Introduction

In this report, we analyze a seating network on the Fakebook company bus to determine which open seat (A, B, C or D) provides the best opportunity for networking and building informal connections with coworkers. By calculating degree centrality, closeness centrality, and betweenness centrality measures for each seat, we can quantitatively assess the advantages and disadvantages of each seating position.

Methods

The seating network was represented as an undirected graph, with nodes corresponding to seats and edges representing adjacency between seats. The graph was constructed based on the seating layout provided.

Three standard centrality measures were calculated for each seat:

1. Degree Centrality: The number of edges connected to a node, normalized by dividing by the maximum possible degree. It represents how well-connected a node is.

2. Closeness Centrality: The reciprocal of the average shortest path distance from a node to all other nodes. Higher values indicate a node is "closer" to other nodes on average.

3. Betweenness Centrality: The number of times a node lies on the shortest path between two other nodes, normalized by the total number of node pairs. It measures a node's role in connecting different parts of the network.

The igraph package in R was used to build the network graph and calculate the centrality measures.

Results

The table below shows the calculated centrality measures for each open seat:

Seat	Degree	Closeness	Betweenness
A	0.222	0.059	0.009
B	0.444	0.071	0.139
C	0.667	0.083	0.333
D	0.667	0.083	0.231

Seat C has the highest values across all three centrality measures, followed closely by Seat D. Seat B has moderate centrality, while Seat A scores the lowest.

Discussion

- Seat C emerges as the most strategic choice for networking, with the highest degree (tied with D), closeness, and betweenness centrality. Sitting here provides the most direct connections,

efficient access to others, and influence over information flow. However, it is also the most prominent "high-pressure" position.

- Seat D has centrality scores very close to Seat C, making it a strong second choice. It provides most of the same connection benefits with slightly less betweenness/influence.

- Seat B offers a more balanced, moderate position - less central than C and D but more connected than A. It enables building connections without being in the most prominent seat.

- Seat A is the least favorable from a networking perspective, with the lowest scores on all measures. However, it could suit someone who wants to keep a low profile.

The ideal seat choice depends on one's networking goals and personal preferences regarding visibility. Seat C is optimal for someone seeking maximum connectivity and influence, Seat A for maintaining a low profile, with B and D providing more nuanced intermediate options.

Conclusion

This network centrality analysis provides a quantitative basis for choosing a seat on the Fakebook bus to maximize informal networking opportunities. Assuming this is a priority, Seat C is recommended as the top choice, followed by Seat D. However, individual preferences around profile and connectedness should also be weighed in the decision. The code used for the analysis is provided in the Appendix.