I606 Final Project

# Network Analysis of Organizational Communication

Adam Hilgenkamp

## Motivation

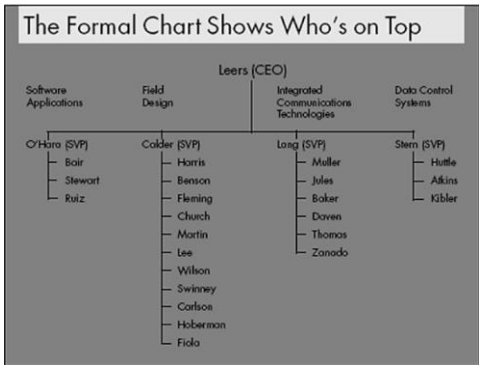
# Why Study Organizational Communication?

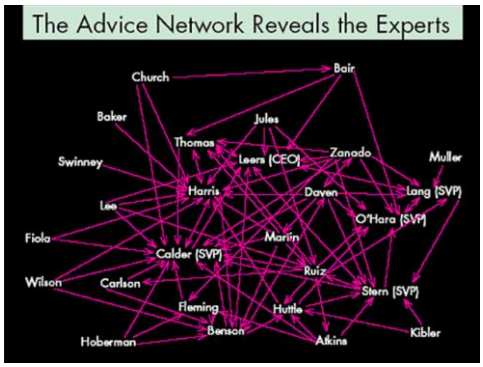
1. Understaning the informal organization structure
2. Visibility into diversity
3. Identification of information silos



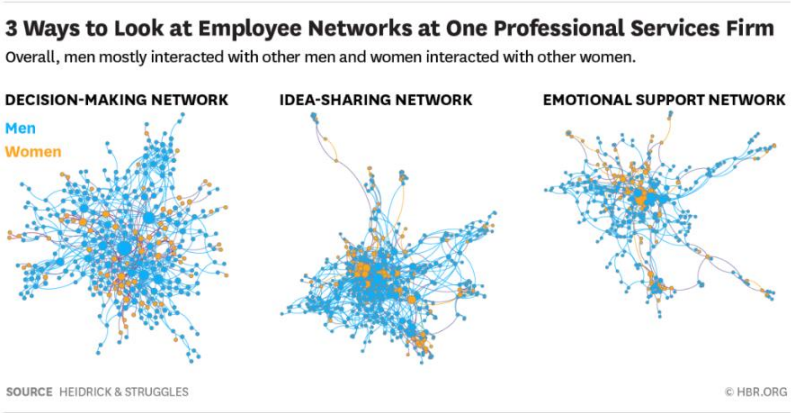


# The Company Behind the Chart



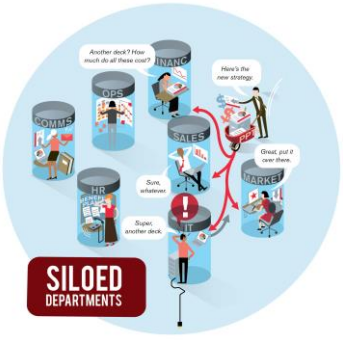
# Inclusivity in Business

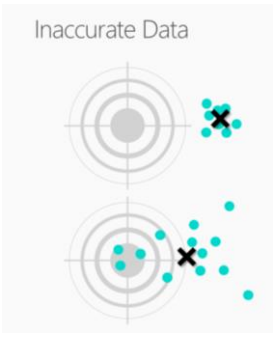







# Why I Wanted to Study Communication Patterns

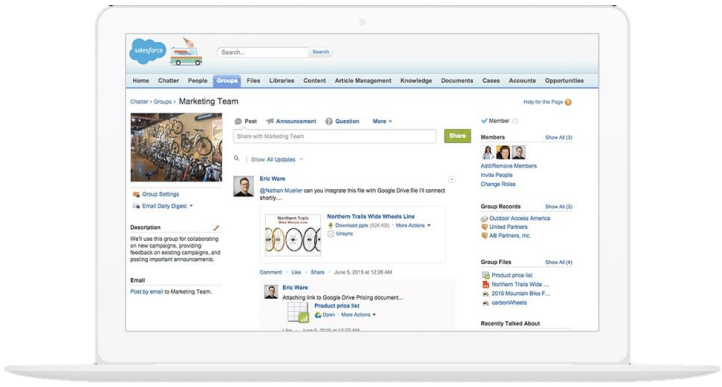


# Methods



## What is Chatter?



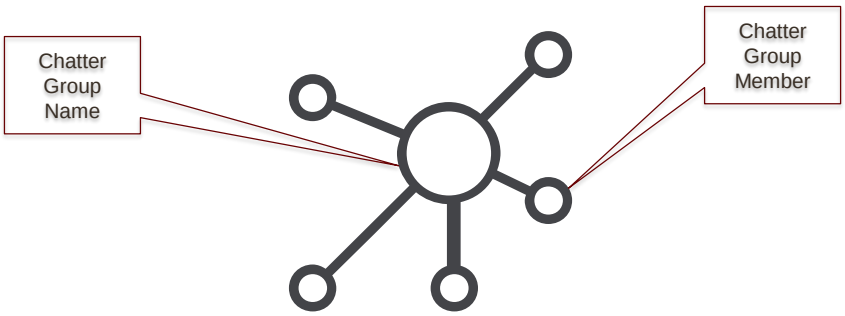
# Collecting the Data



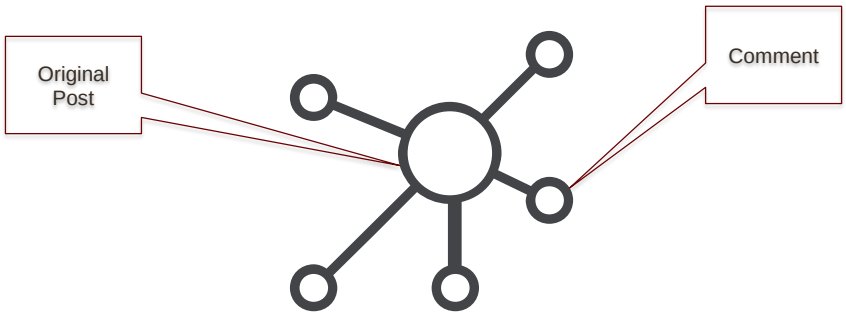





# Creating the Chatter Group Data



# Creating the Interaction Data







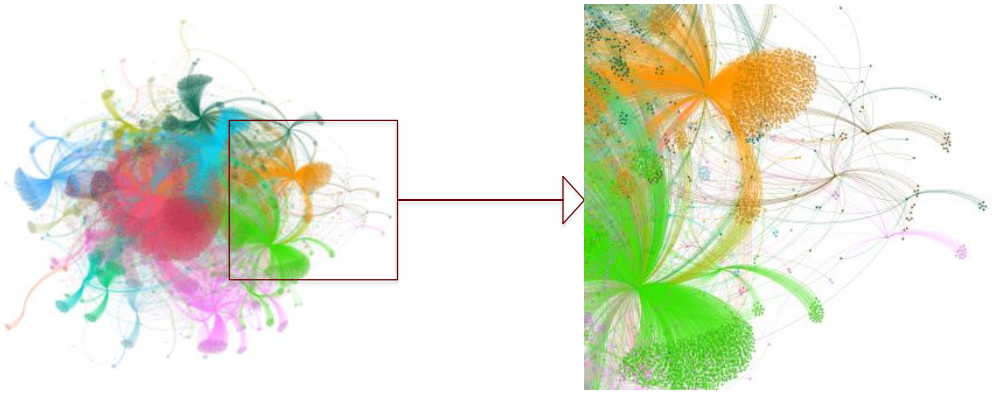

# Potential Issues with the Data

1. Chatter is not the only form of communication
2. Not all interactions are included
3. Confounding variables

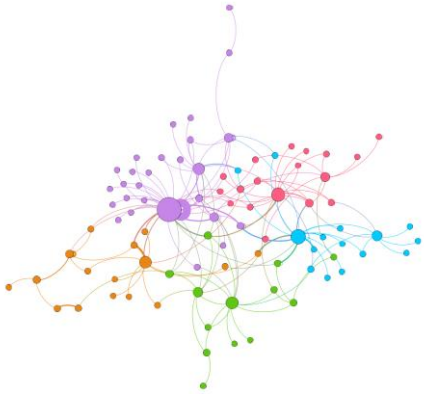
# Results



## Chatter Group Network



# Chatter Group 1

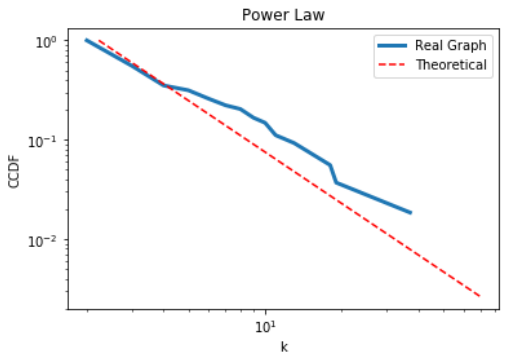






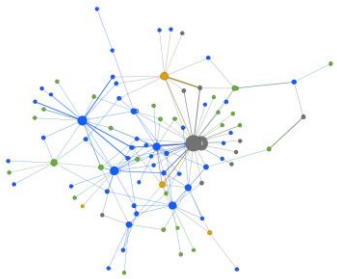
# Characteristics of Group 1

```
Number of nodes: 89
Number of edges: 157
Average degree:   3.5281
Friendship Paradox: 0.8876
Graph Density: 0.0401
Graph Diameter: 7
Avg Clustering Coefficient: 0.1439
Avg Shortest Path: 3.0912
```

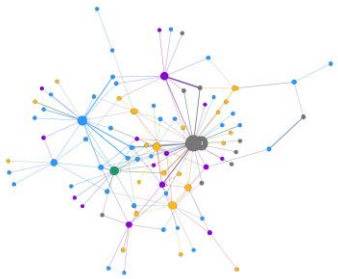


# Characteristics of Group 1

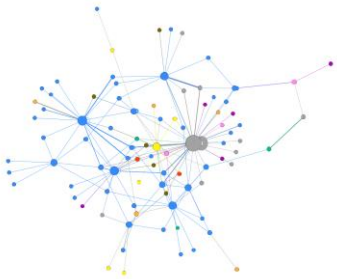
Job Grade



Tenure



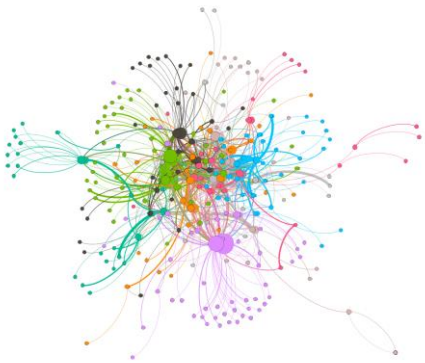
Work Location





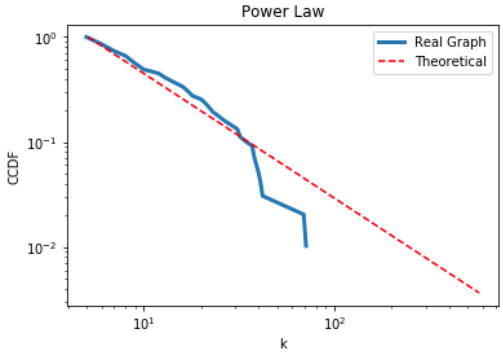


# Chatter Group 2



# Characteristics of Group 2

```
Number of nodes: 283
Number of edges: 883
Average degree:   6.2403
Friendship Paradox: 0.9152
Graph Density: 0.0221
Graph Diameter: 6
Avg Clustering Coefficient: 0.2104
Avg Shortest Path: 3.0412
```







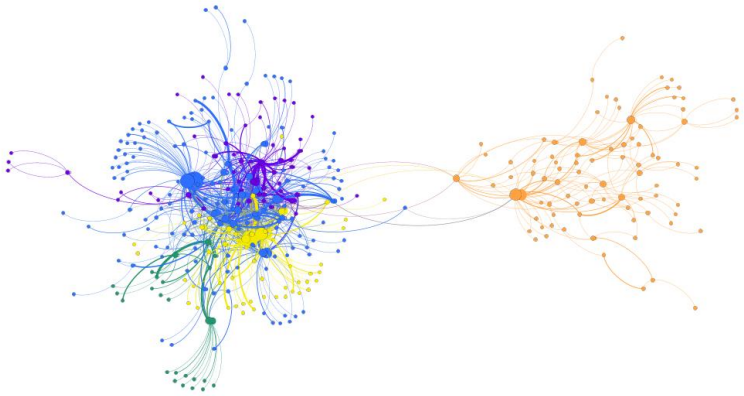

# Characteristics of Group 2

Job Grade

Tenure

Work Location

# Group 1 + Group 2





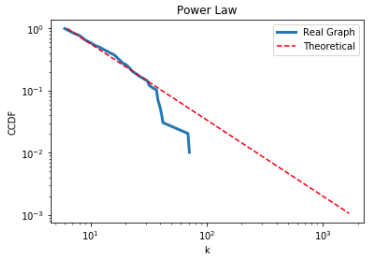


# Characteristics of Combined Groups

```
Number of nodes: 89
Number of edges: 157
Average degree:   3.5281
Friendship Paradox: 0.8876
Graph Density: 0.0401
Graph Diameter: 7
Avg Clustering Coefficient: 0.1439
Avg Shortest Path: 3.0912
```

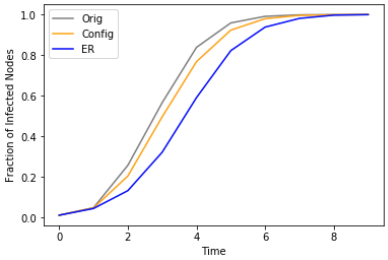
```
Number of nodes: 283
Number of edges: 883
Average degree:   6.2403
Friendship Paradox: 0.9152
Graph Density: 0.0221
Graph Diameter: 6
Avg Clustering Coefficient: 0.2104
Avg Shortest Path: 3.0412
```

```
Number of nodes: 368
Number of edges: 1040
Average degree:   5.6522
Friendship Paradox: 0.9103
Graph Density: 0.0154
Graph Diameter: 8
Avg Clustering Coefficient: 0.1951
Avg Shortest Path: 3.7281
```

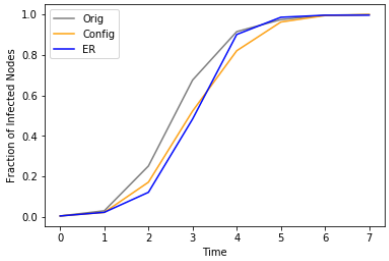


# Simple Contagion

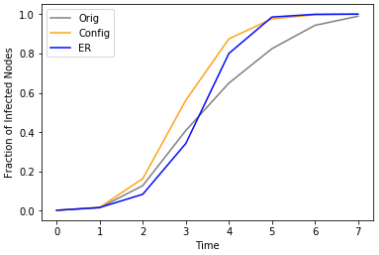
Group 1




Group 2




Group 1 & 2



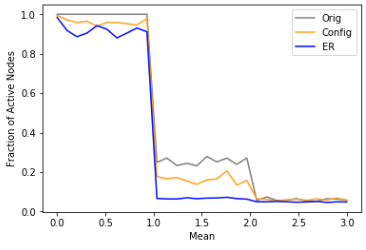

Beta = 0.9  Initial Infection = 1 node



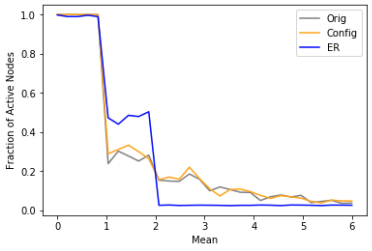


# Complex Contagion

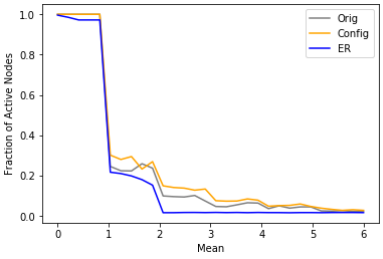
Group 1




Group 2




Group 1 & 2



# Future Areas of Study



## Chatter Data is a Small Part of the Story

1. Employee Survey Data
2. Including views and likes
3. Email, messaging and other forms of communication

# Questions

## Sources


1. J. Hanson, D. Krackhardt. (2014, August 01). Informal Networks: The Company Behind the Chart. Retrieved February 12, 2019, from https://hbr.org/1993/07/informal-networks-the-company-behind-the-chart

2. S. Tavares, B. Yamkovenko. (2017, September 20). To Understand Whether Your Company Is Inclusive, Map How Your Employees Interact. Retrieved February 12, 2019, from https://hbr.org/2017/07/to-understand-whether-your-company-is-inclusive-map-how-your-employees-interact


**GitHub Repository:** https://github.com/ahilgenkamp/Network_Sci_Project