



I606 Final Project

# Network Analysis of Organizational Communication

Adam Hilgenkamp

## Motivation

Motivation

## Why Study Organizational Communication?

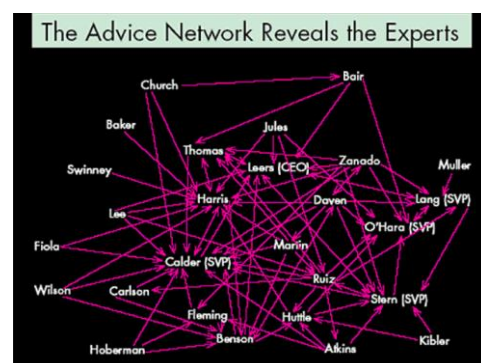
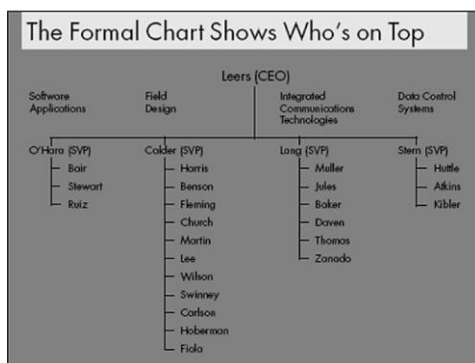
1. Understanding the informal organization structure
2. Visibility into diversity
3. Identification of information silos



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Motivation

## The Company Behind the Chart



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Motivation

# Inclusivity in Business

## 3 Ways to Look at Employee Networks at One Professional Services Firm

Overall, men mostly interacted with other men and women interacted with other women.

### DECISION-MAKING NETWORK

Men  
Women



### IDEA-SHARING NETWORK



### EMOTIONAL SUPPORT NETWORK



SOURCE HEIDRICK & STRUGGLES

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Motivation

# Why I Wanted to Study Communication Patterns

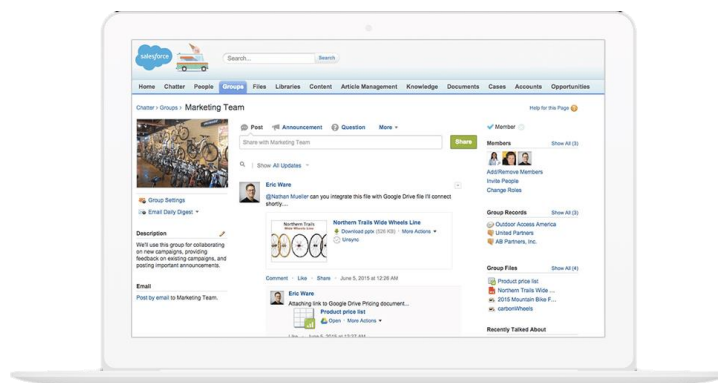


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# Methods

Methods

## What is Chatter?



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Methods

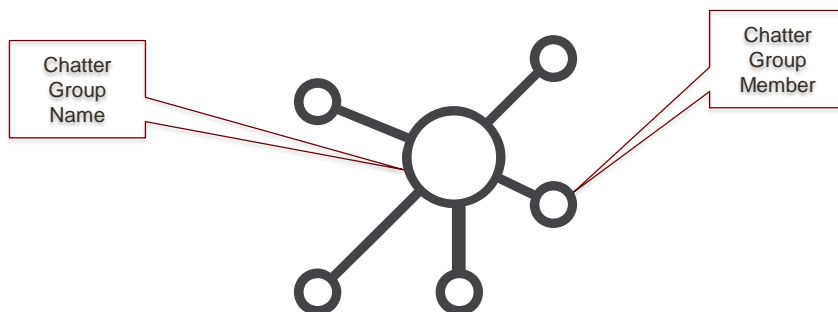
## Collecting the Data



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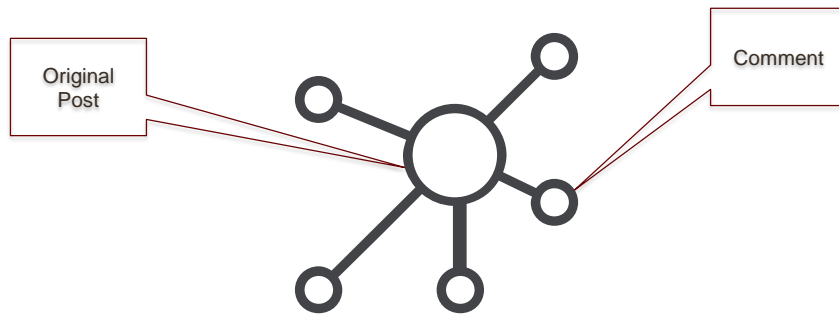
Methods

## Creating the Chatter Group Data



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## Creating the Interaction Data



## Potential Issues with the Data

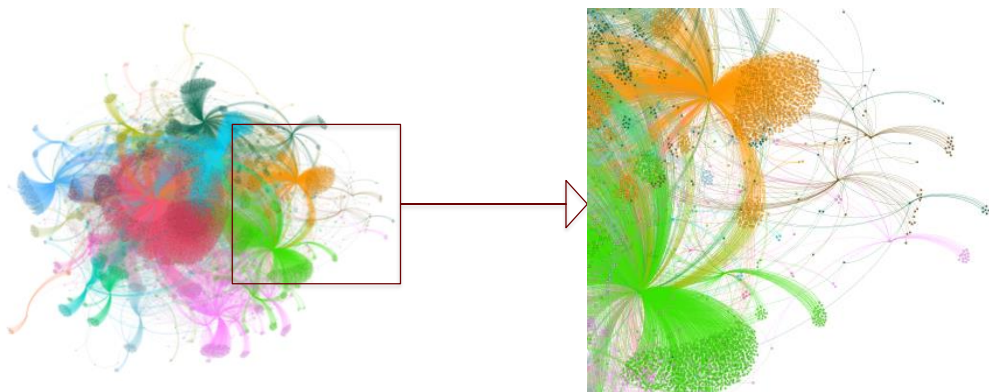
1. Chatter is not the only form of communication
2. Not all interactions are included
3. Confounding variables



# Results

Results

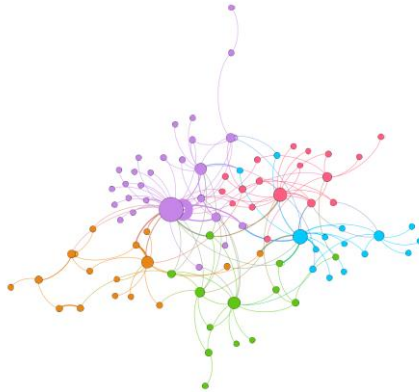
## Chatter Group Network



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Results

## Chatter Group 1

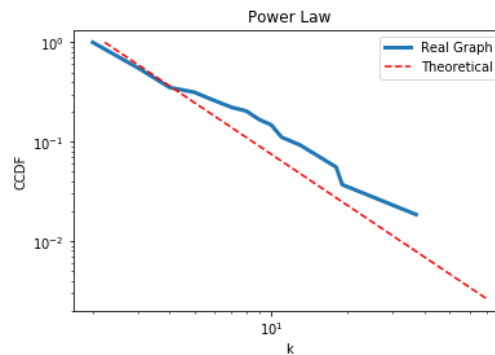


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Results

## 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



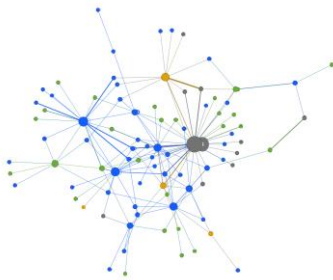
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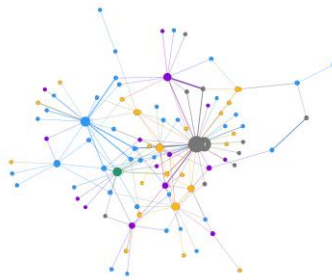
Results

## Characteristics of Group 1

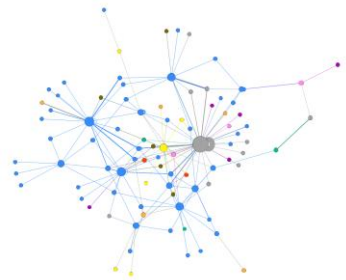
Job Grade



Tenure



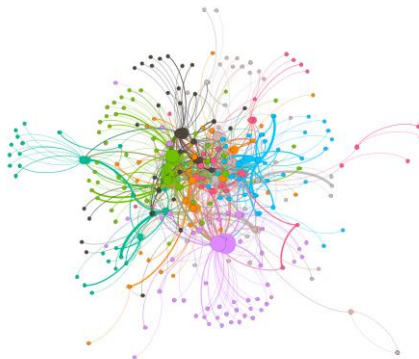
Work Location



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Results

## Chatter Group 2

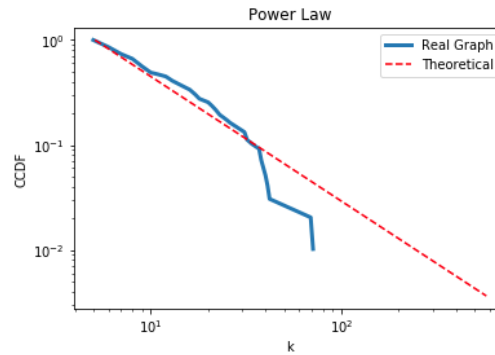


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Results

## 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



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Results

## Characteristics of Group 2

Job Grade



Tenure



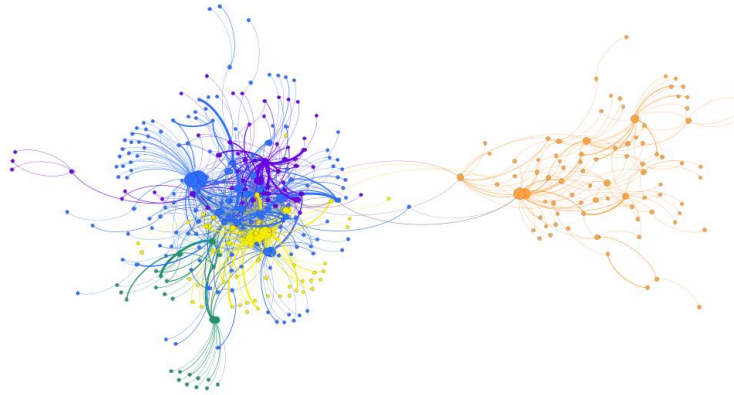
Work Location



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Results

## Group 1 + Group 2



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Results

## Characteristics of Combined Groups

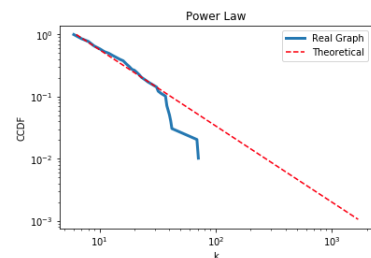
Number of nodes: 89  
 Number of edges: 157  
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Number of nodes: 283  
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 Avg Clustering Coefficient: 0.2104  
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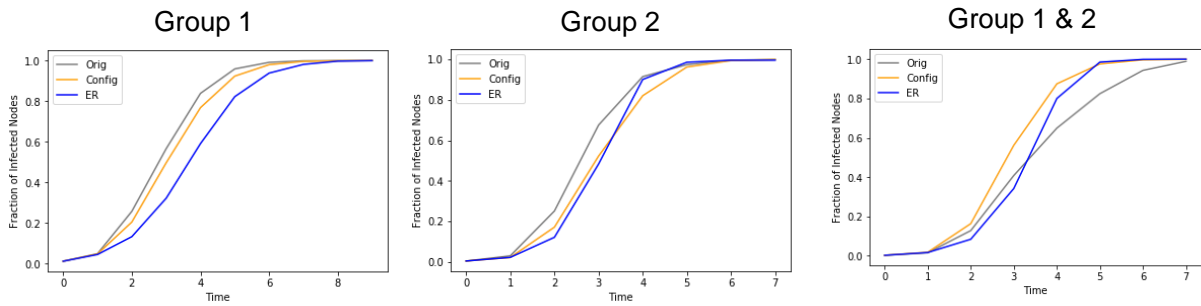
Number of nodes: 368  
 Number of edges: 1040  
 Average degree: 5.6522  
 Friendship Paradox: 0.9103  
 Graph Density: 0.0154  
 Graph Diameter: 8  
 Avg Clustering Coefficient: 0.1951  
 Avg Shortest Path: 3.7281



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Results

# Simple Contagion



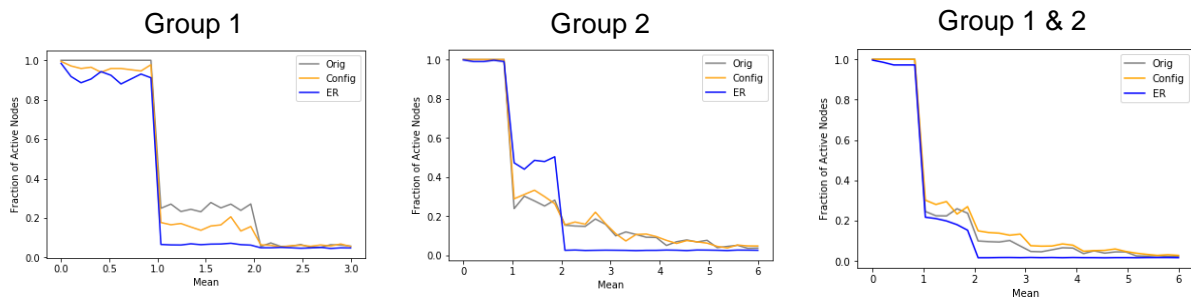
Beta = 0.9 Initial Infection = 1 node



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Results

# Complex Contagion



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# Future Areas of Study

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](https://github.com/ahilgenkamp/Network_Sci_Project)

