5G Conspiracy vs Non-Conspiracy Network Analysis Report

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Introduction

Purpose of Analysis:

The objective of this analysis is to understand the structural differences between misinformation (5G conspiracy) networks and non-conspiracy networks. We aim to:

- Compare network characteristics using Gephi.
- Identify patterns in connectivity, community structure, and centrality metrics.

Graphs

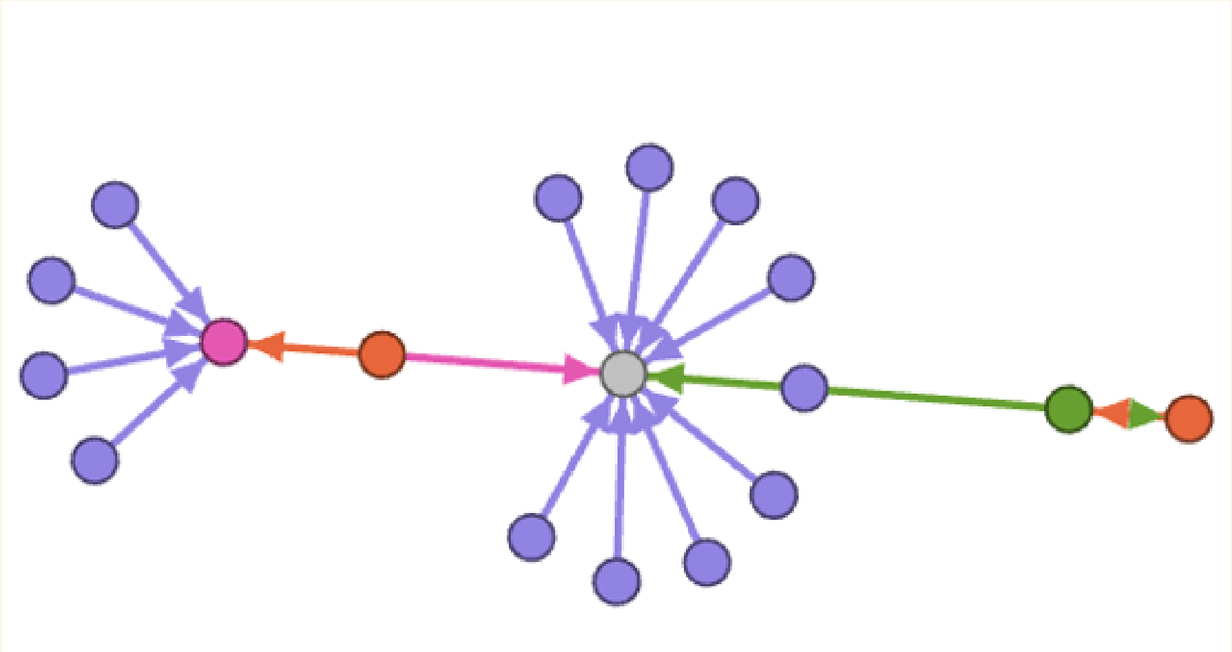
5G Conspiracy Graph: 30

Non-Conspiracy Graph: 40

Visualization

- 5G Conspiracy Graph: Force-Atlas, Expansion
- Non-Conspiracy Graph: Force-Atlas, Expansion

5G Conspiracy Graph



5G Conspiracy Graph

- Nodes 18
- Edges 20
- Interpretation:
  - Larger size may indicate a more complex network or broader discussion.
  - Smaller size may suggest a niche or tightly focused group.

5G Conspiracy Graph

- Avg. Degree 1.111
- Meaning:
  - Average number of connections per node.
- Interpretation:
  - Higher average degree = nodes are more connected.
  - Lower average degree = nodes have fewer interactions.

5G Conspiracy Graph

- Density 0.065
- Meaning:
  - Measures how tightly connected the network is.
- Interpretation:
  - Higher density = network is more interconnected.
  - Lower density = network is sparser.

5G Conspiracy Graph

- Clustering Coefficient 0.058
- Meaning:
  - Likelihood that nodes form local clusters or triangles.
- Interpretation:
  - Higher clustering = more local communities or echo chambers.
  - Lower clustering = less localized clustering.

5G Conspiracy Graph

- Modularity Q 0.375
- # Communities 3
- Meaning:
  - Higher modularity indicates well-separated communities.
  - Number of communities indicates network fragmentation.

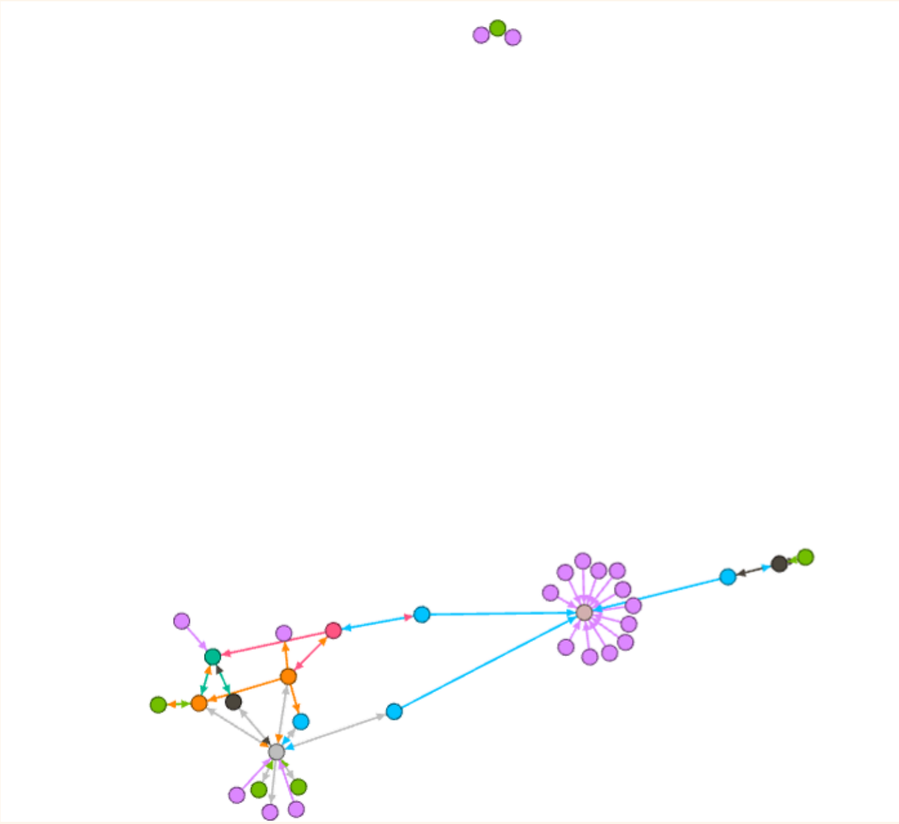
5G Conspiracy Graph

- Betweenness Centrality 0 - 11
- Closeness Centrality 0.5 - 1
- Meaning:
- Betweenness: Nodes acting as bridges in the network.
- Closeness: Nodes closest to all others in terms of path length.

5G Conspiracy Graph

- # Connected Components 1
- Meaning:
  - Number of separate sub-graphs (isolated groups).
- Interpretation:
  - Single connected component = all nodes are reachable.
  - Multiple components = fragmented groups.

5G Non-Conspiracy Graph



5G Non-Conspiracy Graph

- Nodes 36
- Edges 53
- Interpretation:
  - Larger size may indicate a more complex network or broader discussion.
  - Smaller size may suggest a niche or tightly focused group.

5G Non-Conspiracy Graph

- Avg. Degree 1.472
- Meaning:
  - Average number of connections per node.
- Interpretation:
  - Higher average degree = nodes are more connected.
  - Lower average degree = nodes have fewer interactions.

5G Non-Conspiracy Graph

- Density 0.042
- Meaning:
  - Measures how tightly connected the network is.
- Interpretation:
  - Higher density = network is more interconnected.
  - Lower density = network is sparser.

5G Non-Conspiracy Graph

- Clustering Coefficient 0.039
- Meaning:
  - Likelihood that nodes form local clusters or triangles.
- Interpretation:
  - Higher clustering = more local communities or echo chambers.
  - Lower clustering = less localized clustering.

5G Non-Conspiracy Graph

- Modularity Q 0.549
- # Communities 5
- Meaning:
  - Higher modularity indicates well-separated communities.
  - Number of communities indicates network fragmentation.

5G Non-Conspiracy Graph

- Betweenness Centrality 0 – 144.5
- Closeness Centrality 0 -14
- Meaning:
  - Betweenness: Nodes acting as bridges in the network.
  - Closeness: Nodes closest to all others in terms of path length.

5G Non-Conspiracy Graph

- # Connected Components 2
- Meaning:
  - Number of separate sub-graphs (isolated groups).
- Interpretation:
  - Single connected component = all nodes are reachable.
  - Multiple components = fragmented groups.

Comparative Analysis

- Structure:
  - The conspiracy network is small and centralized, a typical sign of coordinated misinformation operations.
  - The non-conspiracy network is larger, balanced, and decentralized.

Comparative Analysis

- Connectivity:
  - Conspiracy network → few highly influential nodes control most interactions.
  - Non-conspiracy network → connections are more evenly distributed.

Comparative Analysis

- Fragmentation:
  - Conspiracy: 1 connected component → tightly controlled environment.
  - Non-Conspiracy: Multiple components → natural topic diversity.

Comparative Analysis

- Central Nodes:
  - Conspiracy: No extremely high betweenness → weakly connected but dependent on a few nodes.
  - Non-Conspiracy: Strong bridging nodes → resilient against misinformation.

Comparative Analysis

- Community Structure:
  - Conspiracy: Only 3 communities → centralized narrative.
  - Non-Conspiracy: 5 communities → more variety, less manipulation risk.

Result

From a security perspective, conspiracy networks are easier to manipulate but also easier to disrupt because they rely on a few central nodes.

Thank you