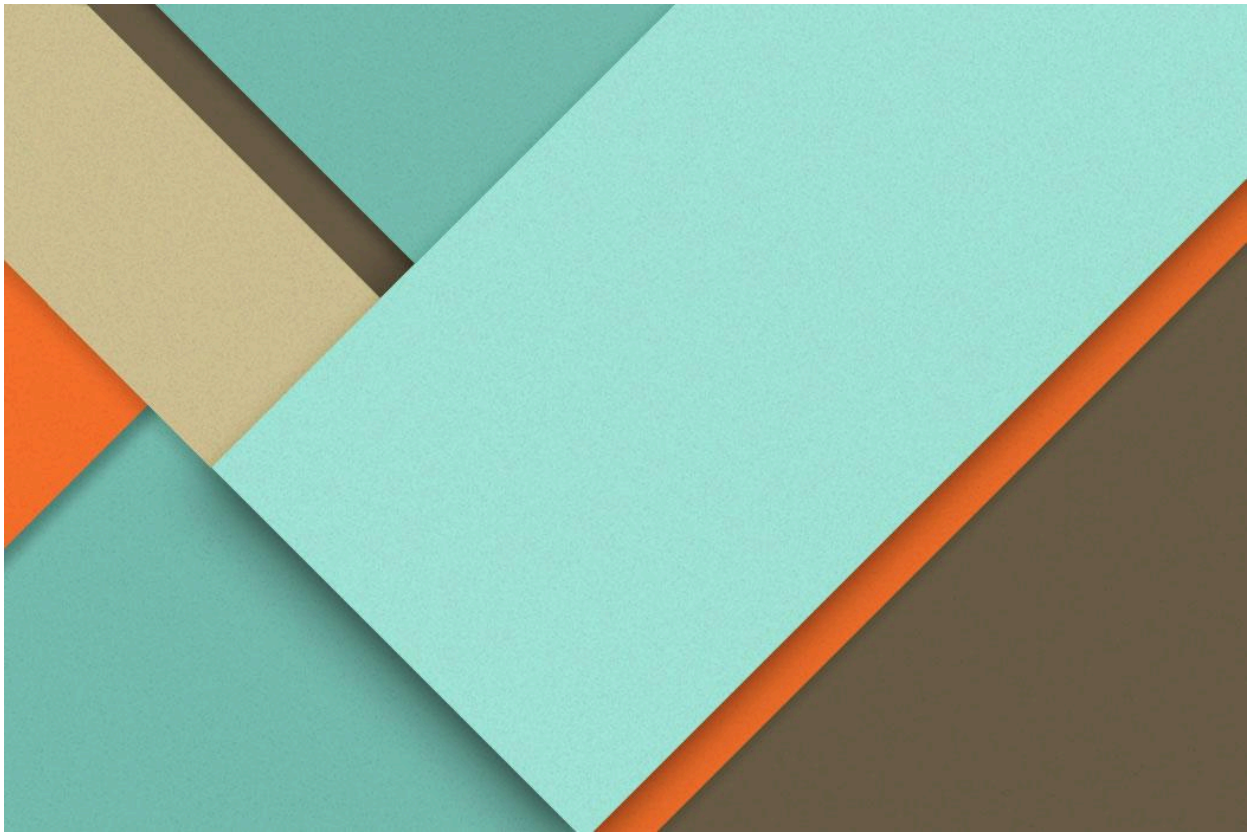

Malicious vs. Benign – WICO Dataset

SOCIAL NETWORK

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Overview

This report compares two Twitter subgraphs from the WICO dataset:

- **5G Conspiracy Network** (misinformation)
- **Non-Conspiracy Network** (benign)

First: 5G Conspiracy Graph (Malicious Cluster)

1. Key Metrics

Metric	Value	Meaning
Nodes	49	Small, focused misinformation group
Edges	130	Moderate interactions
Average Degree	2.653	Users talk to ~2–3 others
Density	0.055	Very sparse network
Clustering Coefficient	0.196	Few small local groups
Modularity (Q)	0.351	High separation → echo chambers

Communities	6	Several small clusters
Diameter	8	Some distant/peripheral users
Avg. Path Length	3.214	Info spreads in ~3–4 steps
Weak Components	2	Two loosely connected clusters
Strong Components	19	Many small directional loops

2. Interpretation

Small & Fragmented

The network is small (49 users) and split into **2 weakly connected parts**.

Echo Chambers

High modularity (**0.351**) and **6 communities** show the network is fragmented into multiple echo chambers with limited cross-interaction.

Sparse Connectivity

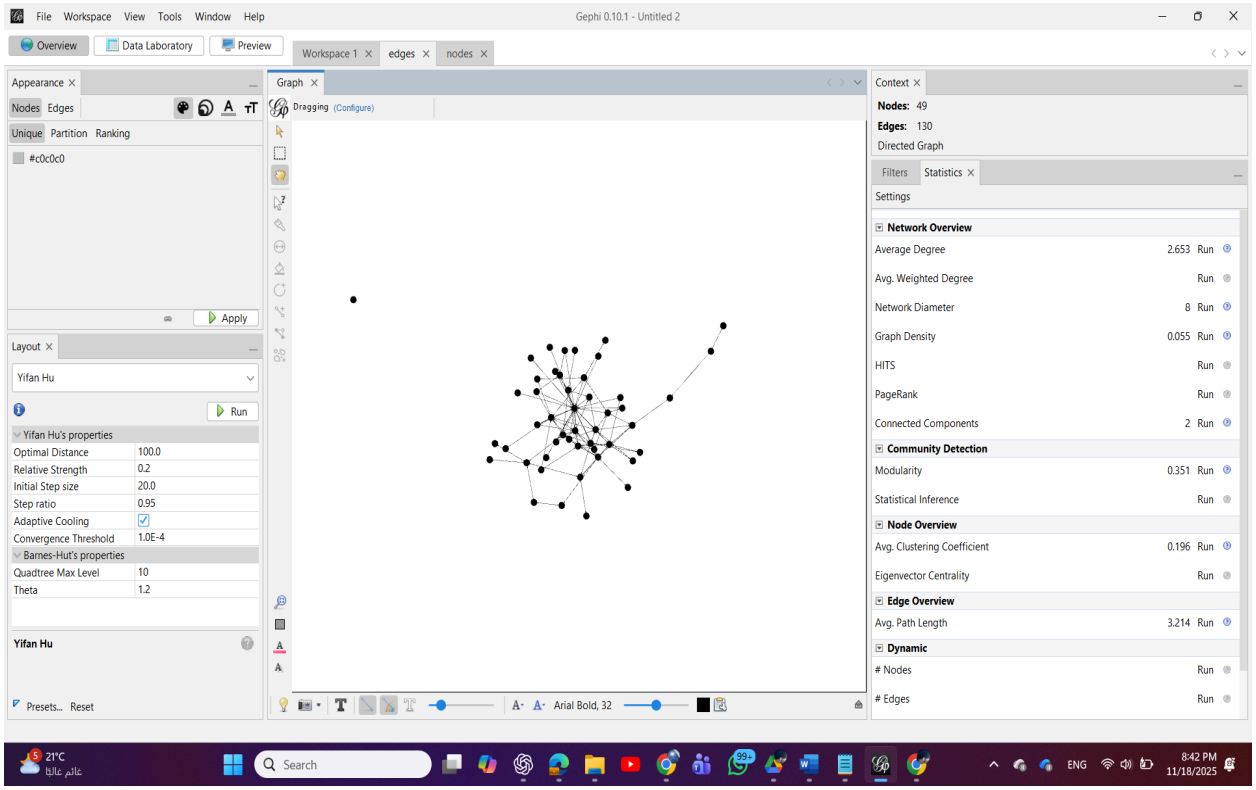
Low density and low average degree indicate selective, narrow communication — typical of misinformation clusters.

Low Clustering

The clustering coefficient (**0.196**) shows users rarely form mutual groups, meaning less natural conversation and more one-directional amplification.

Directional Structure

With **19 SCCs**, users often retweet or mention without reciprocal interaction.



Second: Non-Conspiracy Graph (Benign Cluster)

1. Key Metrics

Metric	Value	Meaning
Nodes	88	Larger, active community
Edges	399	High interaction volume

Average Degree	4.534	Users connect to ~4–5 others
Density	0.052	Sparse but normal
Clustering Coefficient	0.262	Formed discussion groups
Modularity (Q)	0.295	Moderate community structure
Communities	5	Several overlapping groups
Diameter	7	Efficient reachability
Avg. Path Length	2.754	Very efficient information flow
Weak Components	1	Entire network is unified
Strong Components	32	Many small reply-loops

2. Interpretation

Larger & More Active

A significantly larger user base interacts frequently (399 edges).

Better Connected

Higher average degree and a single weak component show a unified, healthy network.

Higher Clustering

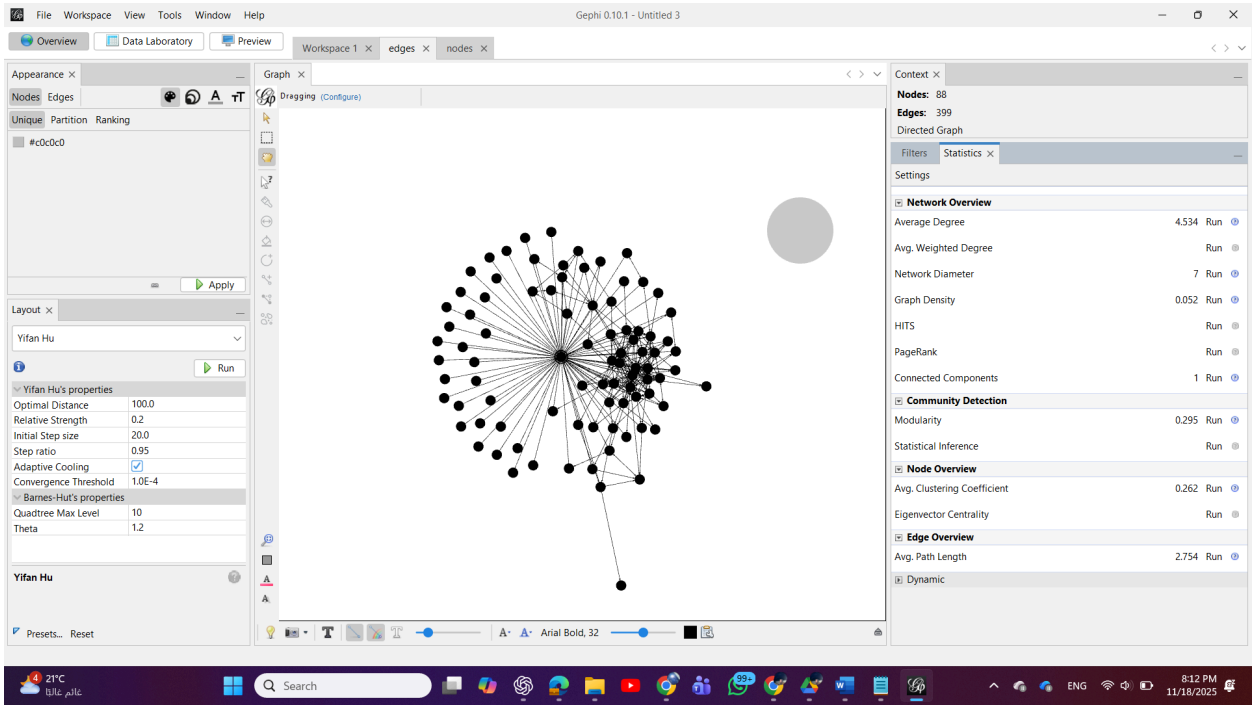
The clustering coefficient (**0.262**) indicates natural conversation circles and topic-based interactions.

Lower Modularity

Modularity (**0.295**) with only 5 communities means less fragmentation and more cross-group communication.

Efficient Information Flow

Short path length and diameter show rapid movement of information across the network.



Final Comparison: 5G Conspiracy vs. Non-Conspiracy

Metric	Conspiracy	Non-Conspiracy	Meaning
Nodes	49	88	Benign network is bigger
Edges	130	399	Much more interaction in benign
Avg Degree	2.653	4.534	Benign users more connected
Density	0.055	0.052	Both sparse (normal for Twitter)
Clustering	0.196	0.262	Benign has more genuine groups
Modularity	0.351	0.295	Conspiracy more fragmented
Communities	6	5	More echo chambers in conspiracy
Diameter	8	7	Info flows faster in benign
Avg Path	3.214	2.754	Benign more efficient

Weak CC	2	1	Conspiracy has isolated groups
Strong CC	19	32	Benign has many small reply loops

Overall Insights

The 5G conspiracy network is smaller, more fragmented, and shaped by echo chambers, with limited interaction and selective connectivity. In contrast, the non-conspiracy network is larger, more connected, more clustered, and has healthier communication flow. Misinformation networks show higher modularity, more separation between groups, and weaker global connectivity, while benign networks display strong cohesion and efficient information exchange.