

GRATEFUL NETWORK

Song Co-Writing Network Analysis

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Introduction/Background

This network originated as research on procedural methods in creating and analyzing co-author networks for another topic. Because it was initially a working example, I chose a topic that I have deep personal knowledge on from over 30 years of engaging with and studying the Grateful Dead community. I gathered information from multiple archival sources, including the University of California Santa Cruz special collections archive, and analyzed in this project only original songs that were played live by the Grateful Dead during their existence (1965 - 1995). This information includes data documenting:

- 450 unique songs played live; 181 originals
- 5 founding members contributing to songwriting, plus contributions from 5 more members joining later
- 2 key collaborators/lyric writers
- At least 13 additional confirmed song contributors
- 2,318 concerts played



The Grateful Dead
"Steal Your Face" icon.

Hypothesis

I posit that Jerry Garcia, singer, lead guitarist, and front man for the Grateful Dead, was central to the Grateful Dead songwriting network.



Exploratory Analysis

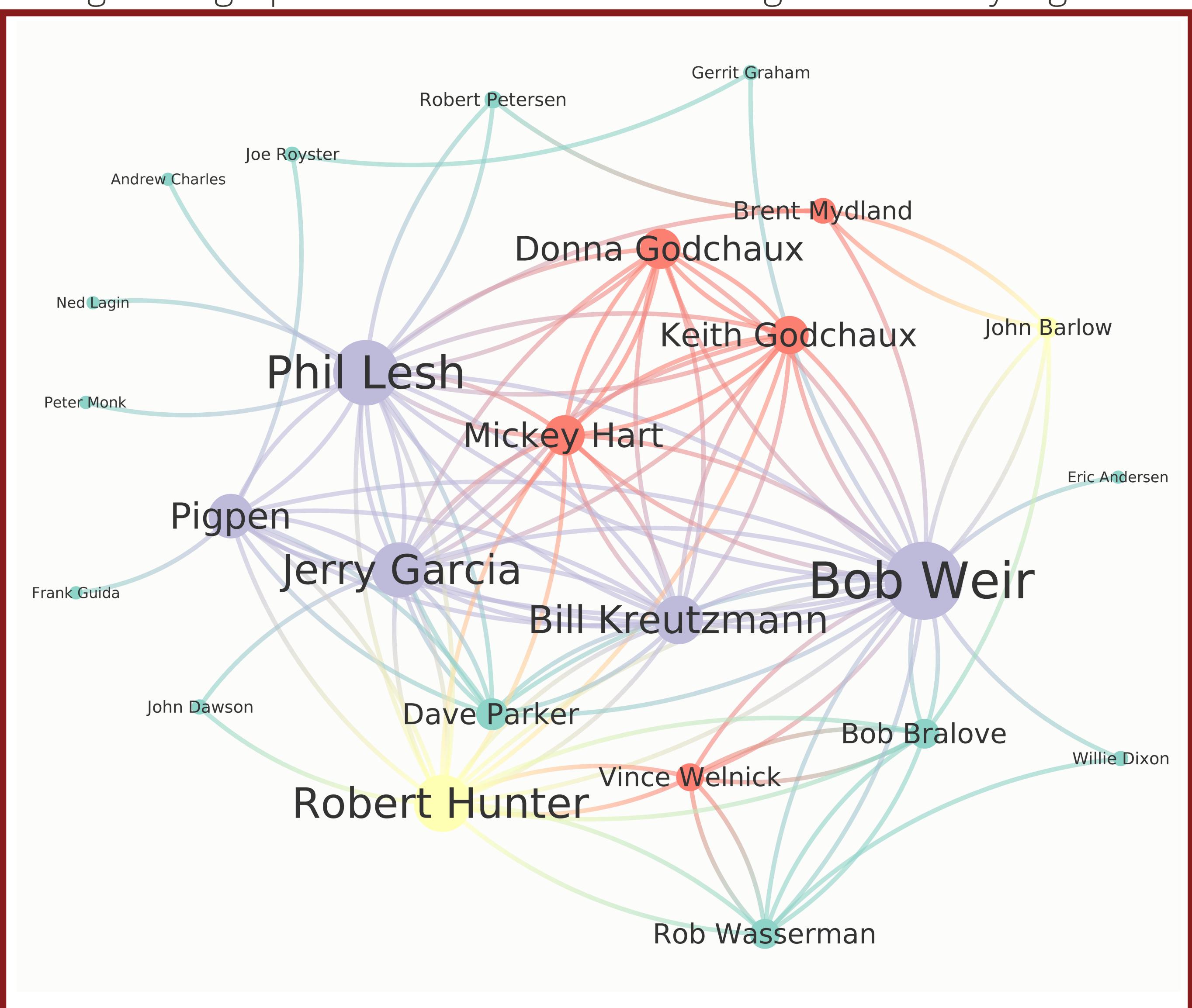
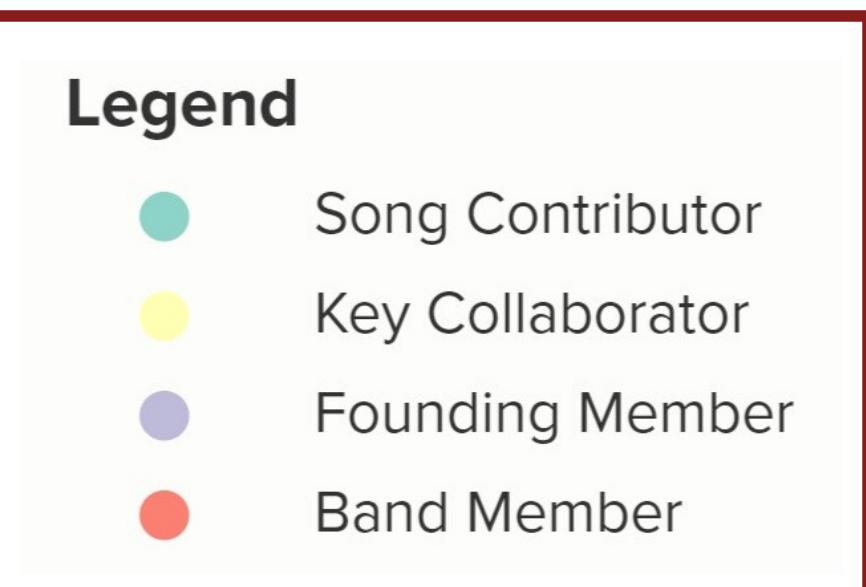
Preprocessing of the songwriter data included researching 3 different archival databases to ensure all unique, original songs had been represented along with the appropriate songwriting contributors. Songs were included if they were written as original songs and not covers, and where there is specific archival information marking it as unique and not just a variation. Songs and writers were then arranged in an incidence matrix before analysis.

Related Literature

There is little, if any, research in the area of social network analysis regarding the Grateful Dead. However, there are a large number of academic reviews of the Grateful Dead in theology, sociology, anthropology, geography, communications, marketing, history, art, etc. My literature review focused primarily on the work of Social Network Analysis by Nick Crossley and J.B. Watson on the networks of UK punk bands.

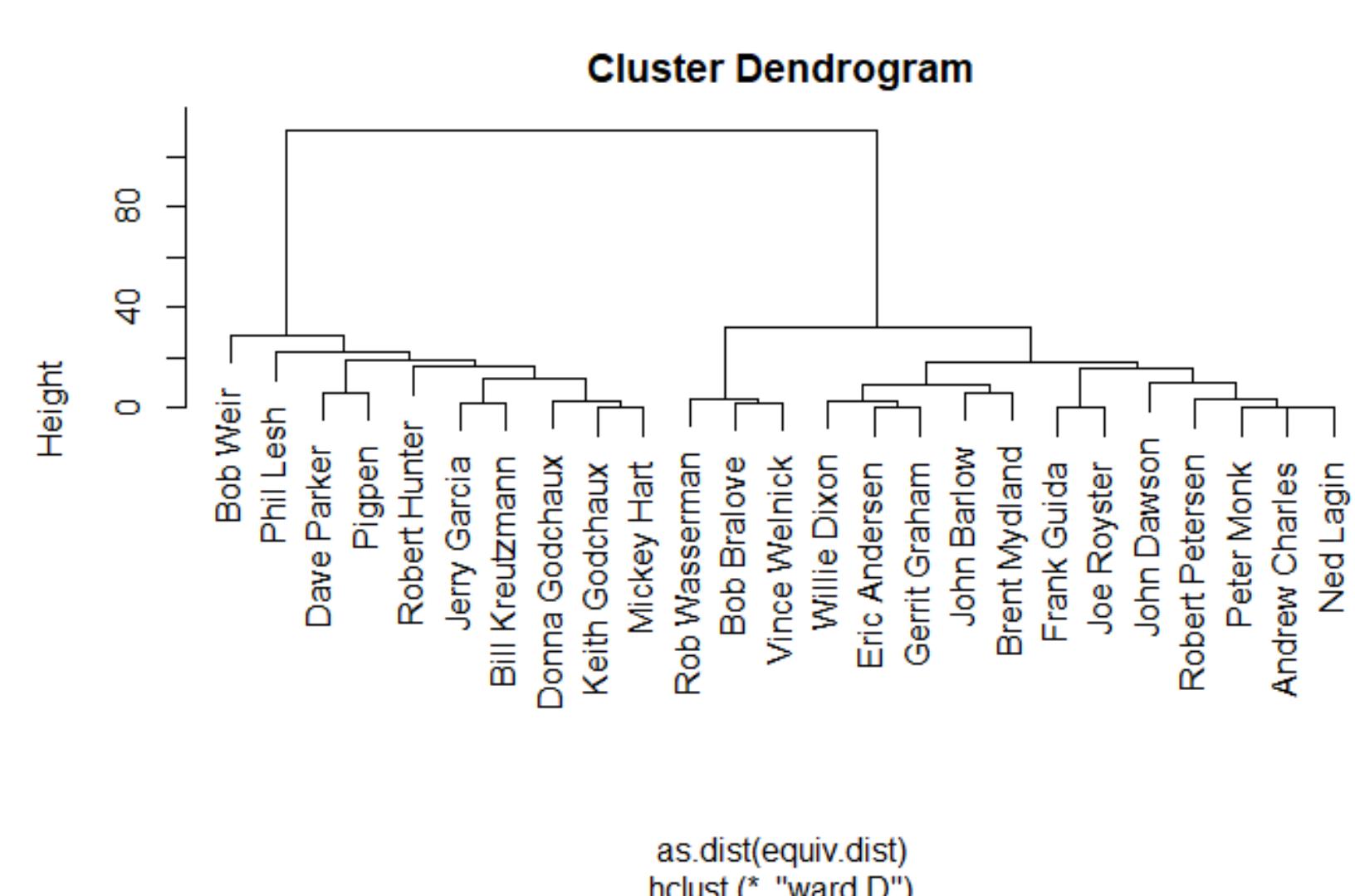
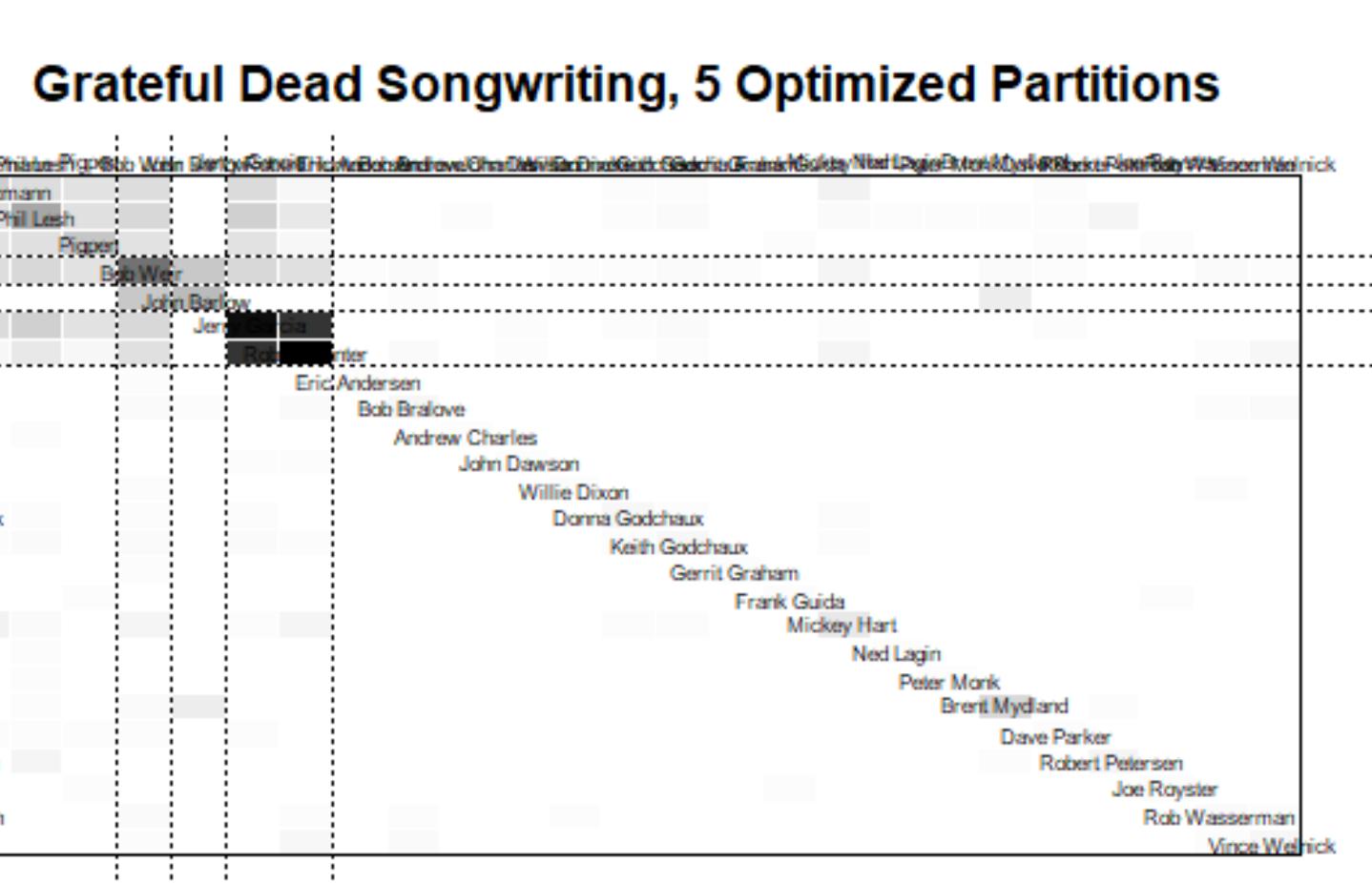
Results/Findings

After creating networks using both igraph and statnet, it became clear that it is probable that it is not Jerry Garcia, but Bob Weir, that is the central figure in the Grateful Dead songwriting network. Although the igraph evaluation determined degree centrality higher for Jerry Garcia, even in igraph, Bob Weir had more centrality by every other measure. In the statnet evaluation, Weir held the most consistently strong centrality of any member, including Jerry Garcia.



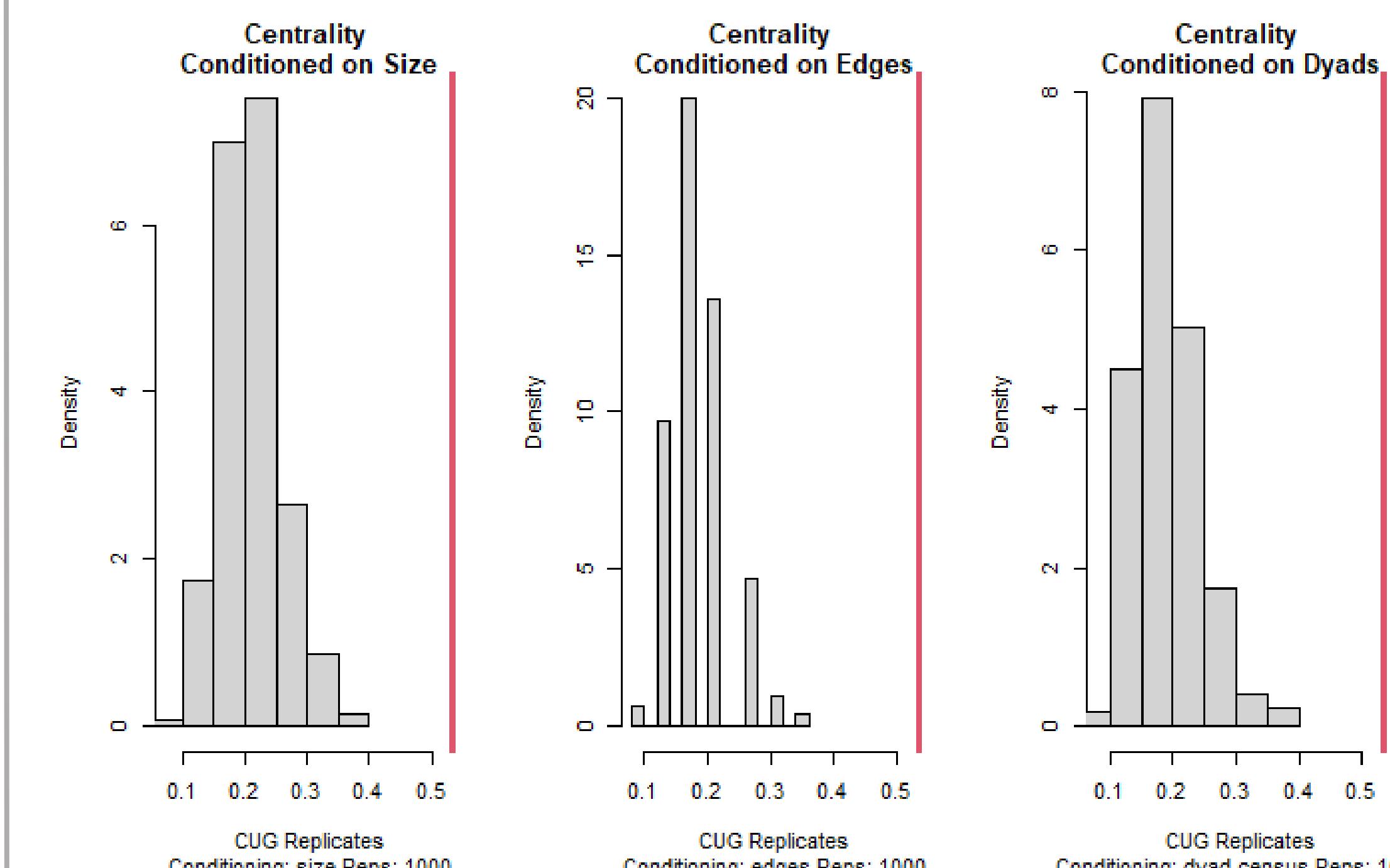
Analysis

I have analyzed the cluster methods, block models, and partitions, and found some useful tools. Since clustering can produce different results that are not independently verifiable as "best", I looked at multiple models that showed unexpected groupings that did allow some insight into why Bob Weir is represented more centrally than Jerry Garcia in most network algorithms. Although in sheer numbers, Jerry Garcia wrote more songs, he primarily wrote them either with the original band members or Robert Hunter. Bob Weir, on the other hand, wrote a significant volume and though lower, the songs were written with many, varied co-authors and combinations of authors.



CUG Testing

There is a low chance that, conditioning across the properties of size, edges, and dyad census, the observed centrality of 0.534 could be replicated in a random network. This gives me confidence in observing that the observed network degree centrality is higher than would be expected from a random network.



Univariate Conditional Uniform Graph Tests
Conditioning Across Three Properties

Conclusion

This research allowed me to use Social Network Analysis tools to examine social and cultural phenomenon. I have long held theories concerning the centrality of Jerry Garcia to the band, and used those tools to grapple with analysis of those theories as a researcher. Ultimately, further research is necessary to confirm my preliminary conclusion that the influence of Jerry Garcia, while unquestionably strong, was not necessarily most central overall.

The Grateful Network
project code and
citations are available
using the QR code or
visiting www.gratefulnetwork.live

