Web Scrapping and Text Mining of Employee Reviews of JP Morgan Chase Bank and Bank of America

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Background

	JP MORGAN CHASE BANK	BANK OF AMERICA
ASSETS	$2,167,700,000,000	$1,759,530,000,000
EMPLOYEES	192,802	139,812
CUSTOMER ACCOUNTS	53,356,299	71,727,936
HEADQUARTERS	Columbus, OH	Charlotte, NC
BRANCHES	5,252	4,578

Source: www.depositaccounts.com

JP Morgan Chase Bank and **Bank of America** are the two largest banks in USA with assets in trillion of US dollars, over hundred thousand employees and more than 50 million customer accounts.

Glassdoor is a website where both current and former employees anonymously review companies

Objectives

- Does JP Morgan Chase or Bank of America have a better pay & benefits as perceived by employees?

- Does JP Morgan Chase or Bank of America have a better work-life balance as perceived by employees?

- Does JP Morgan Chase or Bank of America have a better Management as perceived by employees?

- Glean reviews for other insights about what it is like to work at JP Morgan Chase Bank and Bank of America

Methodology

- Scraped 4500 reviews each of the two banks from glassdoor.com
- Cleaned data (punctuations, numbers, abbreviations, symbols, stop words, extra space, upper case)
- Word Counts/Frequencies
- Common Term Frequencies
- Word Cloud analysis
- Hierarchical Cluster Analysis
- Common Words Analysis
- Common Themes Analysis

R Packages

- library(rvest)
- library(purrr)
- library(qdap)
- library(dplyr)
- library(tm)
- library(wordcloud)
- library(plotrix)

- library(dendextend)
- library(ggplot2)
- library(ggthemes)
- library(RWeka)
- library(stringr)
- library(stringi)

The Value of Text Mining

- With 4500 review each = 9000 total reviews

- 285, 525 words equivalent to 717 pages of documents.

- Without text mining, it would take a very long time to answer my questions from the data

Number of words	Font
285525	Times New Roman ▾

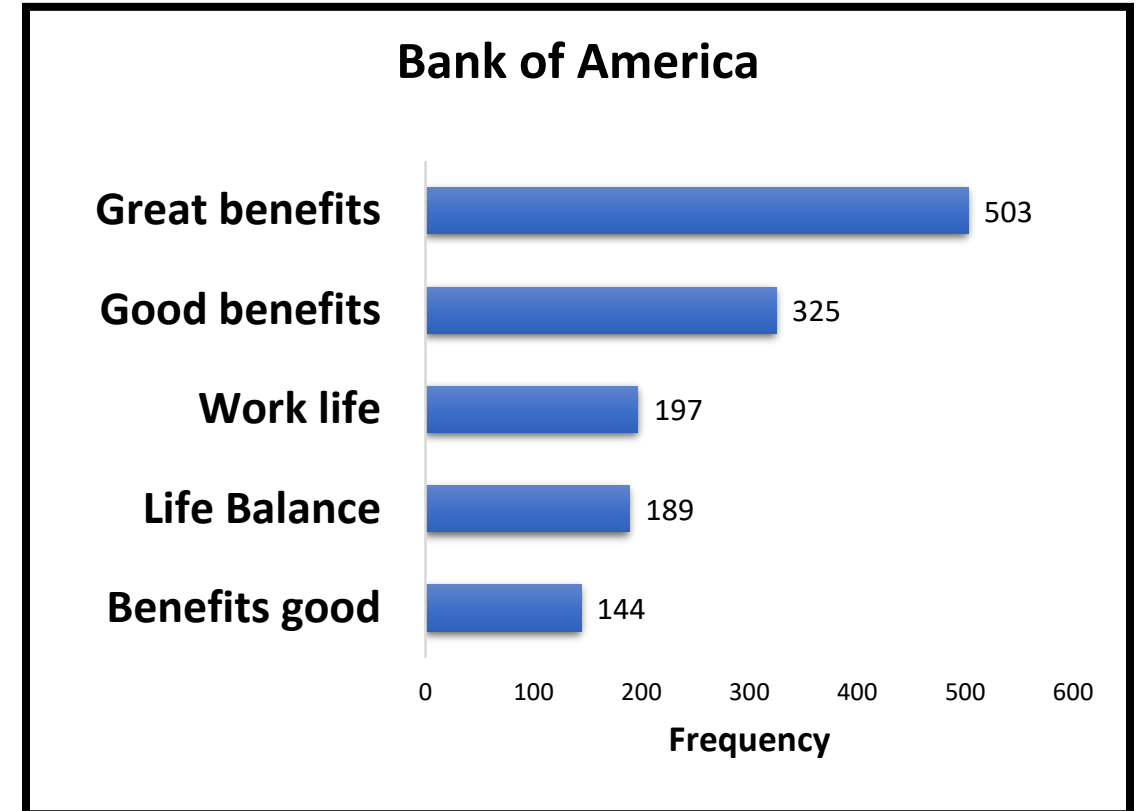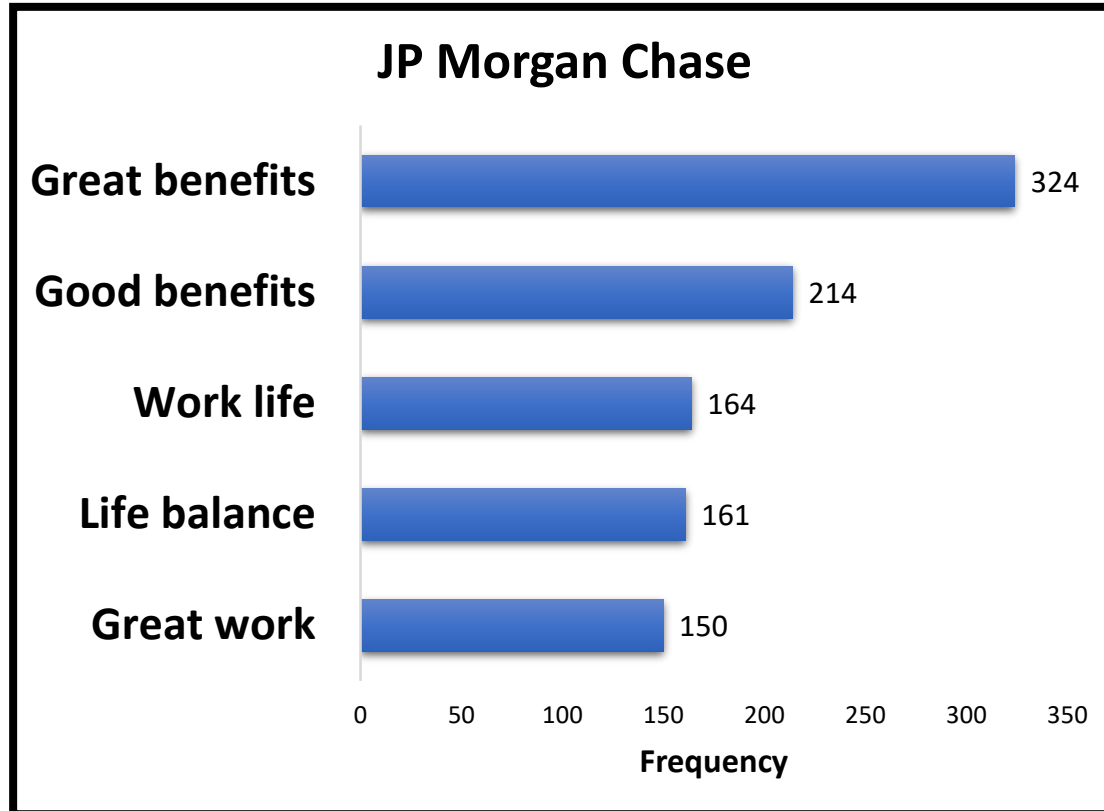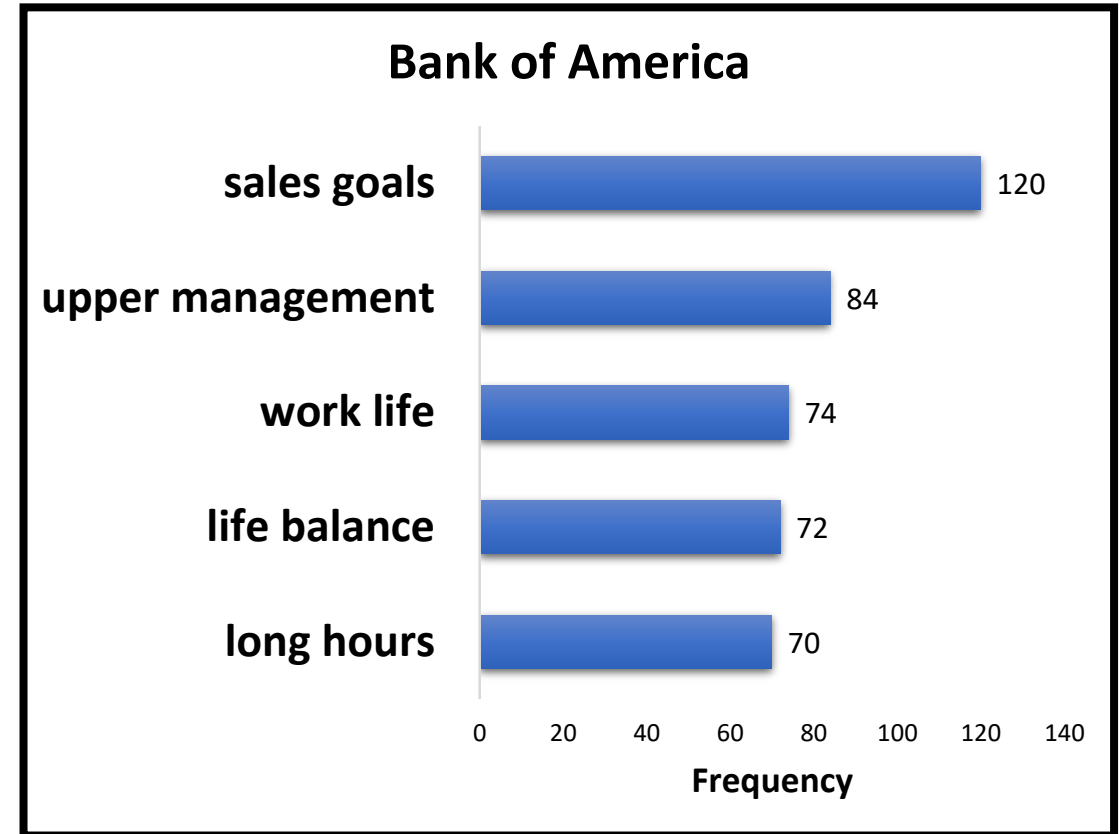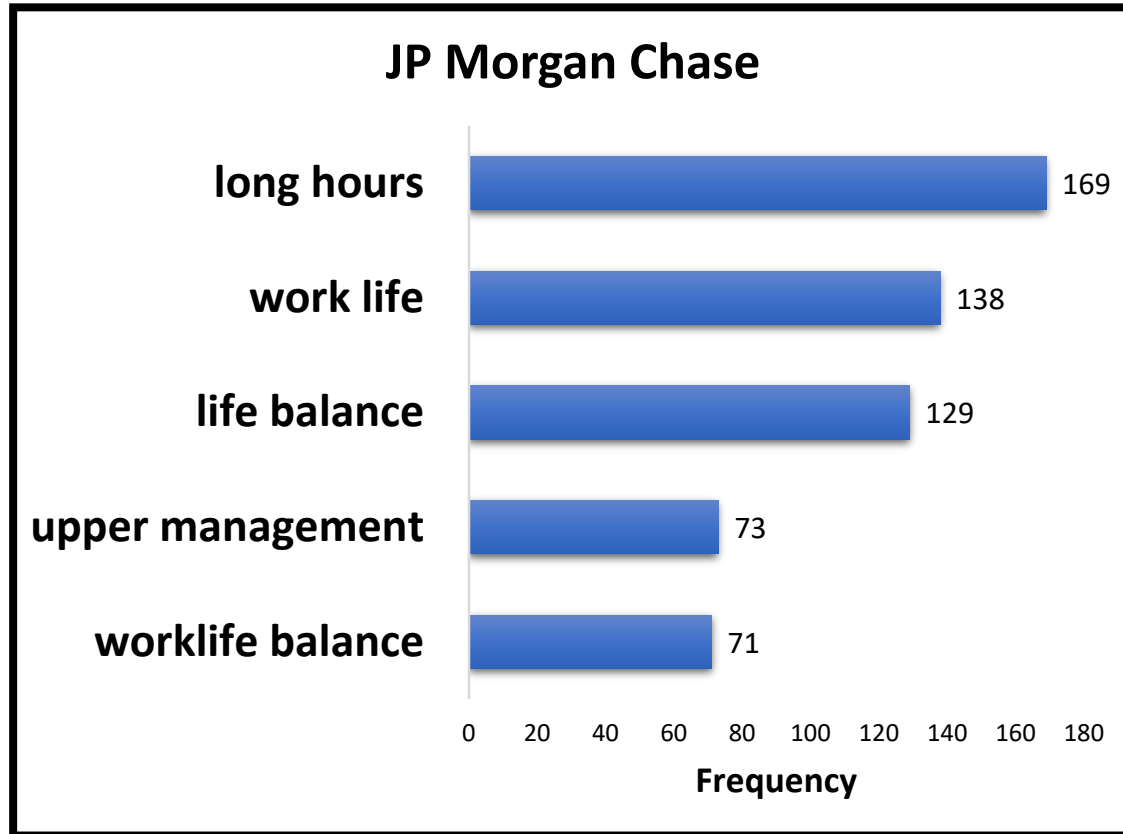| Font size	Spacing
12 ▾	single ▾

717 Pages

www.wordstopages.com

Limitations

- Non-probability-based sample
- Sample may not be representative
- No control over design and how data is collected
- No vetting of reviewers
- No control over multiple reviews by individuals
- Open to selection bias

Top 5 Occurring Pro Terms

JP Morgan Chase

Term	Frequency
Great benefits	324
Good benefits	214
Work life	164
Life balance	161
Great work	150

Bank of America

Term	Frequency
Great benefits	503
Good benefits	325
Work life	197
Life Balance	189
Benefits good	144

Top 5 Occurring Con Terms

JP Morgan Chase

Term	Frequency
long hours	169
work life	138
life balance	129
upper management	73
worklife balance	71

Bank of America

Term	Frequency
sales goals	120
upper management	84
work life	74
life balance	72
long hours	70

JP Morgan Word Clouds (Pros vs Cons)

Bank of America Word Clouds (Pros vs Cons)
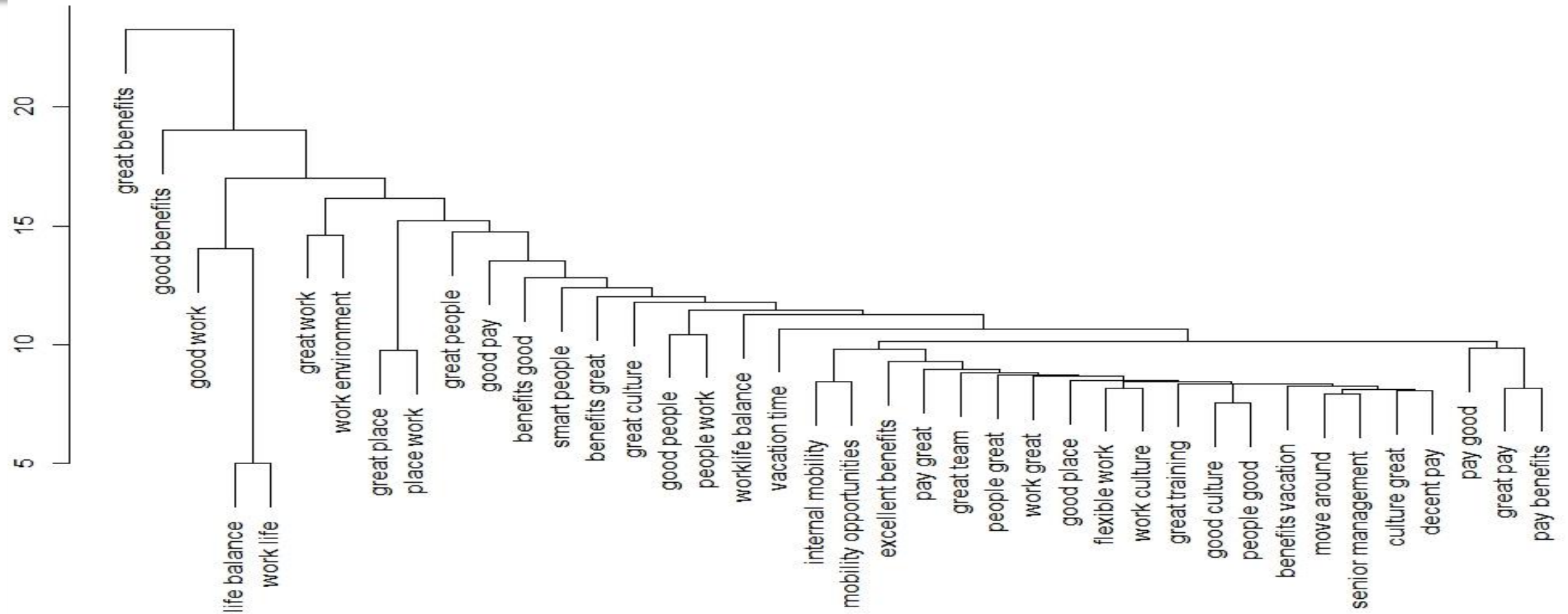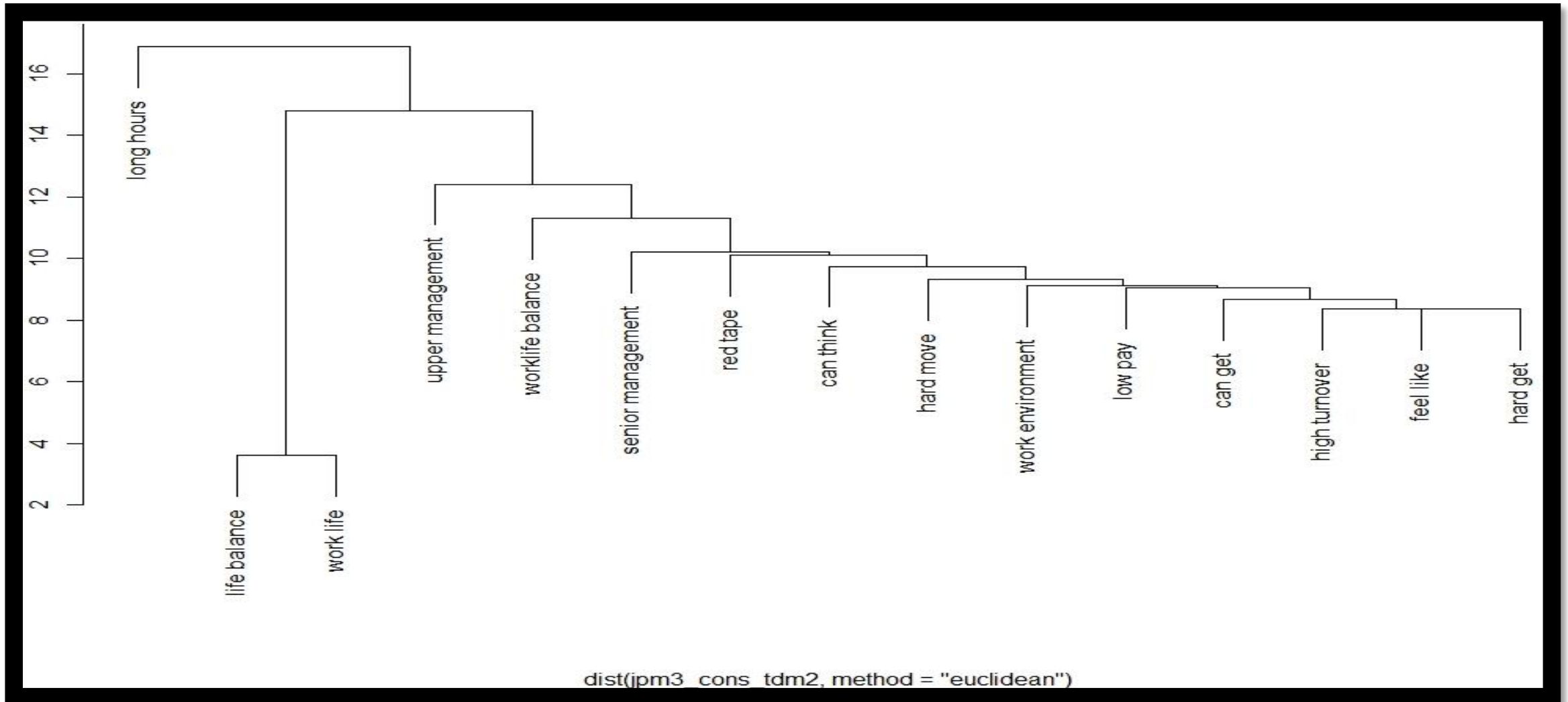
Comparison Clouds

Cluster Analysis (JP Morgan Pro Terms)

dist(jpm3_pros_tdm2, method = "euclidean")

Cluster Analysis (JP Morgan Con Terms)

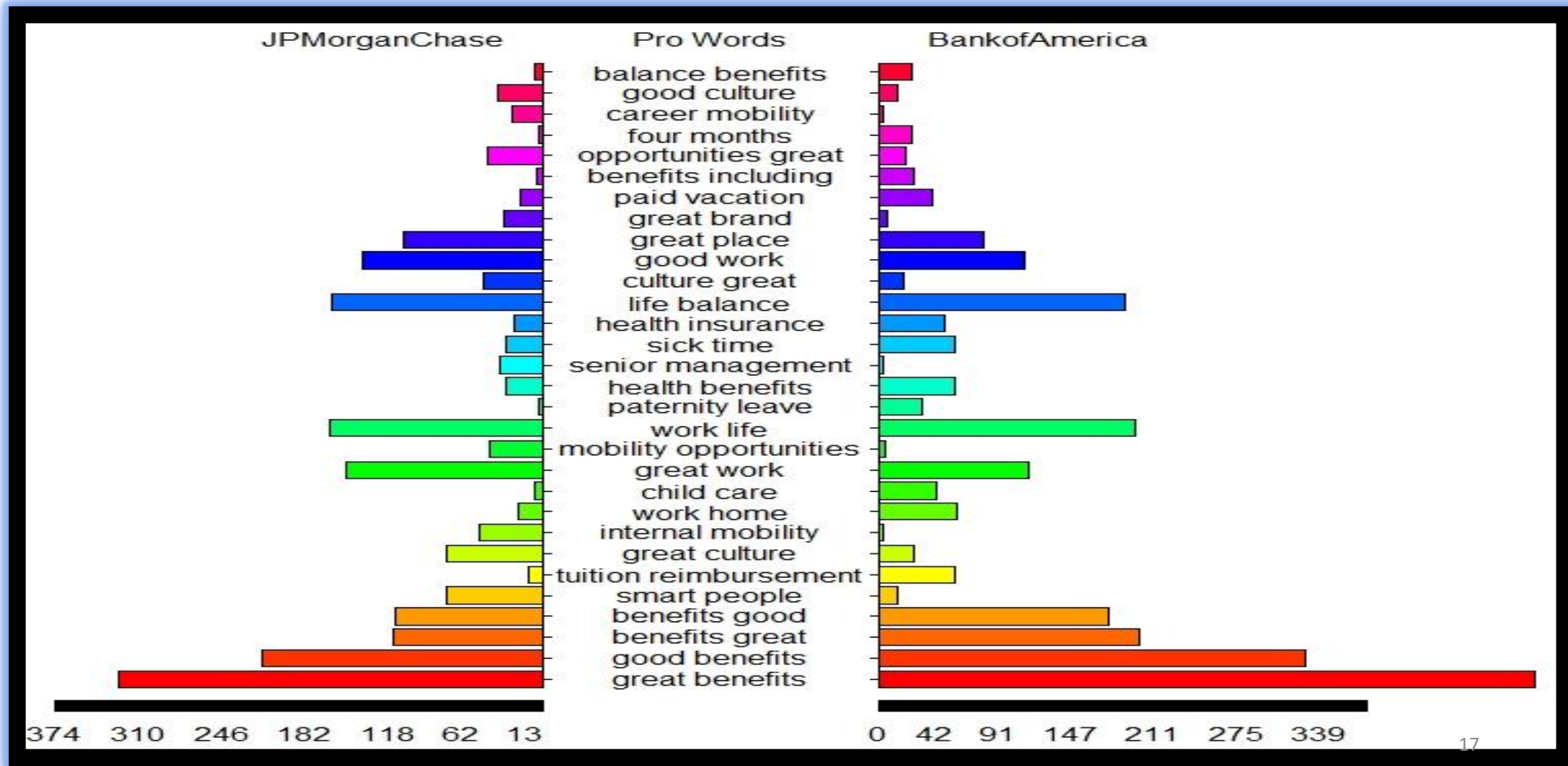dist(jpm3_cons_tdm2, method = "euclidean")

Cluster Analysis (Bank of America Pro Terms)

dist(boa3_pros_tdm2, method = "euclidean")
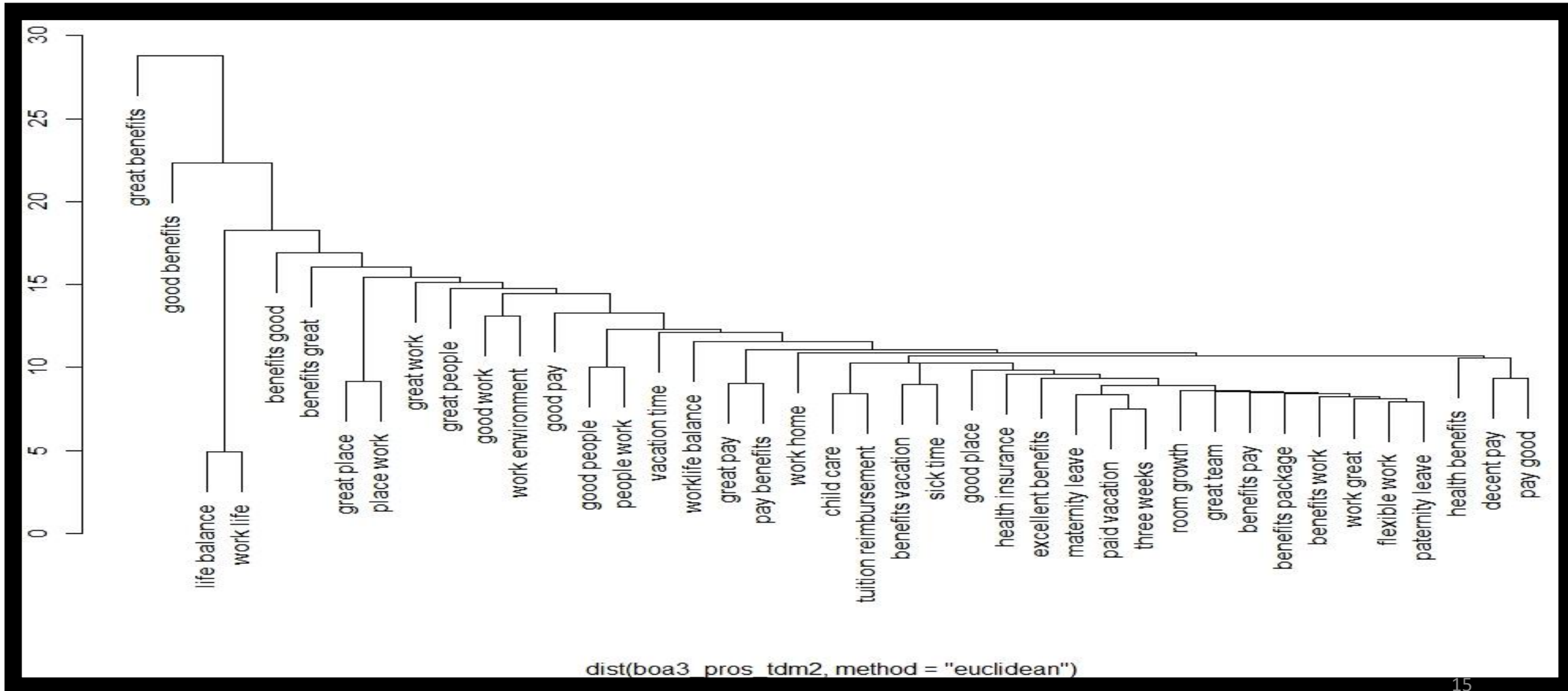
Cluster Analysis (Bank of America Con Terms)

dist(boa3_cons_tdm2, method = "euclidean")
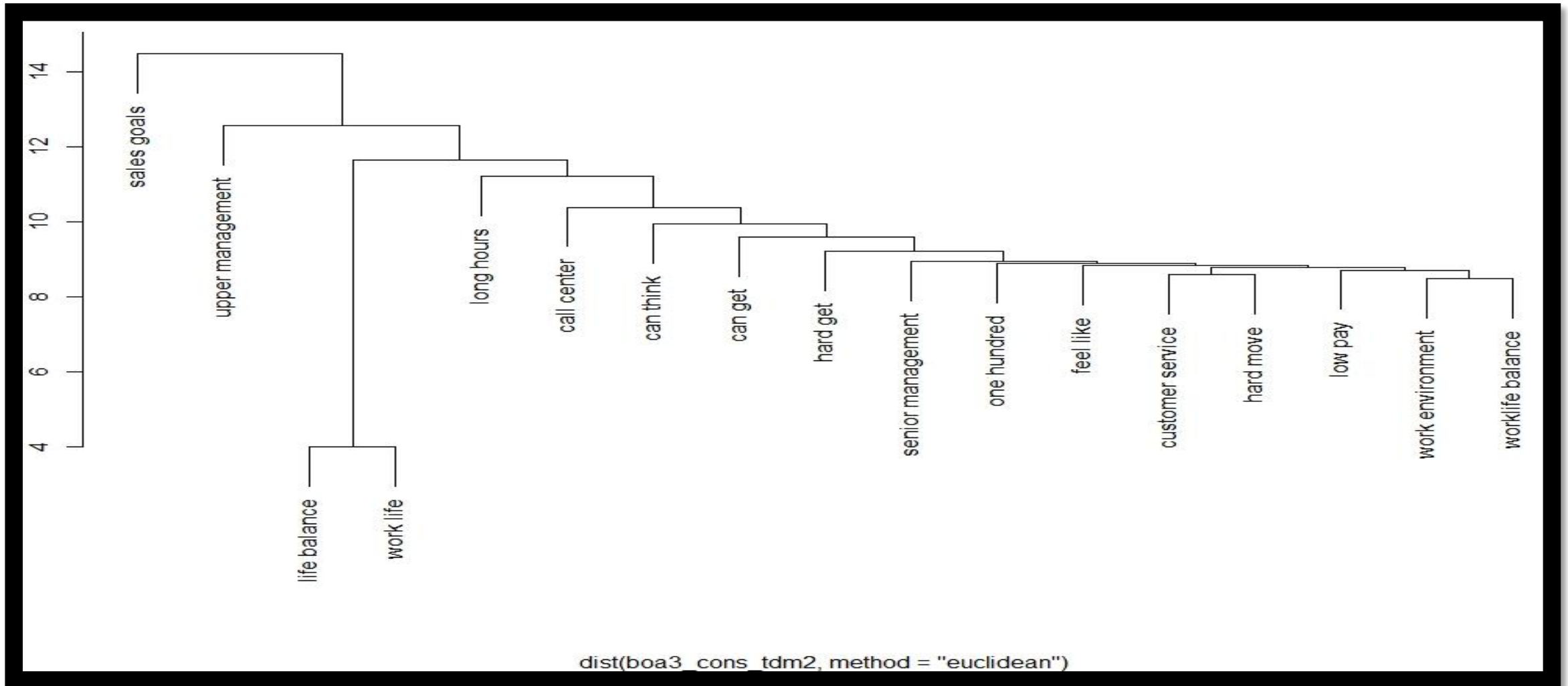
Common Words Analysis (Pros Bi-grams)

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Common Words Analysis (Pros Uni-grams)

JPMorgan | Pro Words | BankofAmerica

strong, home, tuition, sick, resume, lot, insurance, vacation, exposure, pension, career, health, name, internal, care, brand, work, time, paid, leave, reimbursement, pay, smart, firm, opportunities, hours, culture, people, mobility, benefits

JPMorgan axis: 1514 1251 999 784 569 354 139

BankofAmerica axis: 0 166 381 596 811 1050 1313

18
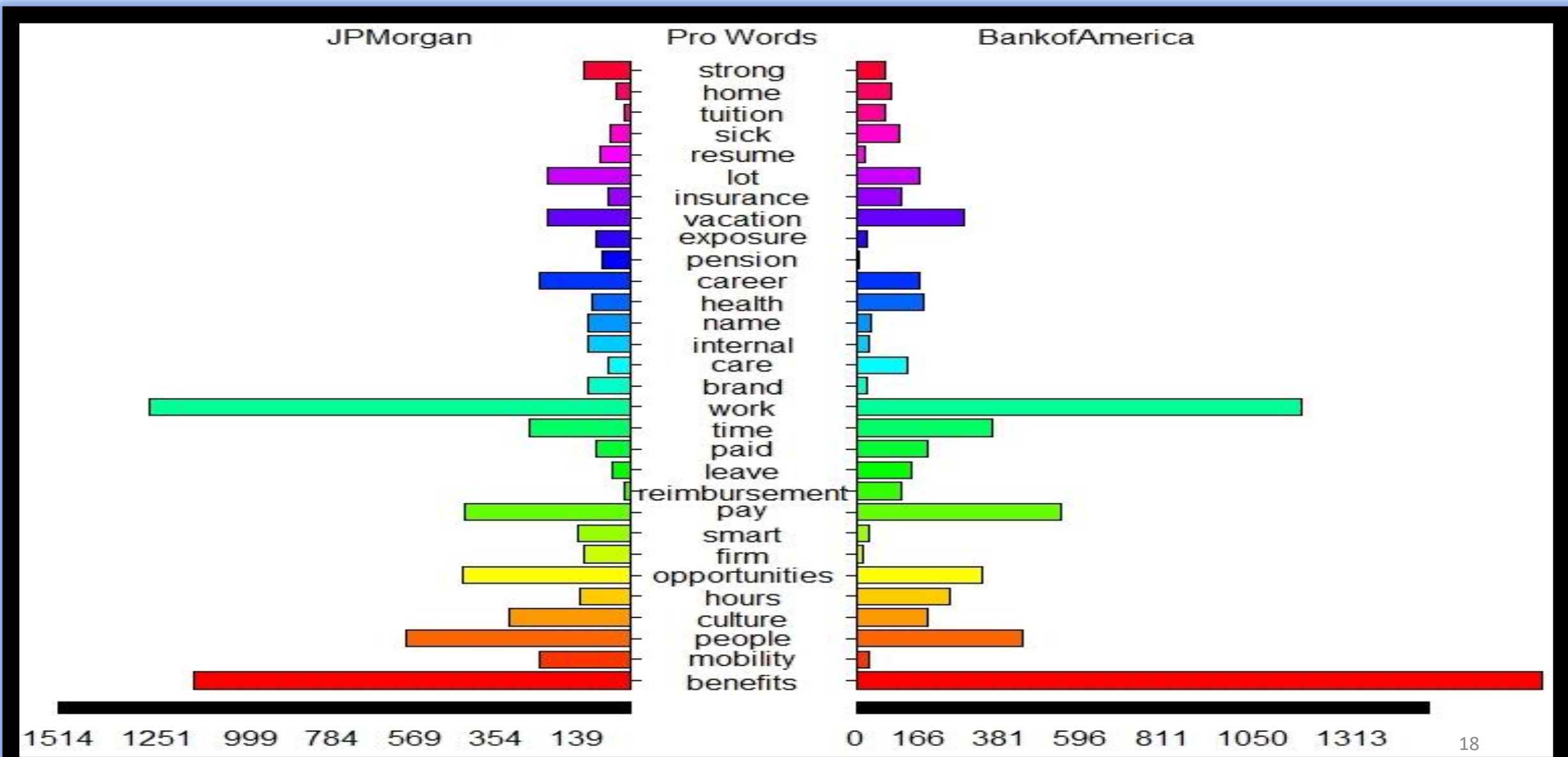
Common Words Analysis (Cons Bi-grams)

	JPMorganBank	Con Words	BankofAmerica

Con Words (top to bottom): working hours, work long, upward mobility, sell sell, middle management, low base, line business, easy get, micro managed, meet goals, investment banking, hours long, micro management, long work, conference calls, retail banking, short staffed, pressure sales, career mobility, work hours, credit cards, red tape, customer service, sales pressure, call center, worklife balance, life balance, work life, long hours, sales goals

JPMorganBank axis: 129 108 89 72 55 38 21 7

BankofAmerica axis: 0 14 31 48 65 82 99 118

Common Words Analysis (Cons Uni-grams)

JPMorgan | Con Words | BankofAmerica

Con Words (top to bottom): many, financial, culture, technology, layoffs, politics, high, call, associates, customer, sell, make, calls, job, mobility, salary, bank, pressure, balance, firm, center, bureaucracy, customers, will, clients, long, work, hours, goals, sales

JPMorgan axis: 811 702 593 484 375 266 157 60

BankofAmerica axis: 0 72 169 278 387 496 605 714

Common Theme Analysis

- Built a Theme Dictionary for Pay, Benefits, Work-life Balance, and Management by matching with key words
- Pay (pay, salary, paid, wage)
- Benefits (benefit)
- Work-life Balance (work life, life balance, work balance)
- Management (manage)
- Do string counts and find the sum to calculate the theme frequency

Common Themes Analysis (Pros)
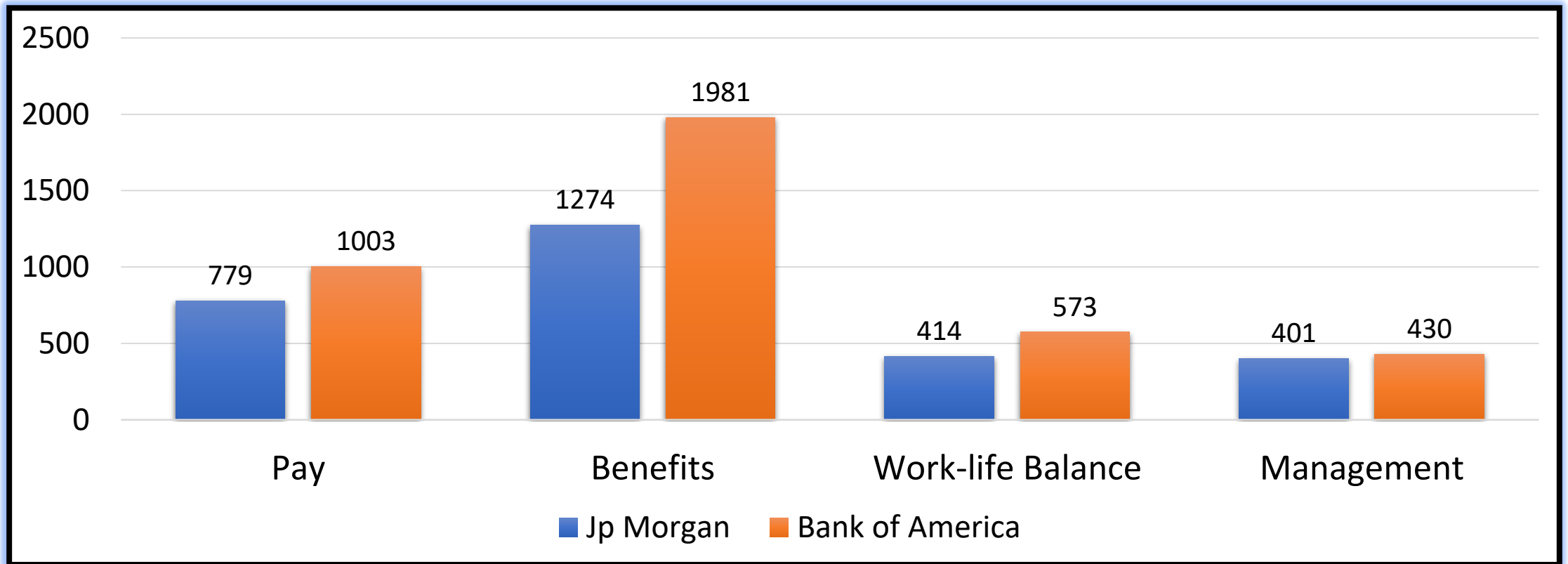
Pay +ve Perception
Bank of America > JP Morgan
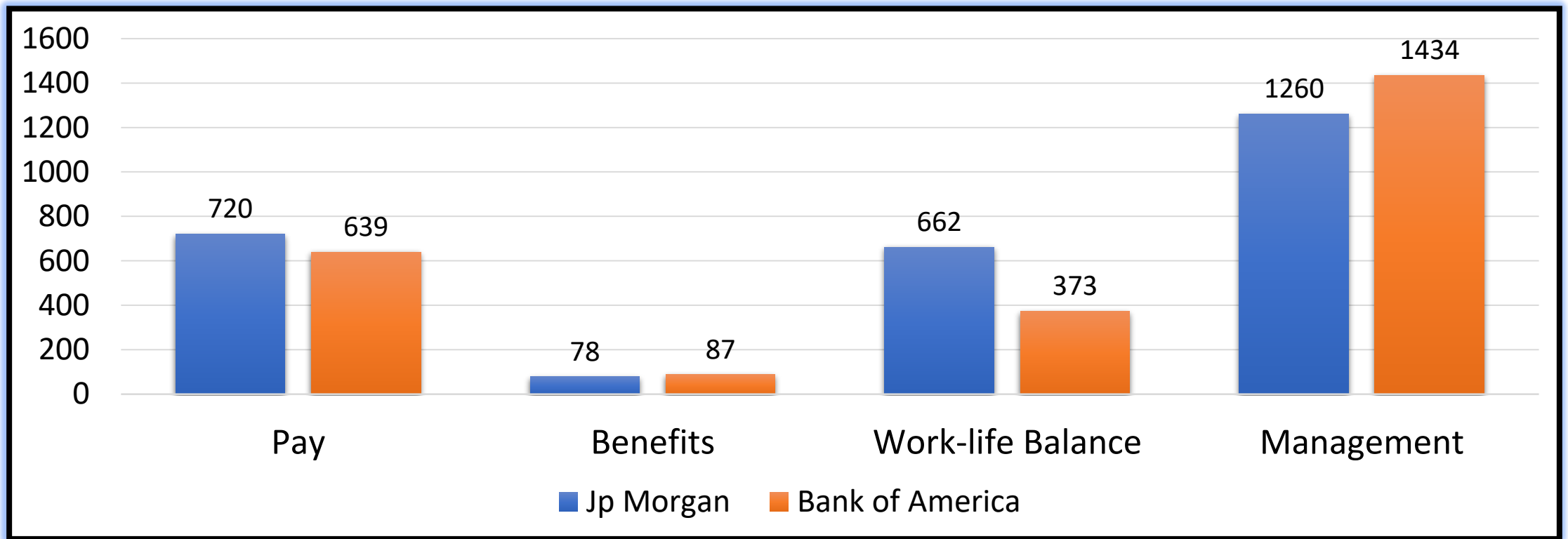**Benefits +ve Perception**
Bank of America > JP Morgan

Work-life +ve Perception
Bank of America > JP Morgan
Management +ve Perception
Bank of America > JP Morgan

Common Themes Analysis (Cons)

Pay -ve Perception
JP Morgan > Bank of America
Benefits -ve Perception
Bank of America slightly > JP Morgan

Work-life -ve Perception
JP Morgan > Bank of America
Management -ve Perception
Bank of America > JP Morgan

Further Common Theme Analysis

- To investigate the discrepancy in Management between Pros and Cons

- Divided Management into two categories across the two banks and built a dictionary (Management levels and Styles)

- Senior Management (senior manage, upper manage)

- Middle Management (middle manage) ——→ **Management Levels**

- Lower Management (lower manage)

- Micro Management (micro manage) ——→ **Management Styles**

- Macro Management (macro manage)

- Do string counts and find the sum to calculate the theme frequency
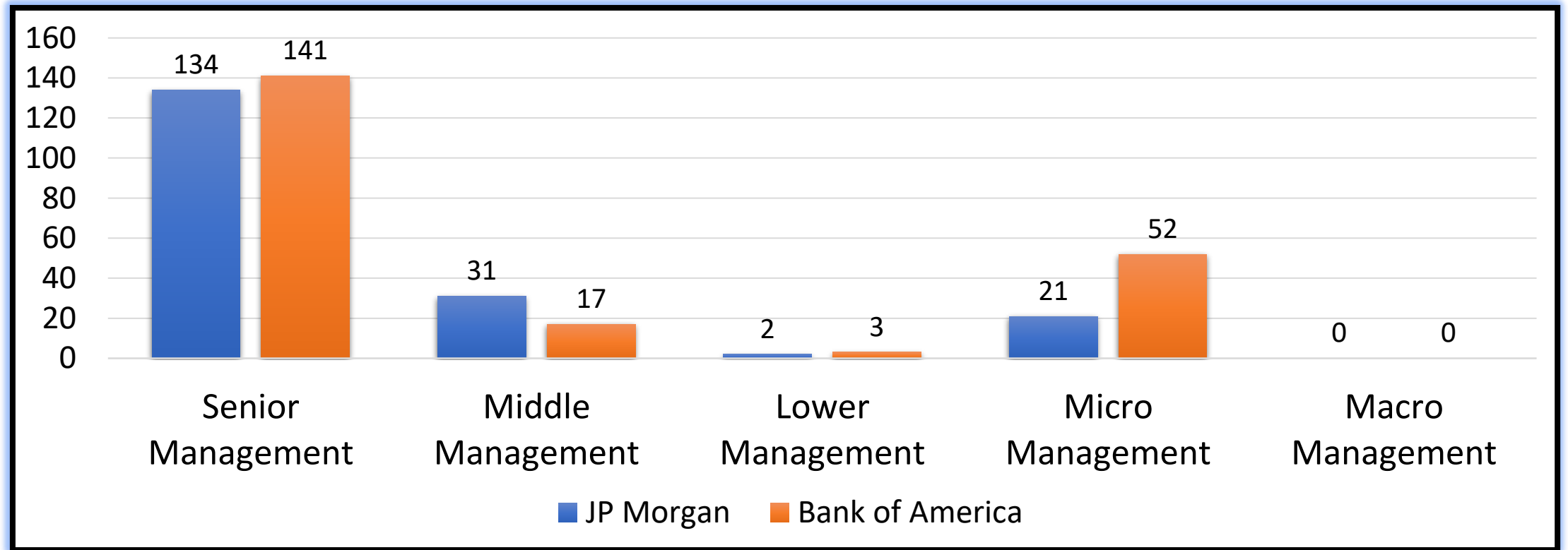
Management Theme Analysis (Pros)
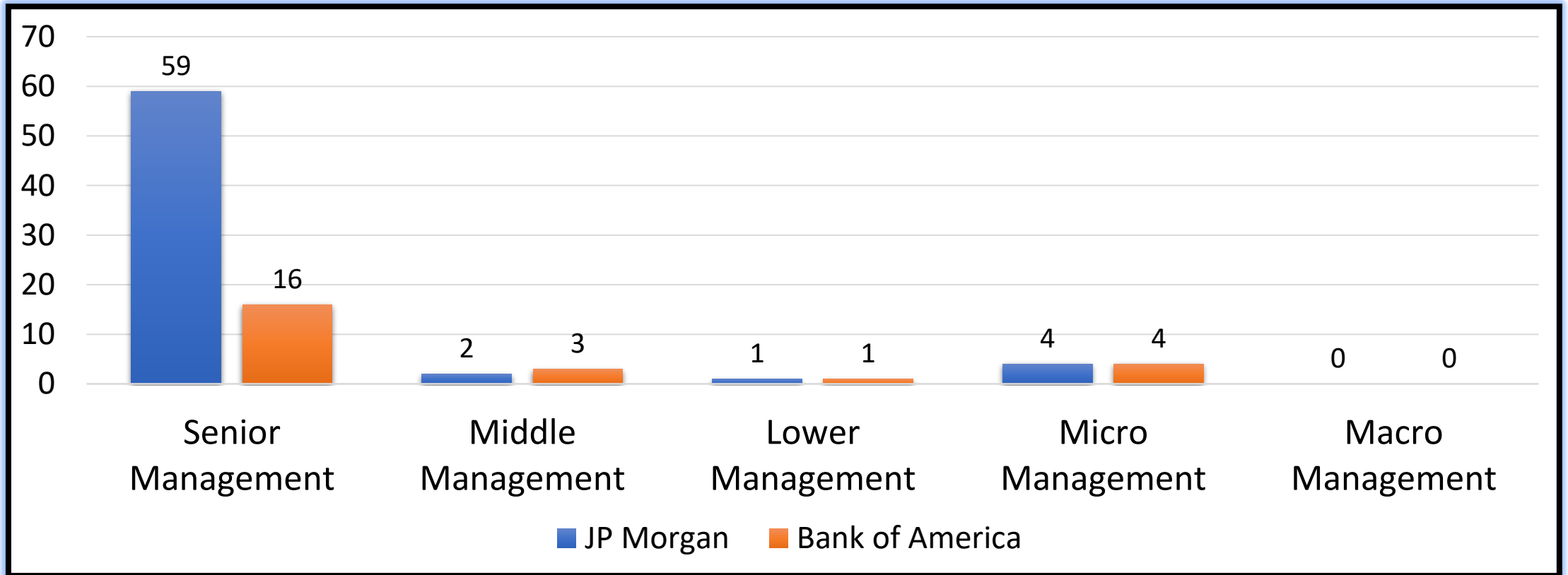
Senior Management +ve Perception
JP Morgan > Bank of America

All others
About the same

Management Theme Analysis (Cons)

Senior Management -ve Perception
Bank of America > JP Morgan

Middle Management -ve Perception
JP Morgan > Bank of America

Middle Management -ve Perception
JP Morgan > Bank of America
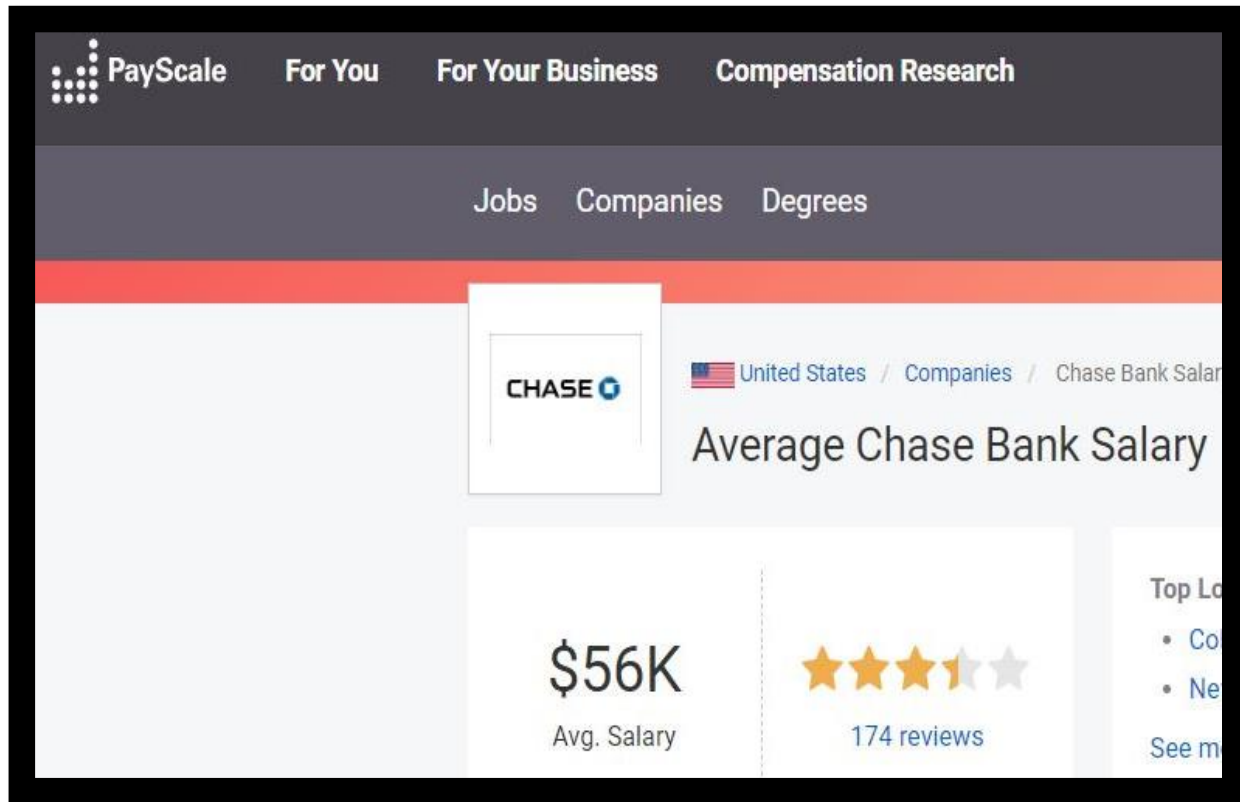
Lower Management -ve Perception
About the same

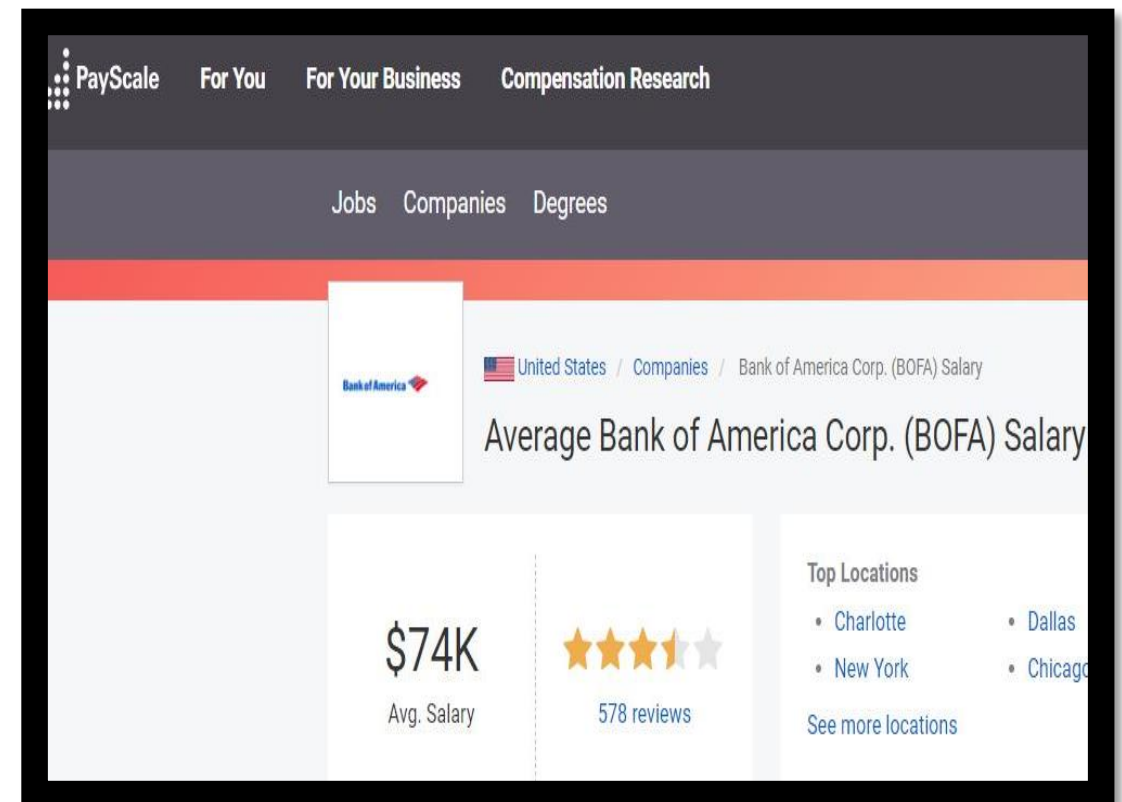**Micro Management -ve Perception**
Bank of America > JP Morgan

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Inferences/Insights (Pay/Benefits)

- It appears that Bank of America has a better pay and benefits than JP Morgan

www.payscale.com
www.payscale.com

Inferences/Insights (Work-life Balance)

- It appears that Bank of America has a better work-life balance than JP Morgan.

BUSINESS 08/23/2013 11:31 am ET | Updated Aug 23, 2013

BofA Takes Hard Look At Work-Life Balance After Intern's Death

https://www.huffingtonpost.com/2013/08/23/intern-death-bank-of-america_n_3804775.html

Bank Of America Has New Work Rules For Junior Bankers After Death Of 21-Year-Old Intern

Erin Fuchs Jan. 11, 2014, 5:32 PM

https://www.businessinsider.com/bank-of-america-work-rules-2014-1

Inferences/Insights (Management)

- It appears JP Morgan has a better Senior Management and Micro management than Bank of America

- It appears Bank of America has better Middle Management than JP Morgan

- Together, it appears employees at both banks dislike the micro management style and have issues with senior management.

Study finds your micromanaging boss could be killing you

https://www.chicagotribune.com/business/ct-workplace-flexibility-death-indiana-study-1018-biz-20161017-story.html

The Devastating Effects of Micromanagement

https://www.careeraddict.com/the-devastating-effects-of-micromanagement

Recommendations

For prospective employees

- If you want better pay and benefits, I recommend Bank of America

- If you have an intense working style without consideration for pay/benefits, I recommend JP Morgan

- If you are not comfortable with micro management style, I recommend JP Morgan

For Banks

- JP Morgan should consider increasing pay/benefits for employees

- JP Morgan should consider improving work-life balance conditions

- Bank of America should consider modifying/changing its' micro management style

- Both banks should consider improving their senior management performance and relationship with employees

Future Research/Directions

- Compare reviews of current vs former employees
- Compare reviews of different classes of workers e.g. Intern, part-time, full-time, contract
- Compare trend in reviews across the years
- Determine the significant predictors of employee ratings

QUESTIONS?

THANK YOU!