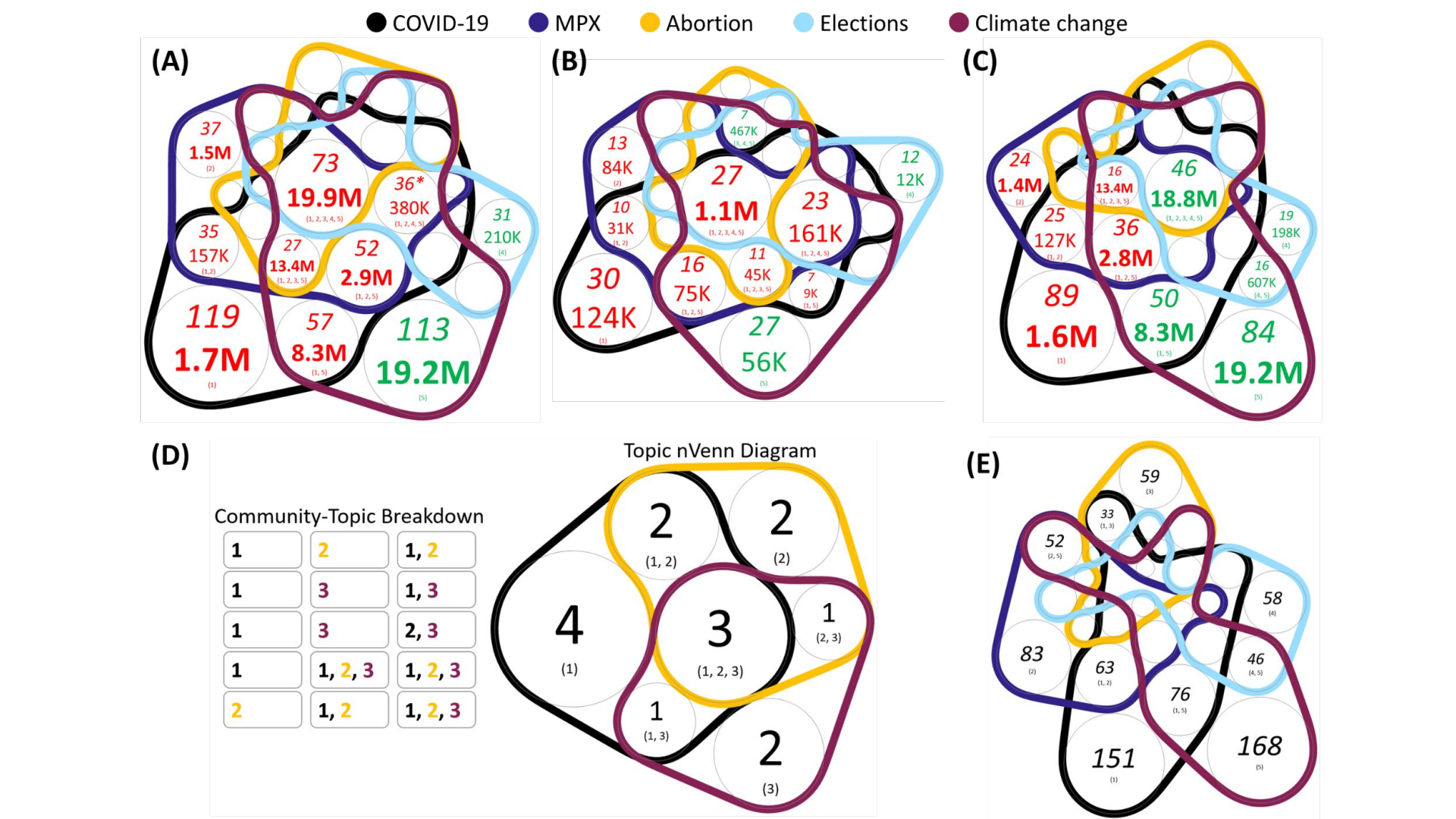


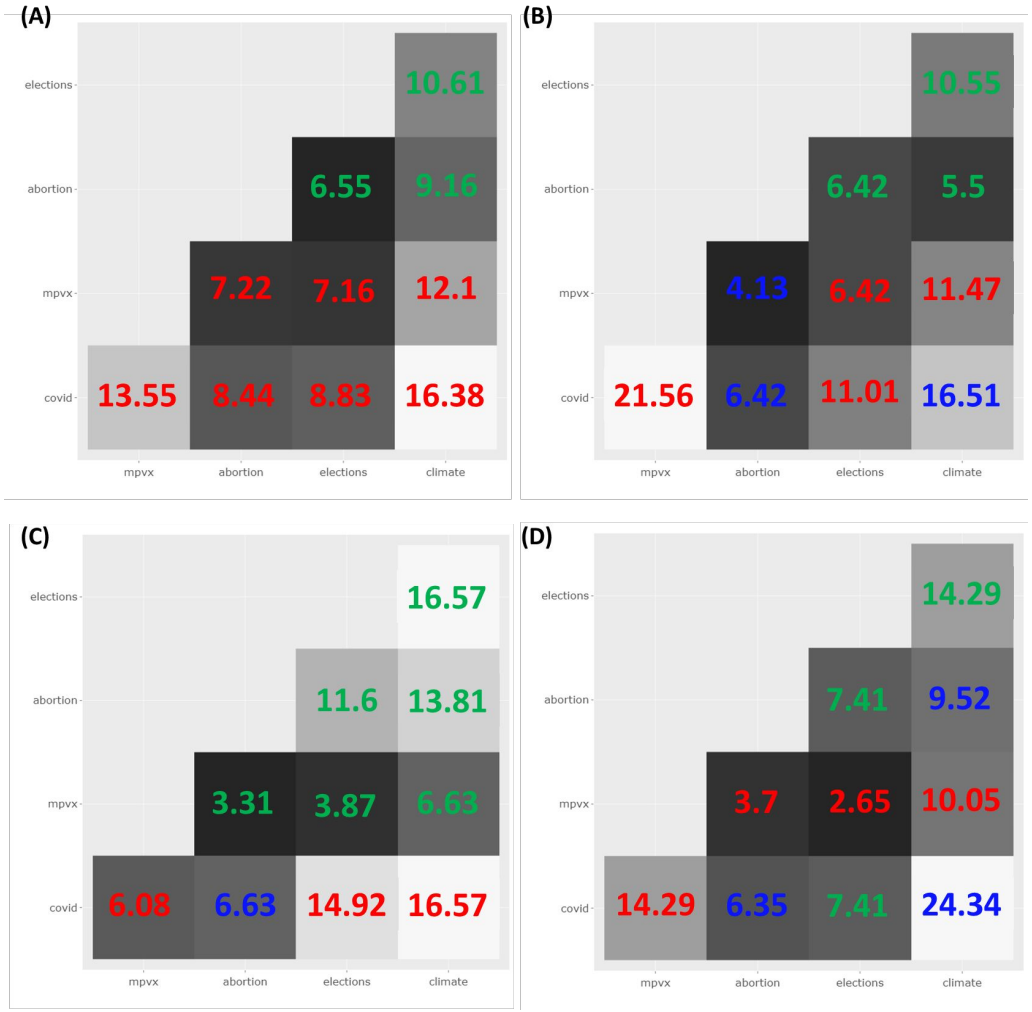
B. local communities



■ COVID-19 ■ mpox ■ abortion ■ elections ■ climate change

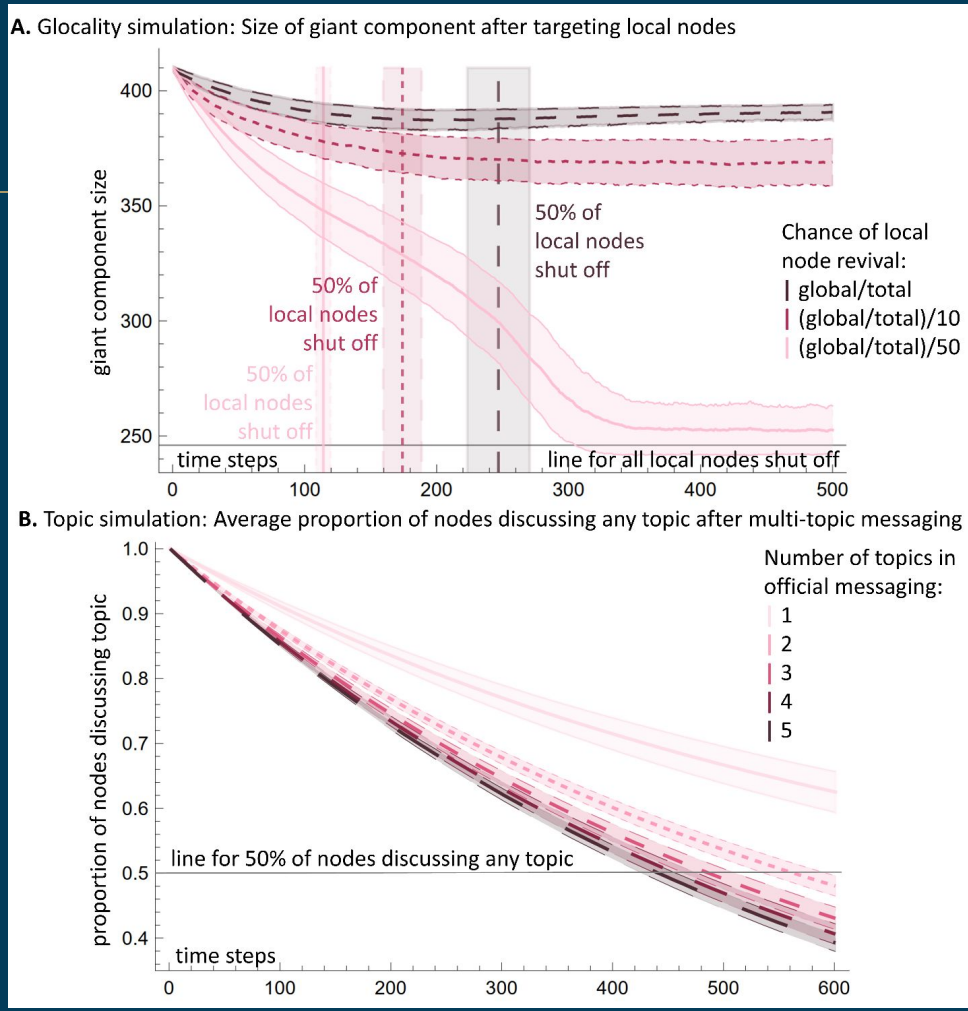

A.
global communities
COVID-19
Mpox
Abortion
Elections
Climate change
24
1.4M
{2}
16
13.4M
{1, 2, 3, 5}
46
18.8M
{1, 2, 3, 4, 5}
19
198K
{4}
25
127K
{1, 2}
36
2.8M
{1, 2, 5}
16
607K
{4, 5}
89
1.6M
{1}
50
8.3M
{1, 5}
84
19.2M
{5}
B.
local communities
13
84K
{2}
7
467K
{3, 4, 5}
12
12K
{4}
27
1.1M
{1, 2, 3, 4, 5}
10
31K
{1, 2}
23
161K
{1, 2, 4, 5}
30
124K
{1}
16
75K
{1, 2, 5}
11
45K
{1, 2, 3, 5}
7
9K
{3, 5}
27
56K
{5}


COVID-19
MPX
Abortion
Elections
Climate change
(A)
37
1.5M
(2)
73
19.9M
(1, 2, 3, 4, 5)
36*
380K
(1, 2, 4, 5)
31
210K
(4)
35
157K
(1,2)
27
13.4M
(1, 2, 3, 5)
52
2.9M
(1, 2, 5)
119
1.7M
(1)
57
8.3M
(1, 5)
113
19.2M
(5)
(B)
7
467K
(3, 4, 5)
13
84K
(2)
12
12K
(4)
27
1.1M
(1, 2, 3, 4, 5)
10
31K
(1, 2)
23
161K
(1, 2, 4, 5)
11
45K
(1, 2, 3, 5)
16
75K
(1, 2, 5)
7
9K
(1, 5)
30
124K
(1)
27
56K
(5)
(C)
24
1.4M
(2)
16
13.4M
(1, 2, 3, 5)
46
18.8M
(1, 2, 3, 4, 5)
19
198K
(4)
25
127K
(1, 2)
36
2.8M
(1, 2, 5)
16
607K
(4, 5)
89
1.6M
(1)
50
8.3M
(1, 5)
84
19.2M
(5)
(D)
Community-Topic Breakdown
1 | 2 | 1, 2
1 | 3 | 1, 3
1 | 3 | 2, 3
1 | 1, 2, 3 | 1, 2, 3
2 | 1, 2 | 1, 2, 3
Topic nVenn Diagram
2
(1, 2)
2
(2)
4
(1)
3
(1, 2, 3)
1
(2, 3)
1
(1, 3)
2
(3)
(E)
59
(3)
33
(1, 3)
52
(2, 5)
58
(4)
83
(2)
63
(1, 2)
46
(4, 5)
76
(1, 5)
151
(1)
168
(5)

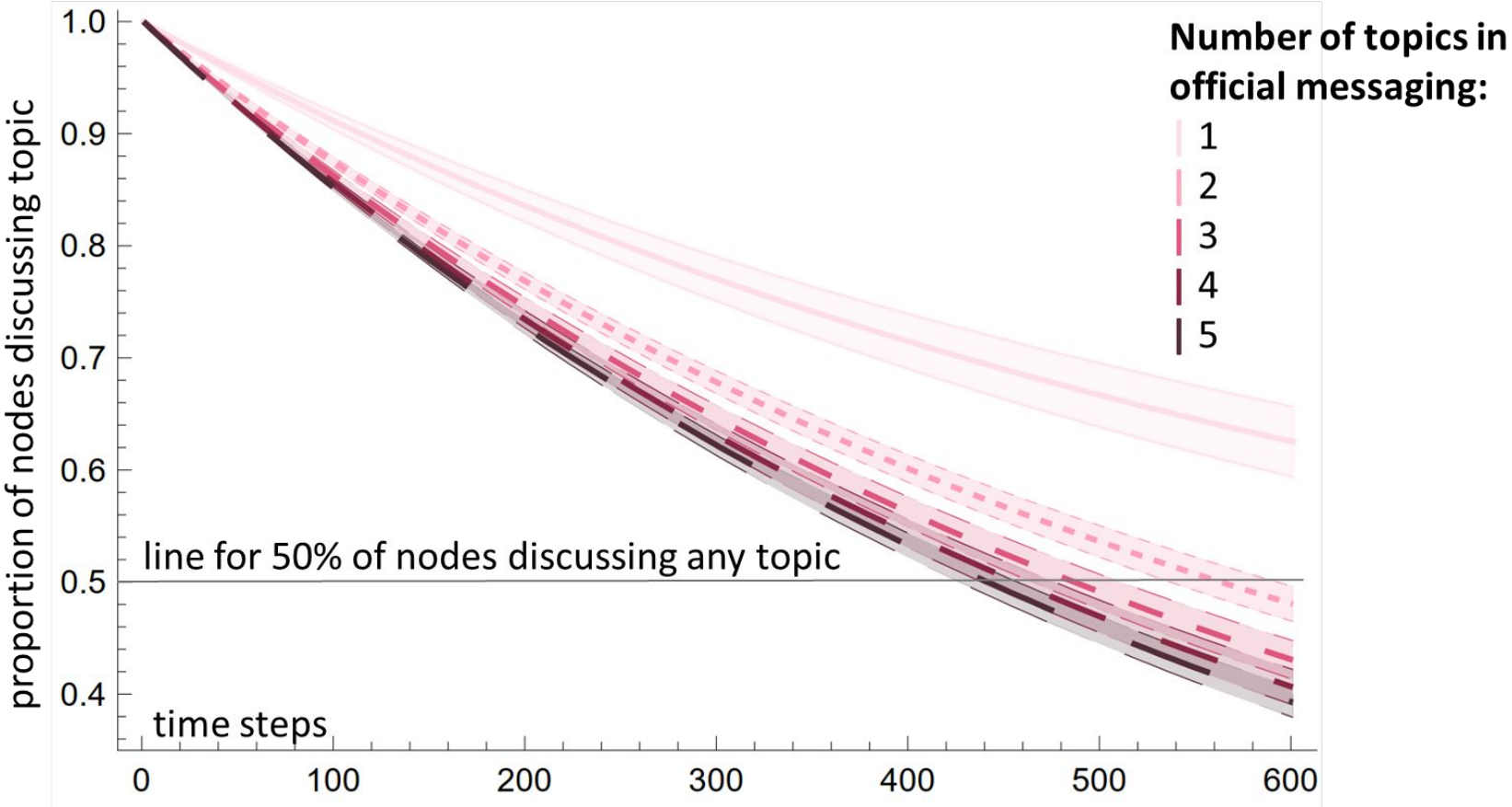

(A)
elections
abortion
mpvx
covid
10.61
6.55
9.16
7.22
7.16
12.1
13.55
8.44
8.83
16.38
mpvx
abortion
elections
climate
(B)
elections
abortion
mpvx
covid
10.55
6.42
5.5
4.13
6.42
11.47
21.56
6.42
11.01
16.51
mpvx
abortion
elections
climate
(C)
elections
abortion
mpvx
covid
16.57
11.6
13.81
3.31
3.87
6.63
6.08
6.63
14.92
16.57
mpvx
abortion
elections
climate
(D)
elections
abortion
mpvx
covid
14.29
7.41
9.52
3.7
2.65
10.05
14.29
6.35
7.41
24.34
mpvx
abortion
elections
climate

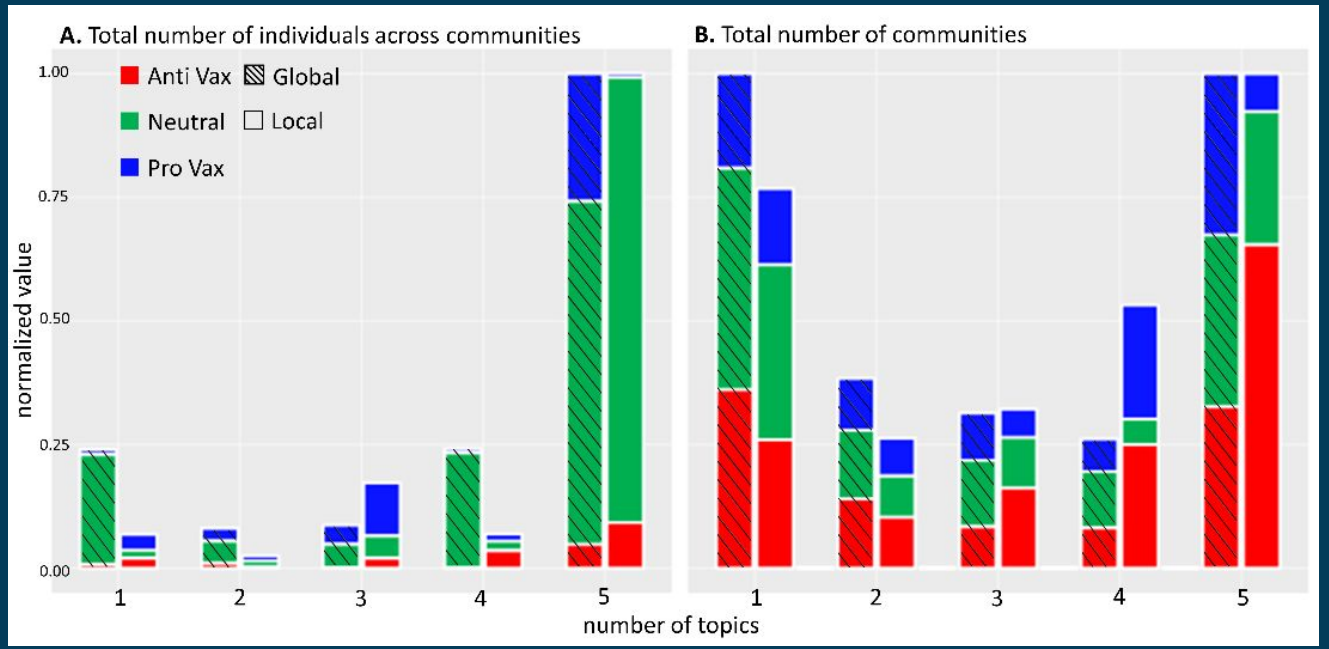
Results

- Simulations compare targeted vs blended mitigation schemes
- Geographic simulation shows can't fully deactivate local communities
- Topic simulation: Multi-topic cuts targeted discussions to 50% in <600 steps
- Interconnectedness enables reactivation despite debunking
- Blending topics and scales leverages entanglement for effectiveness



B. Topic simulation: Average proportion of nodes discussing any topic after multi-topic messaging




A. Total number of individuals across communities
B. Total number of communities
Anti Vax
Global
Neutral
Local
Pro Vax
normalized value
1.00
0.75
0.50
0.25
0.00
1
2
3
4
5
number of topics

Discussion & Conclusion

- Current mitigation schemes overlook interconnected nature of distrust
- Post-pandemic web displays unique resilience to these targeted efforts
- Propose glocal messaging that blends topics and geographic scales
- Framework generalizable beyond vaccine context