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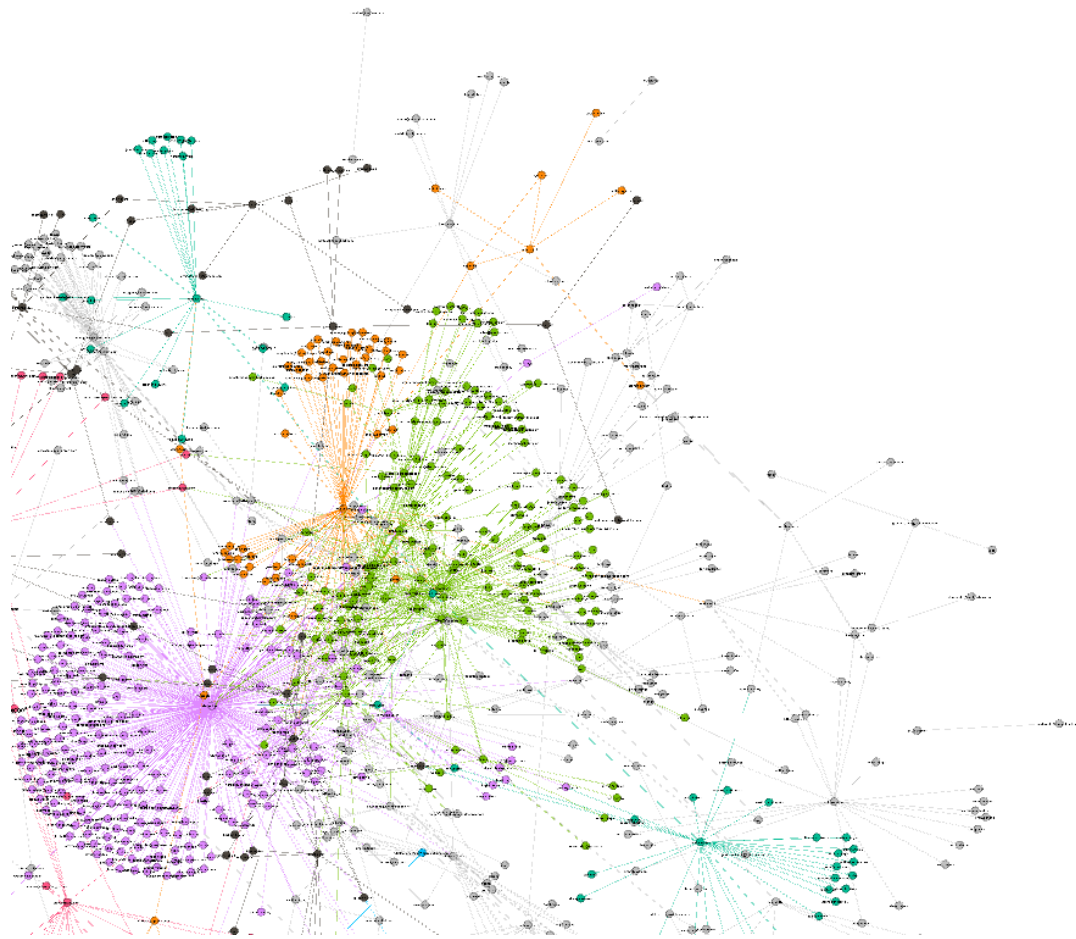
Institute for Statistical Education

Network Analysis

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General Structure

There is a general structure that is present in the network. There appears to be three clusters that comprise the most significant portions. Each of these clusters has their own hub. There also appears to be numerous minor clusters that dot these larger major clusters. It will be instructive to perform a general overview of the major clusters.



The first cluster to review has been colored purple. The hub of this network is Steven Kean. He is the Executive Vice-president and the Chief of Staff. The way the network is modeled strongly reflects his position in the hierarchy. He has an in-degree of 17. This suggests that he has fewer communications with his peers. However, he has an out-degree of 367. Steven is giving more instructions than he is receiving. In terms of closeness centrality, his node is .5. This suggests that he is well-connected and when considering his out-degree, the modeling done by the network accurately reflects reality well.

The second cluster to discuss is colored green. The hub that helps to define this cluster is Susan Maria. She is Enron's California Director of Regulatory Affairs. Her node has an in-degree of 13 and an out-degree of 47. The closeness centrality of her node is around .4. She has a similar pattern as Steven. She has a high out-degree and a relatively high centrality while also having a relatively low in-degree. This suggests that she has a higher standing in Enron as well.

The third cluster is colored orange. The hub of this network is John Shelk. He is a lobbyist for Enron for Washington. John has similar statistics as Susan. He has an in-degree of 13 and an out-degree of 47. His closeness centrality is also around .4. Perhaps, since both John and Susan have jobs that concern working with the government, there could be some relationship with this pattern that is helping to shape the data.

Analysis of First Cluster

The main hub that defines this network is Steven Kean. He appears to have worked closely with many people. One of whom that is of interest is Miyung Buster. She appears to have been focused on energy policy in California. One email involving Miyung is the following,

“Everyone,

Just to clarify Miyung's message, I want Houston to be kept abreast of the key pieces of legislation that Sacto is working on, offering amendements etc. John Neslage provided us with a list but I want to be sure that it hasn't changed at all. ”

This email was sent March 15th. It helps to define the relationship between the parties involved. Miyung is connected to Steven via Mona Petrochko. She was a lobbyist as well. However, it appears that her focus was on Arizona policy. There are records available of her testimony in Arizona from January 1998. It would make sense that she would play a role in connecting Enron's representative from California and more executive leadership.

Analysis of Second Cluster

The second cluster is less defined than the previous. One of the major hubs is Susan Maria. She is connected to John Shelk whom defines the third cluster. As they both focus on lobbying, it would not be surprising for them to coordinate. Likewise, Jeff Dasovich is important to the cluster as well. He is a Government Relation Executive and is connected to both to John and Susan. The two of them seem to be well connected as the rest of the green cluster that appears seem to represent government. However, Jeff appears to be focused more on federal issues and is more closely aligned to lobbying efforts in Washington. Susan is allocated to lobbying California. She is connected to Tim Belden, whom is infamous for orchestrating the Enron scandal. It appears that this cluster is encapsulating those that were involved with lobbying efforts in California. While, the orange group is clustering on those that were involved with federal politics.

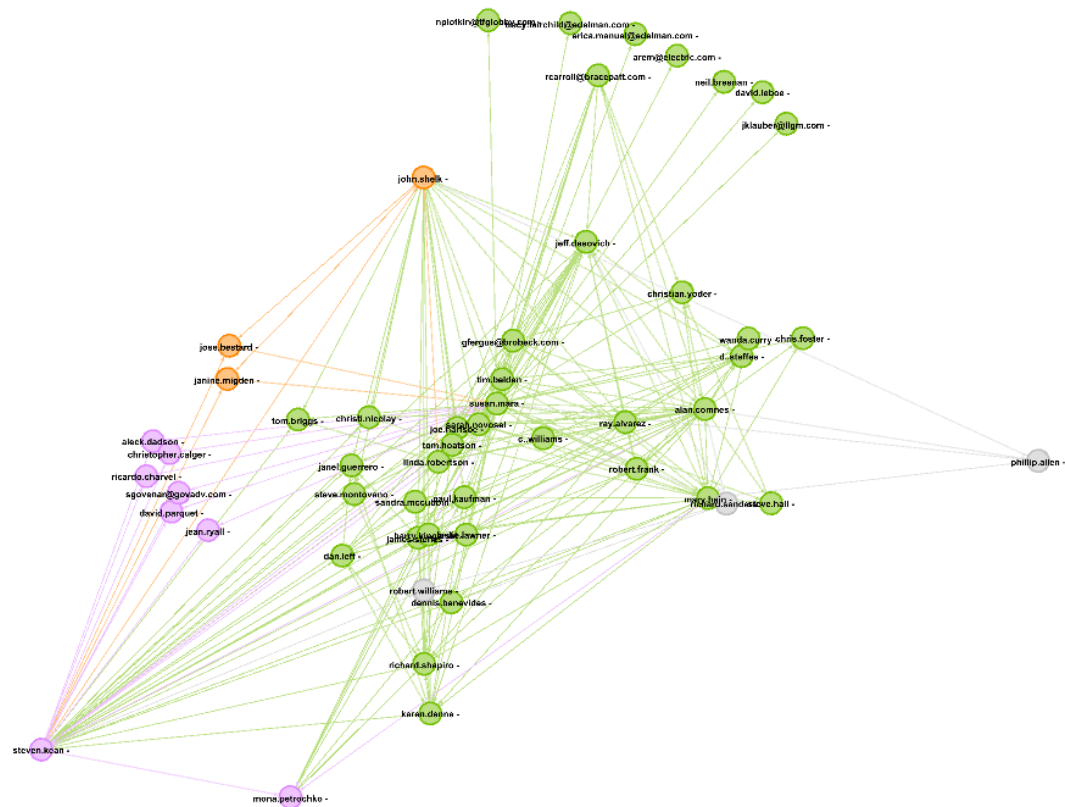
Analysis of Third Cluster

The third cluster appears to be harder to interpret. For instance, Kevin Presto and Kevin McGown are connected to John Shelk. However, both work in Houston. While they are both

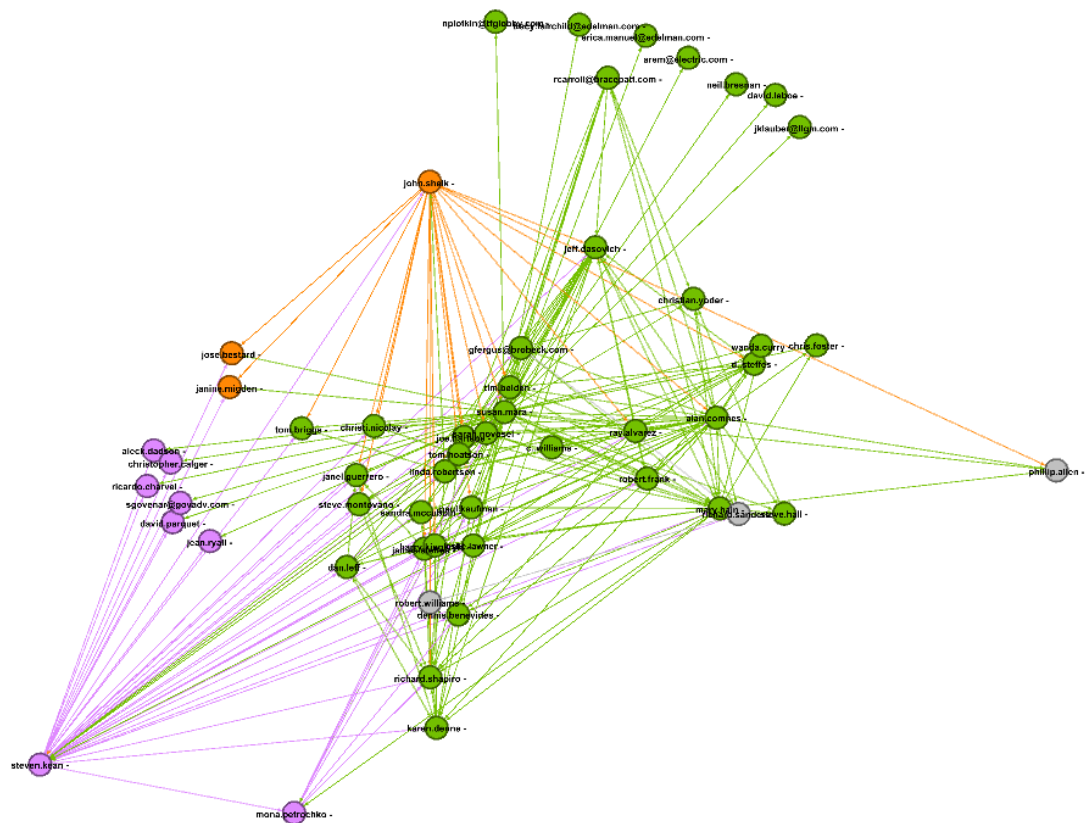
connected to John, they have a lesser centrality. This might suggest that the third cluster is composed more of people from Houston. The relationship could be, the more central the nodes, the more likely they are to be lobbyists on the federal level. This appears to be an appropriate interpretation of the network.

Analysis of Egocentric Networks

The egocentric network of Steven Kean is rather interesting. He has more connections with other clusters than his own. This suggests that while he has more characteristics with his own cluster. He was forced by his position to communicate more with external groups to his cluster. This egocentric network is reflecting the reality of his position. While executives may connect with each other, there is likely far more communication between them and their employees than with each other. This is likely what is being detected in this network.



Susan Mara has a diamond shaped network. There is density for a prolong period that diffuses in the corner. Susan has many of the same connections as Steven, but she has more connections from her own cluster. There is less cross-over which suggests that she had more interaction with her peers than Steven. This would help to explain the more reasonable shape to her network as opposed to Steven.



Concluding Analysis

The larger network suggests that there clustering reflects geographic specialization in tasks. In general, it appears that the closer you are to John, the more likely the node is to be affiliated with federal lobbying. If you are above John, you are likely to be clustered with lobbying efforts in southern states.

In terms of egocentric network, it appears as there was a lack of communication between executive leadership. They may communicate as there is an edge to their nodes and the nodes of their staff, but it appears that there is a lack of centrality for their egocentric network. It suggests they were not actively involved. Take Kean as an example. There is little centrality of his node in his own egocentric network. This suggests that there was operational weakness in Enron's communications that may have helped to facilitate the scandal.