

## Topic 4: Probability to interact.

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# Used Dataset

- Preprocessed data by Viviana Amati and Jürgen Lerner
- Based on the dataset International relations by Oneal and Russett
- Expanded by a few attributes

# Used outcome variable

- Weather or not there is an interaction of a dyad in year  $t+1$  (nextInteract)

## Used explanatory variables (degrees)

- Number of interactions of state a in year t (dega\_int)
- Number of interactions of state b in year t (degb\_int)
- Difference between the numbers of interactions of state a and b (deg\_int\_diff)
- Number of alliances of state a in year t (dega\_all)
- Number of mid's of state a in year t (dega\_mid)

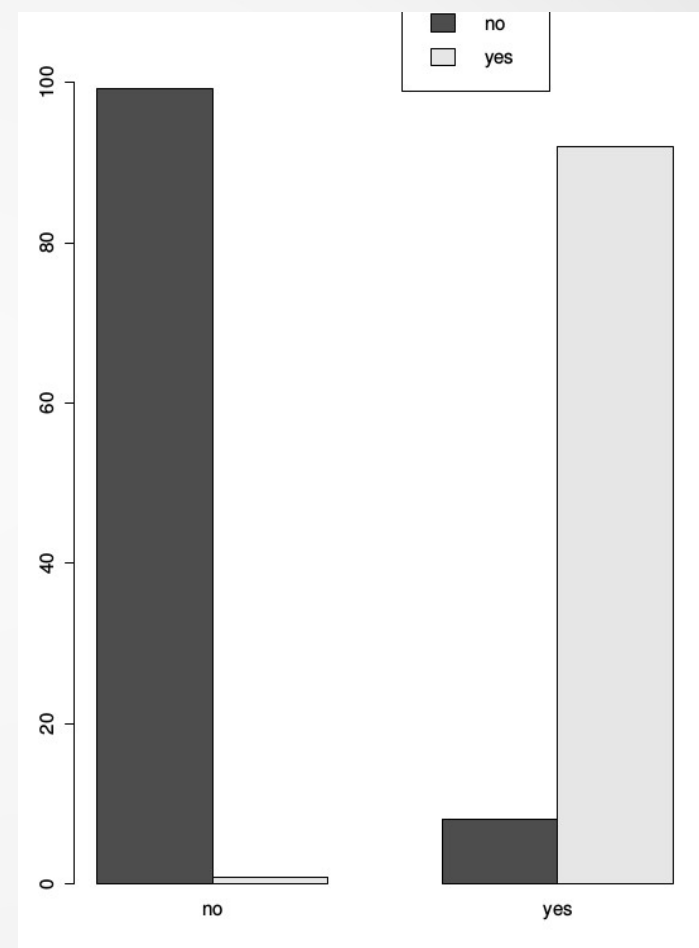
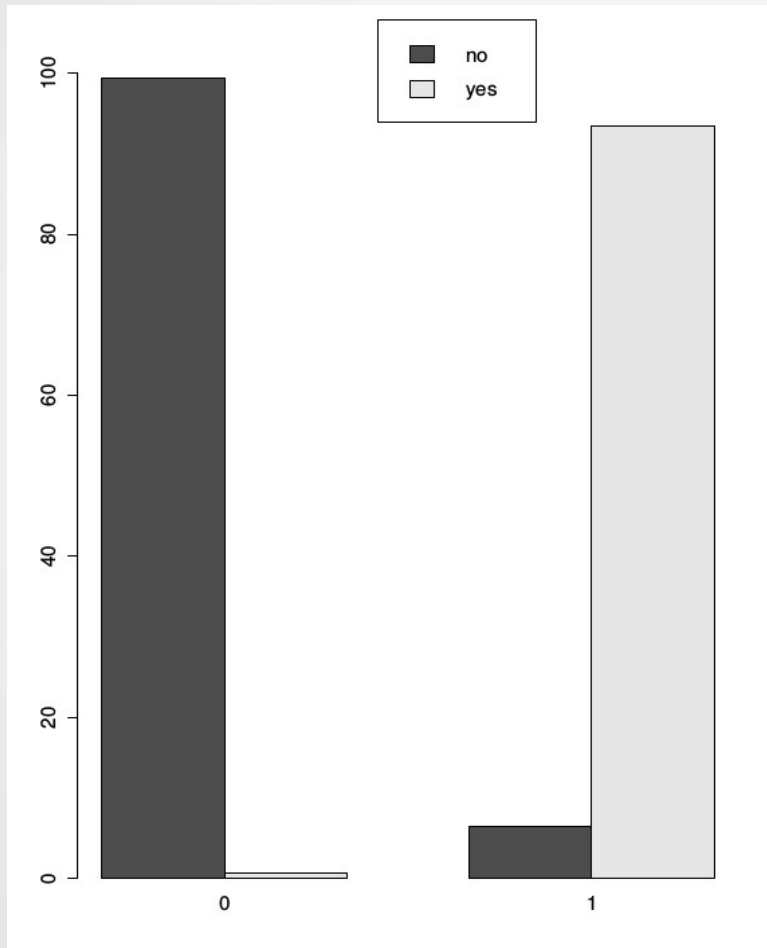
## Used explanatory variables (covariates)

- Logarithmic Trade (logtrade)
- Logarithmic Distance (logdistance)
- Contiguity (contig)
- Sum of major powers in a given dyad (summajp)
- Difference of major powers in a given dyad (diffmajp)
- Joint IGO's of a given dyad (igos\_i)
- Natural logarithm of the national material capability ratio (lncaprat)
- Mean form of government in a given dyad (meangov)
- Difference between the form of governments in a given dyad (diffgov)

## Used explanatory variables (past interaction)

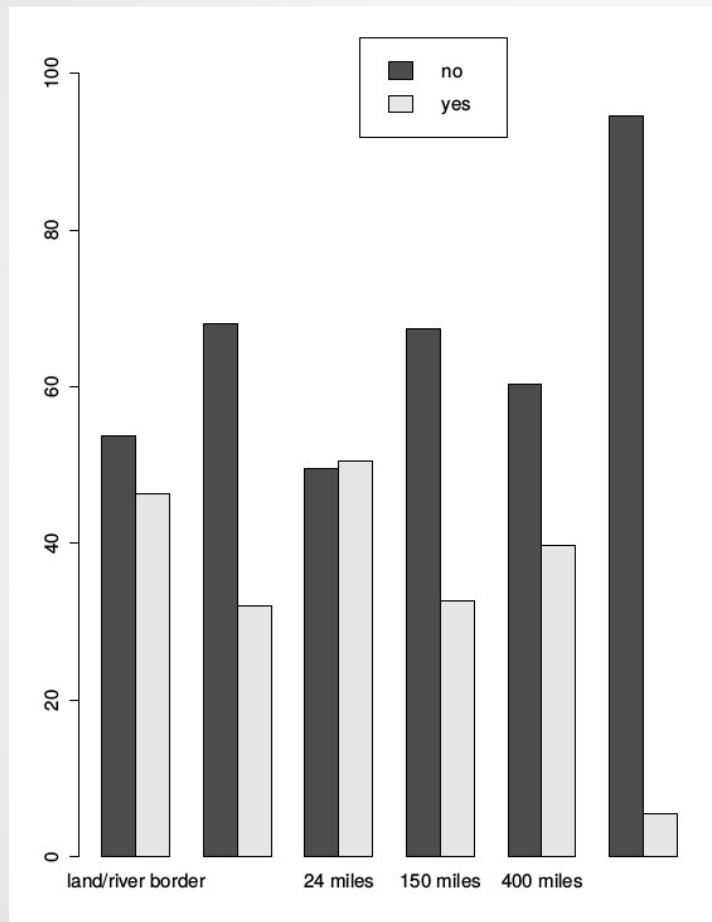
- Interaction of a dyad in year  $t$
- Interaction of a dyad in year  $t-1$

## Graphics: Past interaction (left: t, right: t-1)



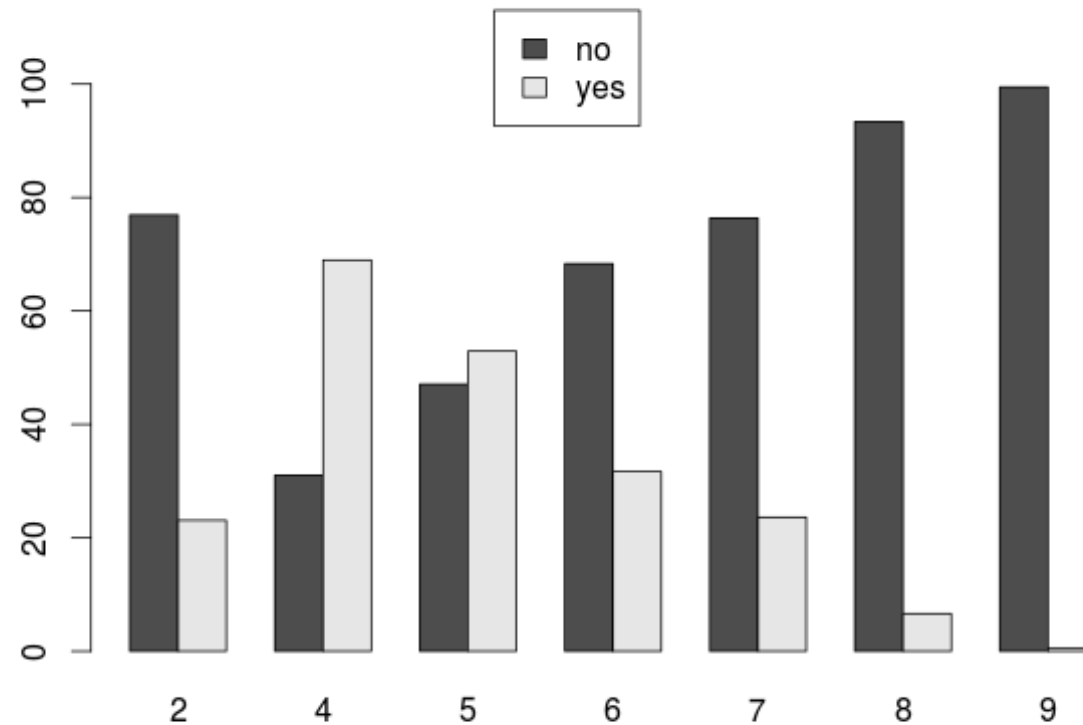


# Graphic: Contiguity

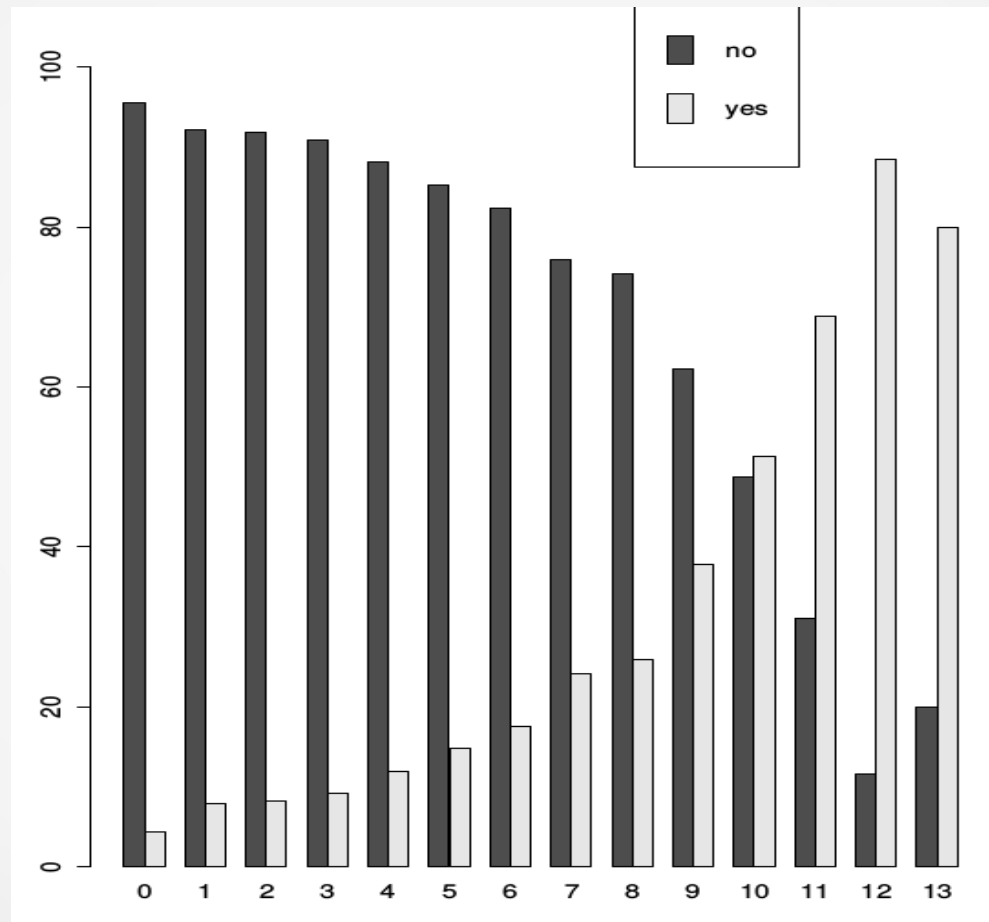


- From left to right:  
Land/river border, <12 miles, <24 miles, <150 miles, <400 miles, non adjacent.

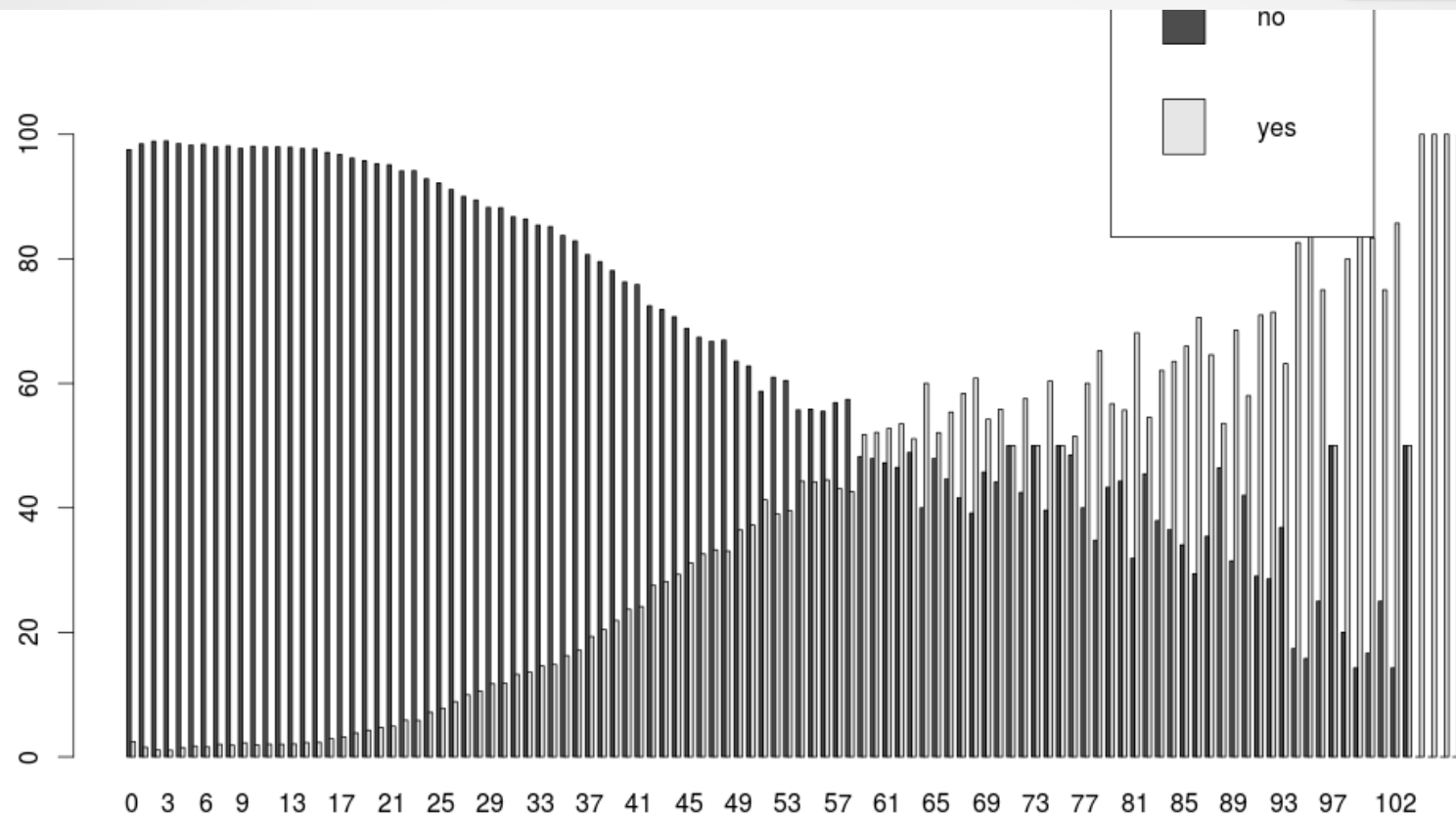
# Graphic: Logarithmic Distance



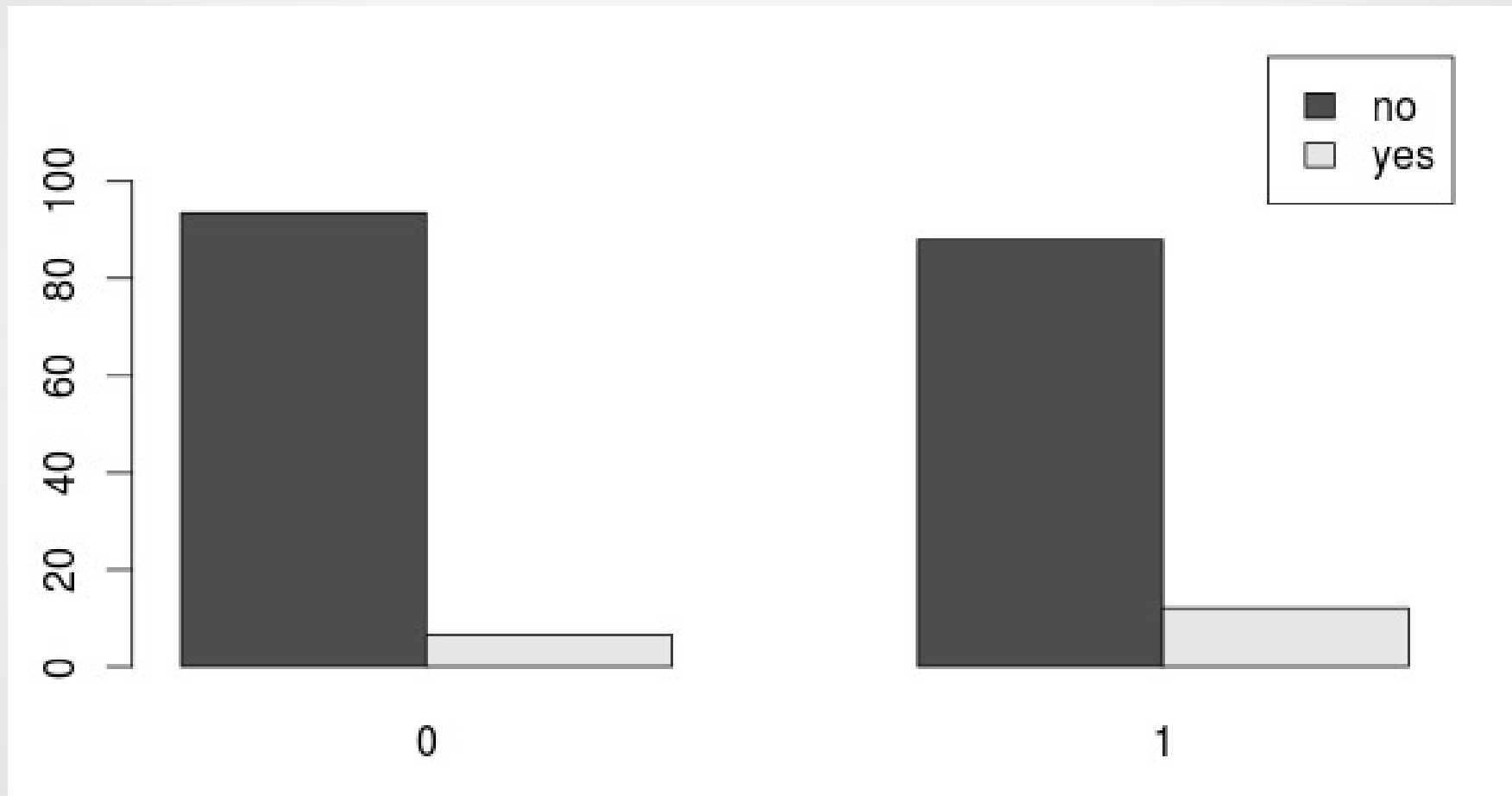
# Graphic: Logarithmic Trade



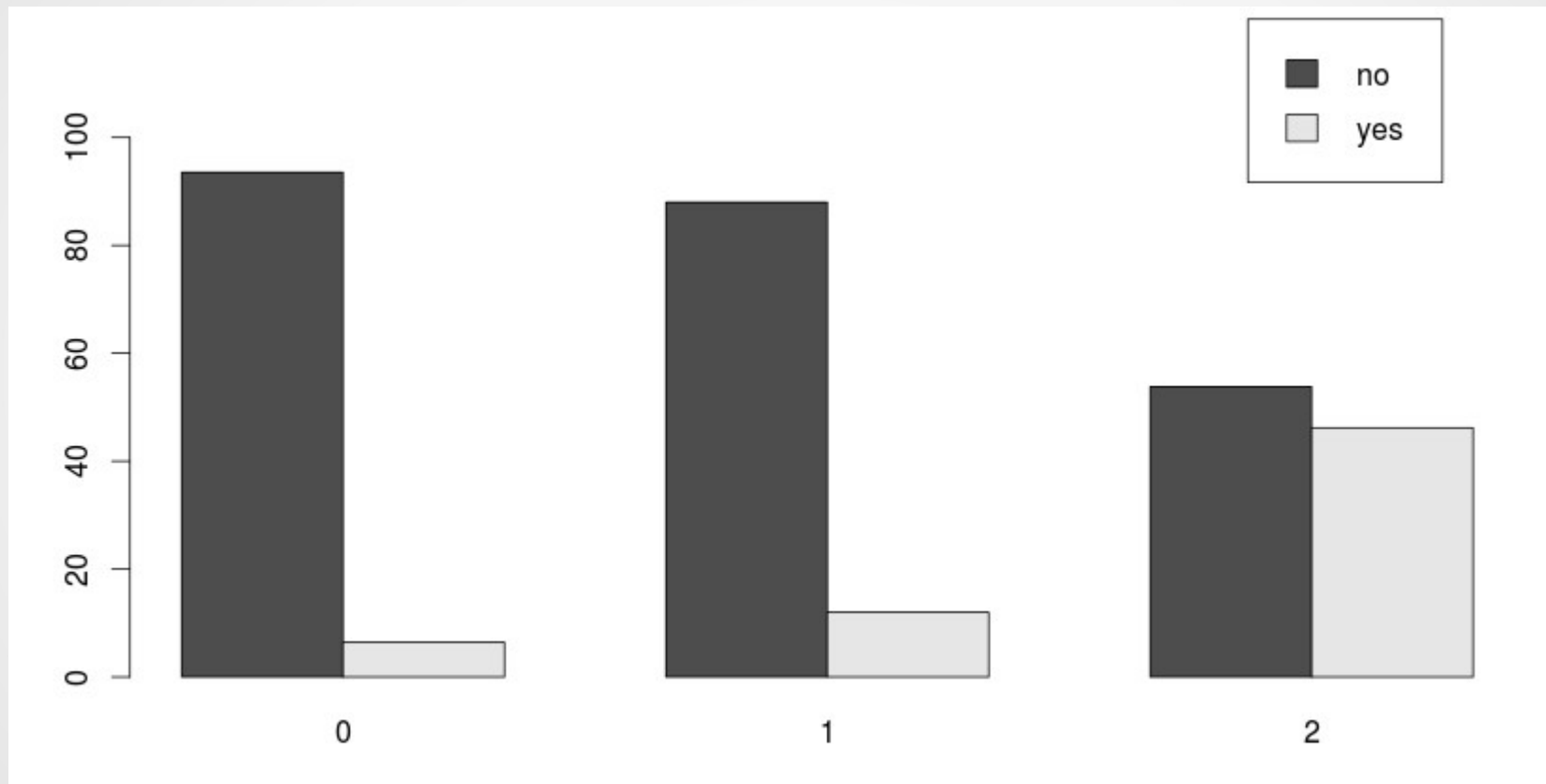
# Graphic: IGO's



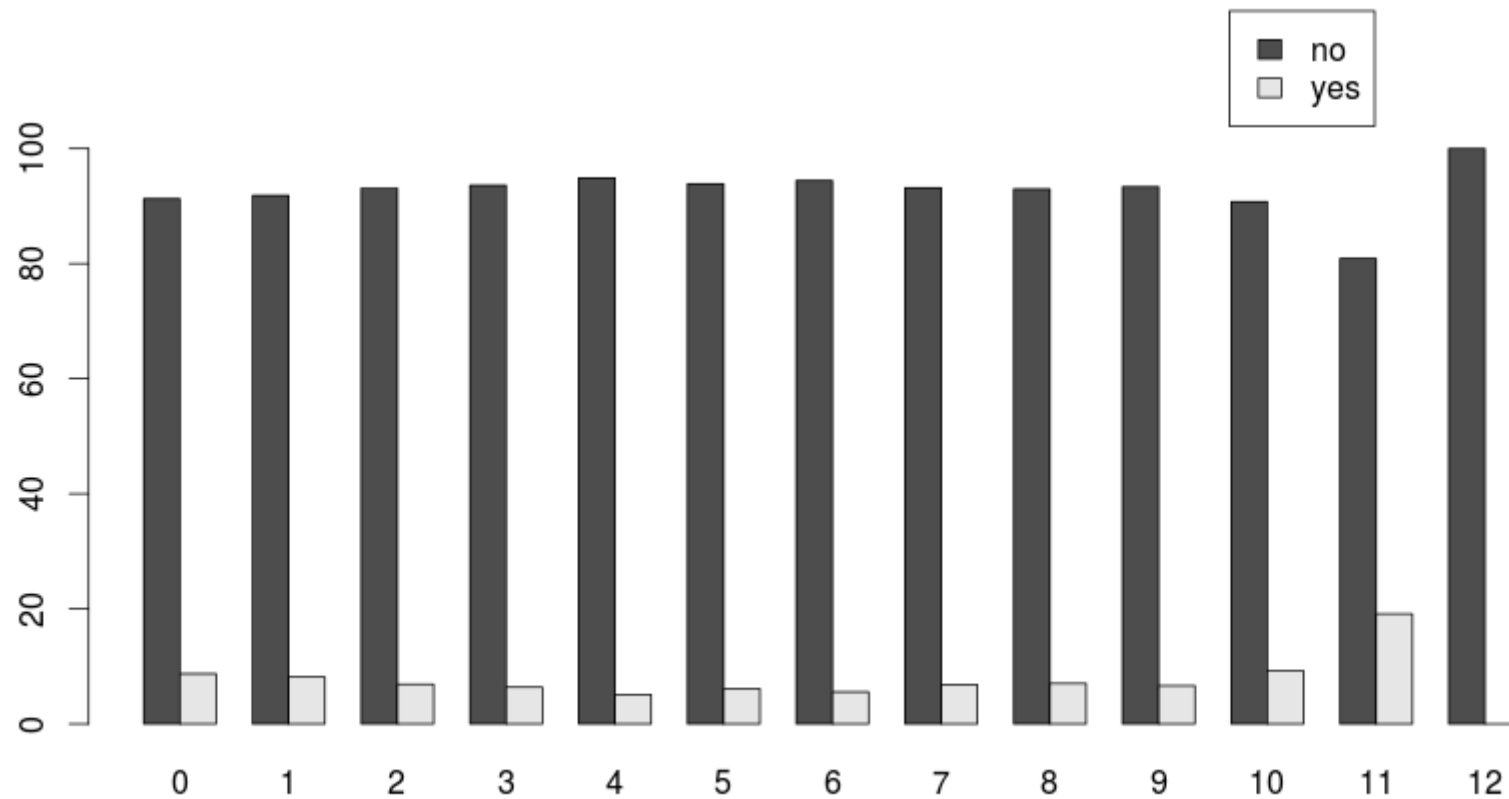
## Graphic: Difference in major powers



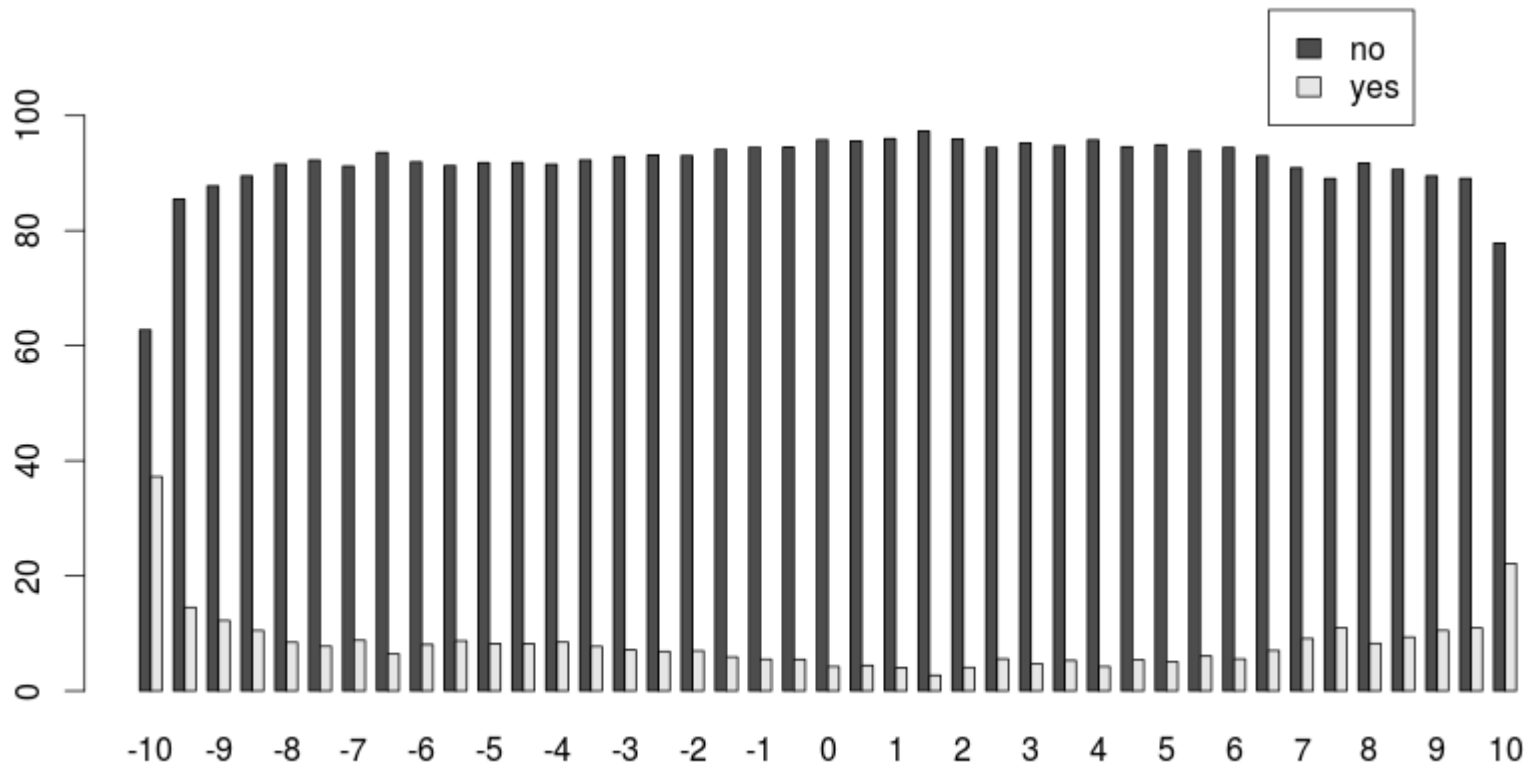
# Graphic: Sum major power



## Graphic: In national material capability ratio

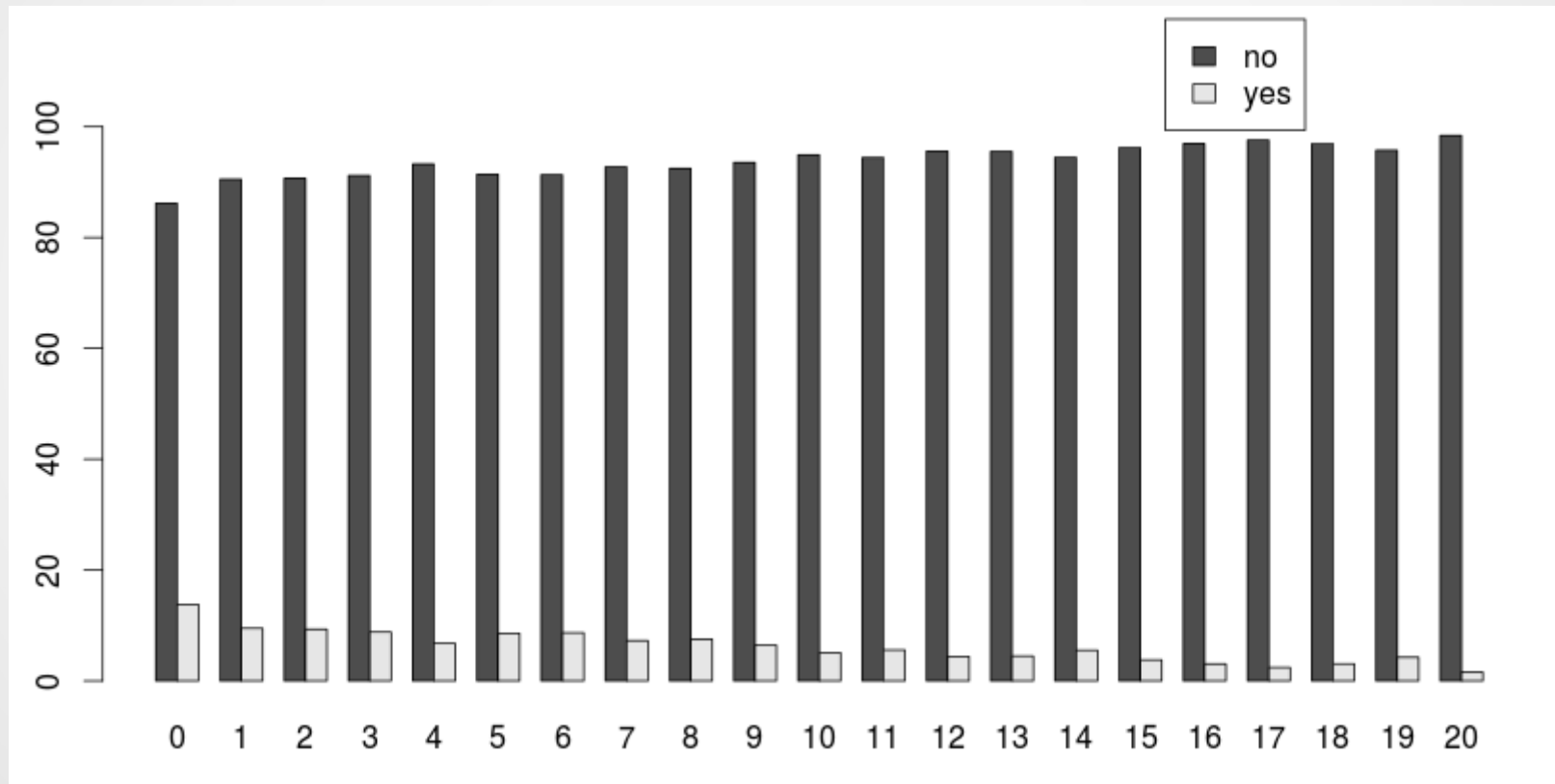


# Graphic: Mean form of government

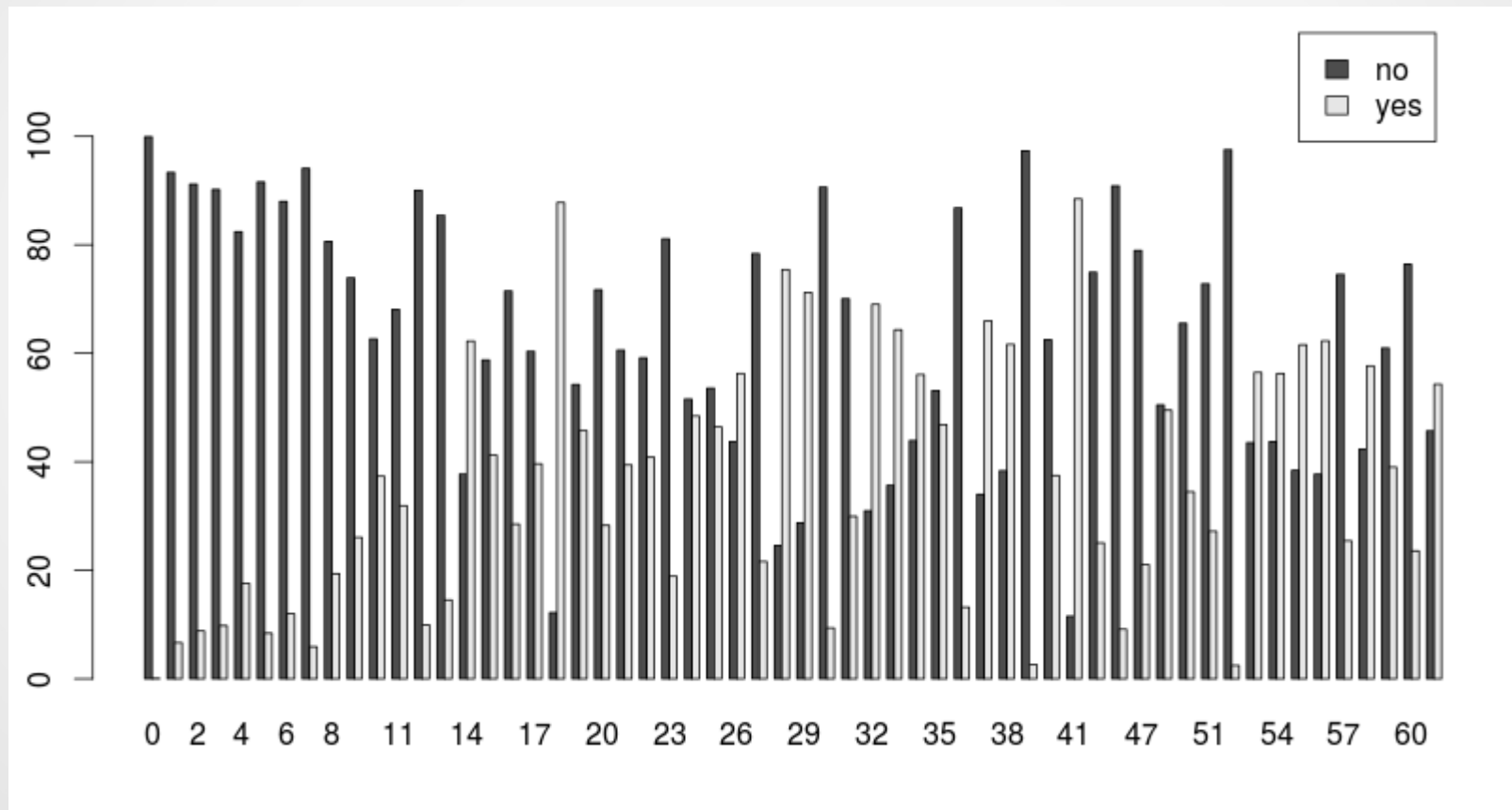




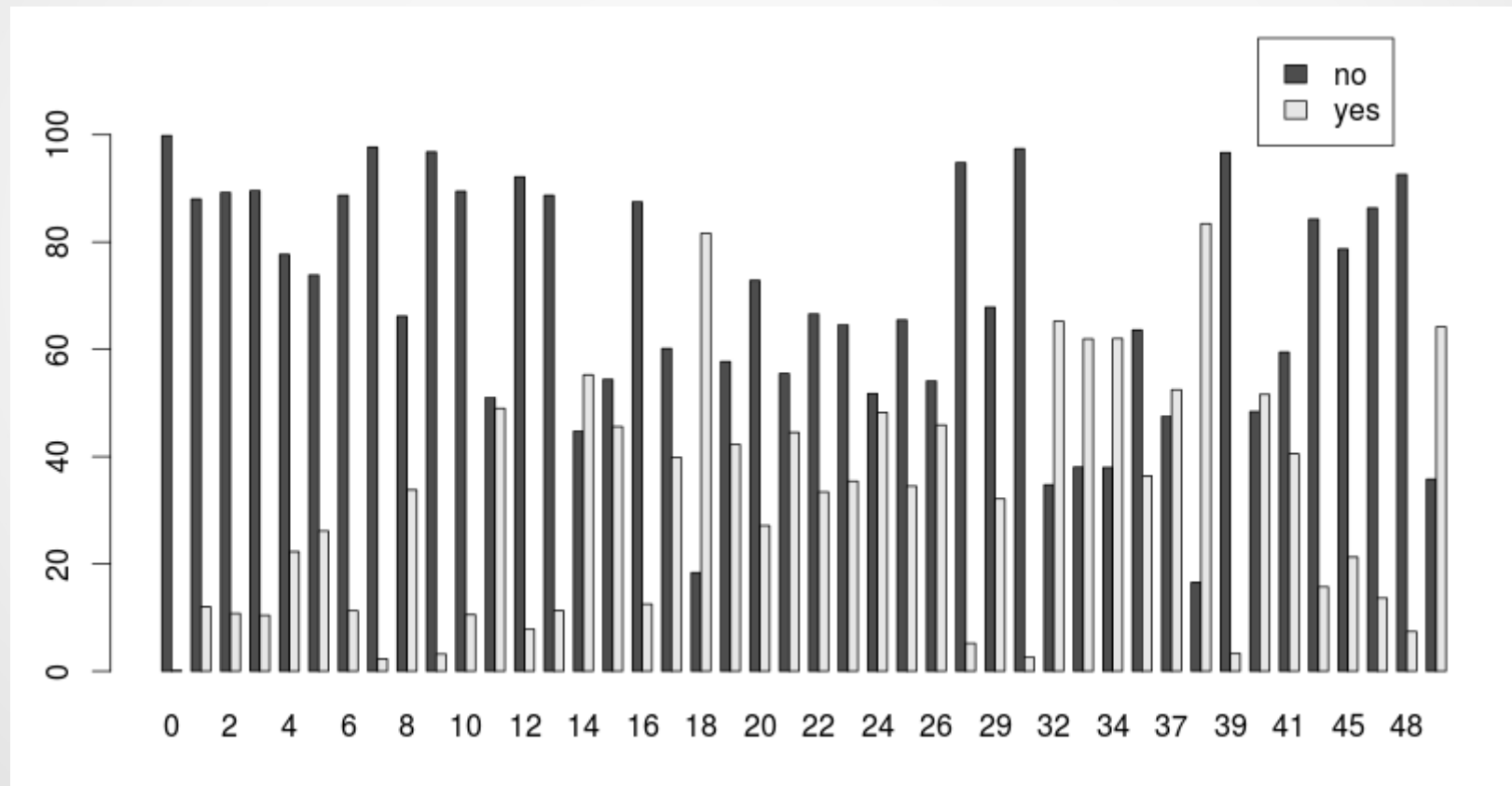
## Graphic: Difference in form of government



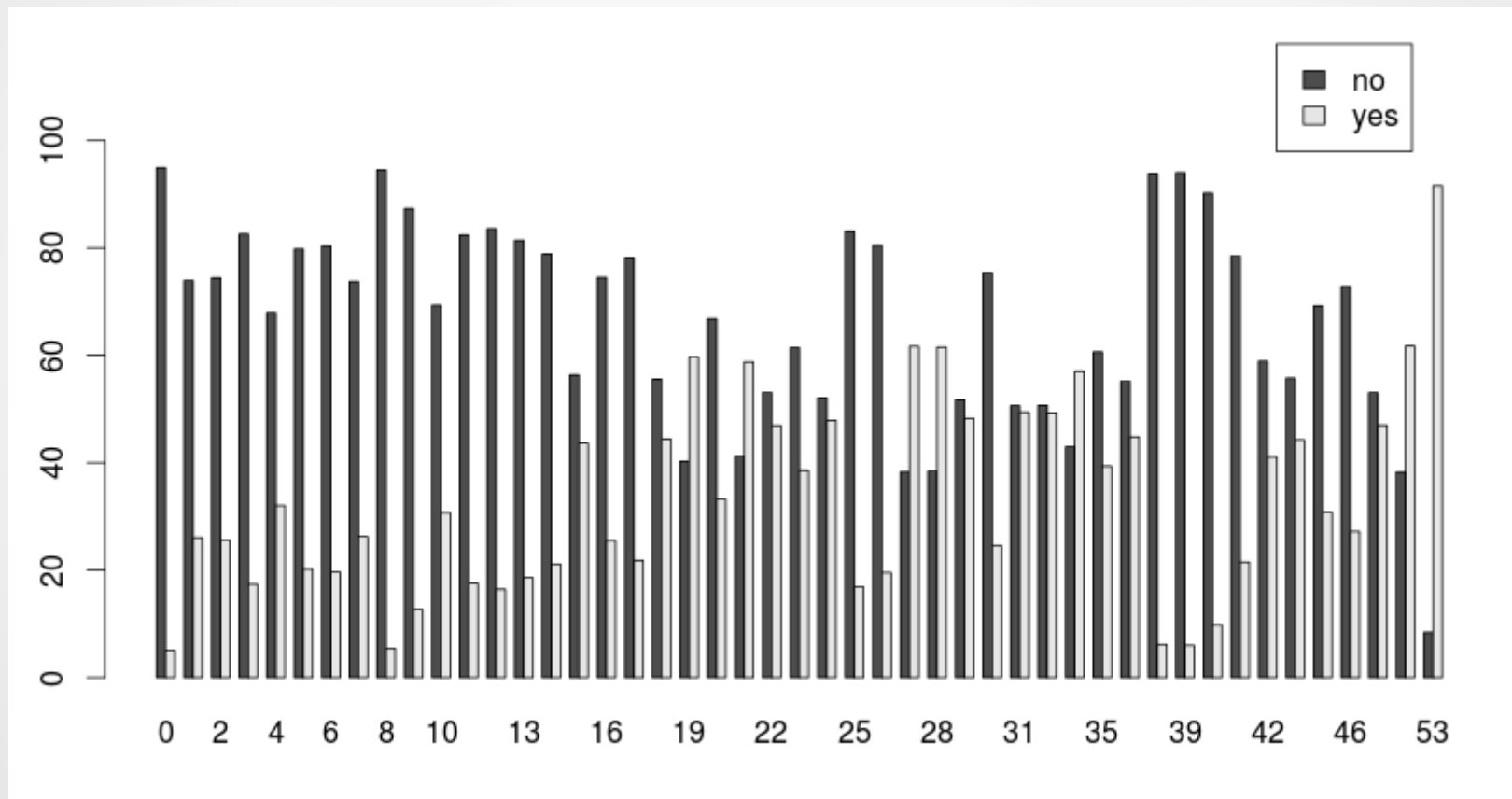
# Graphic: Degree interaction state a



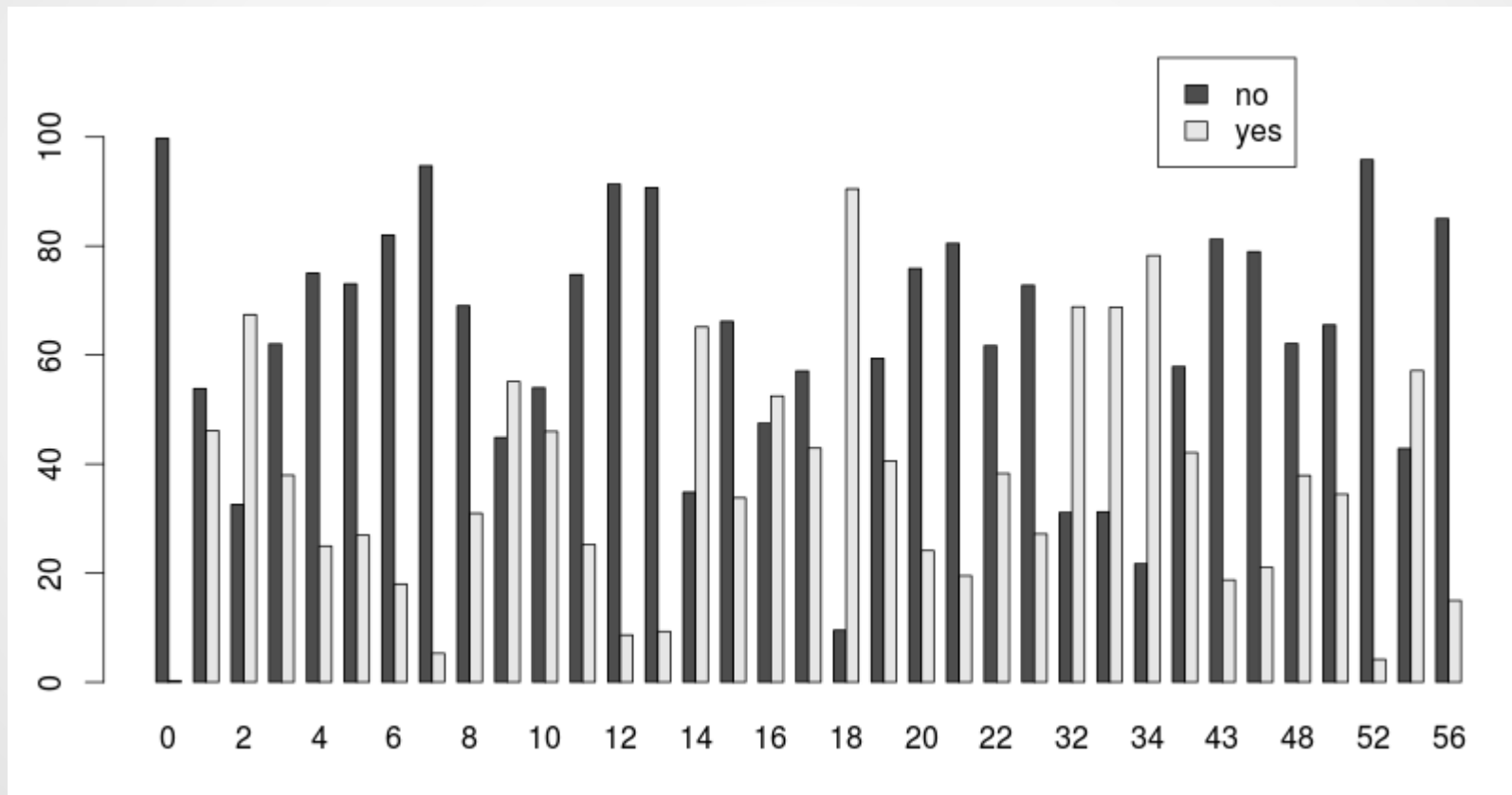
# Graphic: Degree interaction state b



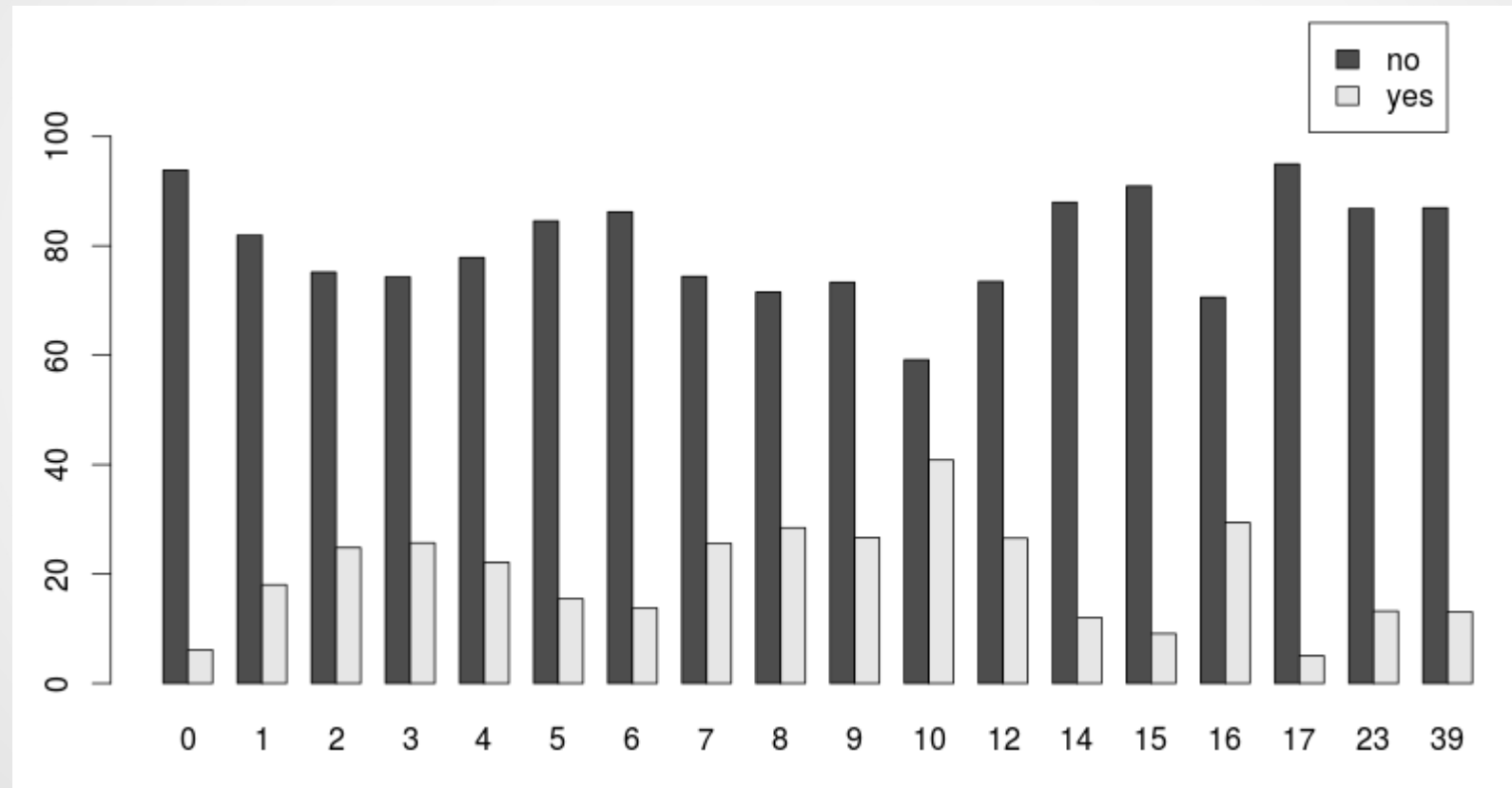
## Graphic: Difference in degree of interaction



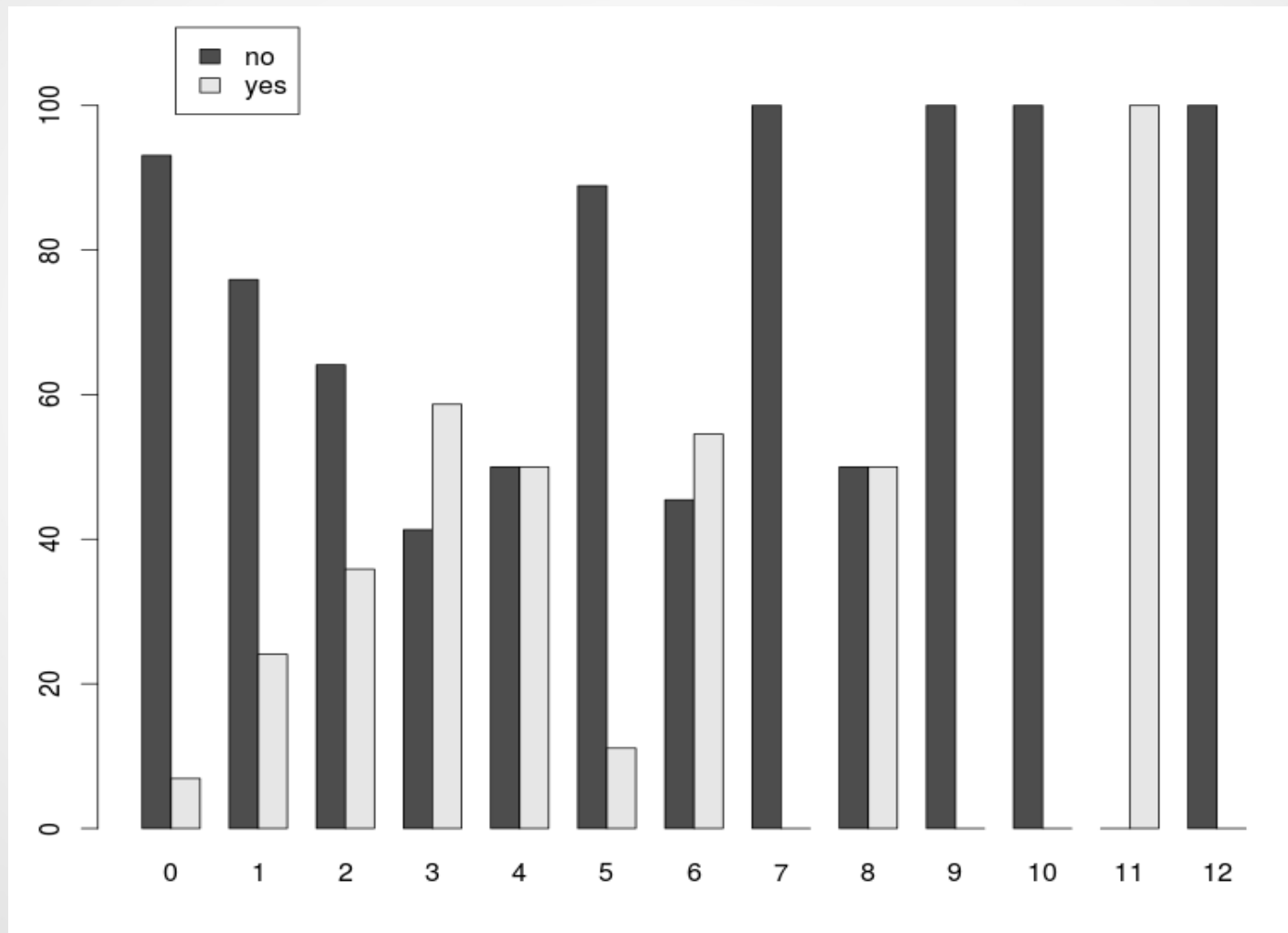
# Graphic: Degree alliances state a



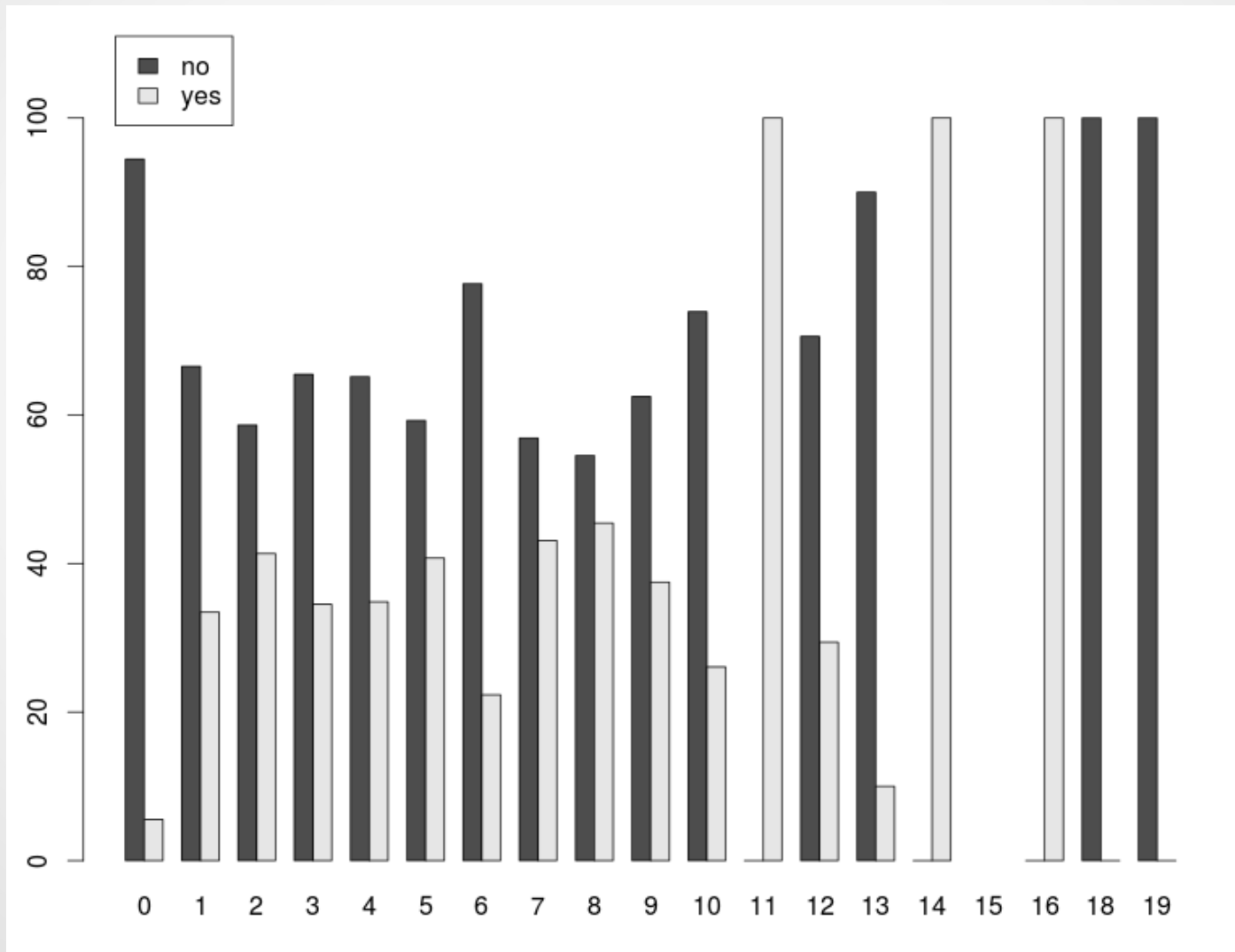
# Graphic: Degree mid's state a



# Graphic: Enemy of my enemy

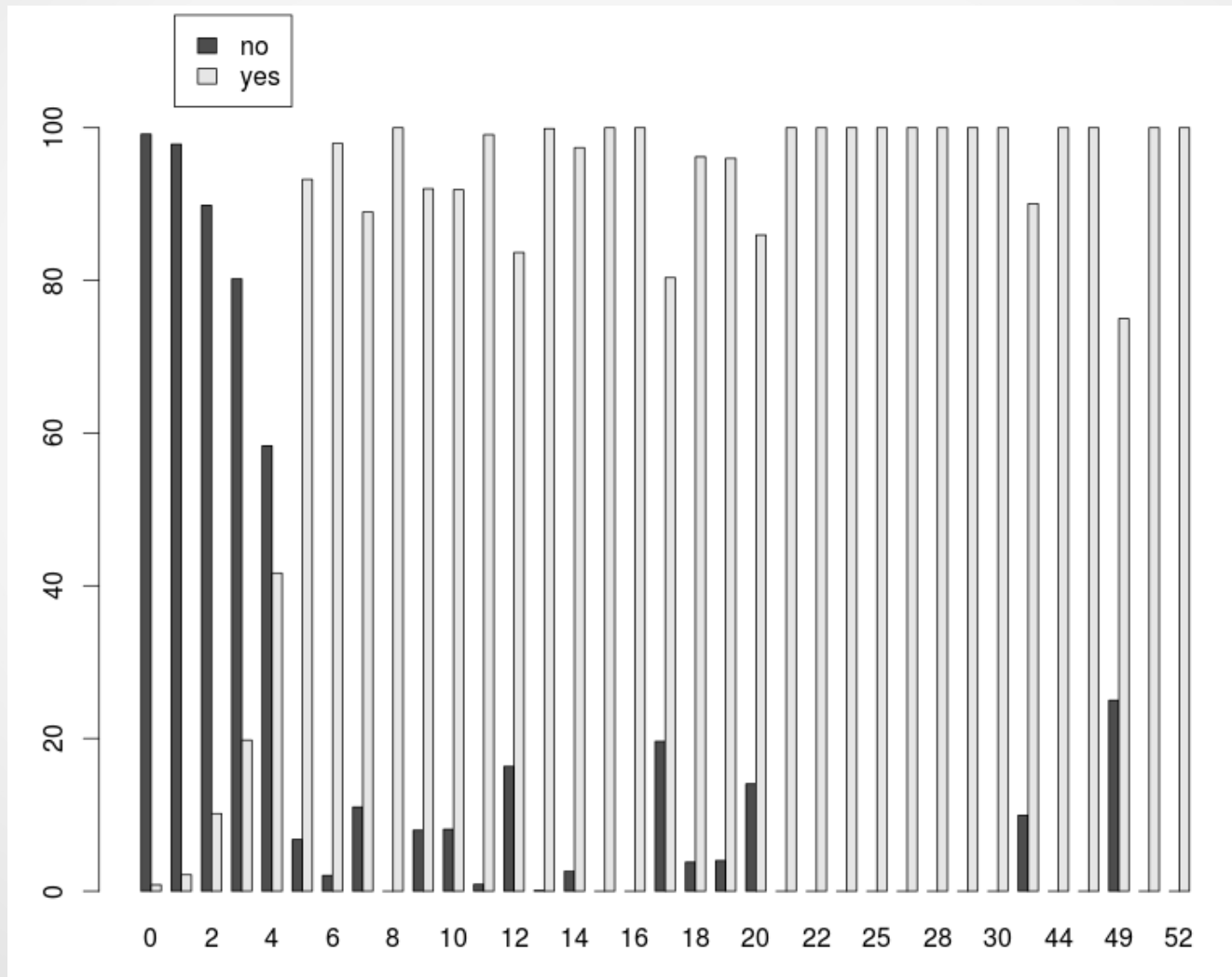


# Graphic: Enemy of my friend





# Graphic: Friend of my friend



# Table

	Model 1	Model 2	Model 3	Model 4
(Intercept)	-5.21*** (0.02)	1.26*** (0.14)	-0.30* (0.15)	-0.32* (0.16)
Interaction in year t	5.63*** (0.04)	5.47*** (0.05)	4.76*** (0.05)	4.84*** (0.06)
Interaction in year t-1	2.75*** (0.04)	2.77*** (0.05)	2.13*** (0.05)	2.10*** (0.05)
Logarithmic trade		-0.00 (0.01)	0.01 (0.01)	0.02* (0.01)
Logarithmic distance		-0.80*** (0.02)	-0.67*** (0.02)	-0.67*** (0.02)
Joint IGO's		-0.01*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)
Difference in major power		0.92*** (0.05)	0.56*** (0.05)	0.58*** (0.05)
ln capability ratio		-0.04*** (0.01)	-0.05*** (0.01)	-0.05*** (0.01)
Mean form of government		-0.01*** (0.00)	-0.04*** (0.00)	-0.05*** (0.00)
Difference in form of government		-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Interaction degree state a			0.05*** (0.00)	0.05*** (0.00)
Interaction degree state b			0.04*** (0.00)	0.04*** (0.00)
Difference in interaction degree			-0.02*** (0.00)	-0.02*** (0.00)
Enemy of enemies				-0.54*** (0.07)
Enemy of friends				-0.12*** (0.02)
Friend of friends				-0.00 (0.00)
AIC	56847.76	38149.38	34471.29	34376.60
BIC	56881.74	38259.99	34615.08	34553.57
Log Likelihood	-28420.88	-19064.69	-17222.64	-17172.30
Deviance	56841.76	38129.38	34445.29	34344.60
Num. obs.	613163	470225	470225	470225

\*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$

Tabelle 1: Statistical models

# Conclusion

- All tested explanatory variables have a significant effect on whether a dyad will interact in the next year or not.



Thanks for listening.  
Any questions?