PLSC 476: Empirical Legal Studies

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February 25, 2021

Topic: SCOTUS and Organized Labor

Central questions:

- Are Supreme Court justices' votes on labor union-related issues associated with their broader political ideology?
- Has the strength or nature of that association changed over time?

Theory & Expectations

Linkages:

- **Economic Interests**
  - Union support for the Democratic Party
  - Corporate support for the Republican Party
- **Social/Cultural**
  - Left values: collectivism
  - Right values: individualism

Expectation:

> *Supreme Court justices who are more liberal (farther to the left on the political spectrum) will be more likely to support labor unions than those who are more conservative (farther to the right on the political spectrum).*

From the Codebook: `issueArea`

A14 varIssuesAreas

14 Distinct Values

varIssuesAreas is used in conjunction with:
issueArea

Values:

1	Criminal Procedure
2	Civil Rights
3	First Amendment
4	Due Process
5	Privacy
6	Attorneys
7	Unions
8	Economic Activity
9	Judicial Power
10	Federalism
11	Interstate Relations

From the Codebook: `decisionDirection`

2. In the context of issues pertaining to unions and economic activity, liberal (2)=

- pro-union except in union antitrust where liberal = pro-competition

.

...

conservative (1)= reverse of above

Ideology Measures

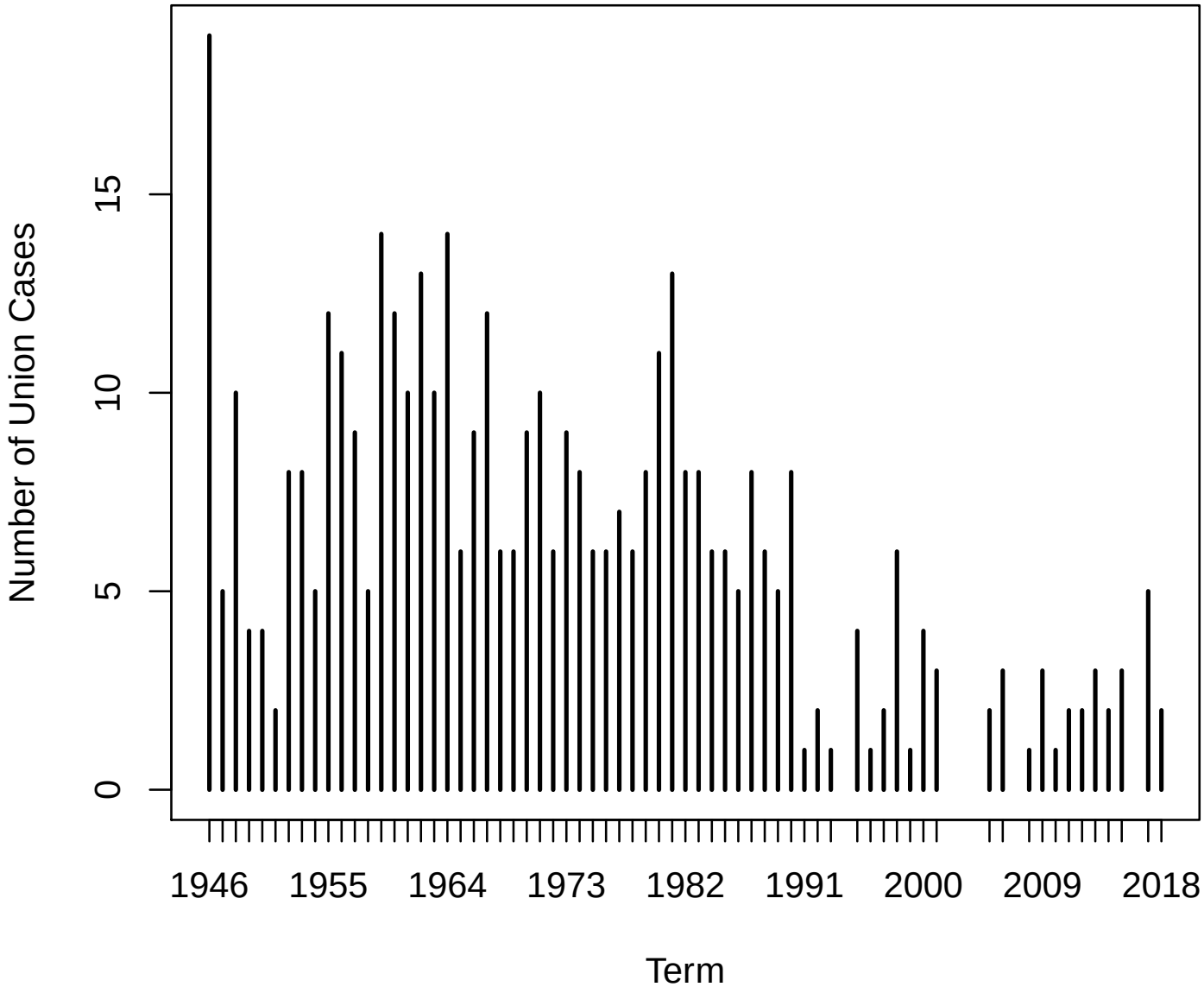
- "Segal-Cover" Scores
  - Measure left/right ideology: "liberalism"
  - Based on content analyses of newspaper editorials from his/her nomination (pre-confirmation)
  - *One value per justice* (do not change over time)

- "Martin-Quinn" Scores
  - Measure left/right ideology: "conservatism"
  - Based on the justices' votes while they are on the Court (via a psychometric model)
  - Data contain one score for each justice for each term on the Court; scores can (but need not) change over time

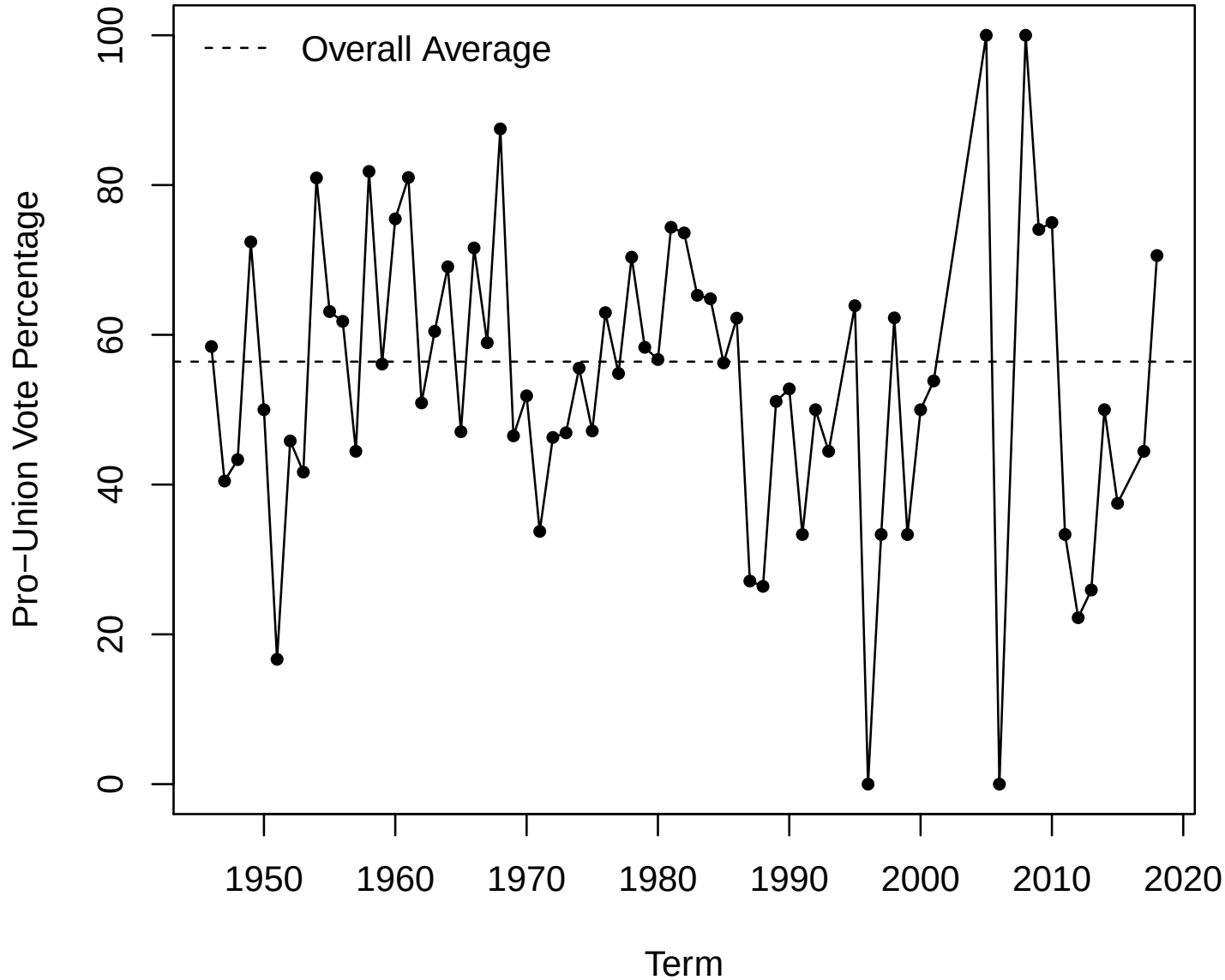
Part I: Aggregate Analysis By Term

- Q: In *terms* when there are many liberal justices on the Court, is the percentage of pro-labor votes higher?
- Unit of analysis / aggregation: Supreme Court Term
- $N = 74$ terms (OT1946 - 2019) with missingness
- Outcome: Percentage of votes in cases involving union issues which were in a pro-labor direction
- Predictor: Average liberalism of the justices sitting on the Court during that term

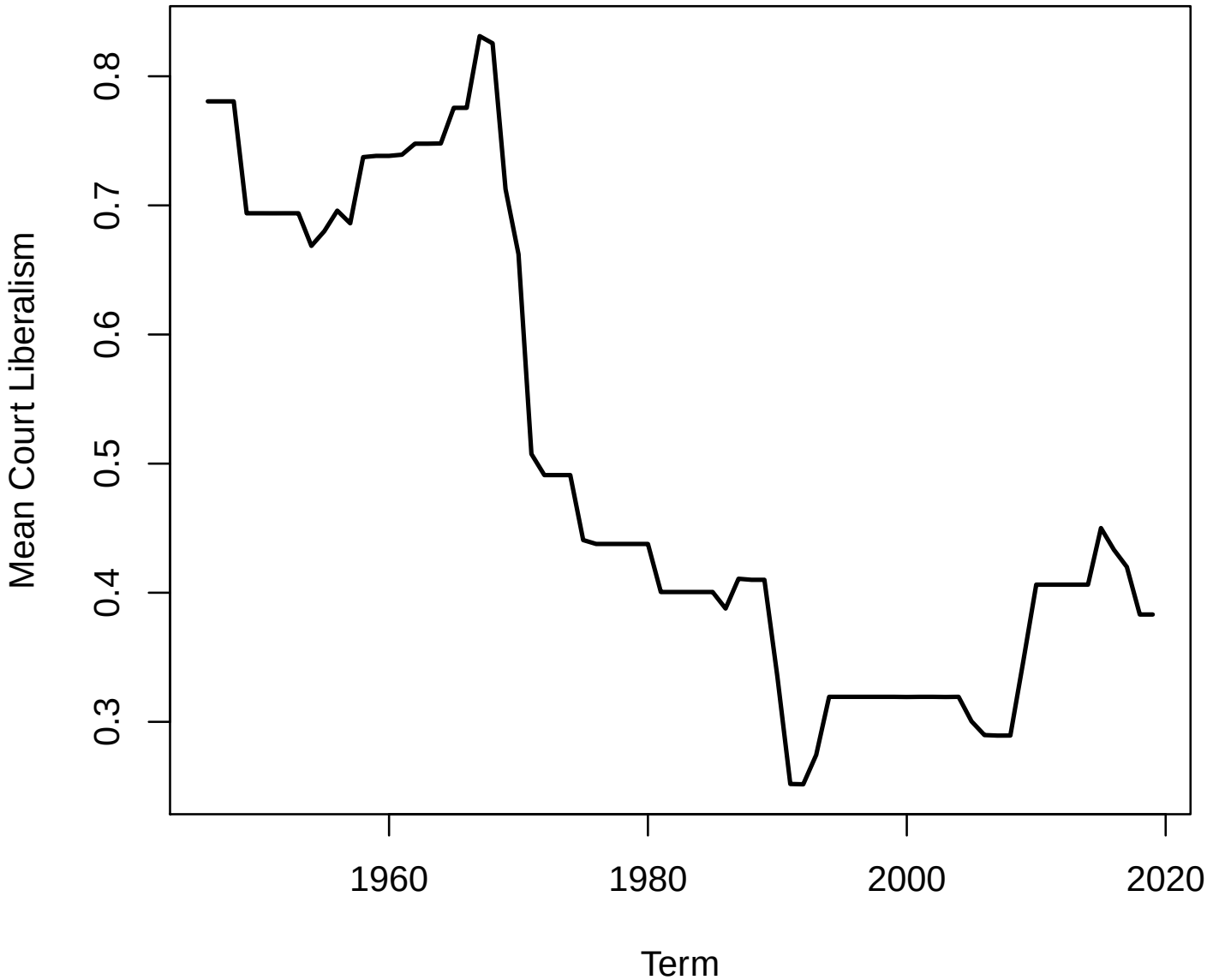
Number of Union Cases By Term



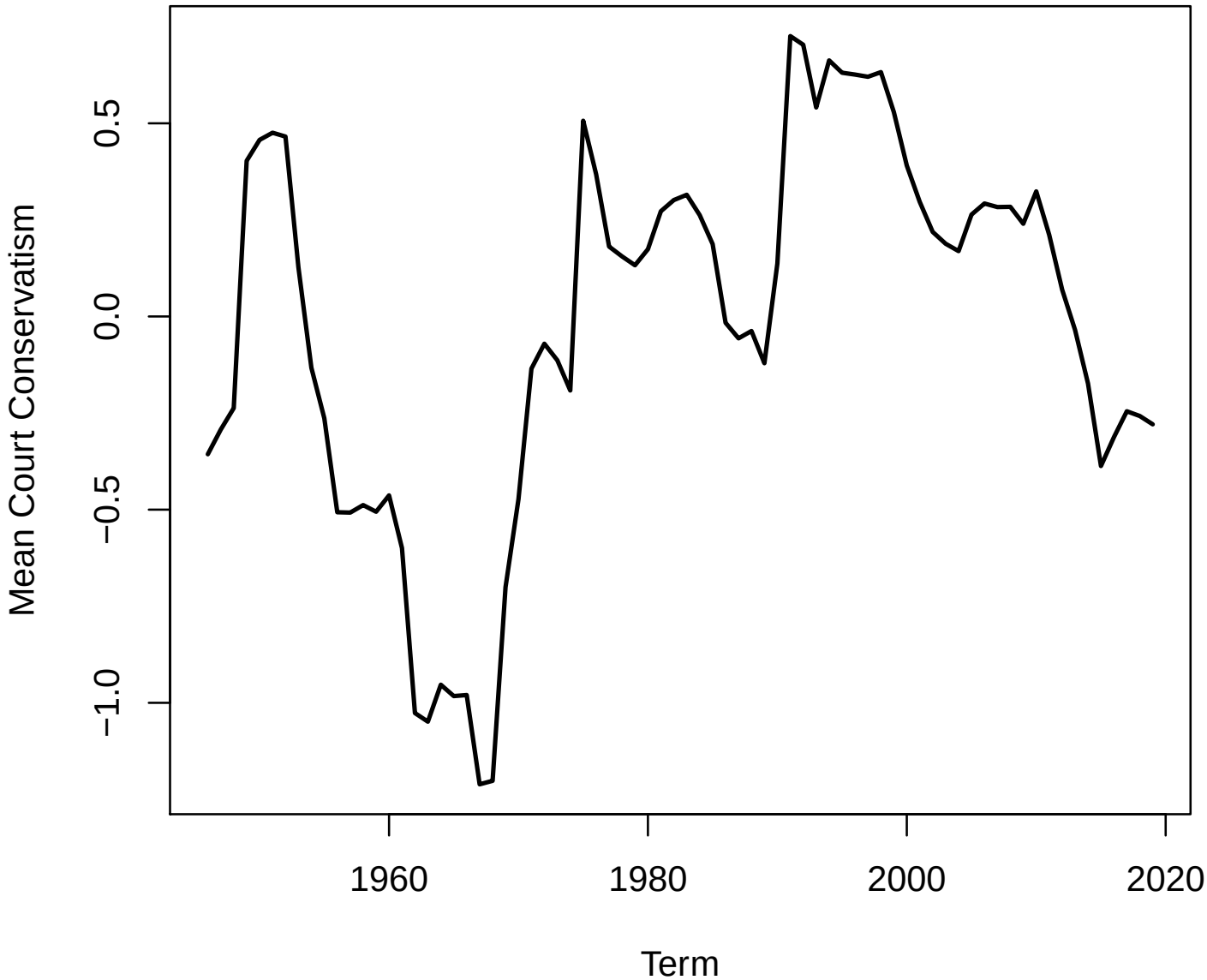
Percentage of Pro-Union Votes, By Term



Mean Segal-Cover Liberalism By Term



Mean Martin-Quinn Conservatism By Term

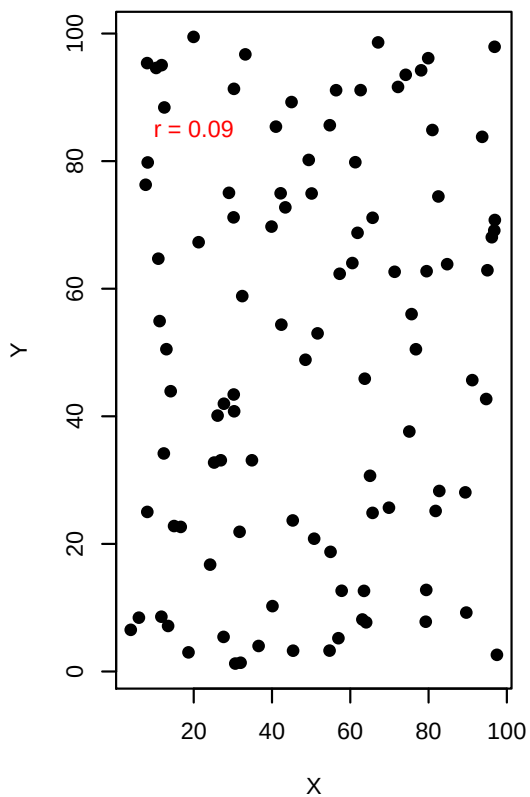


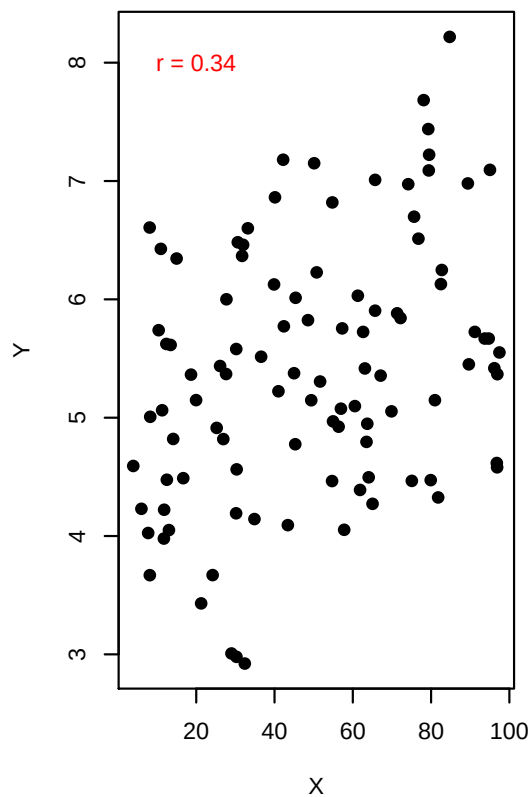
Refresher: Pearson's r

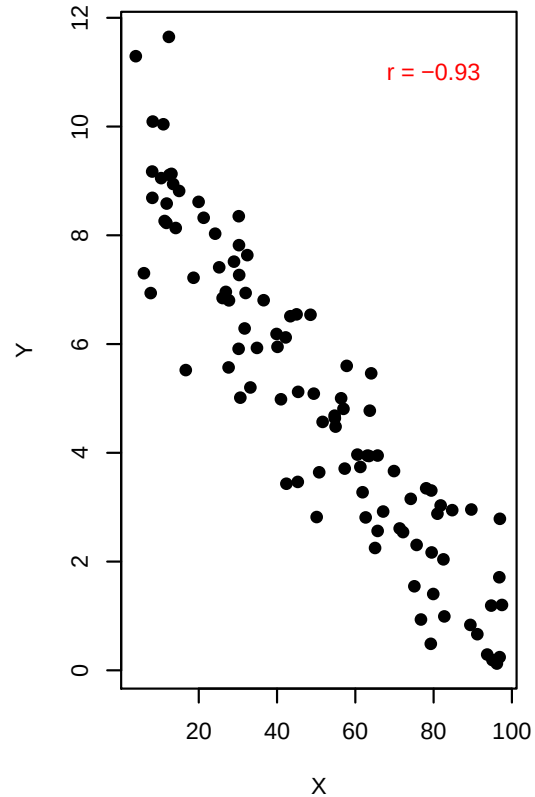
$$
\begin{aligned}
r &= \frac{\sum_{i=1}^{N}(X_i - \bar{X})(Y_i - \bar{Y})}{\sqrt{\sum_{i=1}^{N}(X_i - \bar{X})^2}\sqrt{\sum_{i=1}^{N}(Y_i - \bar{Y})^2}} \\
&= \frac{\text{Cov}(X, Y)}{\text{S.D.}(X)\text{S.D.}(Y)}
\end{aligned}
$$

- Measures the *strength* and *direction* of the *linear association* between two variables
- $r \in [-1, 1]$
- $r = 0 \leftrightarrow$ no linear association

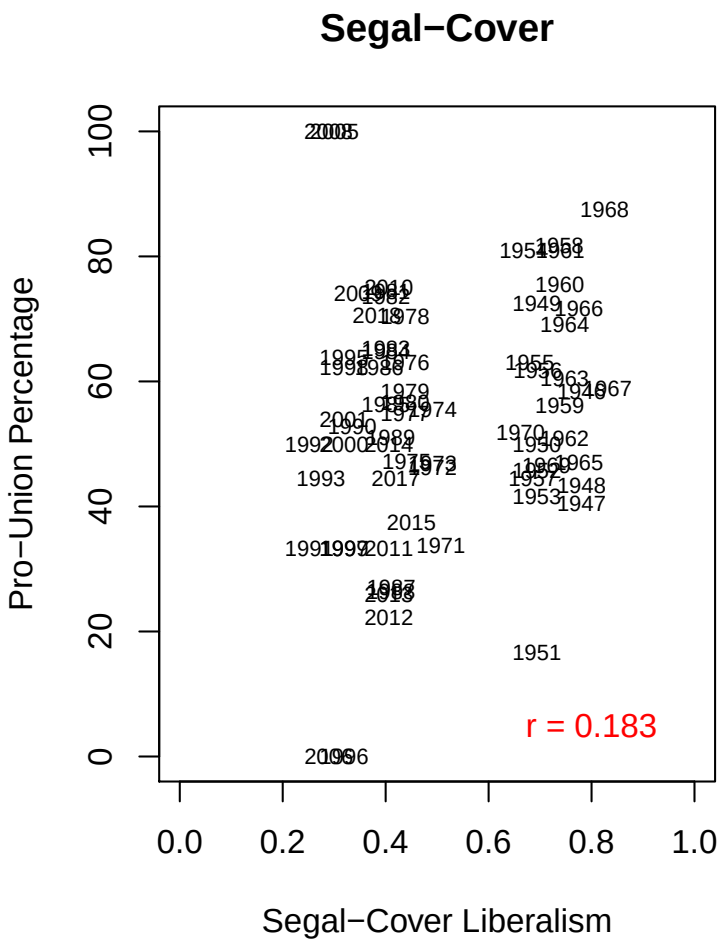
Pearson's r, Illustrated

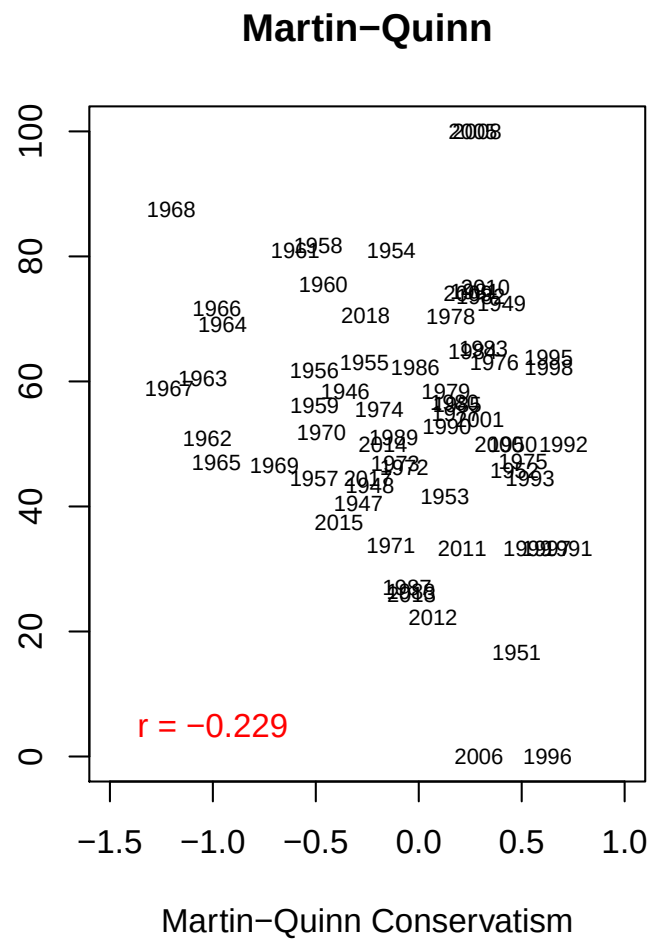




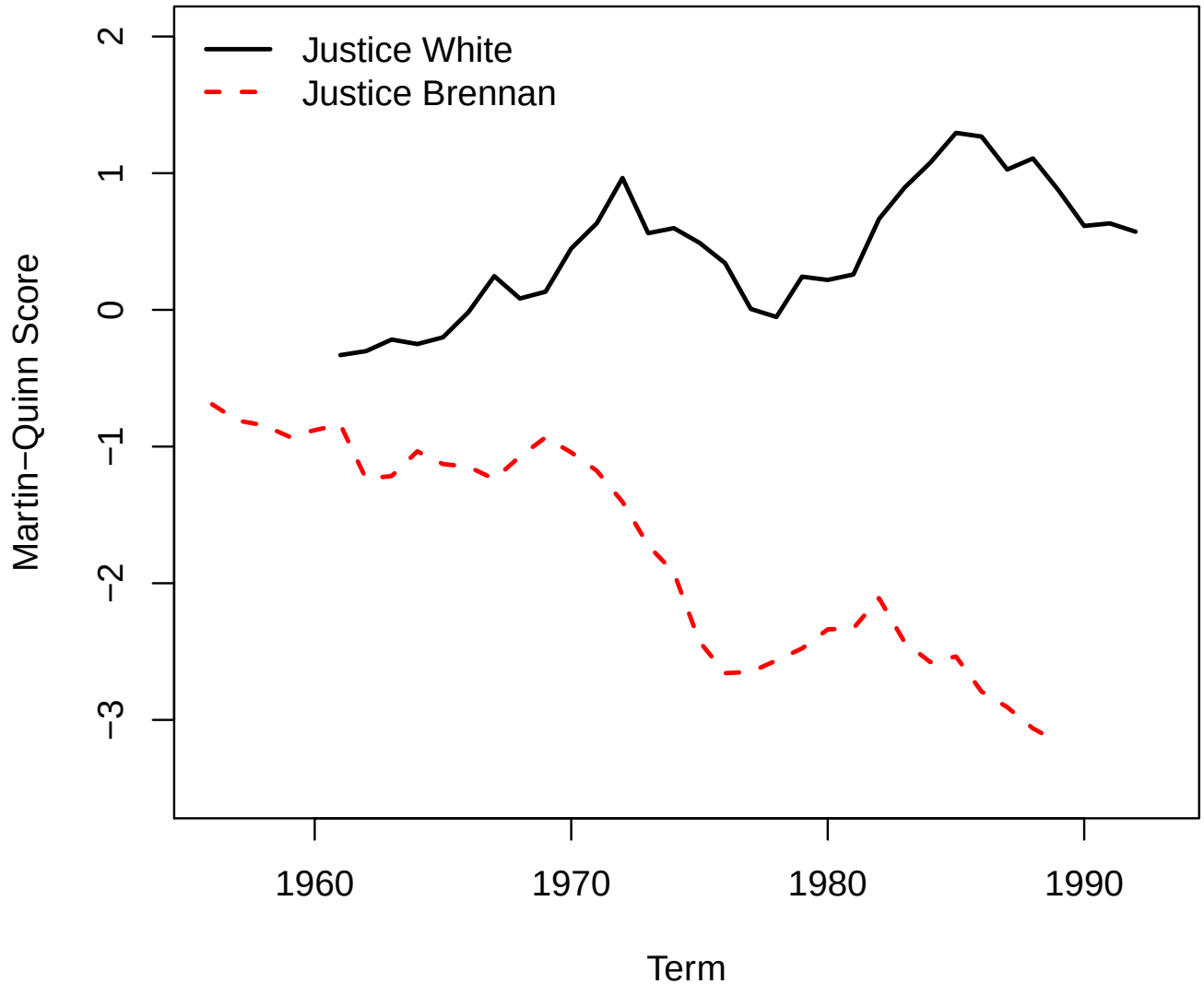


Ideology and Pro-Union Voting: By Term





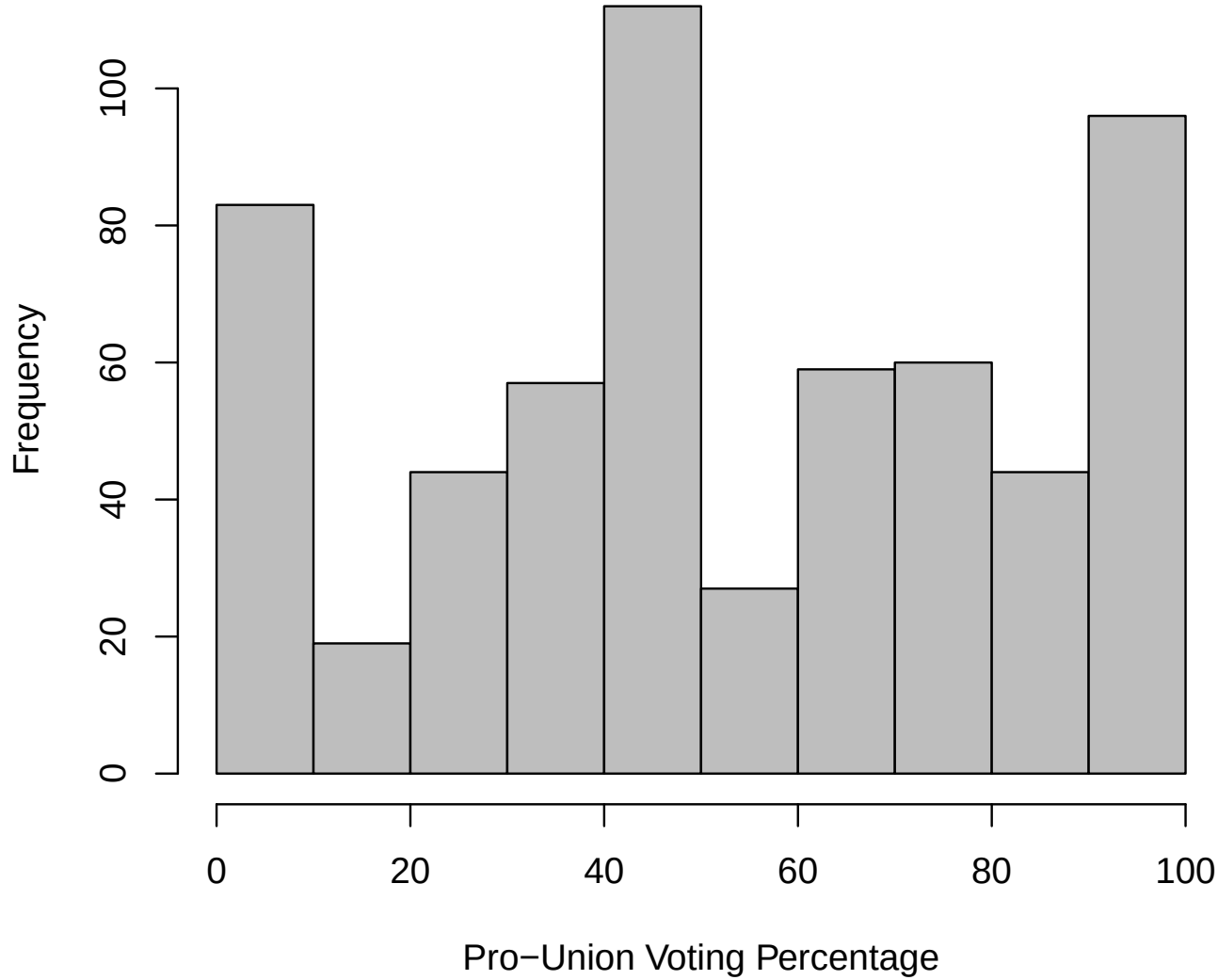
Two Justices' Ideology, By Term



Part II: Analysis By Justice-Term

- Q: Do justices who are more liberal in any given term vote in a pro-union direction more often during that term?
- Unit of analysis / aggregation: the "Justice-Term" (one line of data per justice per term)
- $N = 601$ justice-terms (38 justices across 67 different terms)
- Outcome: Percentage of pro-labor votes cast by that justice in that term
- Predictor: The justice's ideology during that term

Pro-Union Voting, By Justice and Term



Refresher: Linear Regression

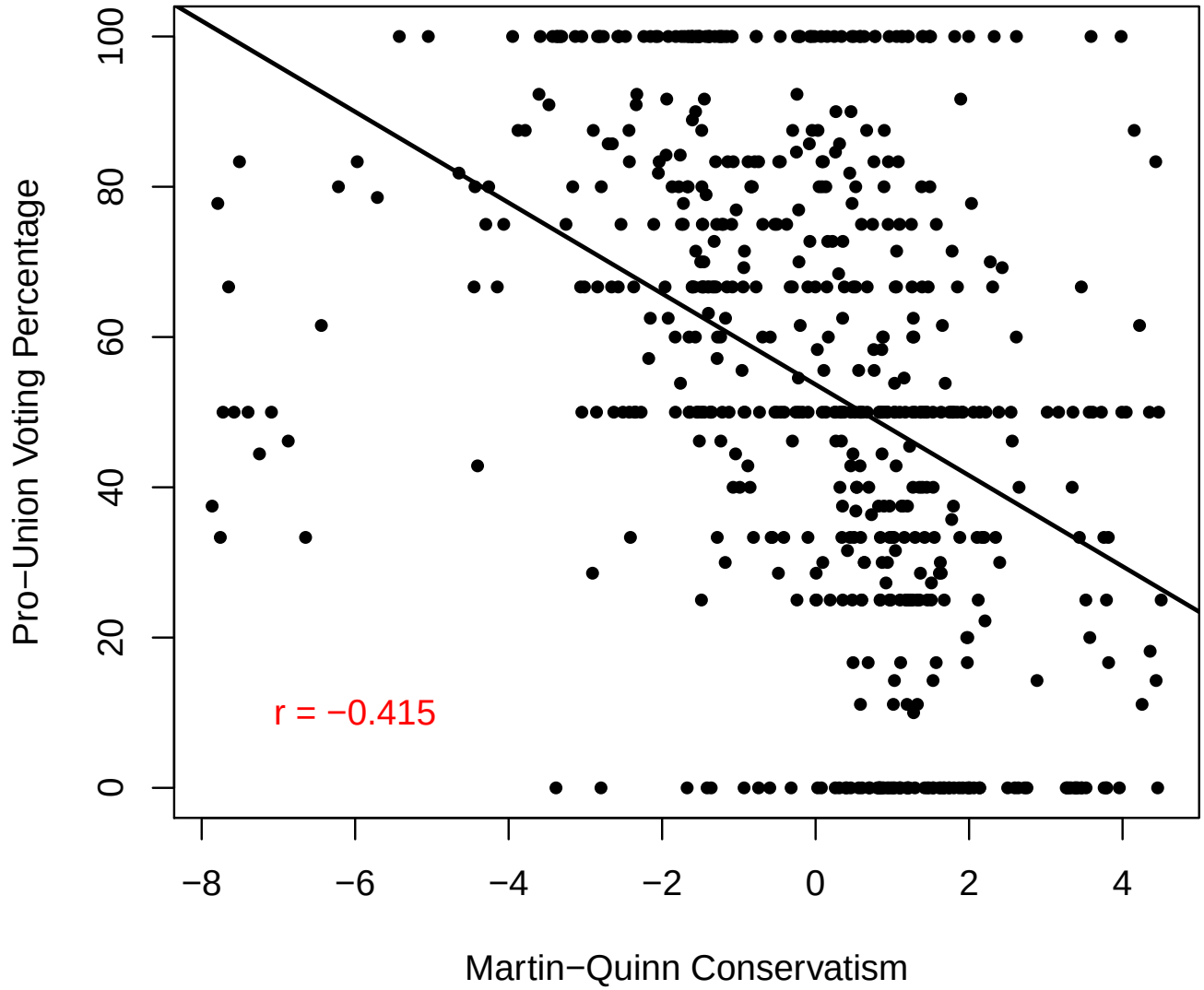
Model is:

$$Y_i = \beta_0 + \beta_1 X_i + u_i$$

- $\beta_0 =$ "intercept" (expected value of Y when $X = 0$)
- $\beta_1 =$ "slope" (expected change in Y associated with a one-unit change in X)
- β_0 and β_1 estimated via *least squares*
  - Chooses $\hat{\beta}_0$ and $\hat{\beta}_1$ to minimize $\sum_{i=1}^{N} \hat{u}_i^2$
  - Formally,

$$\begin{aligned} \hat{\beta}_1 &= \frac{\sum_{i=1}^{N}(X_i - \bar{X})(Y_i - \bar{Y})}{\sum_{i=1}^{N}(X_i - \bar{X})^2} \\ &= \frac{\text{Covariance of } X \text{ and } Y}{\text{Variance of } X} \end{aligned}$$

Ideology and Pro-Union Voting: By Justice and Term



What Does That Regression Look Like?

```
> summary(lm(ProUnionVote~MQScore,data=ProJT))

Call:
lm(formula = ProUnionVote ~ MQScore, data = ProJT)

Residuals:
   Min     1Q Median     3Q    Max
-74.14 -19.58   1.34  21.39  70.41

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept)   53.673      1.181    45.4   <2e-16 ***
MQScore       -6.050      0.541   -11.2   <2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 29 on 599 degrees of freedom
Multiple R-squared:  0.173,Adjusted R-squared:  0.171
F-statistic:  125 on 1 and 599 DF,  p-value: <2e-16
```

What Does That Regression Look Like?

Linear Regression Model

"Independent" variable ("X")

```
> summary(lm(ProUnionVote~MQScore,data=ProJT))
```

"Dependent" variable ("Y")

Data used

```
Call:
lm(formula = ProUnionVote ~ MQScore, data = ProJT)

Residuals:
    Min      1Q  Median      3Q     Max
-74.14 -19.58   1.34  21.39  70.41

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```

Estimated "Intercept"

Estimated "Slope"

Standard Errors

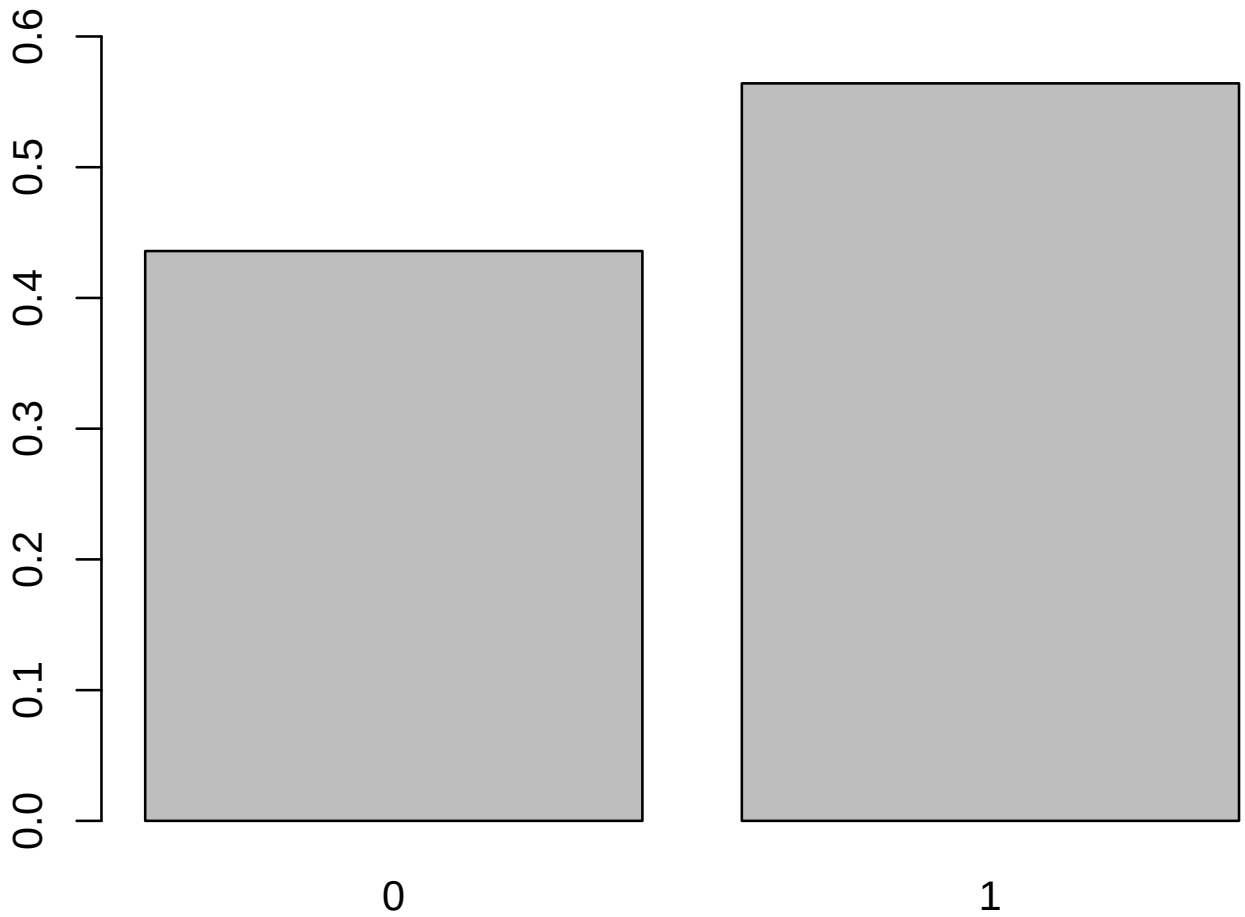
P-Values / "statistical significance"

"R-squared": Model fit (proportion of the variance in Y "explained" by X)

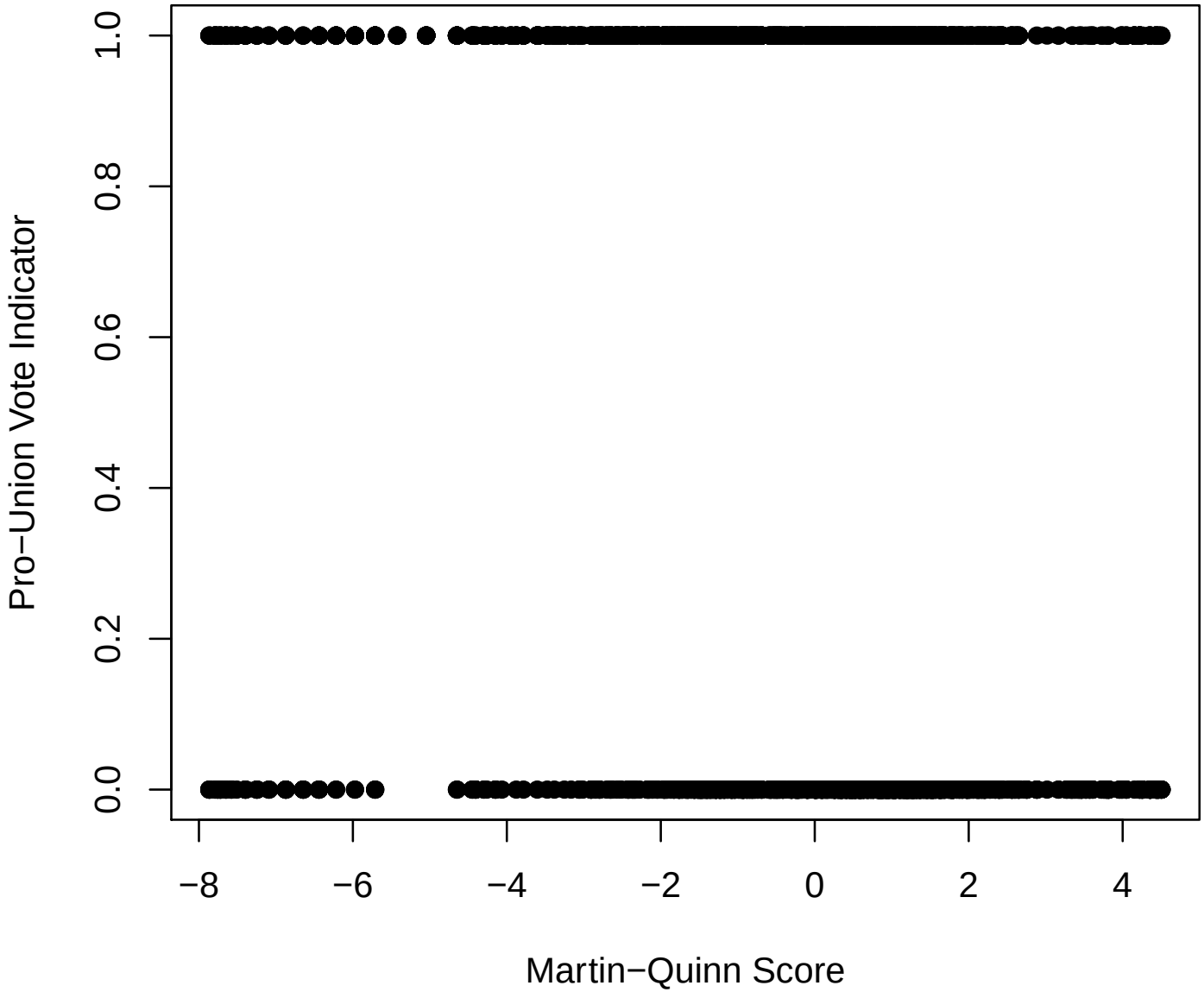
Part III: Analysis Of Votes

- Q: Are justices who are more liberal more likely vote in a pro-union direction than those who are more conservative?
- Unit of analysis: the vote (one line of data for each vote cast in each case involving organized labor)
- $N = 3680$ votes in 409 cases
- Outcome: whether (=1) or not (=0) that justice cast a pro-union vote in that case
- Predictor: The justice in question's ideology

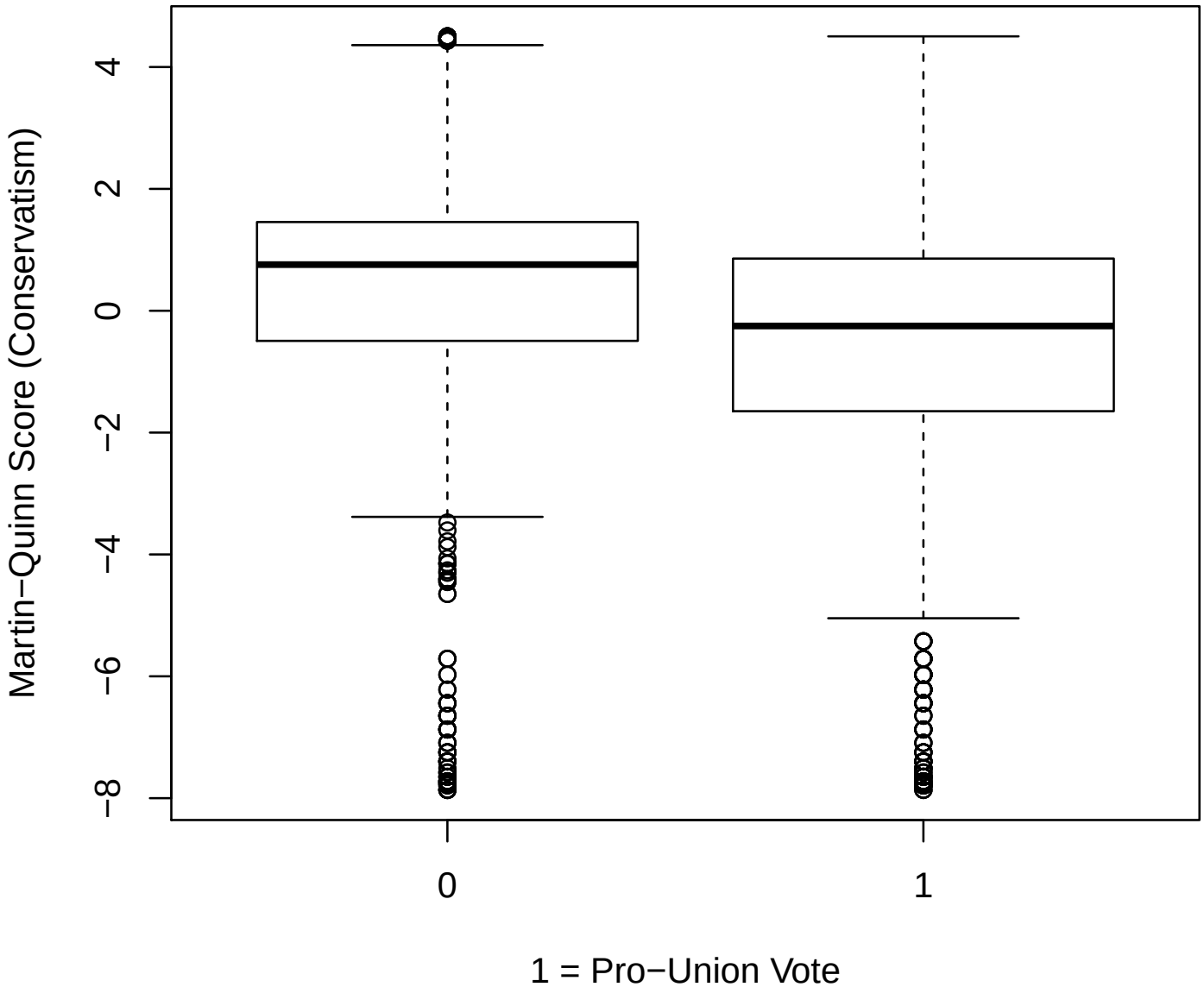
Pro-Union Voting, 1946-2019 (1=Pro-Union)



A Very Terrible Scatterplot



Justice Conservatism, by Vote Direction



Differences of Means

```
> SC.t<-with(UnionDF,t.test(SCScore~ProUnionVote))
> SC.t

Welch Two Sample t-test

data:  SCScore by ProUnionVote
t = -11, df = 3271, p-value <2e-16
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.1389 -0.0975
sample estimates:
mean in group 0 mean in group 1
          0.514           0.632


> MQ.t<-with(UnionDF,t.test(MQScore~ProUnionVote))
> MQ.t

Welch Two Sample t-test

data:  MQScore by ProUnionVote
t = 14, df = 3455, p-value <2e-16
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 0.853 1.139
sample estimates:
mean in group 0 mean in group 1
          0.358          -0.638
```

Differences of Means

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 -0.1389 -0.0975
sample estimates:
mean in group 0 mean in group 1
          0.514           0.632
```

t-statistic values

Mean Segal-Cover score among all pro-union votes

Mean Segal-Cover score among all anti-union votes

P-values / statistical significance

```
> MQ.t<-with(UnionDF,t.test(MQScore~ProUnionVote))
> MQ.t

Welch Two Sample t-test

data:  MQScore by ProUnionVote
t = 14, df = 3455, p-value <2e-16
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 0.853 1.139
sample estimates:
mean in group 0 mean in group 1
          0.358          -0.638
```

Mean Martin-Quinn score among all anti-union votes

Mean Martin-Quinn score among all pro-union votes

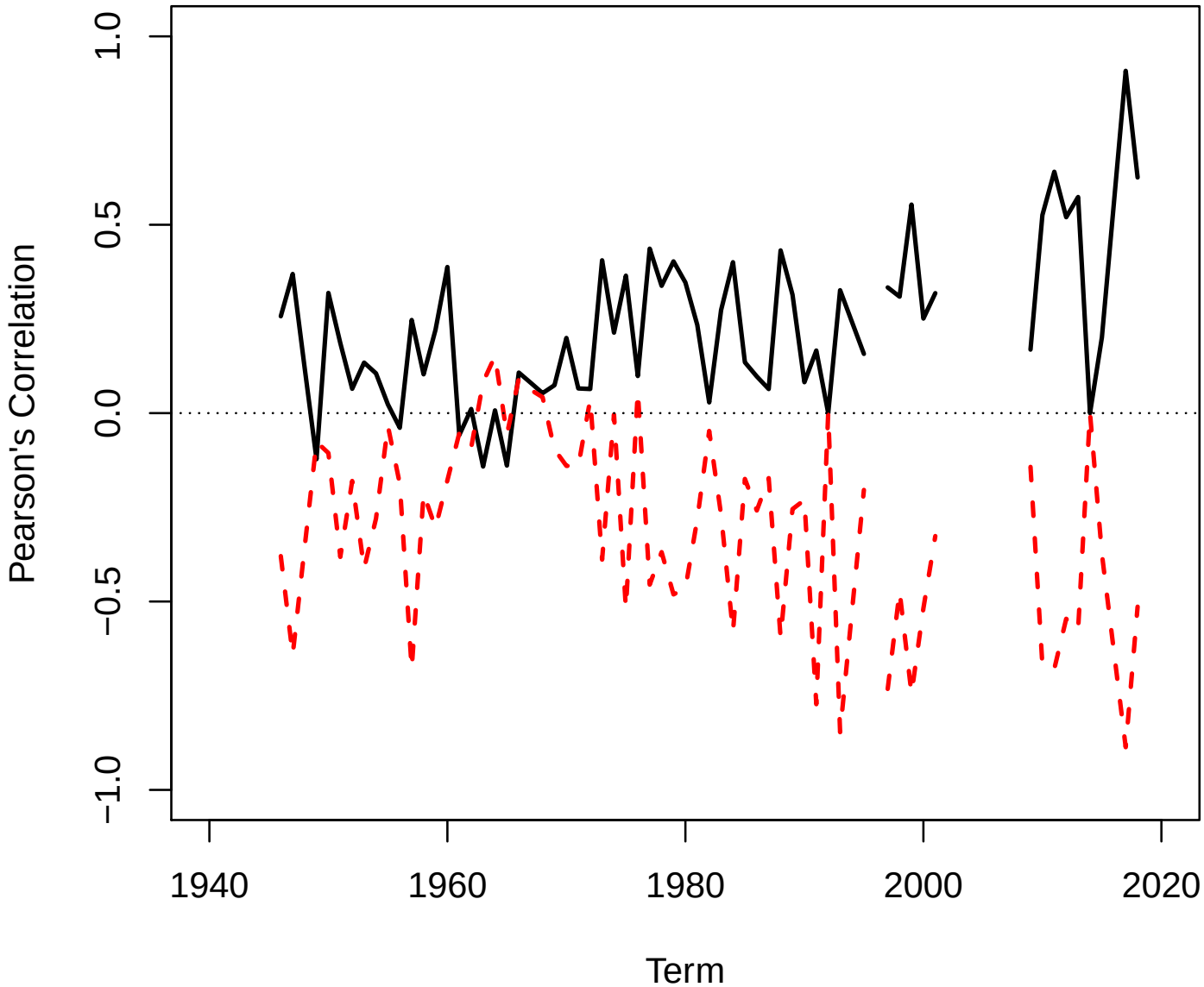
Part IV: Change Over Time

- Q: Does the strength and/or direction of the relationship between justices' ideology and their tendency to vote in a pro-union manner change during the 1946-2019 period?
- Unit of analysis: the vote (one line of data for each vote cast in each case involving organized labor), with separate analyses by Court term
- $N = 3680$ votes in 409 cases
- Outcome: whether (=1) or not (=0) that justice cast a pro-union vote in that case
- Predictor: The justice in question's ideology
- Quantity of Interest: The Pearson's r (correlation) between the outcome and the predictor

How Do We Do This?

1. Start with the vote-level data
2. Extract votes from the first term available (OT1946)
3. Calculate the Pearson's r between pro-union votes and each of our two ideology measures (as we did above)
4. Record those two values of r
5. Repeat steps 2-4 for each term of the data up to 2019.

Pearson's *r* Values By Term



Regressions, Again

```
> fit.r.SC<-lm(r.SC~TermList)
> summary(fit.r.SC)

Residuals:
    Min      1Q  Median      3Q     Max
-0.4100 -0.1229 -0.0008  0.1385  0.4825

Coefficients:
             Estimate Std. Error t value  Pr(>|t|)
(Intercept) -10.28714    2.16134   -4.76 0.0000123 ***
TermList      0.00531    0.00109    4.86 0.0000085 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.178 on 61 degrees of freedom
  (4 observations deleted due to missingness)
Multiple R-squared:  0.279,Adjusted R-squared:  0.268
F-statistic: 23.6 on 1 and 61 DF,  p-value: 0.0000085

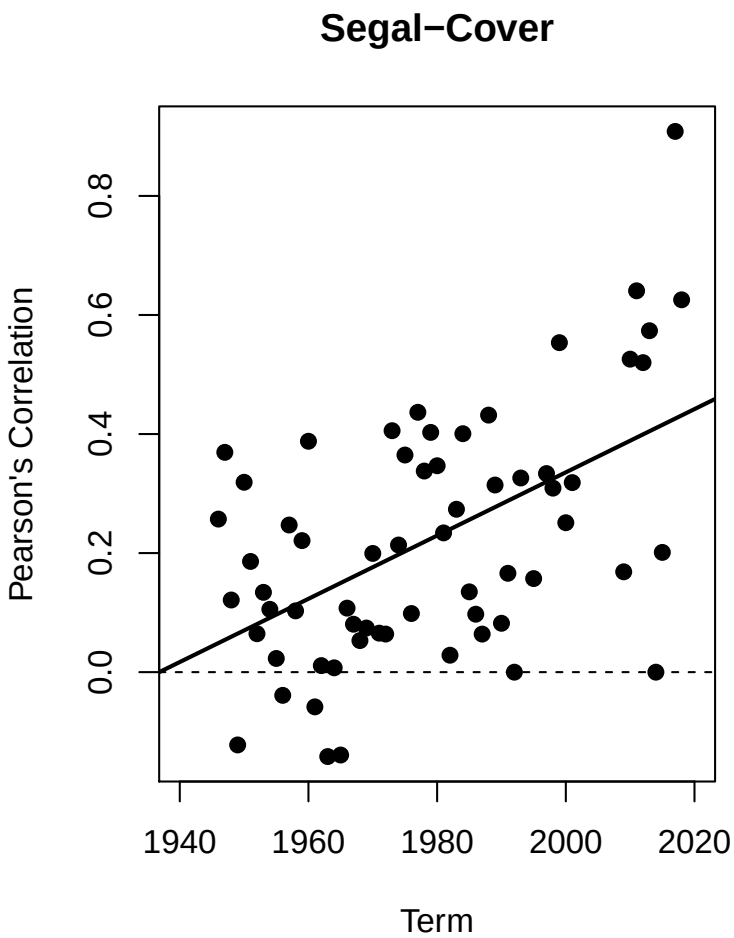

> fit.r.MQ<-lm(r.MQ~TermList)
> summary(fit.r.MQ)

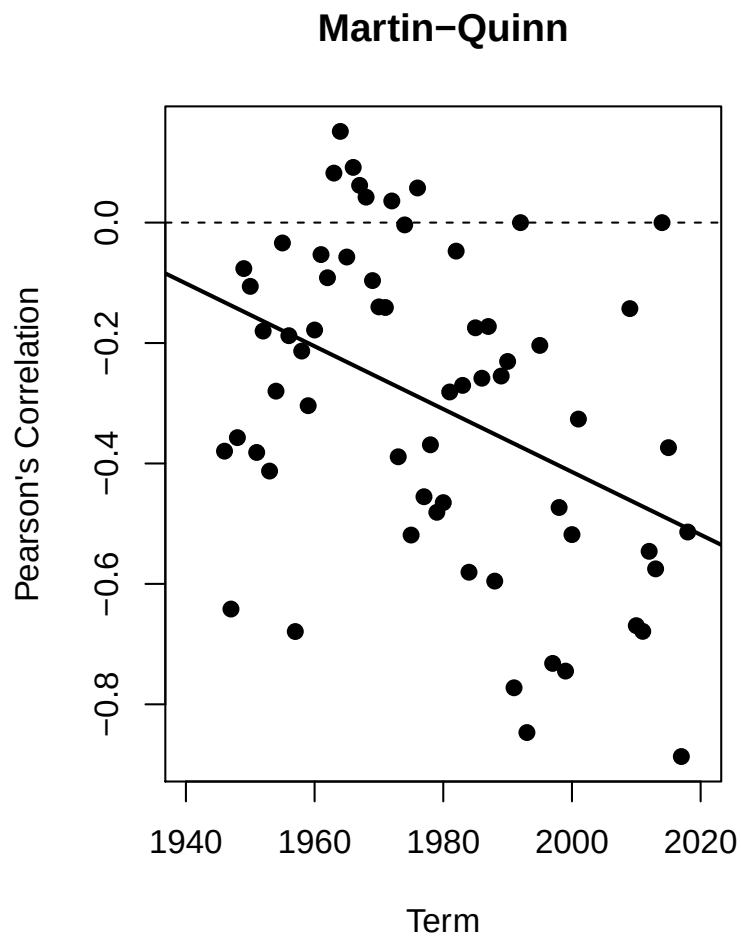
Residuals:
    Min      1Q  Median      3Q     Max
-0.5042 -0.1898  0.0271  0.1594  0.4871

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept) 10.01892    2.93342    3.42  0.00114 **
TermList    -0.00522    0.00148   -3.52  0.00083 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.241 on 61 degrees of freedom
  (4 observations deleted due to missingness)
Multiple R-squared:  0.169,Adjusted R-squared:  0.155
F-statistic: 12.4 on 1 and 61 DF,  p-value: 0.000826
```

Pearson's *r* Values By Term Redux





Some Conclusions

- The Justices' votes in cases involving organized labor are moderately strongly related to their political ideology.
- In general, liberal justices vote in a pro-union fashion more frequently than conservatives.
- The strength of the relationship between ideology and pro-union voting has generally been growing over time.
- This suggests that cases involving organized labor have become more "ideological" during the past 70+ years.