

Code ▾

Analysis of presidential inaugural speeches - based on Party

Introduction

Inaugural speech is not only the the first official speech of any president of United States, but also reflects the personality, sentiment, interested topics for the next few years and so on. The following analysis mainly focus on the difference of inaugural speeches between Democratic Party and Republican Party(part 1). Then, we compare the inaugural speeches of DonaldJTrump and BarackObama(part 2).

```
[ 1] "1789-04-30" "1793-03-04" "1797-03-04" "1801-03-04" "1805-03-04" "1809-03-04" "1813-03-04"
[ 8] "1817-03-04" "1821-03-04" "1825-03-04" "1829-03-04" "1833-03-04" "1837-03-04" "1841-03-04"
[15] "1845-03-04" "1849-03-05" "1853-03-04" "1857-03-04" "1861-03-04" "1865-03-04" "1869-03-04"
[22] "1873-03-04" "1877-03-05" "1881-03-04" "1885-03-04" "1889-03-04" "1893-03-04" "1897-03-04"
[29] "1901-03-04" "1905-03-04" "1909-03-04" "1913-03-04" "1917-03-04" "1921-03-04" "1925-03-04"
[36] "1929-03-04" "1933-03-04" "1937-01-20" "1941-01-20" "1945-01-20" "1949-01-20" "1953-01-20"
[43] "1957-01-21" "1961-01-20" "1965-01-20" "1969-01-20" "1973-01-20" "1977-01-20" "1981-01-20"
[50] "1985-01-21" "1989-01-20" "1993-01-20" "1997-01-20" "2001-01-20" "2005-01-20" "2009-01-20"
[57] "2013-01-21" "2017-01-20" NA
```

President <chr>	File <chr>	T... <dbl>	Party <chr>	Date <chr>	Wo... <chr>	... <chr>
1 George Washington	GeorgeWashington	1	NA	April 30, 1789	1422	Yes
2 George Washington	GeorgeWashington	2	NA	March 4, 1793	133	Yes
3 John Adams	JohnAdams	1	Fedralist	March 4, 1797	2306	Yes
4 Thomas Jefferson	ThomasJefferson	1	Democratic-Republican Party	March 4, 1801	1711	Yes
5 Thomas Jefferson	ThomasJefferson	2	Democratic-Republican Party	March 4, 1805	2143	Yes
6 James Madison	JamesMadison	1	Democratic-Republican Party	March 4, 1809	1167	Yes

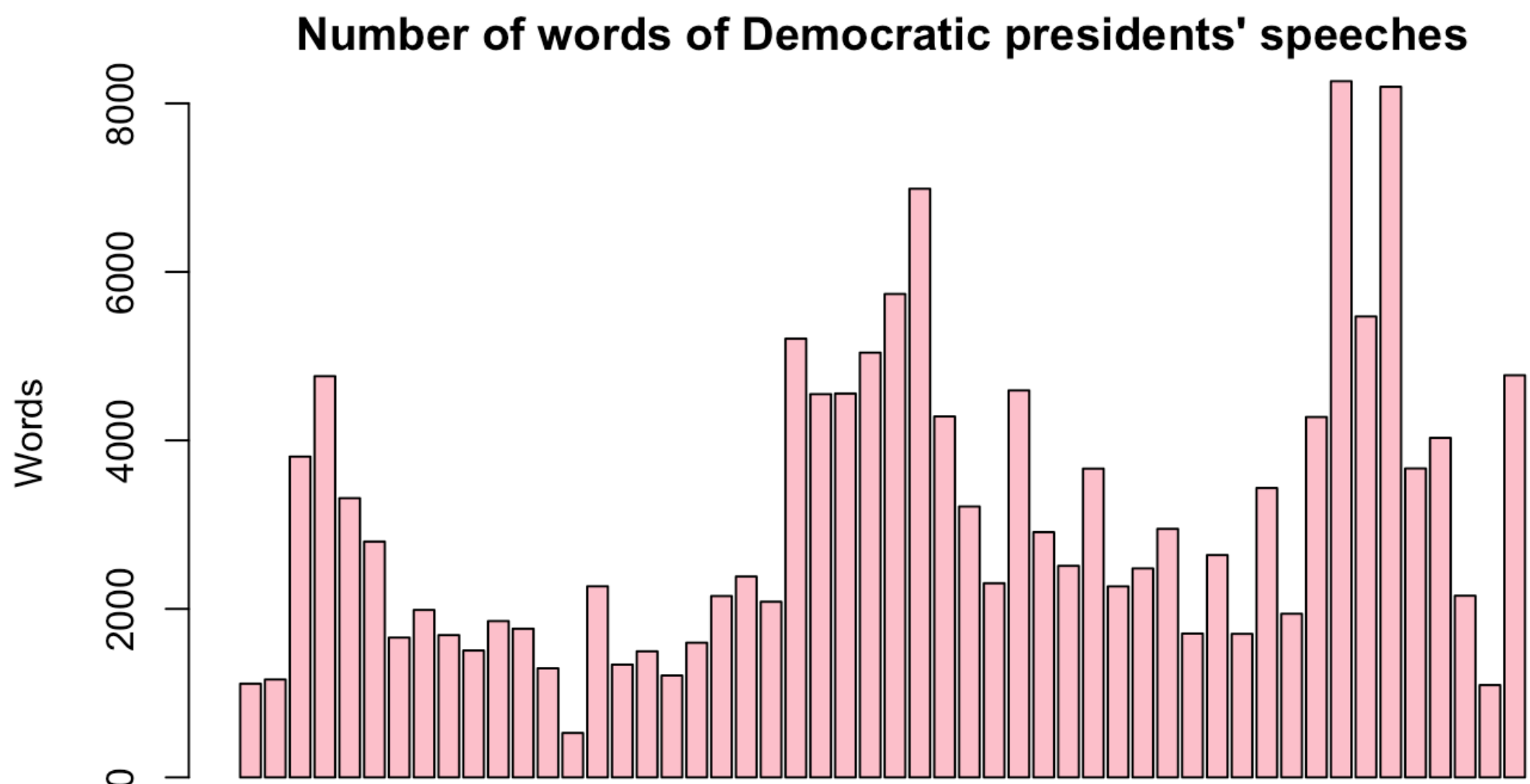
6 rows | 1-8 of 11 columns

Above is the dataset we constructed, which contains information related to inaugural speech like Party, number of words, date and so on.

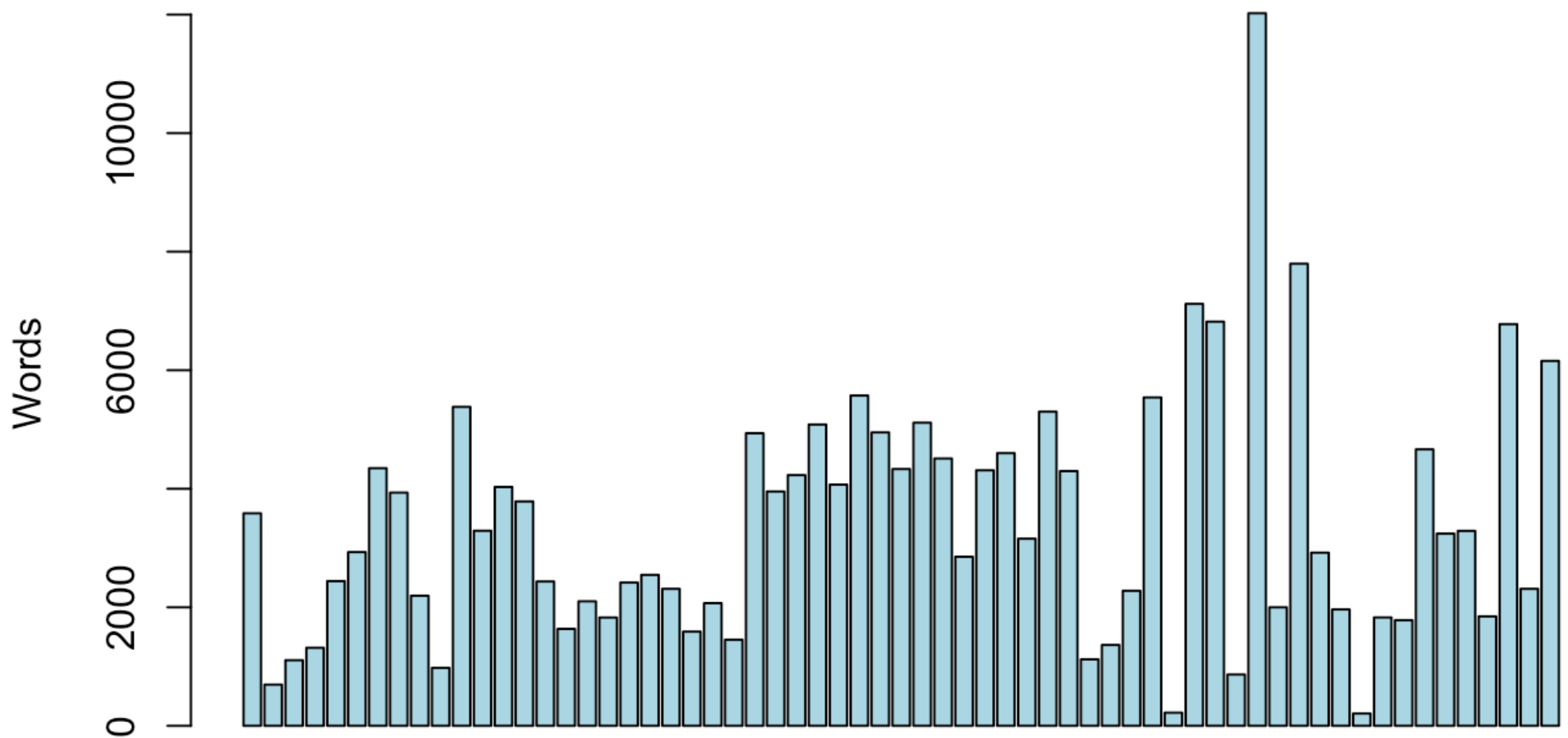
Part 1: The story of inaugural speeches of Democratic Party and Republican Party

It is well known that Democrats and republicans have different platforms, development goals and different interests. So what are the similarities and differences of their speeches?

1.1 The change of number of words over time



Number of words of Republican presidents' speeches



According to the barplot above, we may see that:

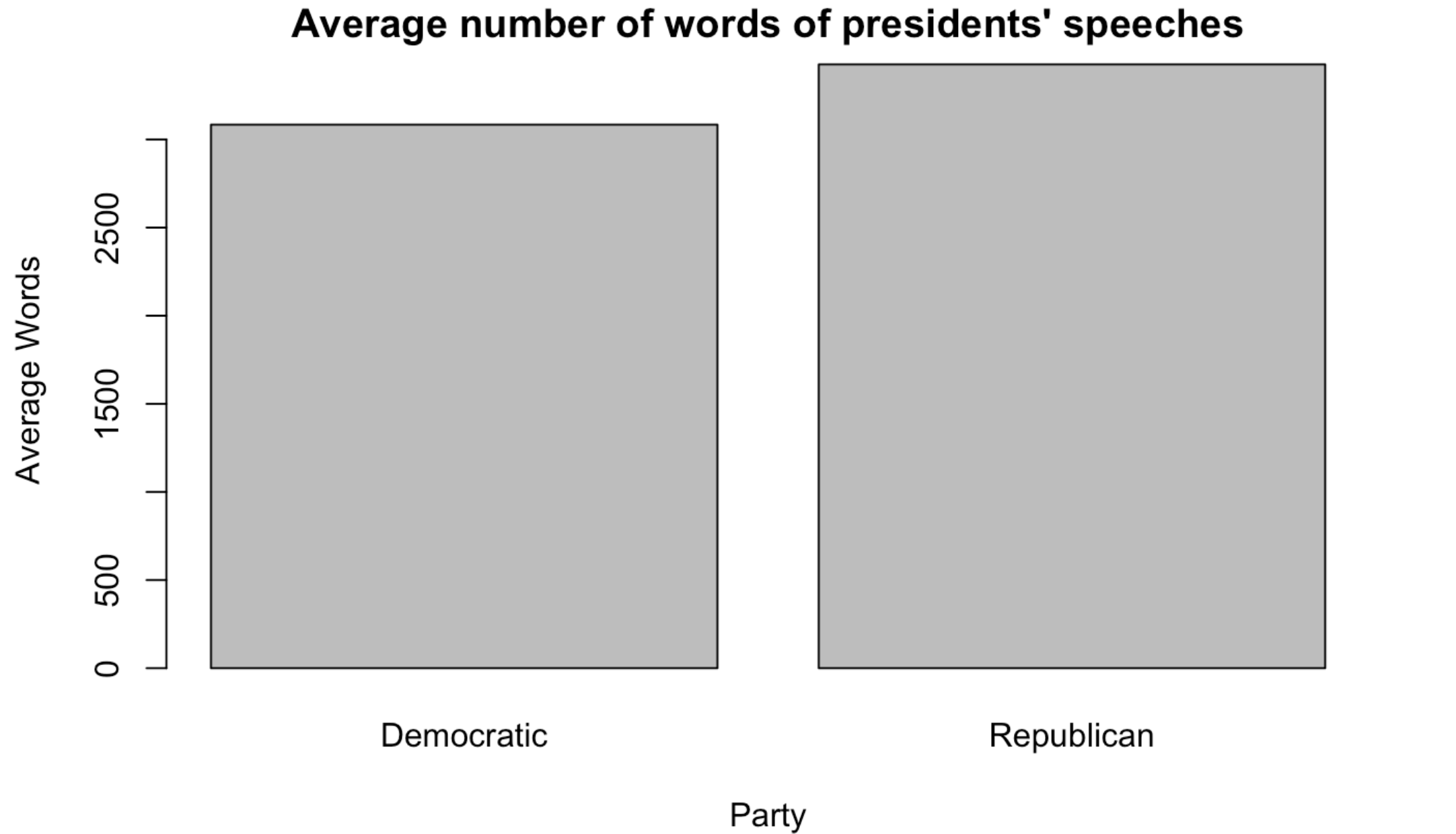
For Democratic presidents' speeches:

- (1) Most of the speeches are under 4000 words.
- (2) The number of words fluctuate over time.
- (3) As time goes by, there is a slight trend that their speeches contain more and more words.

For Republican presidents' speeches:

- (1) Most of the speeches are under 5000 words.
- (2) The number of words fluctuate over time.
- (3) As time goes by, there is a slight trend that their speeches contain more and more words.

It seems like that the word average number of Republican presidents' speeches is more than that of Democratic presidents' speeches. Is it right?



According to the graph above, we can see that the average word number of Democratic presidents’ speeches is about 3000. As for Republican presidents’ speeches, it is about 3500. So we have the right guess.

1.2 Overview of sentence length distribution by different Party of speeches

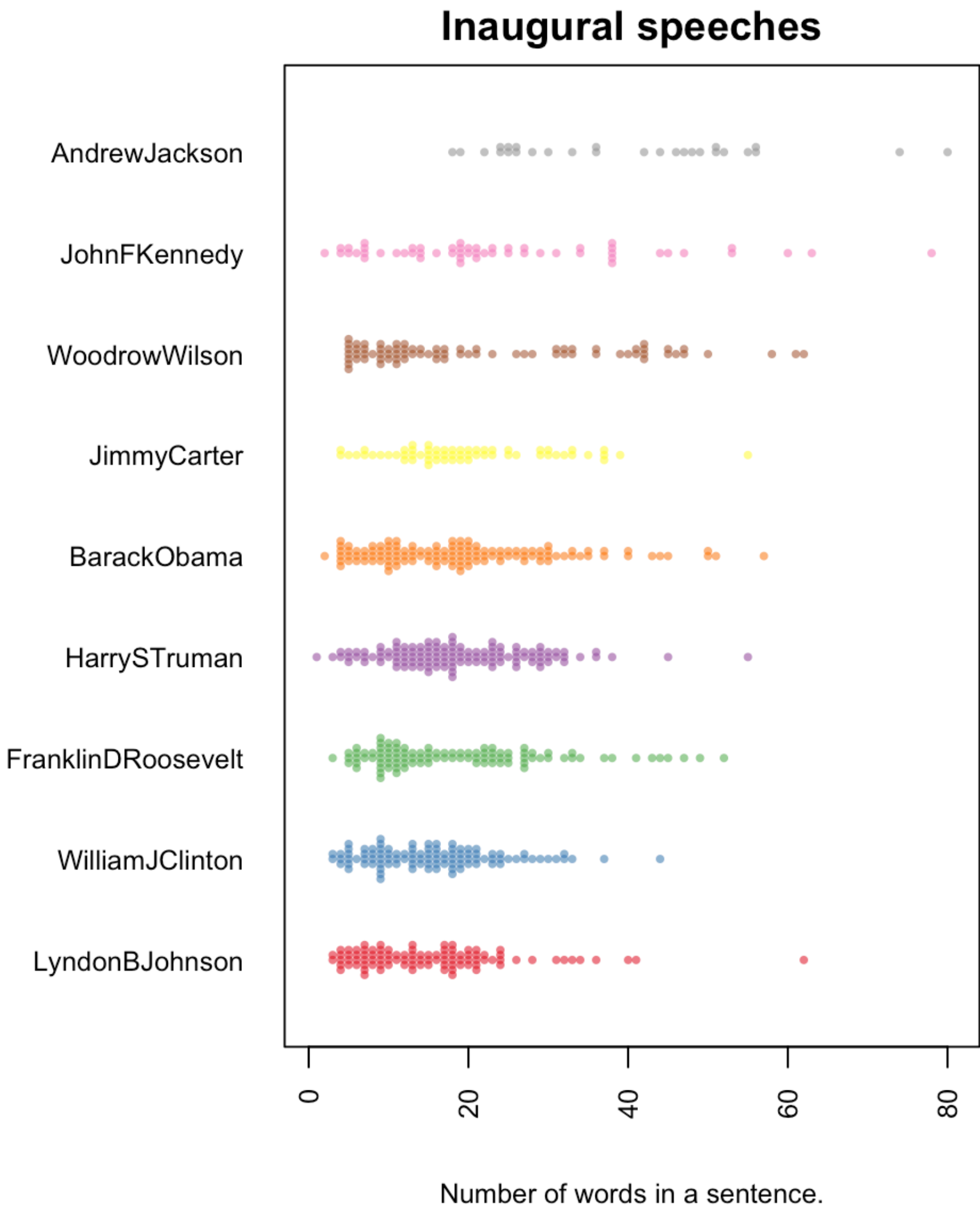
For simpler visualization, we chose a subset of better known presidents or presidential candidates on which to focus our analysis.

[1]	"DonaldJTrump"	"JohnMcCain"	"GeorgeBush"	"MittRomney"
[5]	"GeorgeWBush"	"RonaldReagan"	"AlbertGore,Jr"	"HillaryClinton"
[9]	"JohnFKerry"	"WilliamJClinton"	"HarrySTruman"	"BarackObama"
[13]	"LyndonBJohnson"	"GeraldRFord"	"JimmyCarter"	"DwightDEisenhower"
[17]	"FranklinDRoosevelt"	"HerbertHoover"	"JohnFKennedy"	"RichardNixon"
[21]	"WoodrowWilson"	"AbrahamLincoln"	"TheodoreRoosevelt"	"JamesGarfield"
[25]	"JohnQuincyAdams"	"UlyssesSGrant"	"ThomasJefferson"	"GeorgeWashington"
[29]	"WilliamHowardTaft"	"AndrewJackson"	"WilliamHenryHarrison"	"JohnAdams"

These are the presidnets we chose.

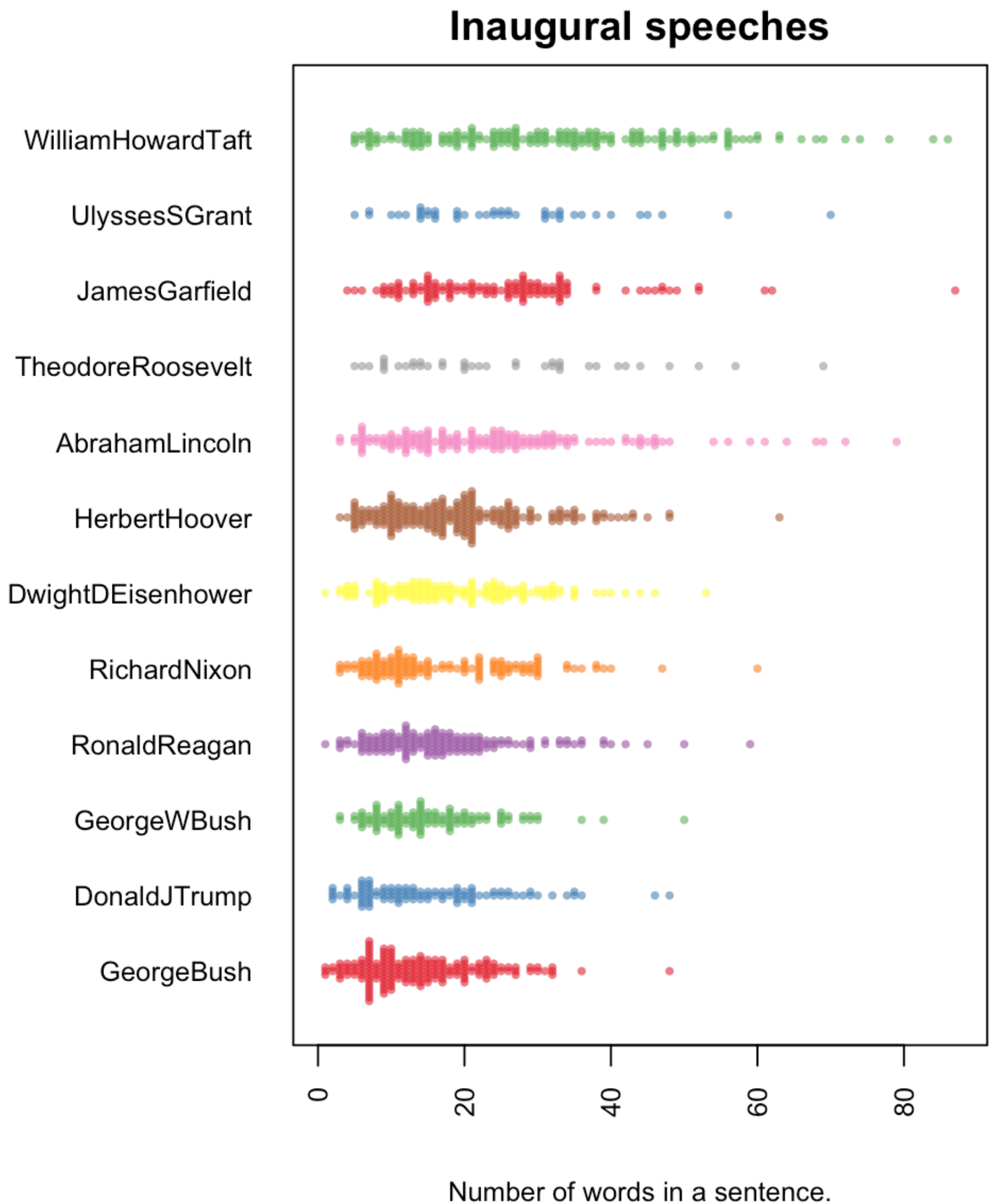
For relevant to Trump’s speeches, we will only compare speeches for the first terms of former U.S. presidents.

1.2.1 Democratic



We may notice that most of their sentences are between 1 and 30 words. The distribution of number of words in a sentence is relatively smooth and average.

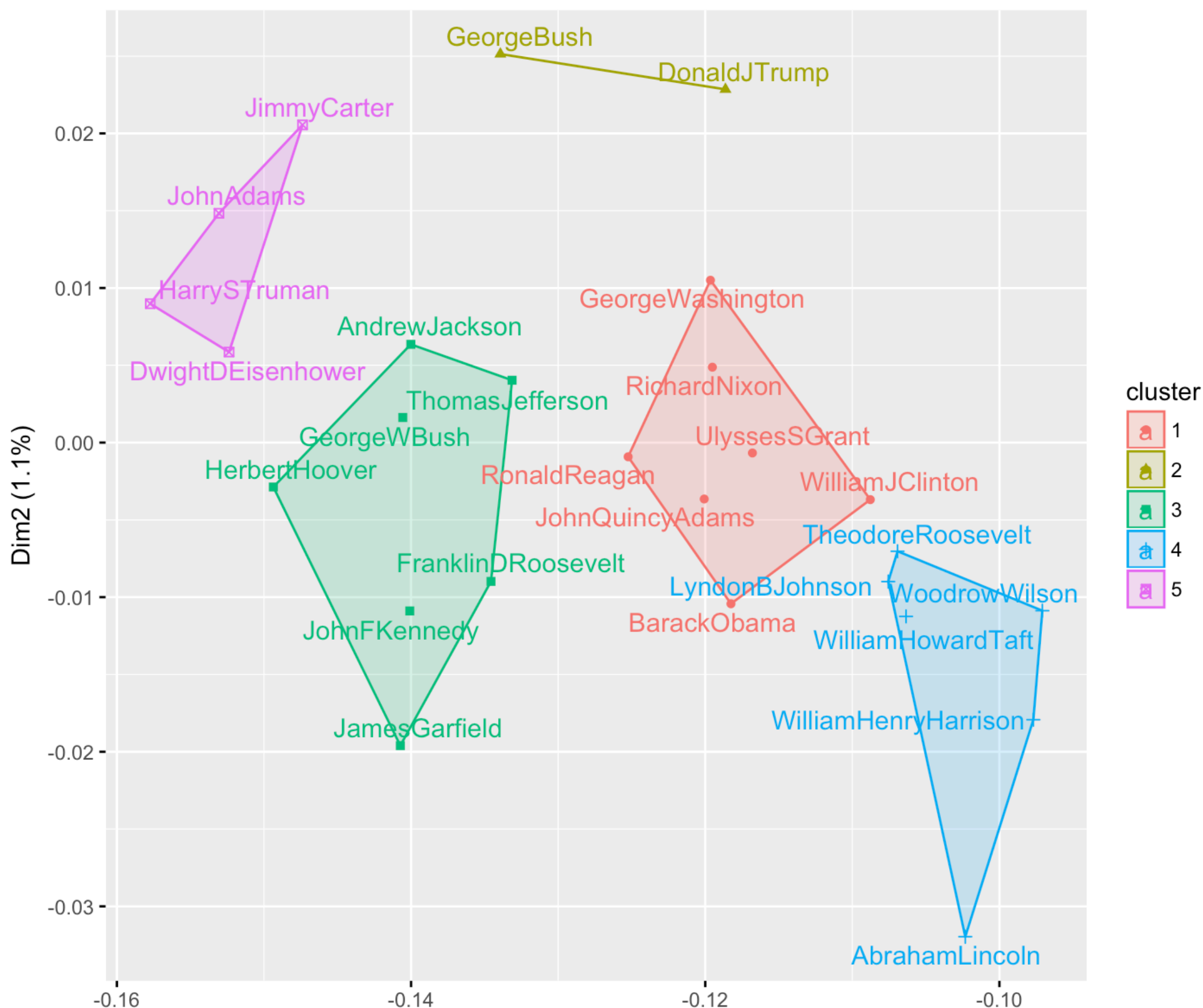
1.2.2 Republican



As for Republican presidents, we find that they have more sentences under 20 words. So most of their points concentrate on the left side of the graph.

1.3 Clustering of emotions

Cluster plot



By clustering of emotions of all these chosen speeches from different Party, we can see that:

- (1) The speeches from different Party may be in the same emotion cluster, like William Howard Taft and BarackObama.
- (2) The speeches from the same Party may be in different emotion cluster, like Franklin D. Roosevelt and BarackObama.

With all the finding we conclude from part 1, next we will focus on the difference of speeches between DonaldJTrump and BarackObama.

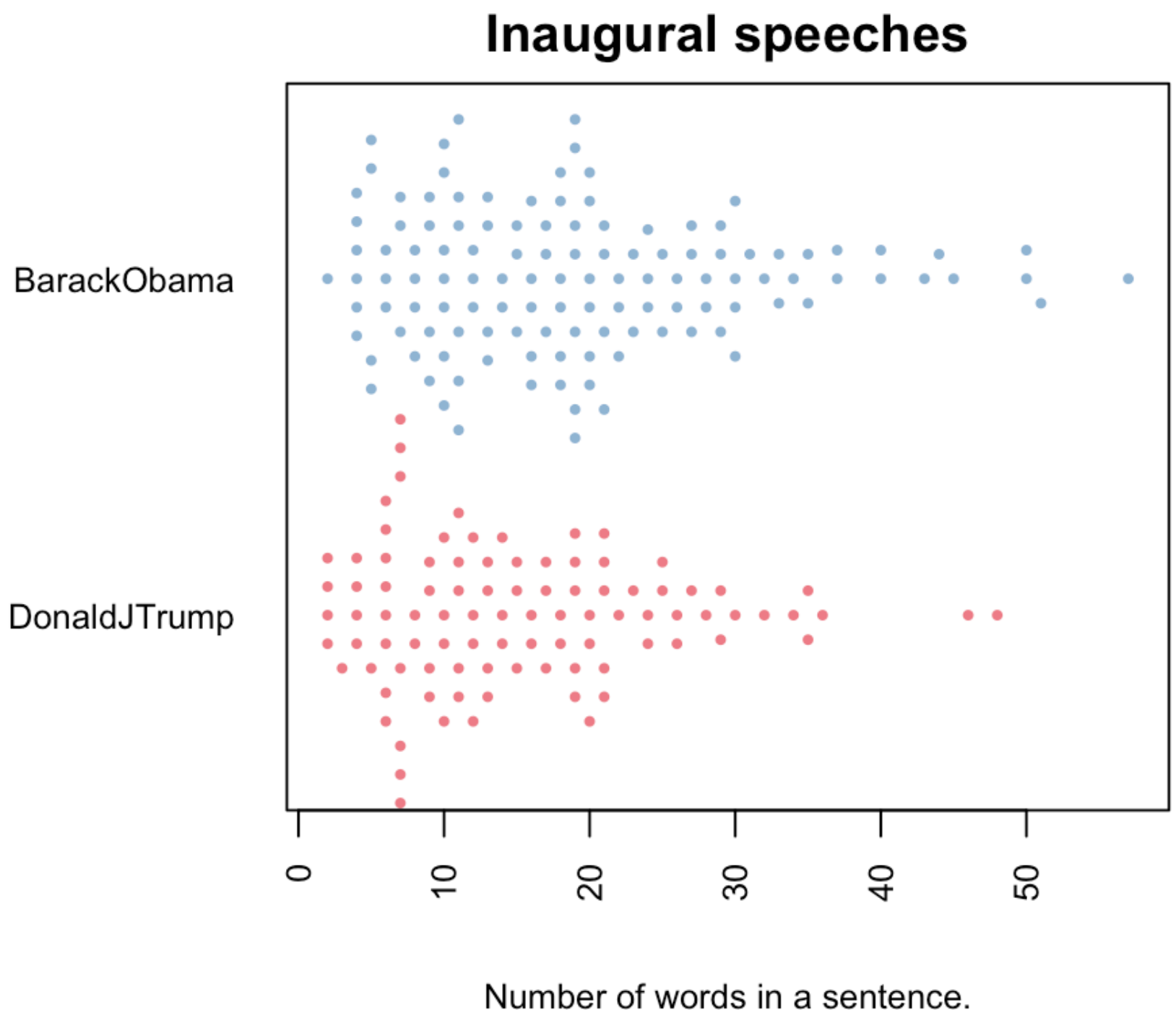
Part 2: The story of inaugural speeches of

DonaldJTrump and BarackObama

Generally speaking, there are lots of differences between DonaldJTrump and BarackObama, ages, Parties, experience and so on. How about their inaugural speeches?

2.1 Overview of sentence length distribution

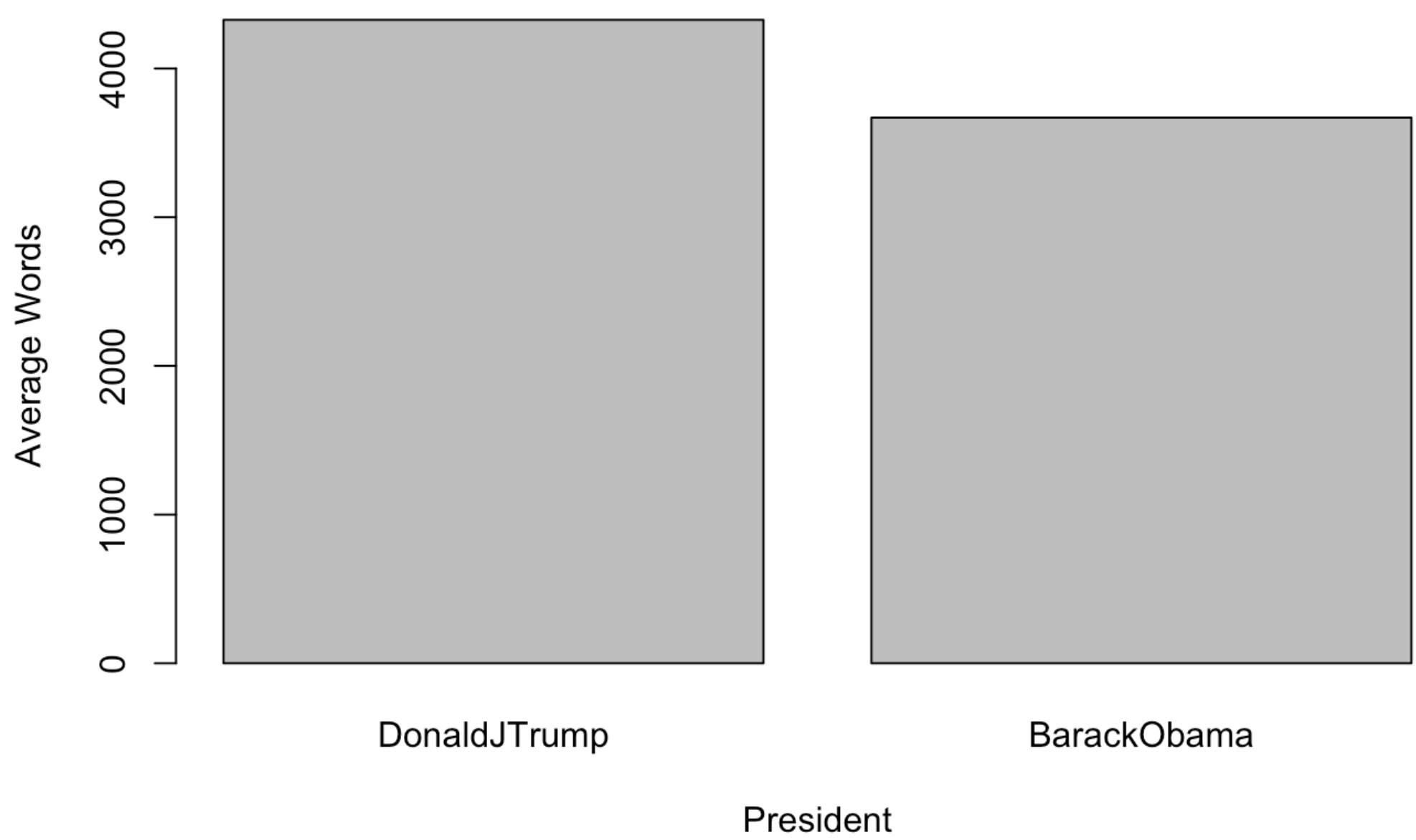
For relevant to Trump's speeches, we will only compare speeches for the first terms of former U.S. presidents.



It is obvious that DonaldJTrump has more short sentences than BarackObama. BarackObama has lots of sentences with more than 25 words.

So will the number of words be different?

Number of words of presidents' speeches



According to the barplot above, we can find that the speeches of DonaldJTrump has about 4300 words. However, the speeches of BarackObama has about 3600 words, which is much less than DonaldJTrump.

2.2 DonaldJTrump VS BarackObama, what are their short sentences?

sentences
<fctr>
Thank you.
America first.
Thank you.
Thank you.
God bless America.
5 rows

sentences
<fctr>
Thank you.

Thank you.
diversity and openness;
Thank you.
4 rows

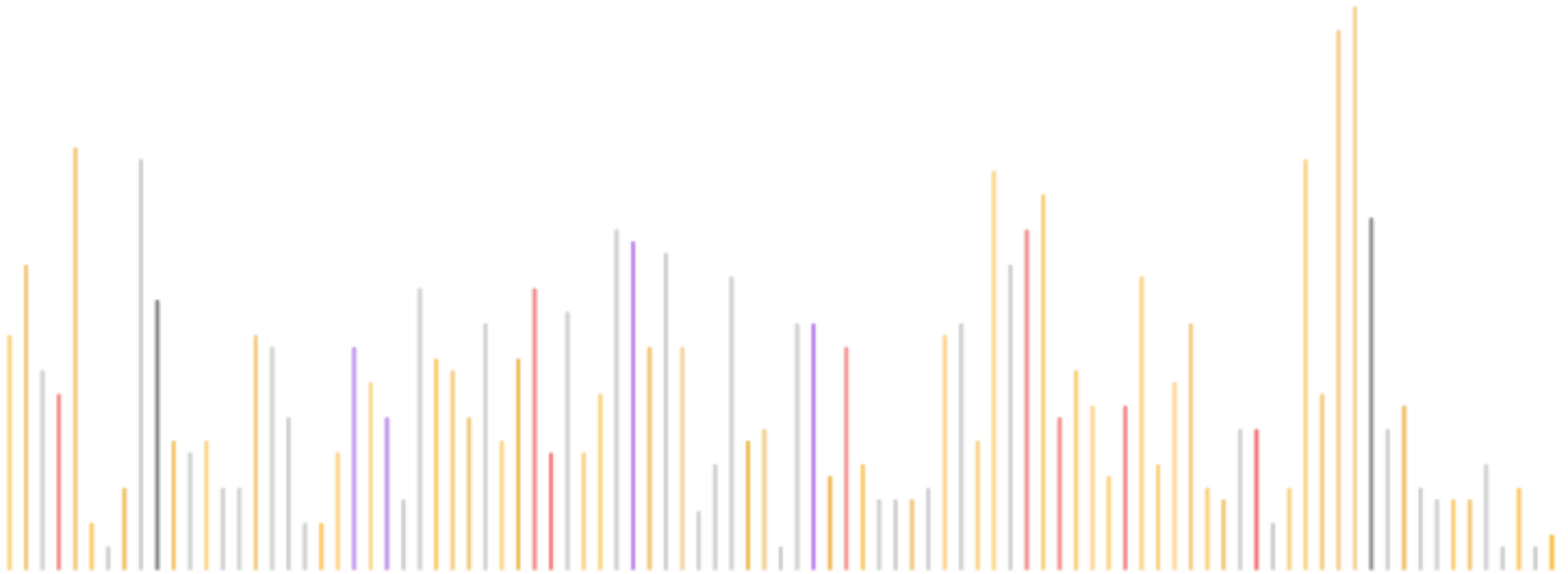
We will notice that most of their short sentences are similar, like ‘Thank you’. The ‘America first’ in Trump’s speech and the ‘diversity and openness’ in Obama’s speech show a big difference in their concept of running a country, especially its external attitude.

2.3 Sentiment analsis

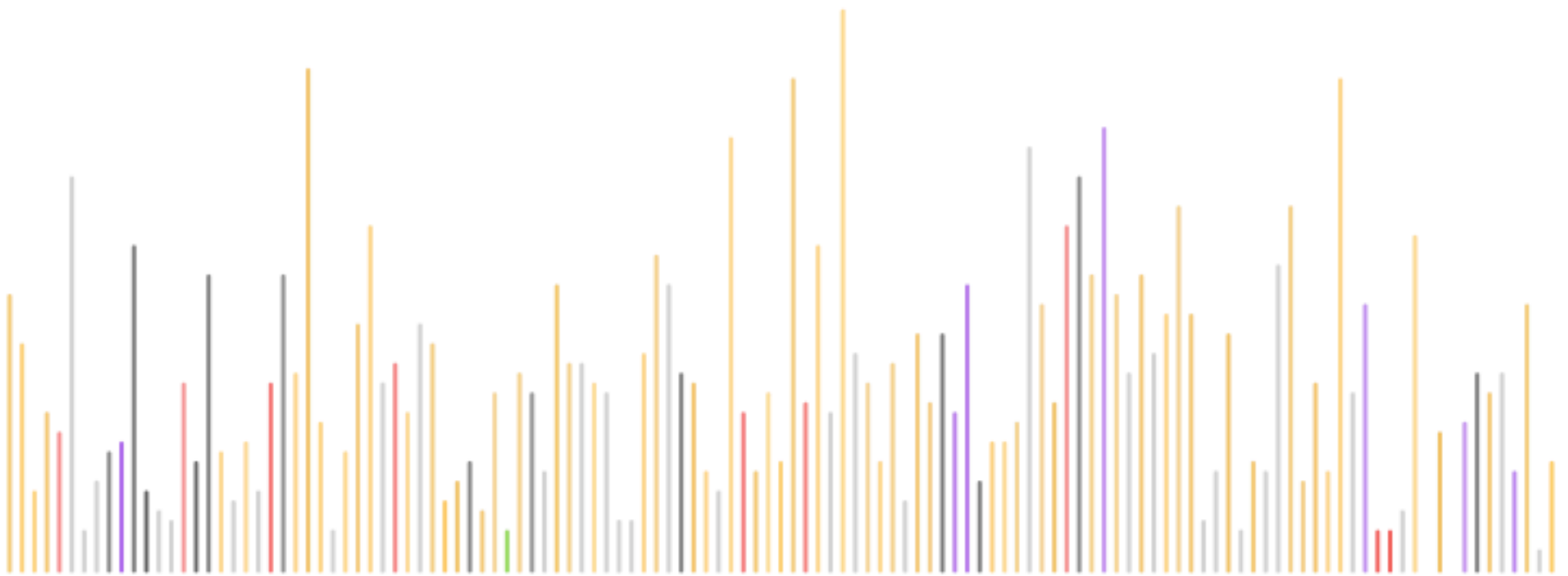
The following analysis shows that sentence length variation over the course of the speech, with emotions. How the presidents alternate between long and short sentences and how they shift between different sentiments in their speeches. We use the same color to show the same emotion.

2.3.1 DonaldJTrump VS BarackObama

Donald Trump



Barack Obama



It is obvious that the emotion of Trump's sentences are more easily changed. On contract, the emotion of Obama's sentences are more coherence.

What are the emotionally charged sentences?

```
[1] "Donald Trump"
[1] "No challenge can match the heart and fight and spirit of America."
[2] "God bless you, and God bless America."
[3] "America will start winning again, winning like never before."
[4] "No challenge can match the heart and fight and spirit of America."
[5] "Today's ceremony, however, has very special meaning."
[6] "America will start winning again, winning like never before."
[7] "Today's ceremony, however, has very special meaning."
[8] "God bless you, and God bless America."
[1] "Barack Obama"
[1] "On this day, we gather because we have chosen hope over fear, unity of purpose over conflict and discord."
[2] "This is the journey we continue today."
[3] "We remain the most prosperous, powerful nation on Earth."
[4] "Our Nation is at war against a far-reaching network of violence and hatred."
[5] "We remain the most prosperous, powerful nation on Earth."
[6] "Our Nation is at war against a far-reaching network of violence and hatred."
[7] "This is the meaning of our liberty and our creed;"
[8] "God bless you, and God bless the United States of America."
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From the result above, we may find that the change of emotion is kind of related to the change of topics, like ‘Today’s ceremony, however, has very special meaning.’ by Trump.

2.4 Topic modeling

For topic modeling, we prepare a corpus of sentence snippets as follows. For each speech, we start with sentences and prepare a snippet with a given sentence with the flanking sentences.

Based on the most popular terms and the most salient terms for each topic, we assign a hashtag to each topic. These topics are “Economy”, “America”, “Defense”, “Belief”, “Election”, “Patriotism”, “Unity”, “Government”, “Reform”, “Temporal”, “WorkingFamilies”, “Freedom”, “Equality”, “Misc” and “Legislation”.

The unemployed miners and textile workers will know how to vote. The old people without medical care --the families without a decent home--the parents of children without adequate food or schools--they all know that it's time for a change. But I think the American people expect more from us than cries of indignation and attack.

thus we have held that the federal government should in the presence of great national danger use its powers to give leadership to the initiative, the courage, and the fortitude of the people themselves, but that it must insist upon individual, community, and state responsibility. that it should furnish leadership to assure the coordination and unity of great existing agencies, governmental and private, for economic and humanitarian action. that where it becomes necessary to meet emergencies beyond the power of these agencies by the creation of new governmental instrumentalities, that they should be of such character as not to supplant or weaken, but rather to supplement and strengthen, the initiative and enterprise of our people.

a difference of opinion has arisen in regard to the point of time when the people of a territory shall decide this question for themselves this is happily a matter of but little practical importance besides it is a judicial question which legitimately belongs to the supreme court of the united state

s before whom it is now pending and will it is understood be speedily and finally settled
and to anyone who believes that restraint honor and trust in the people cannot be returned to govern
ment i say follow me follow me only right conduct only right conduct distinguishes a great nation fr
om one that cannot rise above itself it has never been otherwise
past years men women proudly bravely wear uniforms u s armed services called upon go h
arms way discharged duty honor professionalism
universities culture envy world thats keeps world coming shores instead american spirit – american
promise – pushes us forward even path uncertain binds us together spite differences
old thing grown familiar begun creep habit thought live alter aspect latter look critic upon fresh a
waken eye drop disguis shown alien sinist new thing look frank upon will comprehend real charact com
e assum aspect thing long believ familiar stuff convict

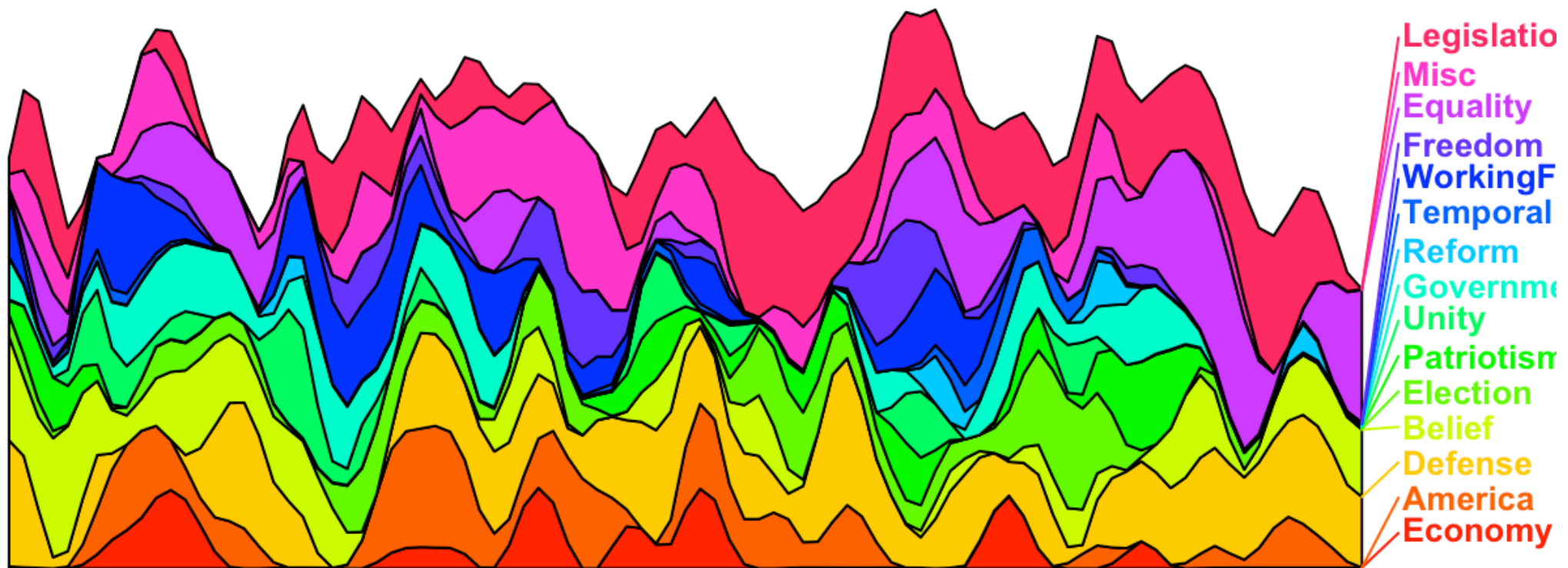
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
1691	2143	1761	1953	2049	1162	1262	1073	1298	1188	912	1609	1315	993	572	
	[,1]		[,2]			[,3]		[,4]		[,5]		[,6]		[,7]	
[1,]	"product"		"trade"			"tariff"		"market"		"agricultur"		"per"		"taxat"	
[2,]	"educ"		"teacher"			"doubl"		"medicar"		"medic"		"doctor"		"clean"	
[3,]	"corner"		"golden"			"imag"		"godgiven"		"churchil"		"twentieth"		"stretch"	
[4,]	"john"		"reagan"			"speech"		"chairman"		"truman"		"gore"		"harri"	
[5,]	"think"		"lot"			"got"		"sit"		"youv"		"tire"		"horribl"	
[6,]	"respons"		"technolog"			"planet"		"climat"		"gas"		"discov"		"reaction"	
[7,]	"state"		"perpetu"			"despot"		"sphere"		"agit"		"apprehens"		"latter"	
[8,]	"knowledg"		"mental"			"piti"		"dignifi"		"pretend"		"quarrel"		"exil"	
[9,]	"discharg"		"virtu"			"render"		"cultiv"		"conscious"		"station"		"bestow"	
[10,]	"case"		"court"			"recommend"		"receiv"		"appoint"		"commiss"		"approv"	
[11,]	"choic"		"argument"			"elector"		"wilson"		"logic"		"alabama"		"rancor"	
[12,]	"defens"		"arm"			"nuclear"		"navi"		"vietnam"		"aggress"		"terror"	
[13,]	"aspir"		"hate"			"worthi"		"brother"		"storm"		"star"		"miseri"	
[14,]	"five"		"grown"			"catch"		"sixti"		"summer"		"overstay"		"entri"	
[15,]	"neglect"		"appeas"			"graviti"		"forgiv"		"junctur"		"impend"		"bloat"	
	Topic 1		Topic 2			Topic 3		Topic 4		Topic 5		Topic 6		Topic 7	Topic 8
[1,]	"busi"		"work"			"american"		"presid"		"know"		"must"		"govern"	"nation"
[2,]	"increas"		"famili"			"america"		"day"		"want"		"new"		"state"	"right"
[3,]	"industri"		"job"			"let"		"friend"		"just"		"can"		"power"	"peopl"
[4,]	"product"		"help"			"live"		"man"		"thing"		"chang"		"unit"	"free"
[5,]	"system"		"tax"			"futur"		"thank"		"well"		"need"		"union"	"men"
[6,]	"upon"		"children"			"see"		"offic"		"say"		"respons"		"constitut"	"citizen"
[7,]	"labor"		"care"			"ask"		"accept"		"like"		"econom"		"general"	"equal"
[8,]	"trade"		"economi"			"promis"		"proud"		"think"		"great"		"interest"	"justic"
[9,]	"public"		"pay"			"better"		"convent"		"way"		"problem"		"form"	"life"
[10,]	"import"		"school"			"togeth"		"said"		"dont"		"meet"		"principl"	"secur"
[11,]	"polici"		"valu"			"world"		"hous"		"get"		"home"		"limit"	"among"
[12,]	"use"		"home"			"today"		"first"		"back"		"face"		"whole"	"civil"
[13,]	"protect"		"educ"			"peopl"		"word"		"that"		"old"		"feder"	"individu"
[14,]	"tariff"		"creat"			"build"		"great"		"tell"		"opportun"		"part"	"women"
[15,]	"develop"		"save"			"look"		"tonight"		"ive"		"time"		"becom"	"full"
[16,]	"revenu"		"make"			"tonight"		"senat"		"put"		"fail"		"preserv"	"without"
[17,]	"market"		"mean"			"come"		"side"		"good"		"leadership"		"within"	"progress"
[18,]	"benefit"		"plan"			"centuri"		"next"		"even"		"way"		"citizen"	"everi"
[19,]	"price"		"health"			"stand"		"unit"		"talk"		"energi"		"institut"	"human"
[20,]	"larg"		"need"			"say"		"win"		"someth"		"turn"		"local"	"moral"
	Topic 9		Topic 10			Topic 11		Topic 12		Topic 13		Topic 14		Topic 15	
[1,]	"may"		"law"			"parti"		"world"		"freedom"		"year"		"will"	
[2,]	"shall"		"congress"			"peopl"		"peac"		"hope"		"time"		"everi"	
[3,]	"duti"		"execut"			"one"		"nation"		"faith"		"now"		"can"	
[4,]	"public"		"administr"			"republican"		"war"		"call"		"countri"		"make"	
[5,]	"upon"		"may"			"polit"		"forc"		"god"		"one"		"countri"	
[6,]	"countri"		"without"			"made"		"polici"		"purpos"		"last"		"believ"	
[7,]	"servic"		"shall"			"democrat"		"strength"		"caus"		"mani"		"never"	

[8,]	"trust"	"act"	"differ"	"defens"	"yet"	"first"	"good"
[9,]	"confid"	"effect"	"elect"	"militari"	"peopl"	"histori"	"alway"
[10,]	"great"	"legisl"	"great"	"arm"	"love"	"ever"	"take"
[11,]	"honor"	"constitut"	"question"	"strong"	"spirit"	"end"	"give"
[12,]	"patriot"	"order"	"person"	"use"	"great"	"million"	"now"
[13,]	"best"	"subject"	"decis"	"danger"	"heart"	"much"	"support"
[14,]	"interest"	"enforc"	"fact"	"also"	"land"	"still"	"serv"
[15,]	"experi"	"made"	"choic"	"secur"	"speak"	"sinc"	"lead"
[16,]	"high"	"practic"	"vote"	"intern"	"fear"	"past"	"pledg"
[17,]	"present"	"secur"	"truth"	"nuclear"	"human"	"administr"	"whether"
[18,]	"spirit"	"respect"	"mani"	"europ"	"liberti"	"ago"	"sure"
[19,]	"part"	"pass"	"two"	"maintain"	"ideal"	"four"	"continu"
[20,]	"promot"	"rule"	"now"	"threaten"	"life"	"immigr"	"place"

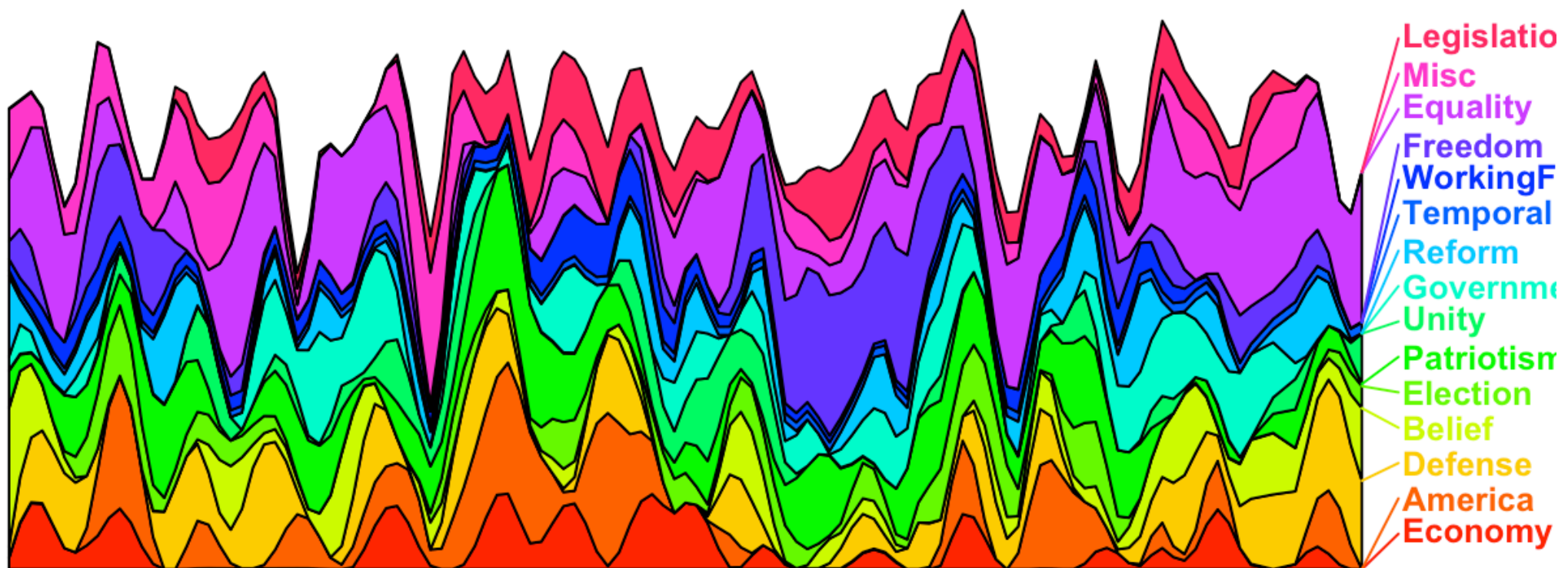
2.4.1 Topics differences between Trump and Obama

[1]	"Economy"	"America"	"Defense"	"Belief"	"Election"			
[6]	"Patriotism"	"Unity"	"Government"	"Reform"	"Temporal"			
[11]	"WorkingFamilies"	"Freedom"	"Equality"	"Misc"	"Legislation"			
[1]	0.04189455	0.08378911	0.12568366	0.16757822	0.20947277	0.25136733	0.29326188	0.33515644
[9]	0.37705099	0.41894555	0.46084010	0.50273466	0.54462921	0.58652377	0.62841832	
[1]	0.04247576	0.08495153	0.12742729	0.16990306	0.21237882	0.25485459	0.29733035	0.33980612
[9]	0.38228188	0.42475765	0.46723341	0.50970917	0.55218494	0.59466070	0.63713647	

Donald Trump, Inaugural Speeches



Barack Obama, Inaugural Speeches



According to the result, we may find that:

- (1) For DonaldJTrump, a big part of his speech is related to legislation, equality, defense and America.
- (1) For BarackObama, it is equality, freedom, government and America.

2.4.2 How are the sentences related to topics?

```
[1] "The prosperity of Porto Rico continues unabated."
[2] "And we need a new sense of responsibility for a new century."
[3] "From the height of this place and the summit of this century, let us go forth."
[4] "Chief Justice, Mr."
[5] "Now arrives the hour of action."
[6] "Abroad and at home, the key to those new responsibilities lies in the placing and the division
of responsibility."
[7] "The Government of the Union, acting within the sphere of its delegated authority, is also a co
mplete sovereignty."
[8] "They are secured by free dissent and the participation of the governed."
[9] "From these I shall endeavor to derive all the advantages which they may afford."
[10] "The secondary boycott is an instrument of tyranny, and ought not to be made legitimate."
[11] "It is alleged that in many communities negro citizens are practically denied the freedom of th
e ballot."
[12] "What has been said of the army may be affirmed in even a more emphatic way of the navy."
[13] "We have endured a long night of the American spirit."
[14] "We've made other countries rich while the wealth, strength, and confidence of our country has
dissipated over the horizon."
[15] "Protection will lead to great prosperity and strength."
[1] "Economy"           "America"           "Defense"           "Belief"           "Election"
[6] "Patriotism"         "Unity"             "Government"        "Reform"           "Temporal"
[11] "WorkingFamilies"    "Freedom"           "Equality"           "Misc"             "Legislation"
```

From the result above, we can clearly see how topic modeling work.

Conclusion

In conclusion, from these analysis, we may find a lot of differences between the inaugural speech of Democratic Party and Republican Party, including the number of words, sentence distribution, emotion cluster and so on.

So as to DonaldJTrump from Republican Party and BarackObama from Democratic Party, they have lots of differences in their speech’s pattern, like sentiment difference, topic difference and so on.

Reference

wk2-Tutorial-TextMining
https://github.com/TZstatsADS/ADS_Teaching/tree/master/Tutorials/wk2-TextMining
(https://github.com/TZstatsADS/ADS_Teaching/tree/master/Tutorials/wk2-TextMining)