

Subreddit Moderator Structure and Influence Across Reddit

An Exploratory Analysis

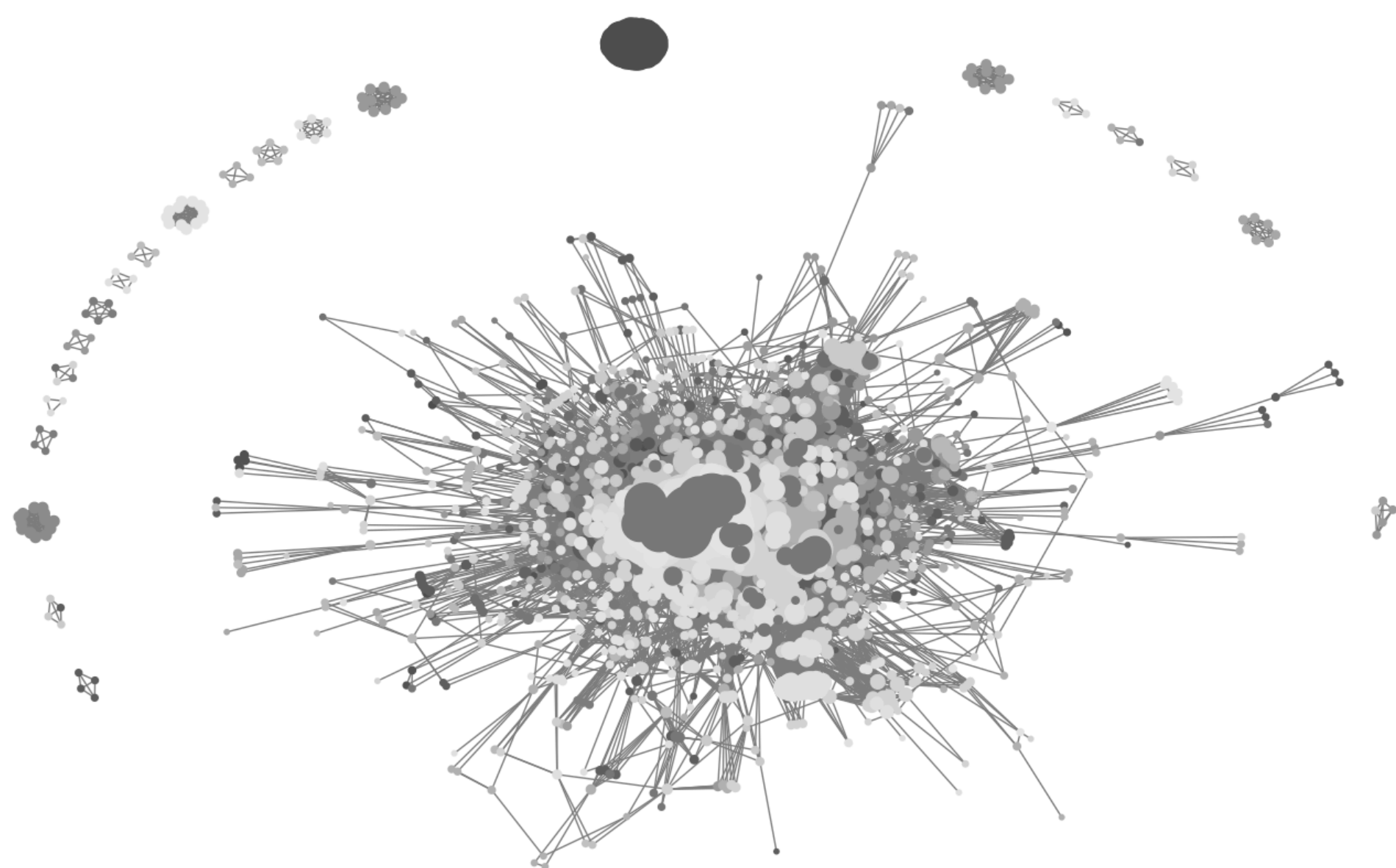
Nathaniel Holden

Research Questions

- What is the structure of Reddit moderation structure, and by proxy which subreddits have the most influence?
- How does subreddit size affect influence?
- Which subreddit communities have the most influence?
- Does community detection match community topic areas?

Network

The network consists of a bipartite projection resulting in a weighted undirected network where nodes consist of subreddits and edges are shared moderators with the weights indicating number.

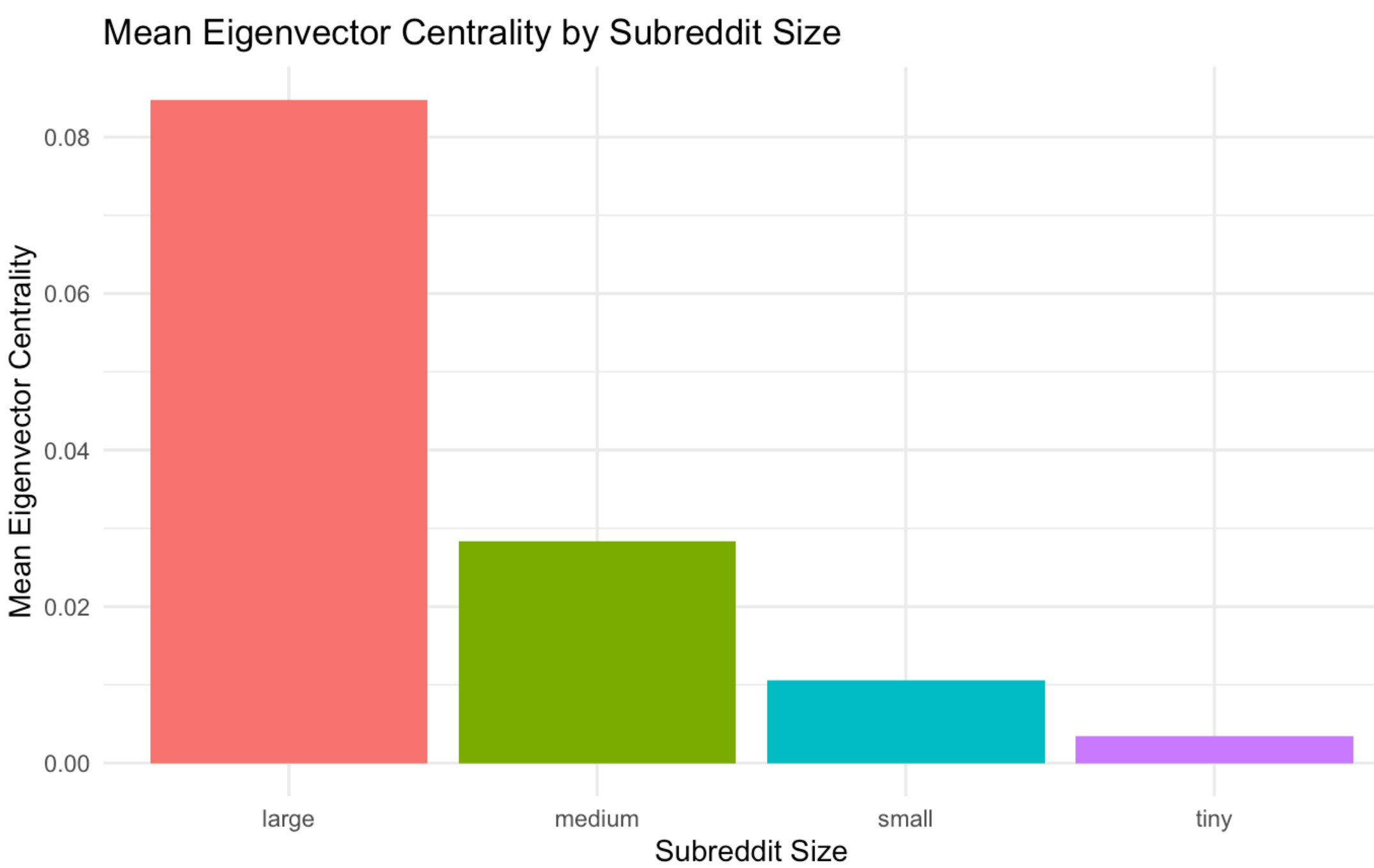


Network visualized, color is grescale of different subreddit community topic

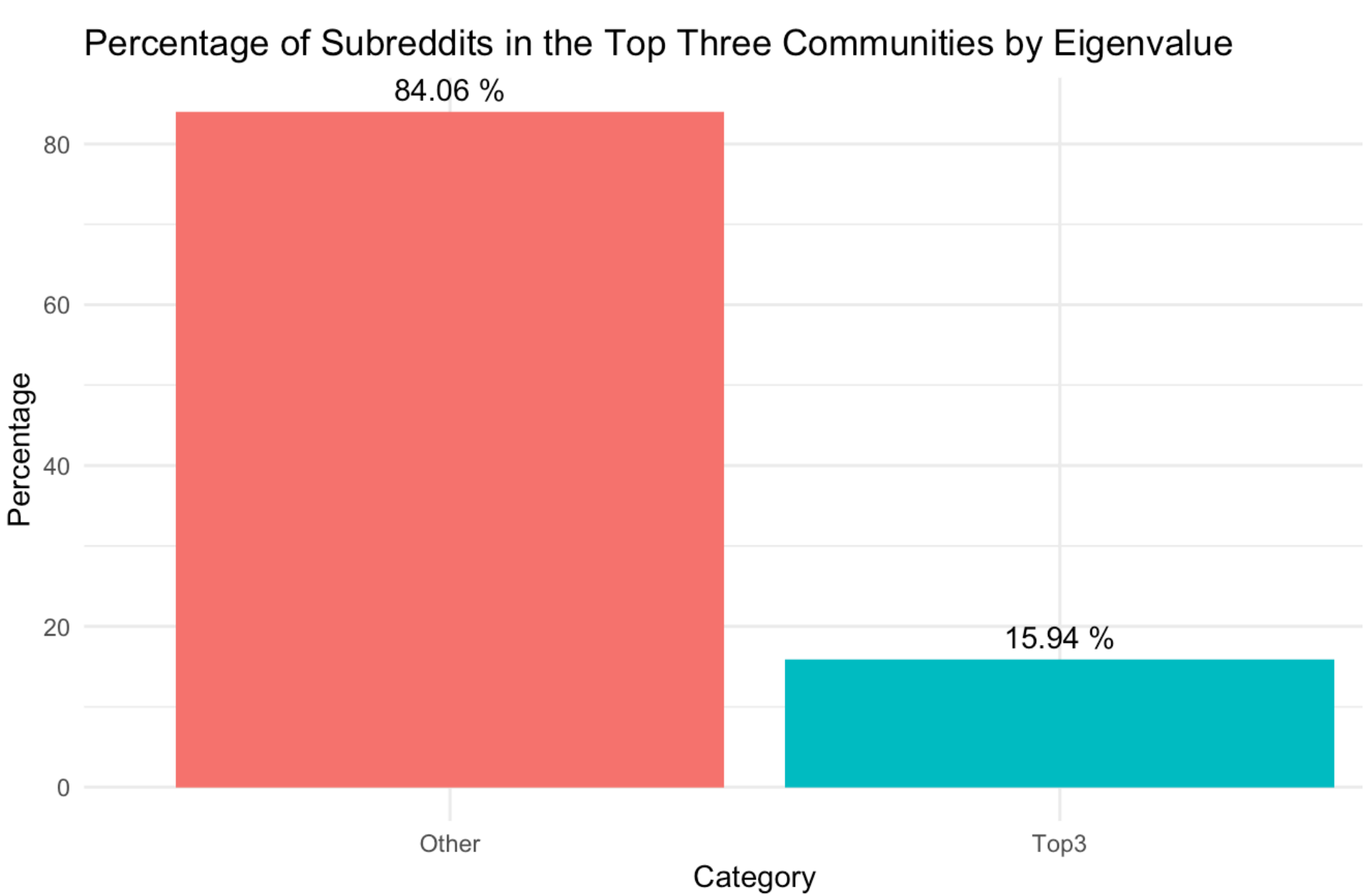


Network visualized, colors denote relative size of subreddit by quartile, isolates are removed

Results

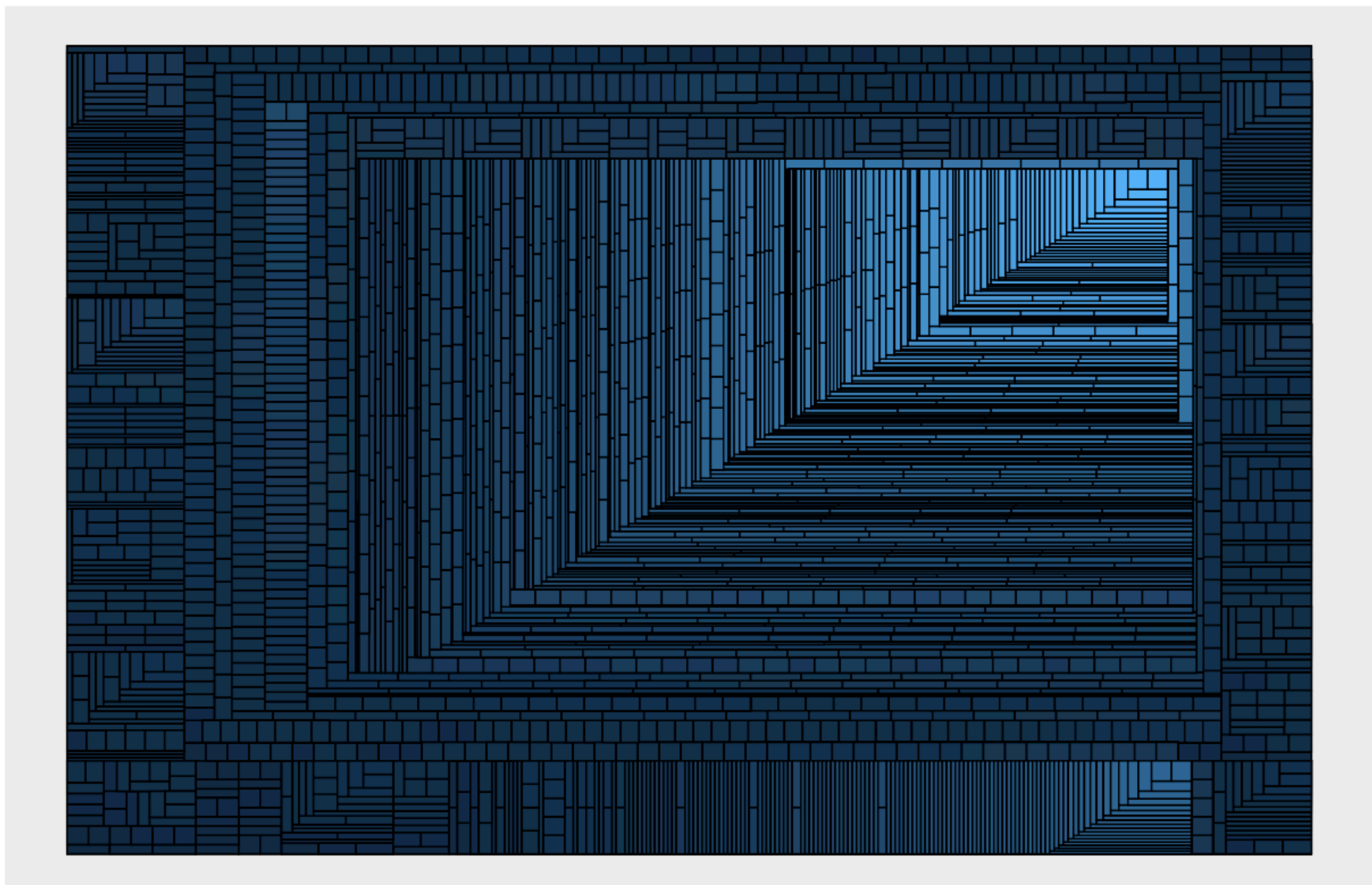


Mean eigenvector centrality by size of subreddit by quartile. large, medium, small, tiny are 75-100%, 50-75%, 25-50%, and 0-25% respectively.

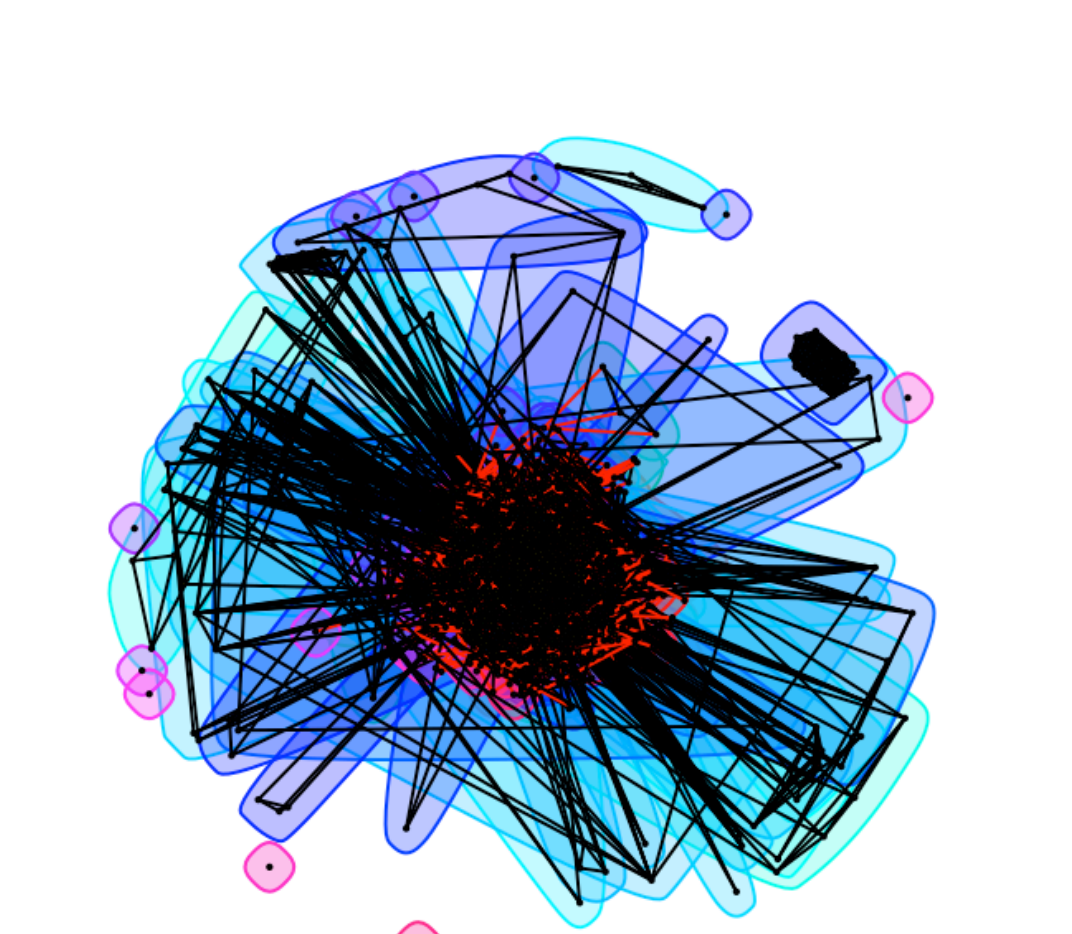


Percentage of subreddits in the top 3 communities with the greatest mean eigenvector centrality.

Block Modeling

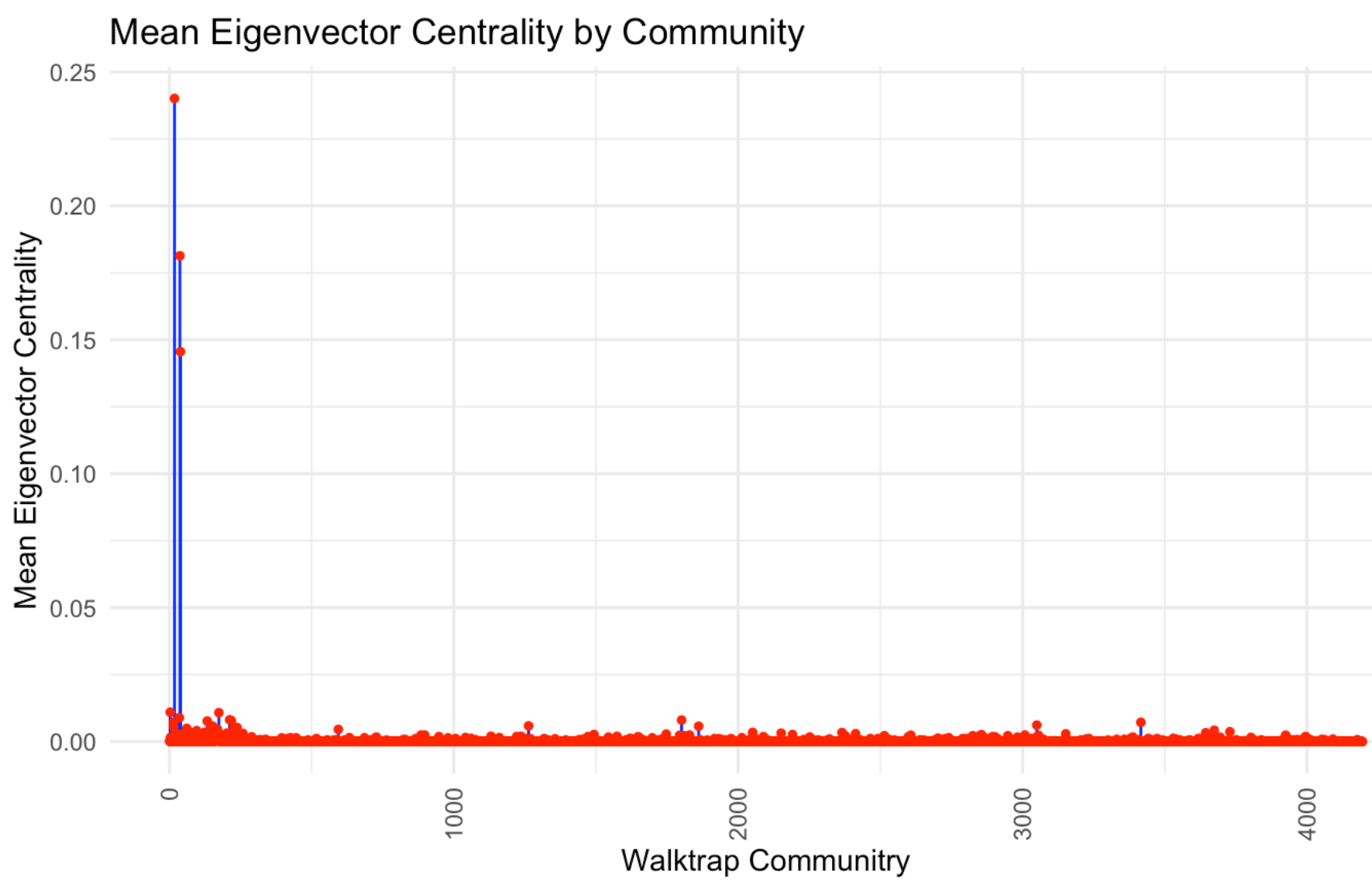


Block modeling results visualized using a treemap

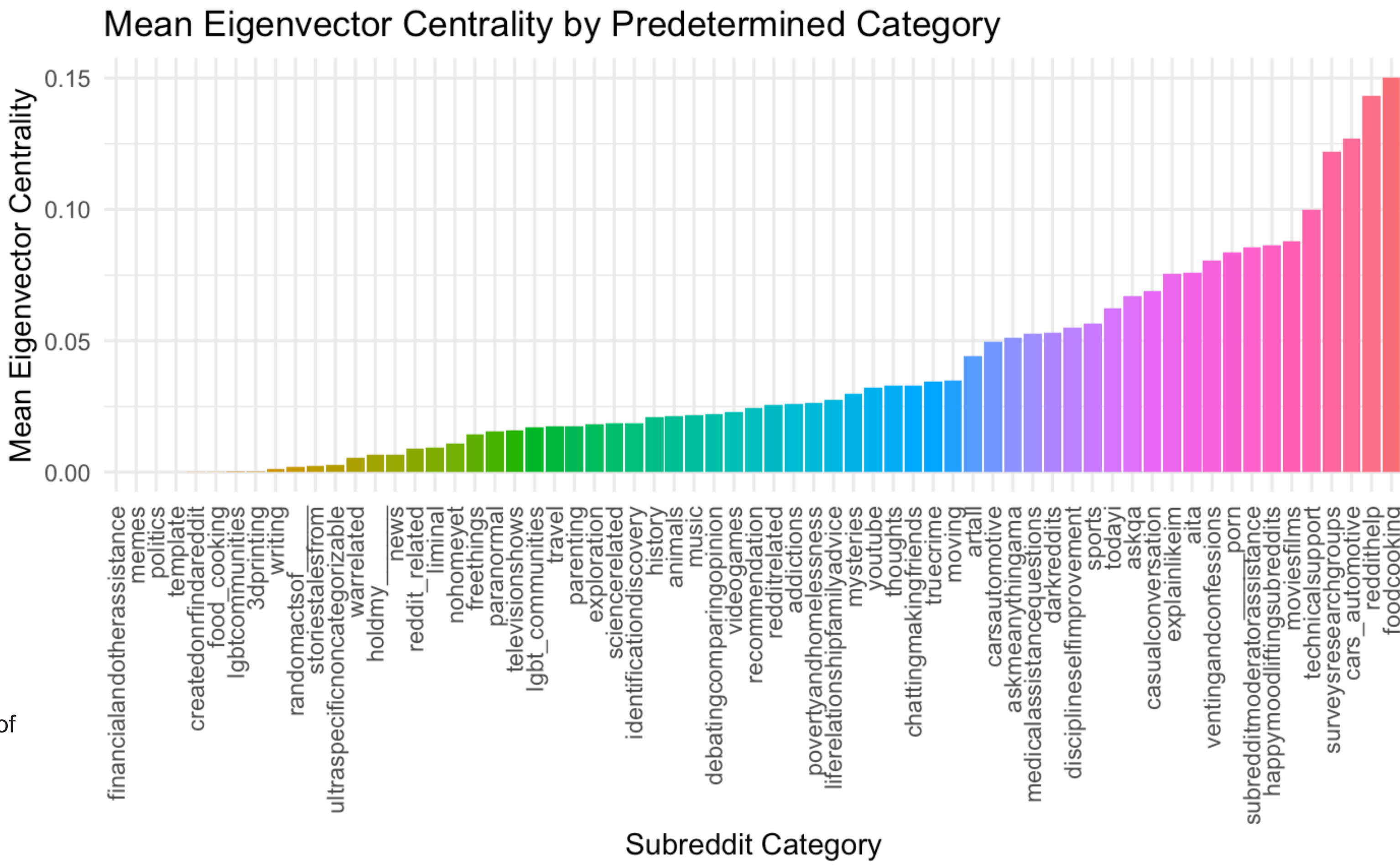


Visualization of detected walktrap algorithm communities

Mean eigenvector centrality based on community topic attributes of subreddits



Mean eigenvector centrality by detected community using the walktrap algorithm



Tables

Network Descriptives			Table denoting main network descriptives of interest
Projected one mode network descriptives			
Metric	Category	Value	
Number of Nodes	Value	6693.000000000	
Number of Ties	Value	112181.000000000	
Average Degree	Value	33.521888540	
Network Density	Value	0.005009248	
Network Degree Centralization	Value	0.086469071	
Betweenness Centralization	Value	0.010952369	

Top Five Subreddits by Eigenvector Centrality					
Subreddits with the highest Eigenvector Centrality metric					
Subreddit	Eigenvector_Centrality	Category	Number_Mods	Walktrap_Community	Subscriber_Count
interestingasfuck	1.0000000	happymoodliftingsubreddits	29	37	12718231
ask	0.9106162	askqa	19	37	1035763
PinkFloyd	0.9044449	music	21	37	199721
pokemongo	0.8906972	videogames	18	37	5028202
Eyebleach	0.8521024	happymoodliftingsubreddits	22	37	4318850

Table denoting details about top five subreddit communities by eigenvector centrality

Conclusions

- The overall network is quite sparse
- Larger subreddits have higher power by eigenvector centrality
- Roughly 16% of subreddits have the most moderator influence
- The top five subreddits have roughly similar amounts of moderators
- Certain subreddit topic communities cluster tightly in terms of shared moderators
- There are far more communities by algorithm than by preassigned topics
- Further investigation into specific communities and quantifying moderator influence is needed
- Focusing on a smaller subset may bring deeper understanding

Data was collected from reddit using PRAW in Python. Data is current as of Oct. 30, 2024. Data includes only subreddits marked as "safe for work" (SFW). Categories and subreddits were sourced from a community collaborative effort to document all existing subreddits. Subreddits with multiple topics were assigned to their first mentioned topic