

# *The Rise of Partisanship in the US*

*A Network Science Approach*

*SLT 13B | Bengielyn Danao, Kyle Ong*

# The New York Times

## *Trump Acquitted of Two Impeachment Charges in Near Party-Line Vote*

As Republicans rallied behind President Trump, Senator Mitt Romney of Utah, the party's 2012 presidential nominee, joined Democrats in voting to convict, the only senator to cross party lines.



<https://www.nytimes.com/2020/02/05/us/politics/trump-acquitted-impeachment.html>

***Donald Trump's  
congress is  
very partisan.***

*Analyze the voting behavior of  
Republican & Democratic parties  
over time (1947 – 2019)*



# The Data

Rollcall vote data from [voteview.com](https://voteview.com) beta



Congressional rollcalls



Individual votes (Yes / No)



Members & parties



Senate



House

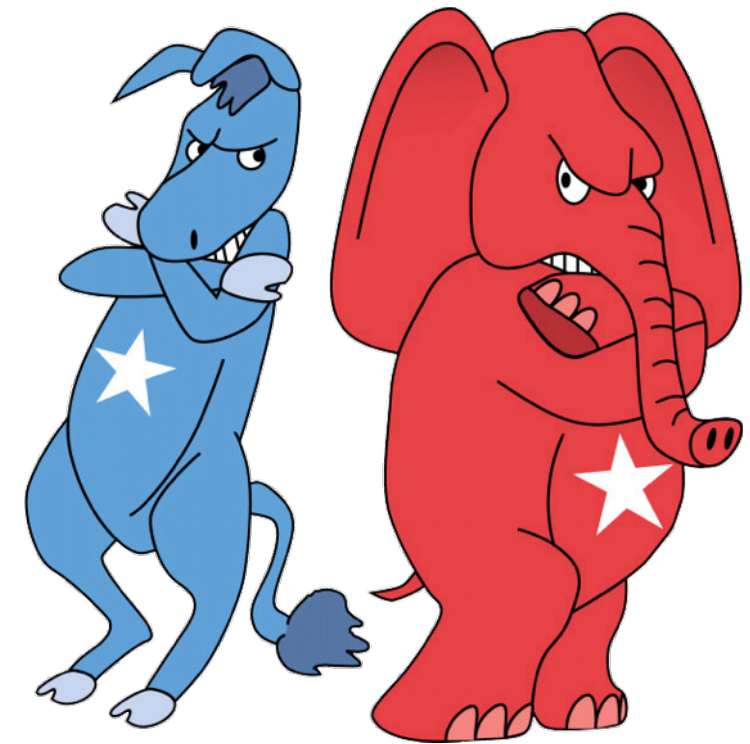
**80<sup>th</sup> to 115<sup>th</sup>**  
Congress

# Network Structure

Observe the polarity / degree of conformity between parties.

↑ individuals of the same party vote identically

↓ individuals of different parties vote identically

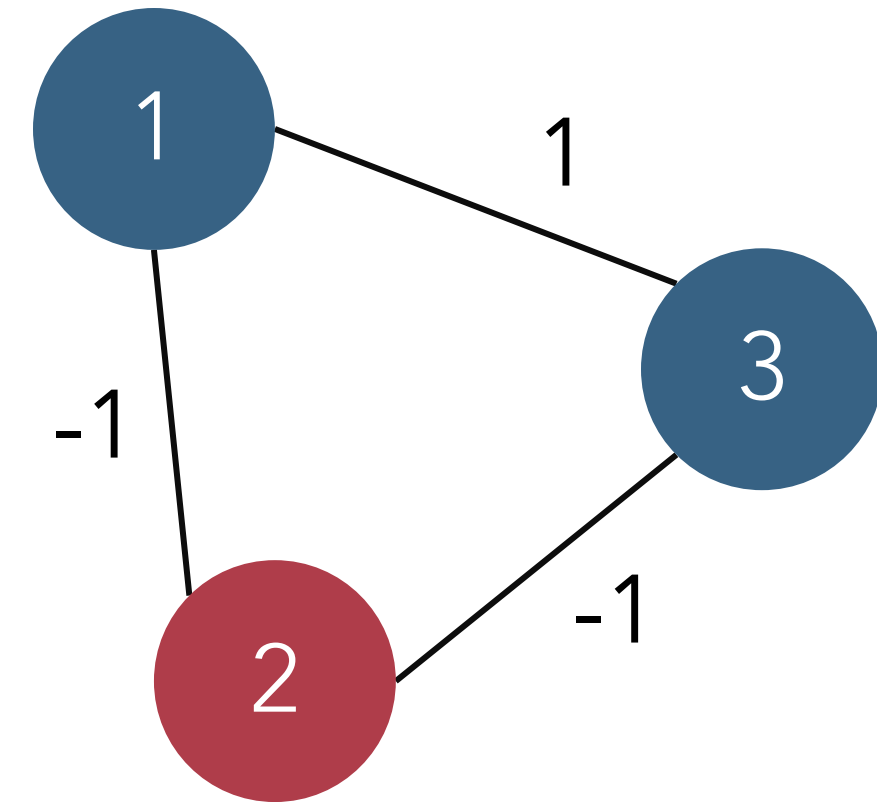


# Network Structure

**Nodes:** Members of the senate or house of representatives

**Edges:** Connection between all pairs of members (fully-connected)

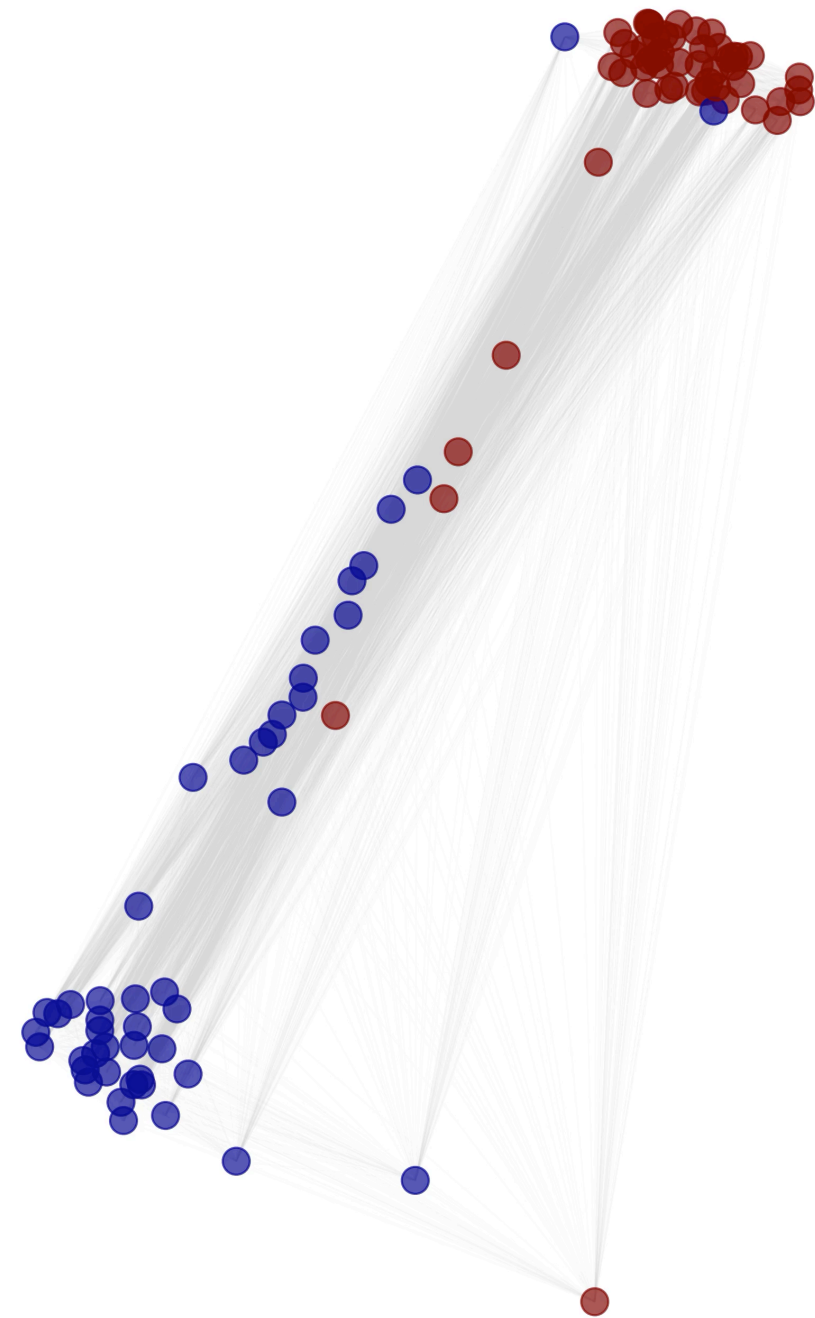
**Weight:** Cosine similarity of voting patterns between two members of the congress



# **Network Evolution**

# Evolution over time

Congress 80



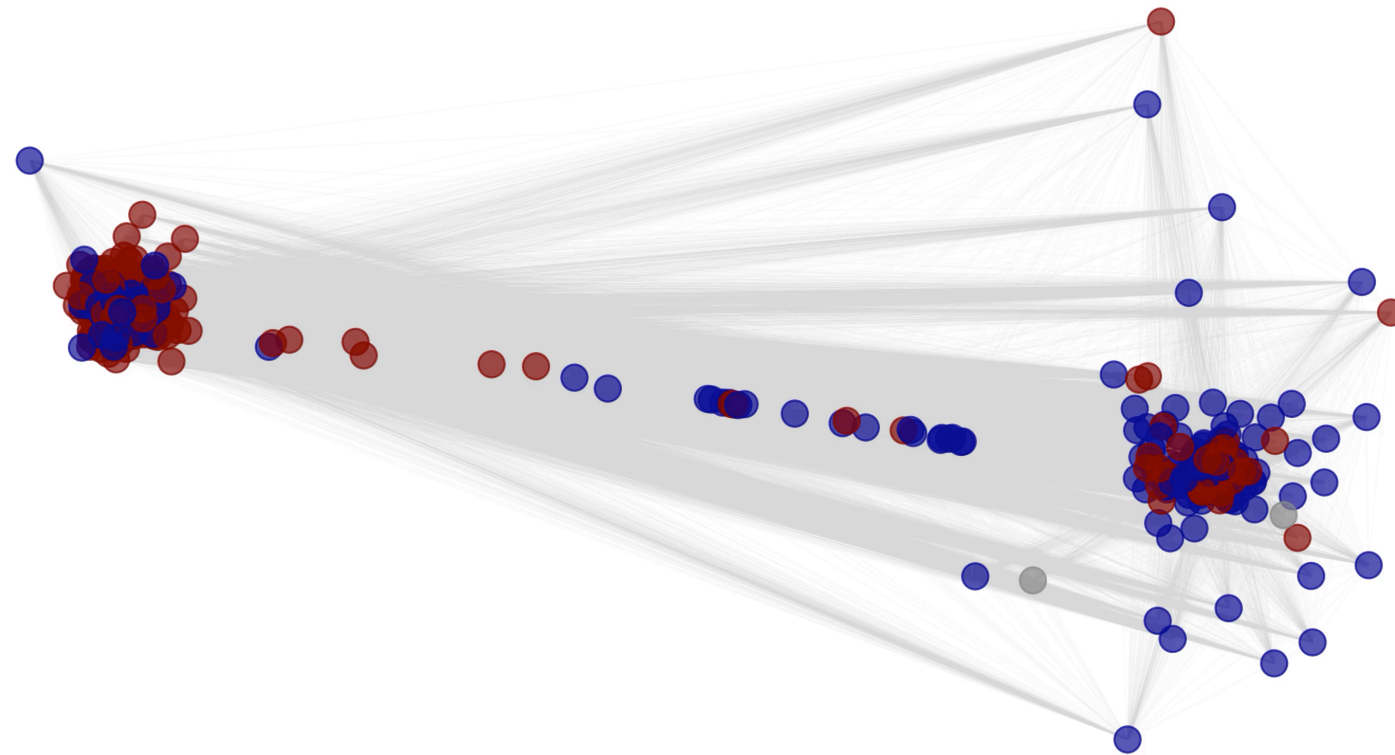
## Senate

Voting behavior gets more polar between parties.



# Evolution over time

Congress 80



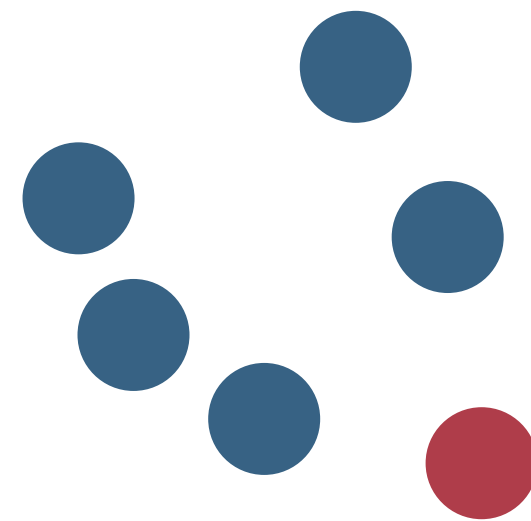
## House of Representatives

Voting behavior gets more polar between parties.

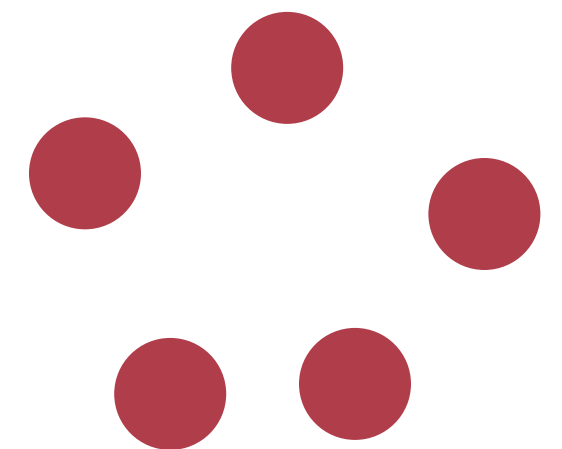
# Average Degree

## Intra-party Similarity

How often does your party vote along party lines?



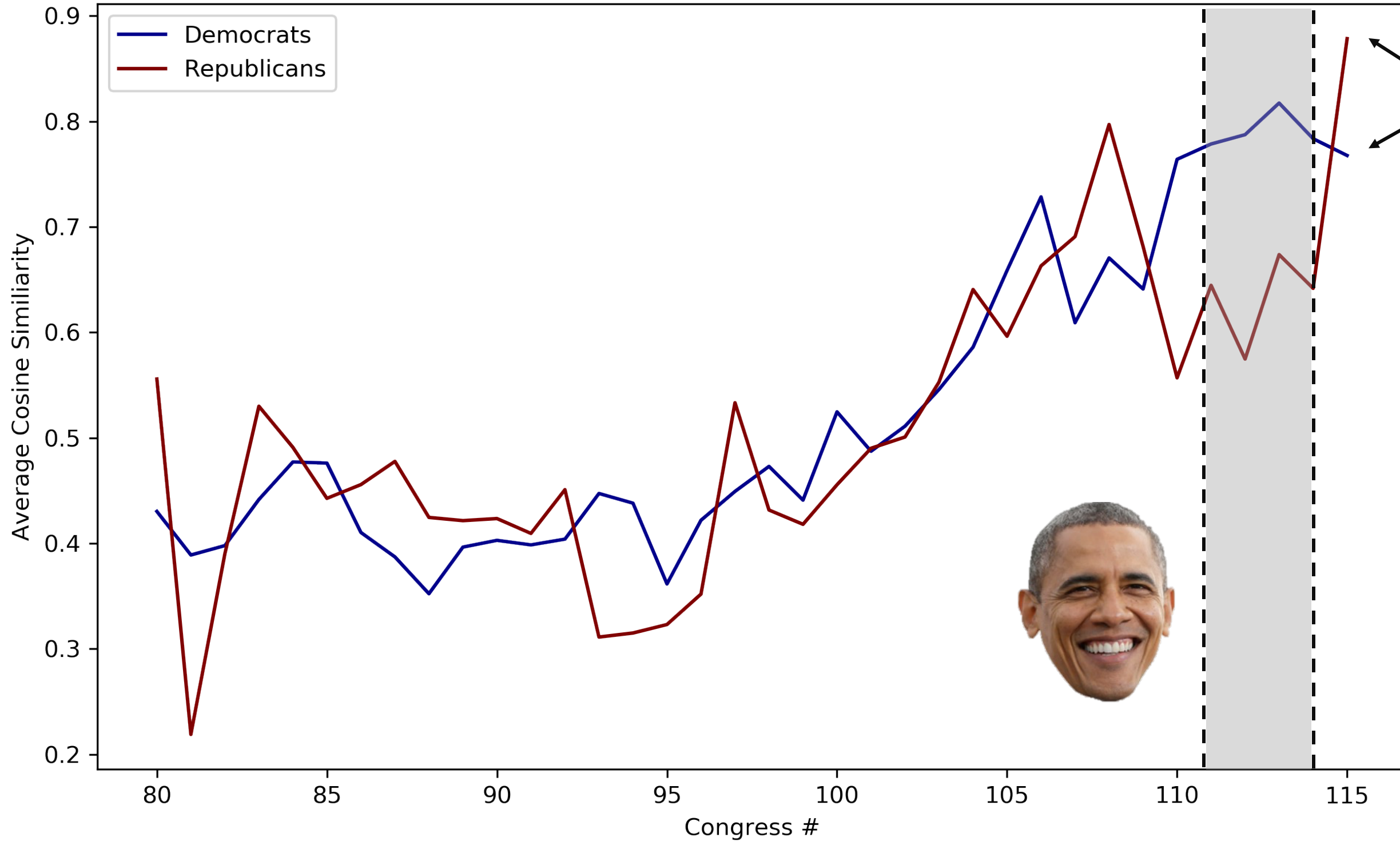
**"Yea"**



**"Nay"**

# Average Degree (Senate)

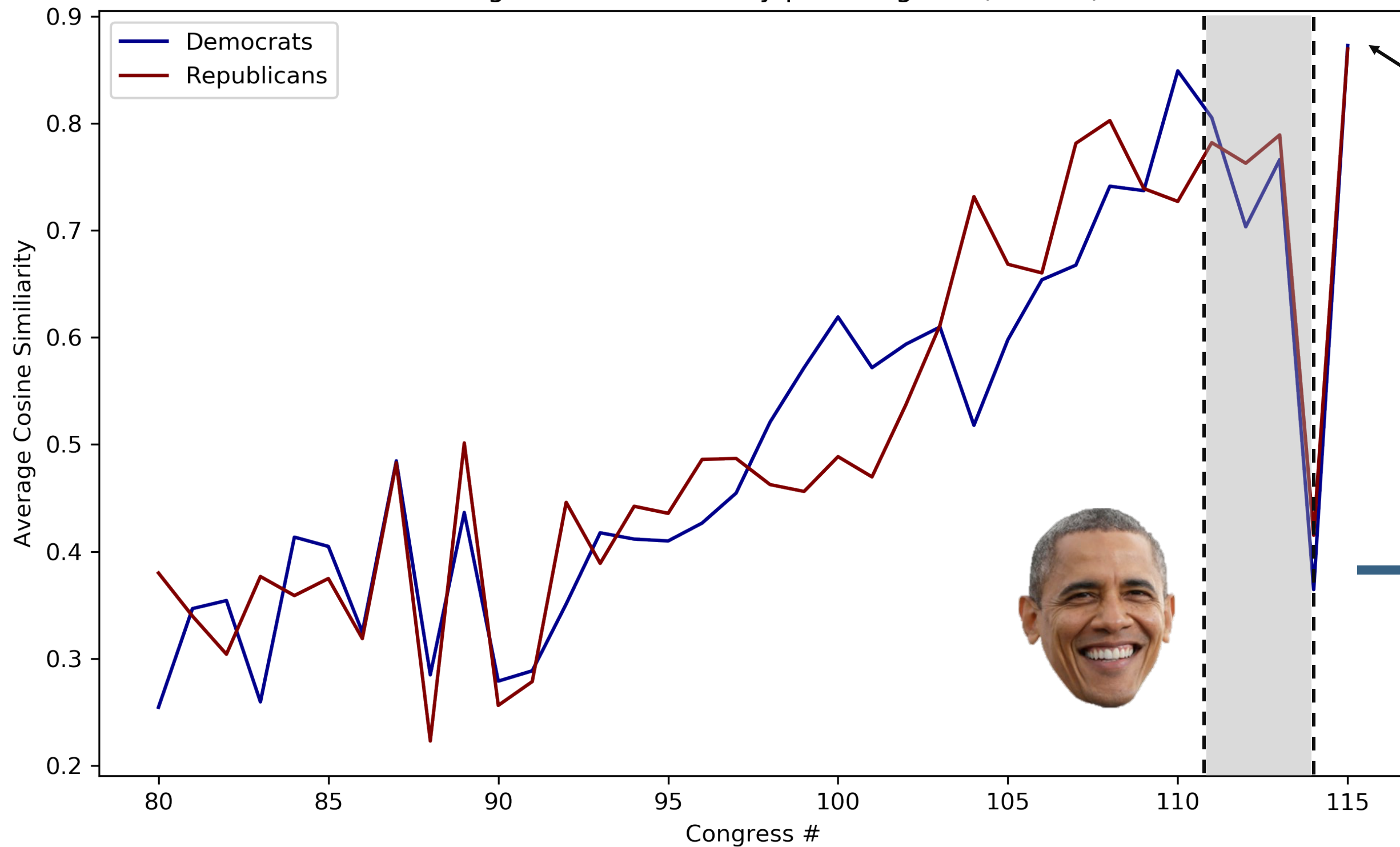
Average Cosine Similarity per Congress (SENATE)



Higher = More Partisan

# Average Degree (House of Representatives)

Average Cosine Similarity per Congress (HOUSE)

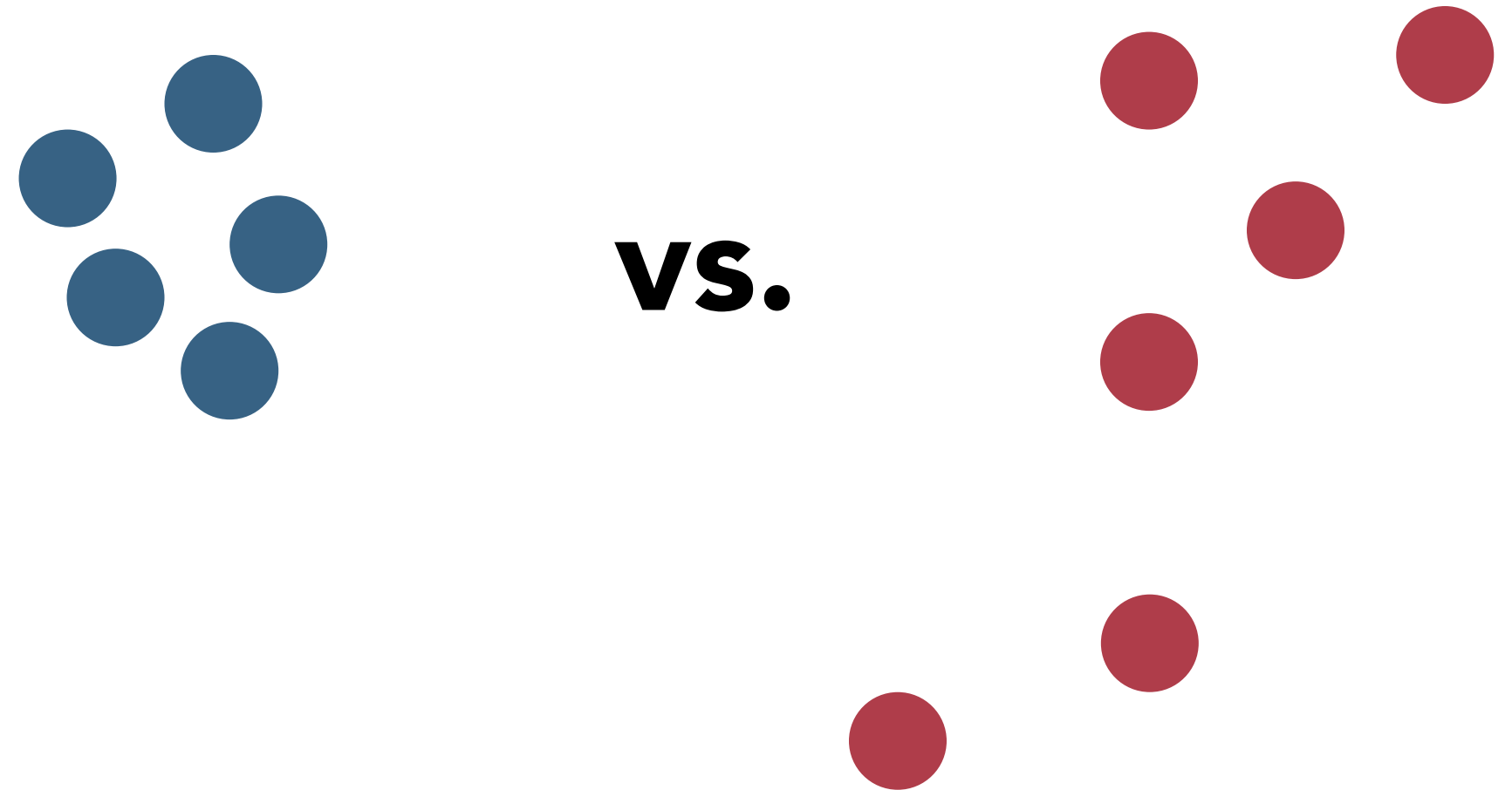


**Obama's Last Year**  
...saw the most bipartisan House of Representatives in over 40 years.

# Clustering Coefficients

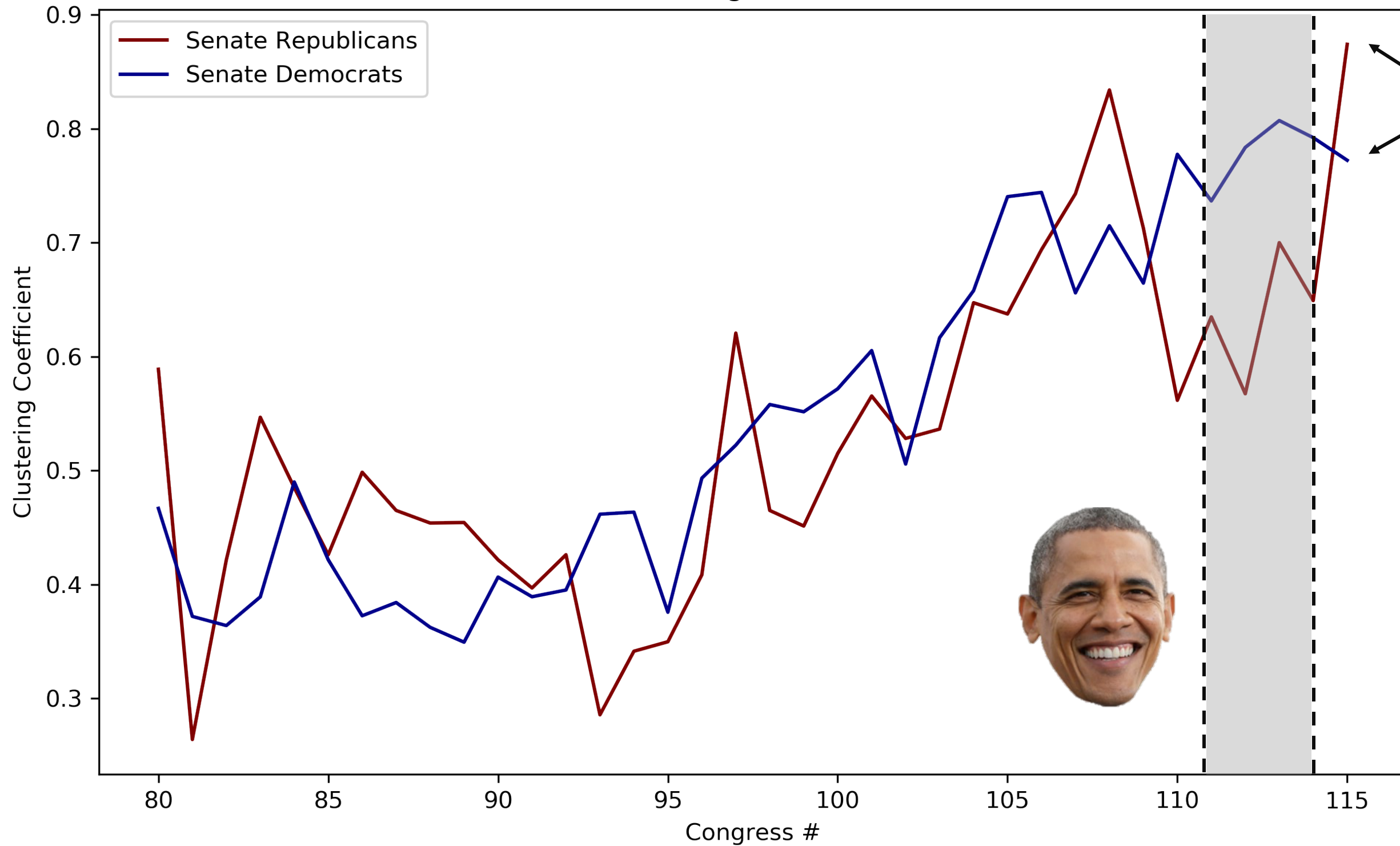
## Intra-party Similarity

How tightly knit is your party?



# Clustering Coefficients

Clustering Coefficient



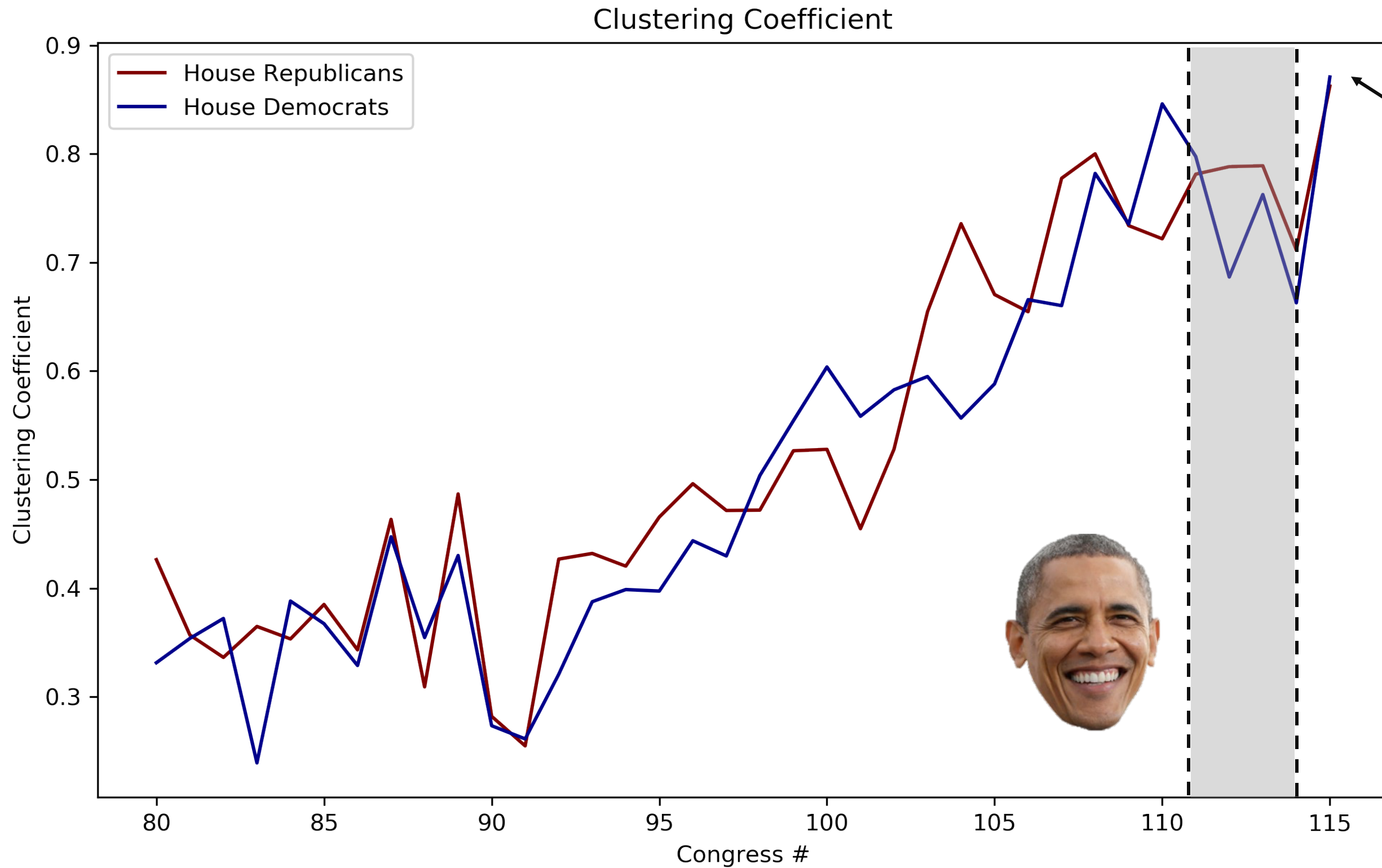
## Senate



ties got more  
tly knit over  
the years  
especially during  
the appointment  
of Trump.



# Clustering Coefficients



## House of Representatives

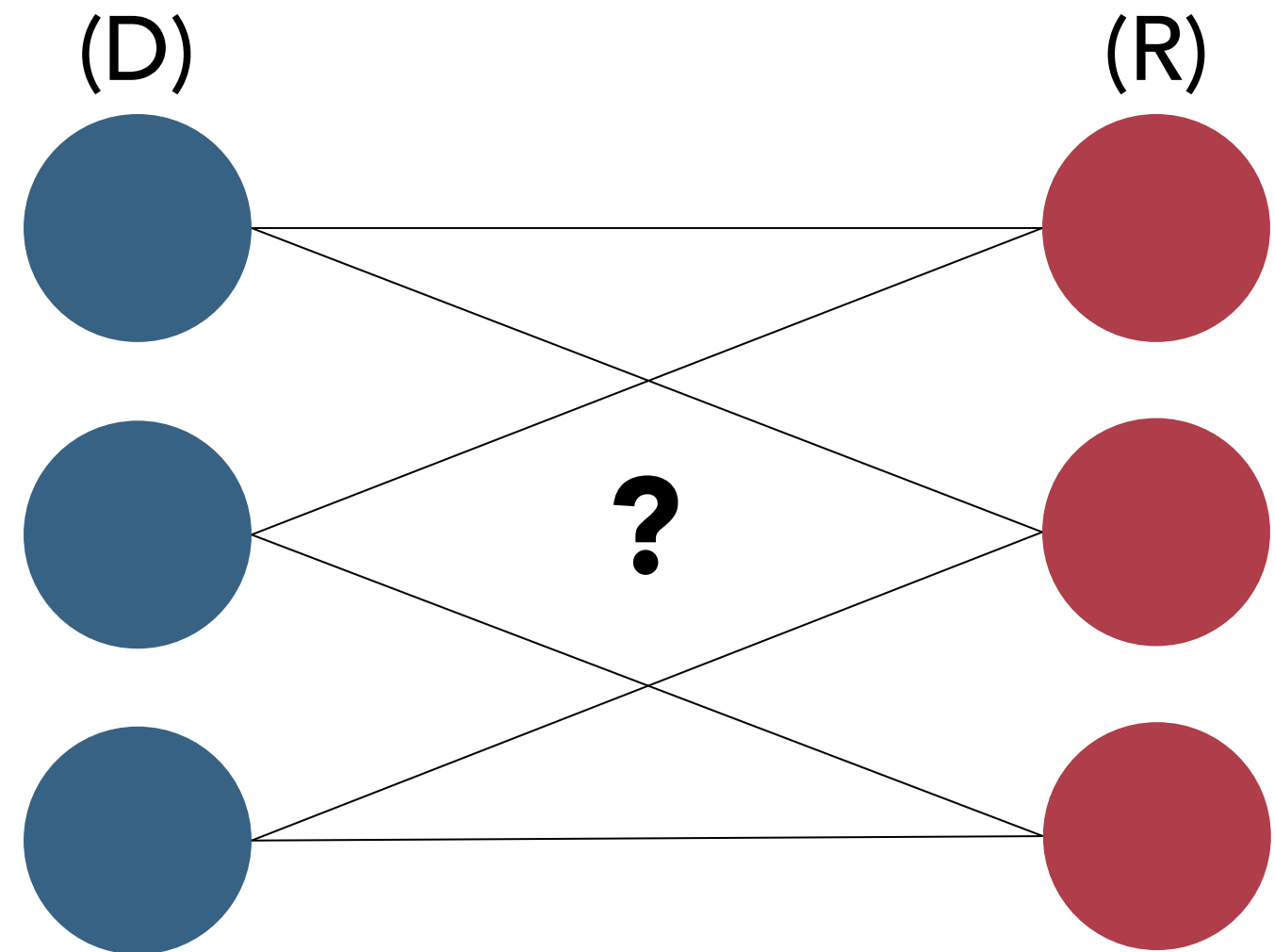
Parties got more tightly knit over the years especially during the appointment of Trump.



# Cooperation Score

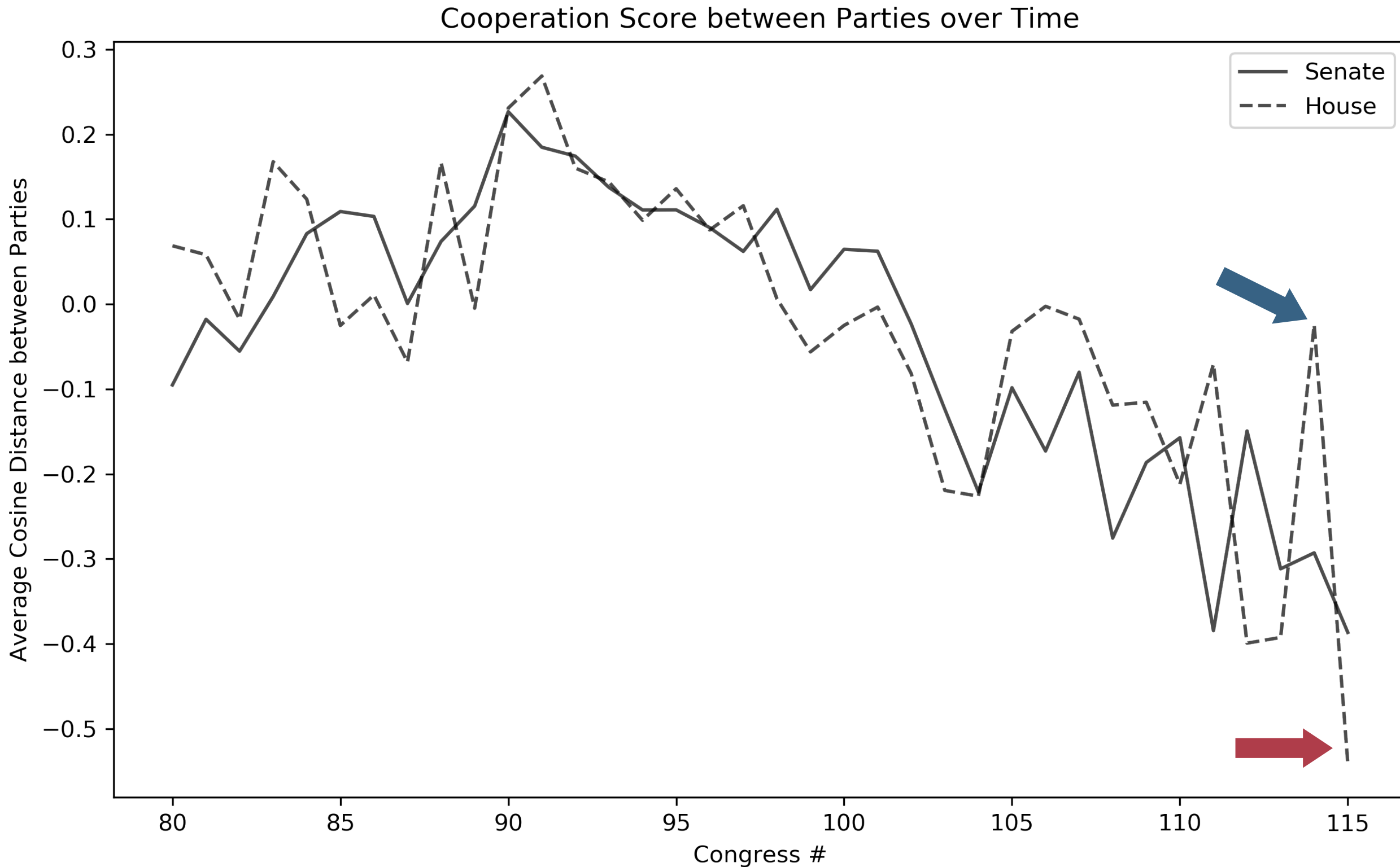
## Inter-party Similarity

How much do both parties "cooperate" across party lines when voting?



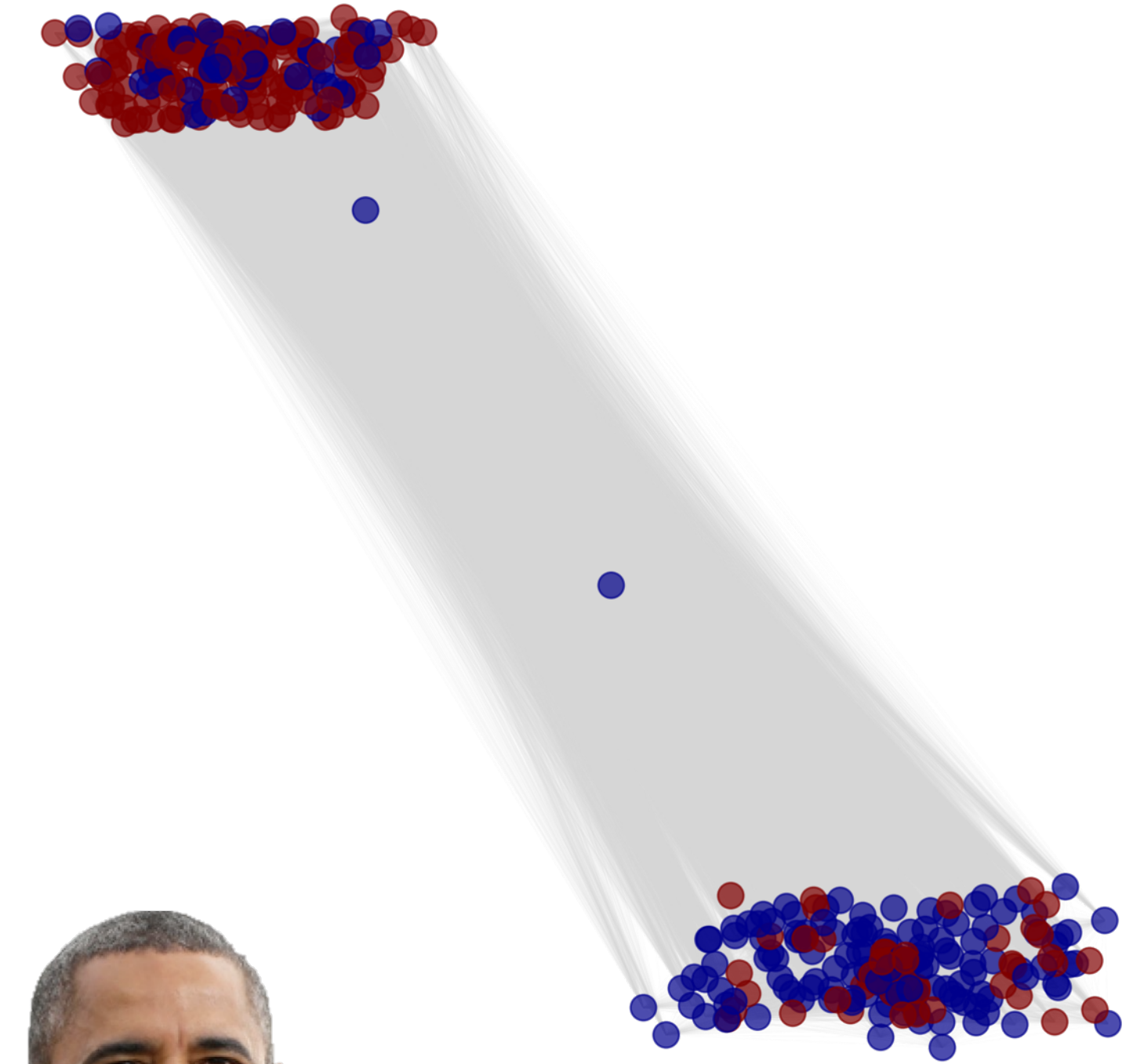


# Cooperation Score

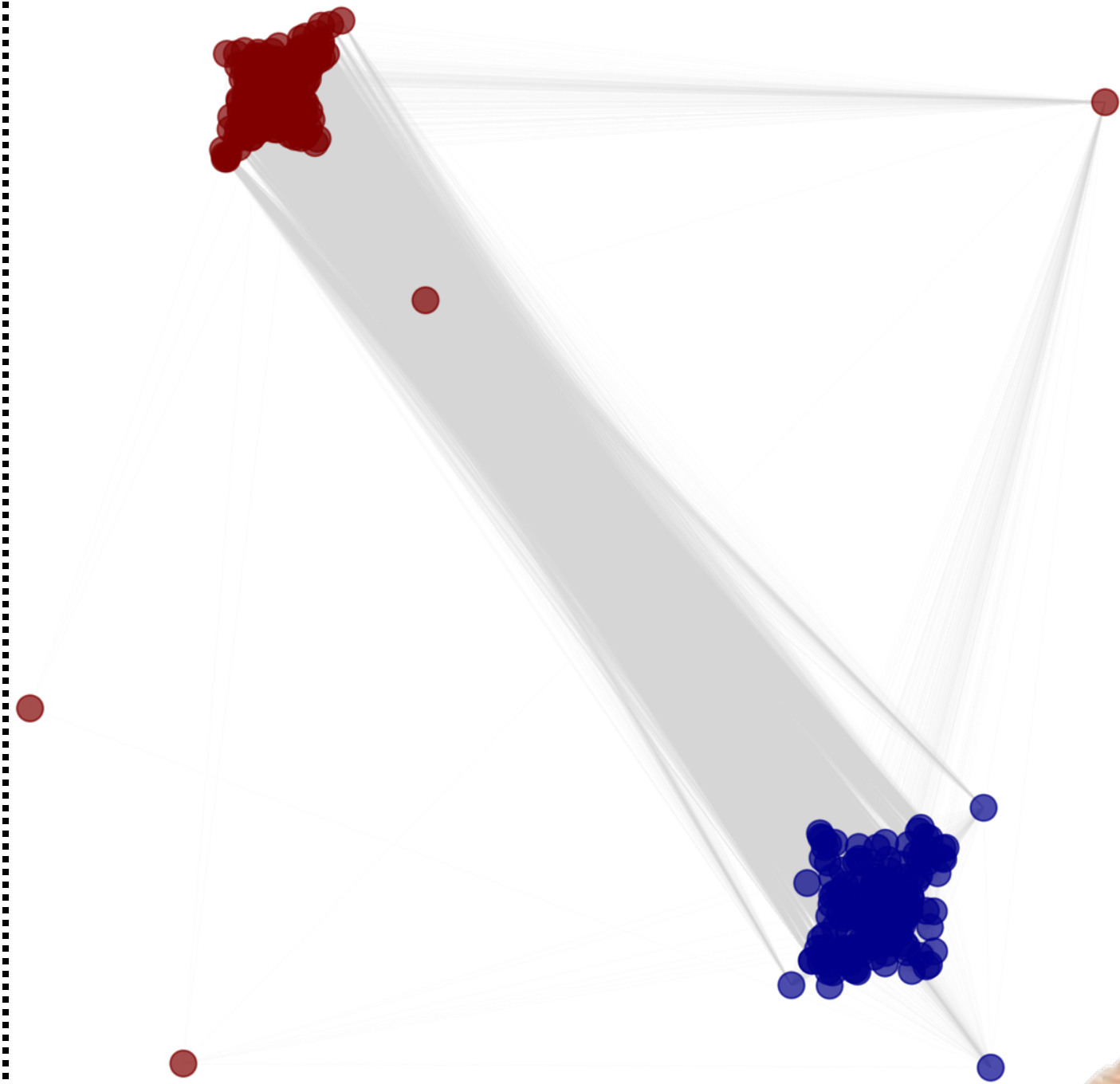


## Collaboration between parties

decreased over the years on both chambers which confirms change in trend of partisanship. Instead of compromising, there is animosity between parties.



**Congress 114**  
(2015-2017)

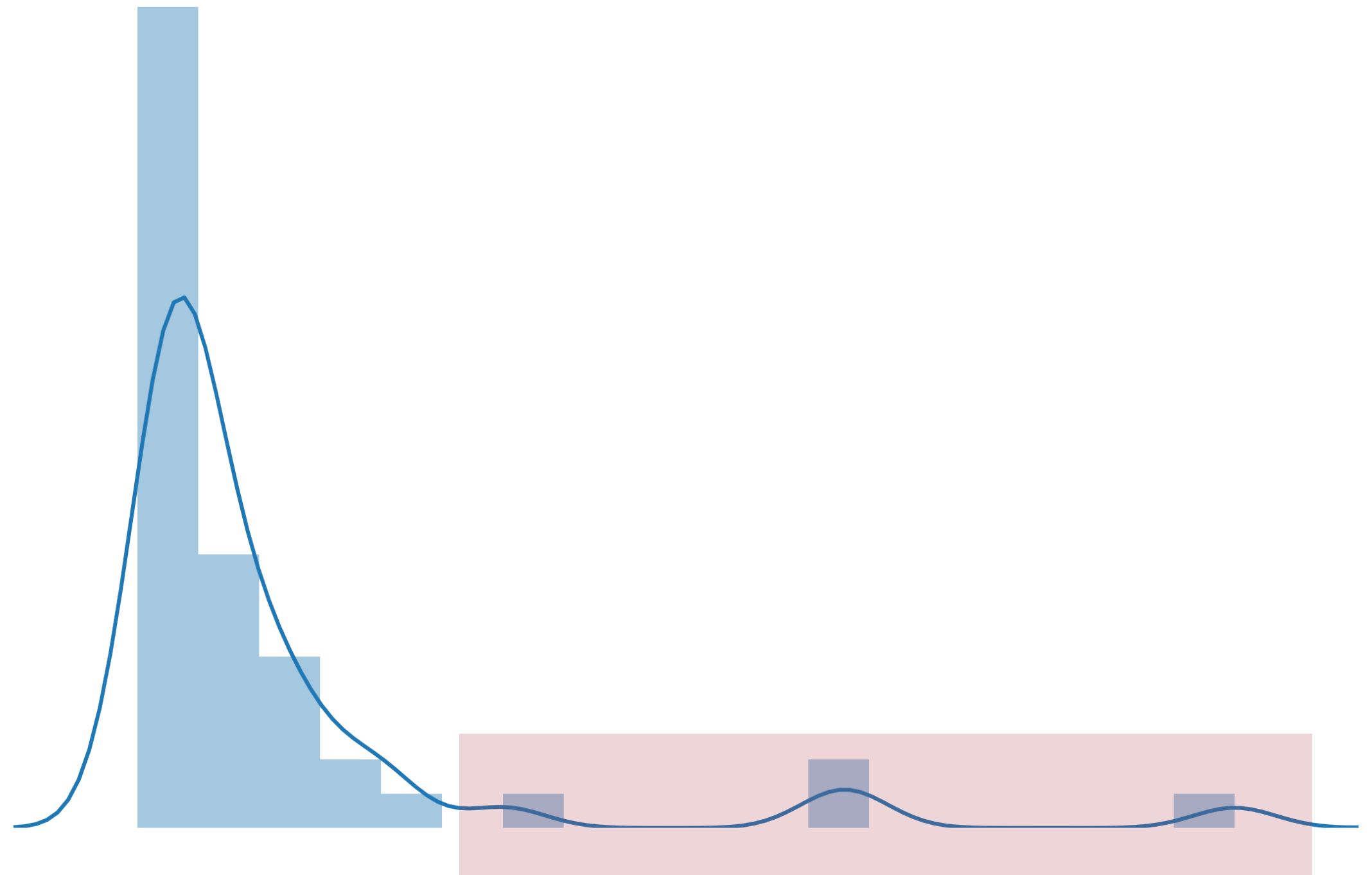


**Congress 115**  
(2017-2019)

# Outliers

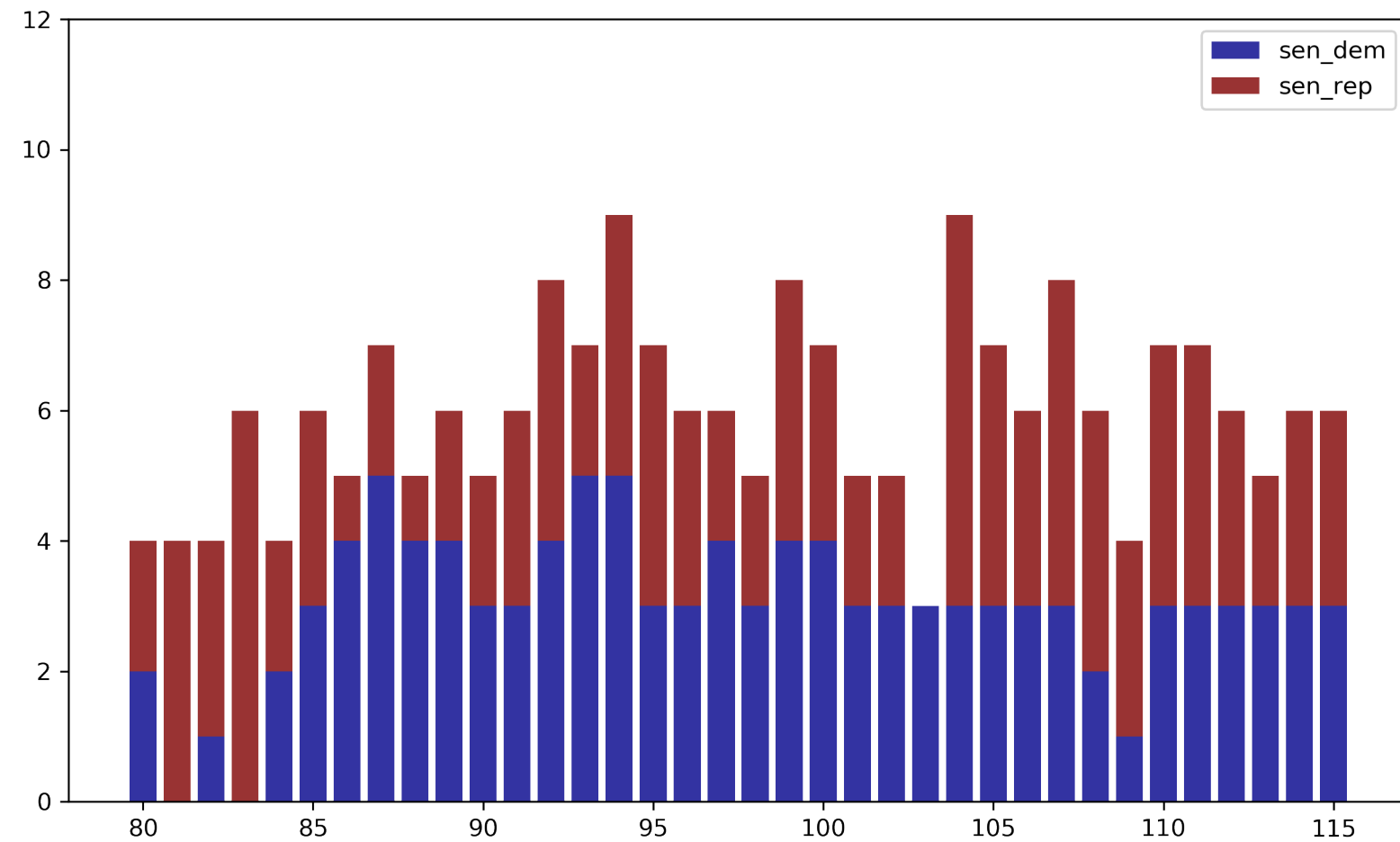
## Intra-party Differences

Who and how many are the "dissenters" from each party?

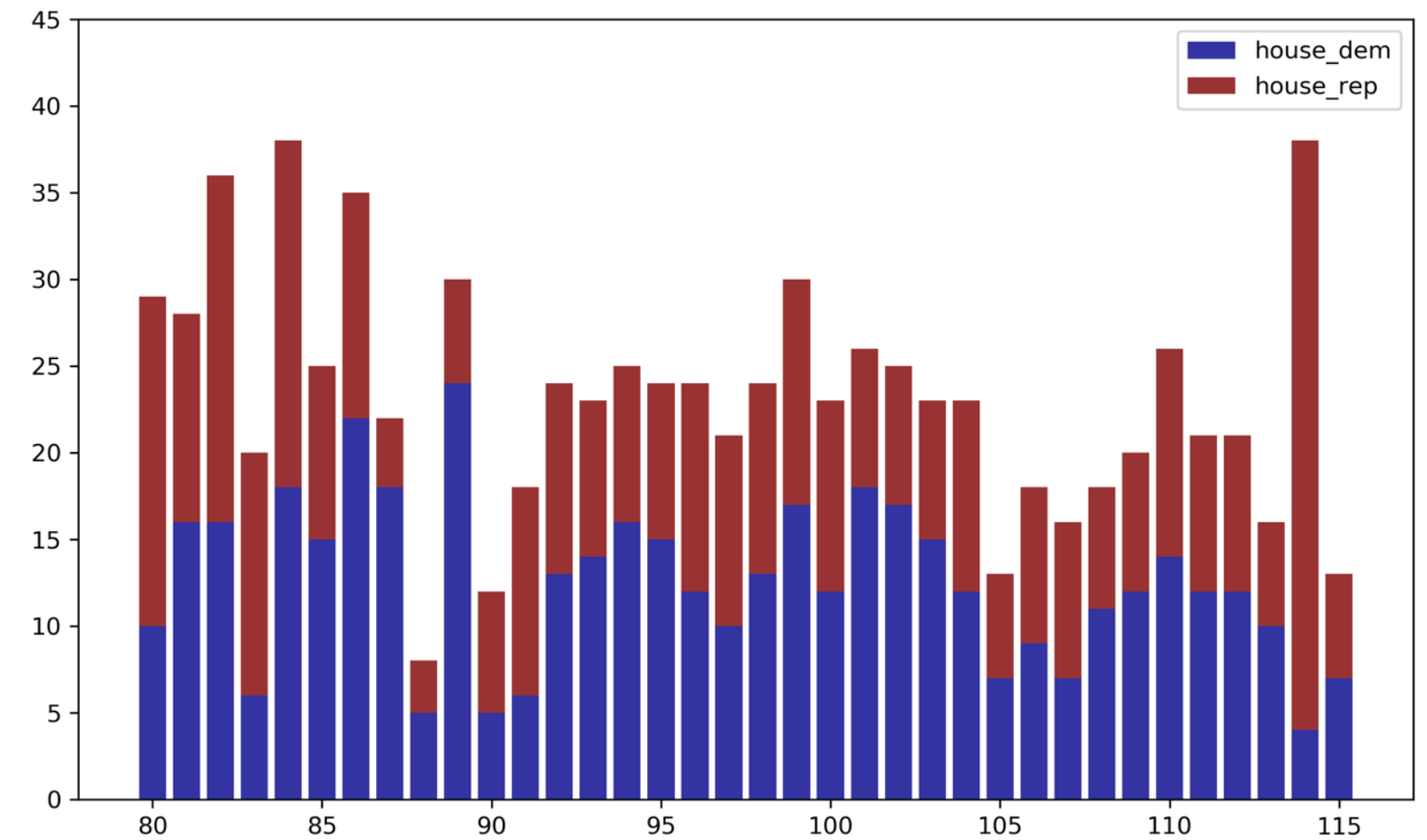


# Outliers

## Senate



## House



Outlier peaks of one party means that the other party has low. The former is more convincing than the other.

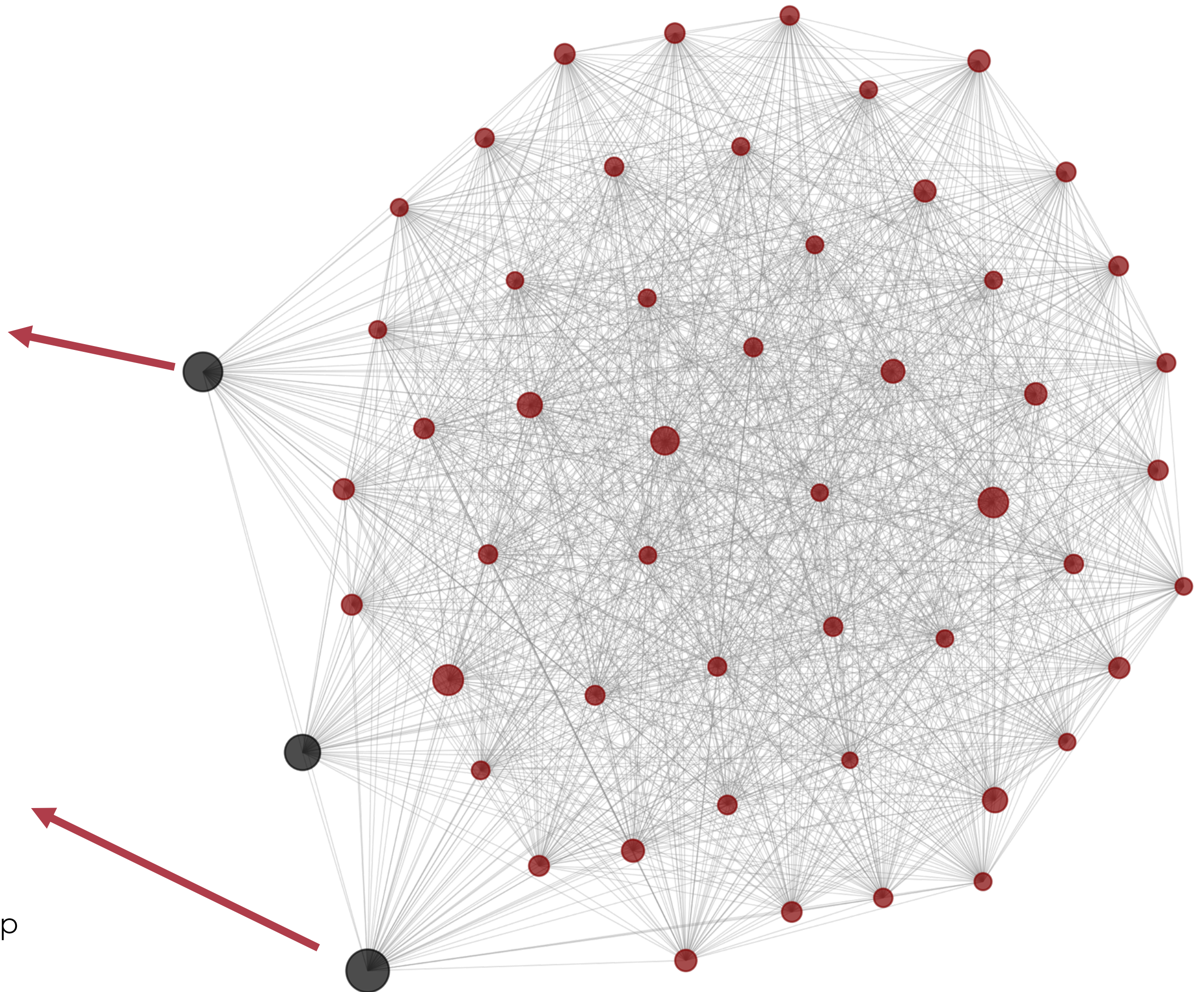
# Outliers



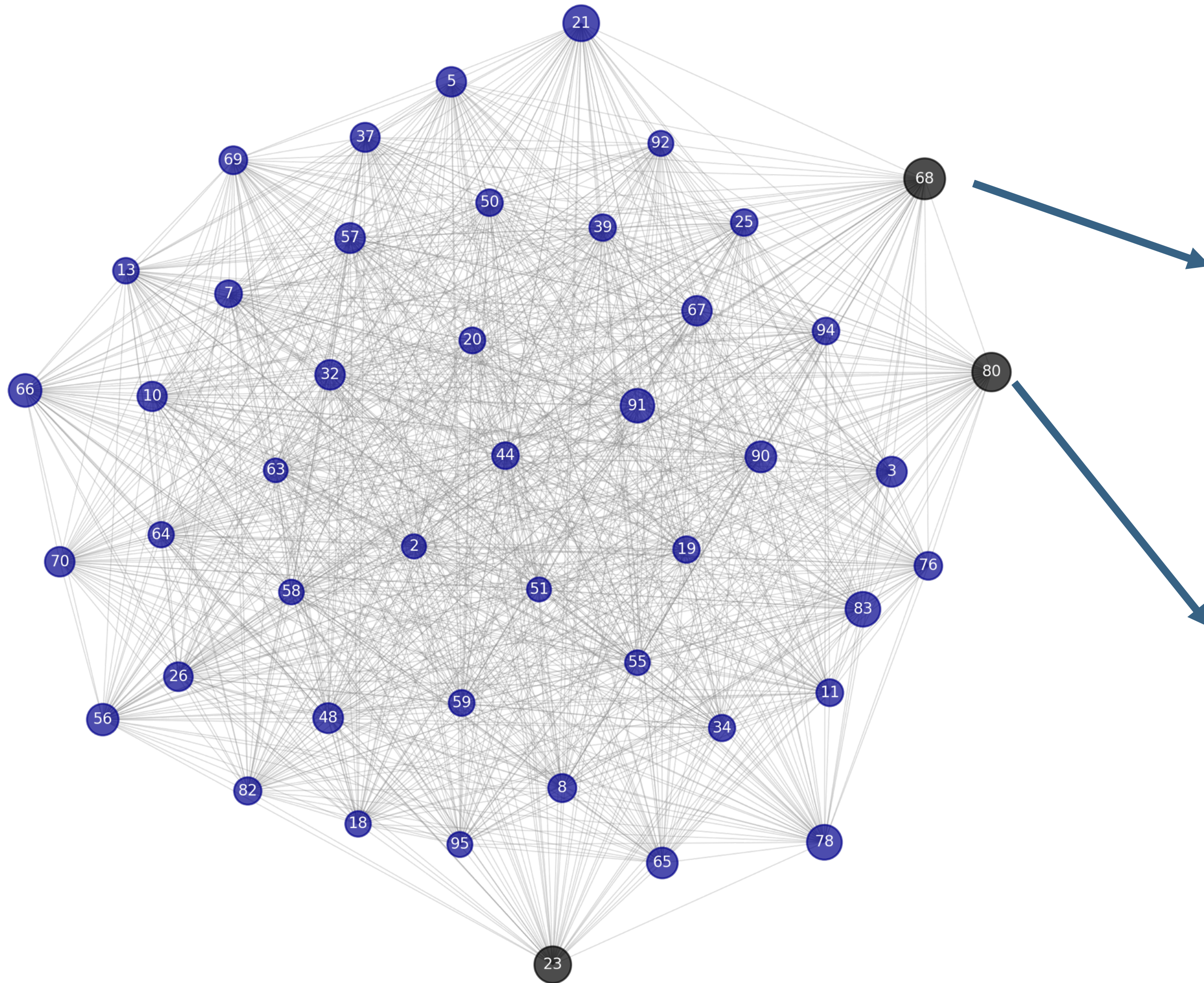
**Rand Paul**  
Votes the least in  
line with Trump;  
Libertarian



**Susan Collins**  
Voted against Trump



# Outliers



**Joe Manchin**  
Noted Bipartisan  
Voter



**Heidi Heitkamp**  
Bipartisan Voter  
Centrist

# Conclusion

The US is more divided than ever which leads to the lack of agreement across party lines. They work together a lot less than they used to.

For an administration to remain effective, members need to cooperate on an agenda.

Partisanship is driving citizens apart instead of bringing them together which results to conflict instead of compromise.