# Online Appendix: Measuring Ideological Polarization on the Circuit Courts of Appeals 1953-2022

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**Abstract**

Attention to ideological polarization in the Circuit Courts of Appeals has surged in recent years. However, no valid cross-circuit cardinal measure of polarization has been established. The lack of a valid cross-circuit measure of polarization has limited scholar's ability to evaluate broad trends in judicial polarization and address how ideological polarization influences judicial decision-making. To address this, I develop a new measure of ideological polarization for each of the Circuit Courts of Appeals between 1953 and 2022 using the polarization framework established by Esteban and Ray (1994). I then theorize that in order to uphold the norms of collegiality, more polarized courts are likely to take strategic actions to avoid breaking consensus. I show that polarized courts deliberate longer before releasing opinions, are less likely to give cases with a full hearing, and are less likely to publish justified and signed opinions. These results have implications for the efficiency, efficacy, and authority of the Circuit Courts of Appeals.

Keywords: Polarization; Federal Courts; Court of Appeals; judicial decision-making

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# Contents

# Polarization with Senior Status Judges

The polarization statistics estimated in the manuscript exclude senior status judges. Here I re-estimate the models with senior status judges included. The polarization scores with senior status judges included by circuit are presented in Figure 1. The general trends are similar across the polarization scores that include and exclude senior status judges, these trends are presented in Figure 2 and Figure 3. The scores are correlated at .792. This correlation is presented in Figure 4. To ensure the robustness of the results presented in the manuscript, I estimated each of the models. The results are presented in Table 1 and the substantive effects presented in Figure 8. These results largely replicate what is presented in the manuscript. The one exception is that the effect of polarization with senior status judges on whether a case receives a full hearing with oral argument is not statistically different from zero. I now present these results in the manuscript. I hope these additional results assuage any hesitations of the reviewer had about the measure of polarization not including senior status judges.

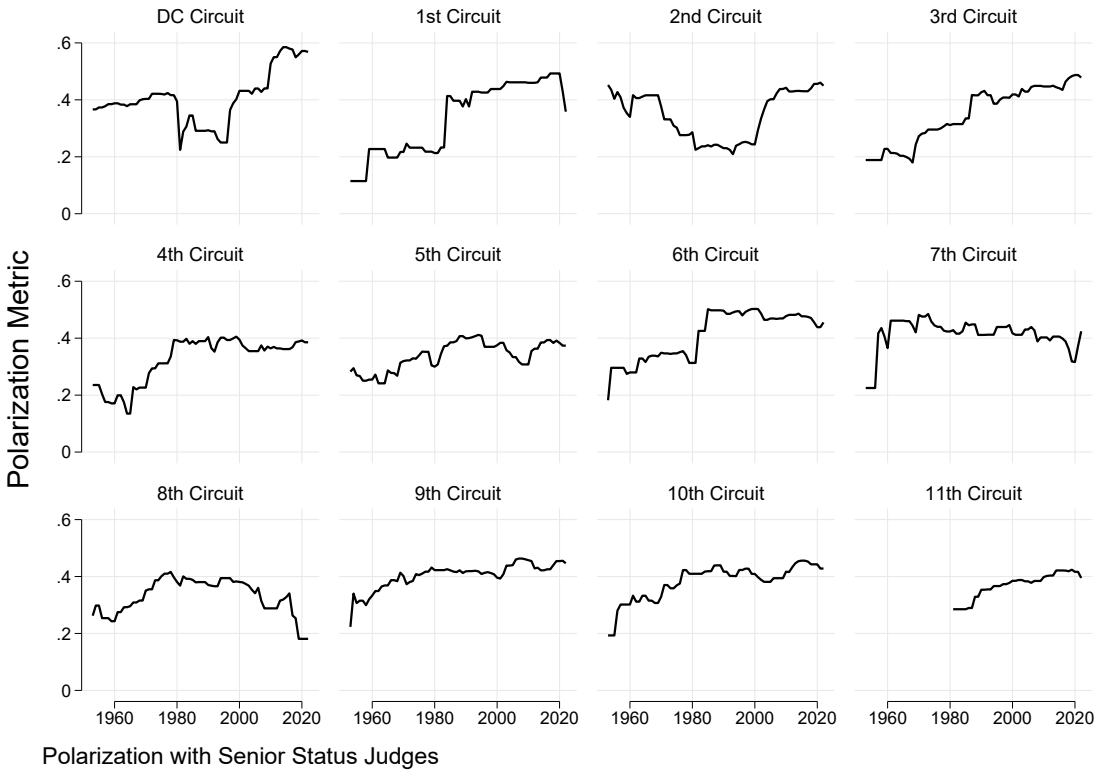


Figure 1: Polarization Statistic with Senior Status Judges

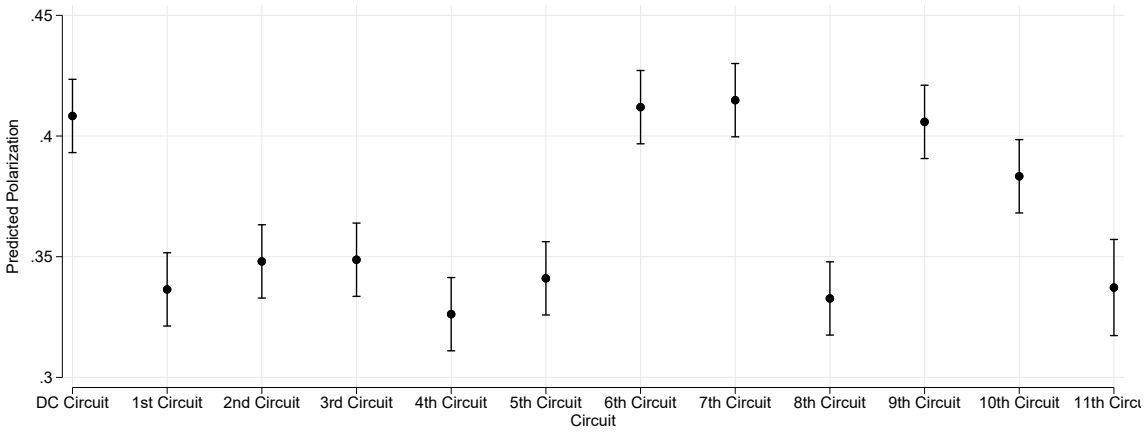


Figure 2: Polarization Statistic with Senior Status Judges Predicted by Circuit

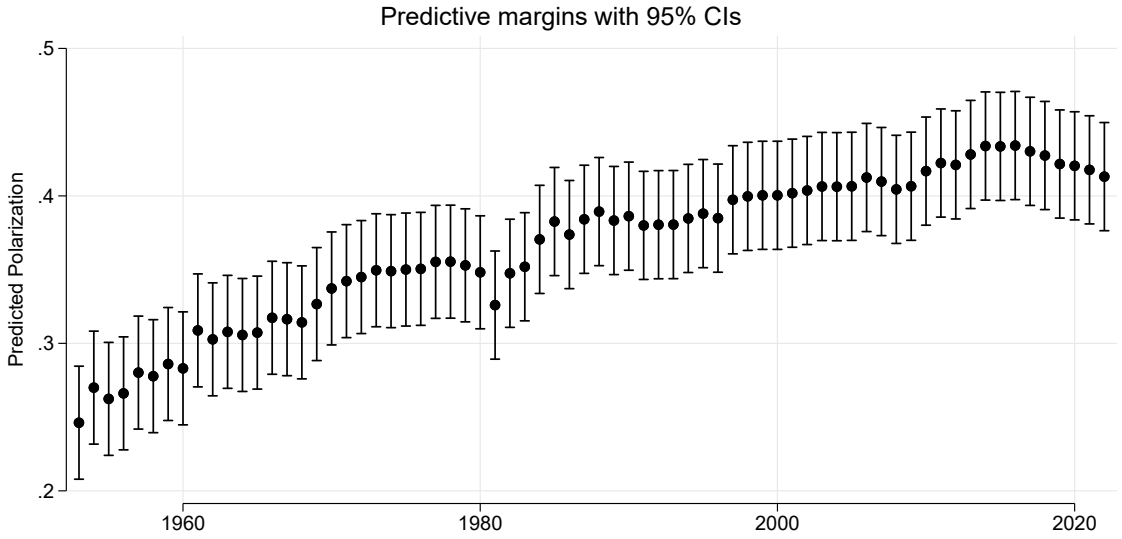


Figure 3: Polarization Statistic with Senior Status Judges Predicted by Year

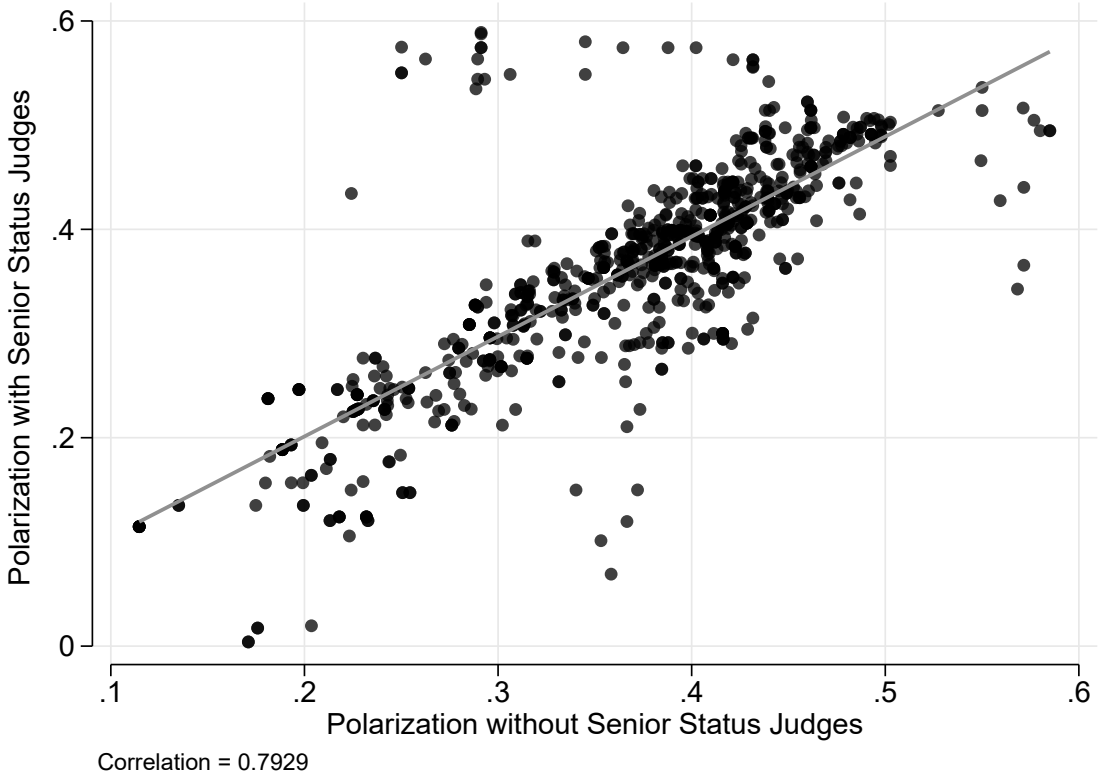


Figure 4: Comparing Polarization Statistics with and without Senior Status Judges

Table 1: Regression Models: Consequences of Polarization with Senior Status

| | (1) Days to Judgement | (2) Full Hearing | (3) Fully Published Opinion |
|---|---|---|---|
| Senior Polarization Statistic | 0.381*** | −0.00983 | −0.471*** |
| | (0.0124) | (0.0361) | (0.0426) |
| USA is a Party | −0.0455*** | −0.00649 | −0.104*** |
| | (0.00131) | (0.00400) | (0.00496) |
| Pauper's Petition | −0.0176*** | −0.554*** | −0.505*** |
| | (0.00220) | (0.00785) | (0.00930) |
| Number of Cases | −0.00000892*** | −0.0000493*** | −0.000167*** |
| | (0.000000506) | (0.00000150) | (0.00000193) |
| Number of Judges | 0.00799*** | 0.00589*** | 0.0293*** |
| | (0.000318) | (0.000964) | (0.00110) |
| District Court Affirmed | 0.0697*** | 1.005*** | −0.240*** |
| | (0.00110) | (0.00348) | (0.00439) |
| Circuit Fixed-Effects | Yes | Yes | Yes |
| Year Fixed-Effects | Yes | Yes | Yes |
| Observations | 1755342 | 2203568 | 1513912 |

Standard errors in parentheses. Model 1 is a negative binomial regression. Models 2 and 3 are logistic regressions.
*** $p < 0.001$ two-tailed test

Senior status judges are included in the IDB set of cases used in the analyses. However, the IDB does not include an indicator to designate whether a senior status judge participated in a case. For this reason, I cannot control for it directly nor could these cases be dropped from the analyses presented in the manuscript.

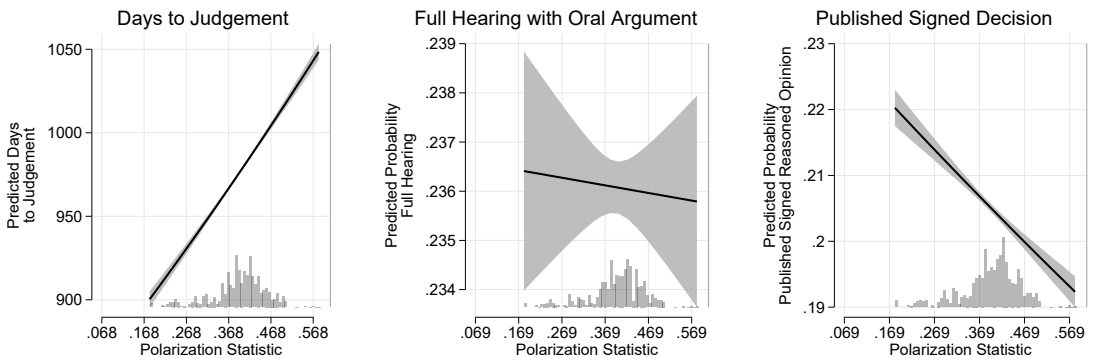


Figure 5: Substantive Effects from Regressions with Senior Status Included Polarization Scores

# Comparing to other Measures of Polarization

Another method for estimating polarization is to use either the variance or kurtosis of ideal points. Where there is a higher variance, it is assumed there is higher polarization, while higher kurtosis implies less polarization (DiMaggio, Evans and Bryson 1996). These measures do not require relying on identify judge's partisanship or ignoring potential ideological heterogeneity within party. However, these measures make problematic distributional assumptions about the nature of polarization (Downey and Huffman 2001). Further, these methods are volatile when the set of actors is relatively small (Clark 2009) which is the case in the context of the Court of Appeals. With that said, I estimate polarization scores using these methods. Alternative methods of estimating polarization scores correlate highly with the Esteban and Ray (1994) model estimated polarization scores.

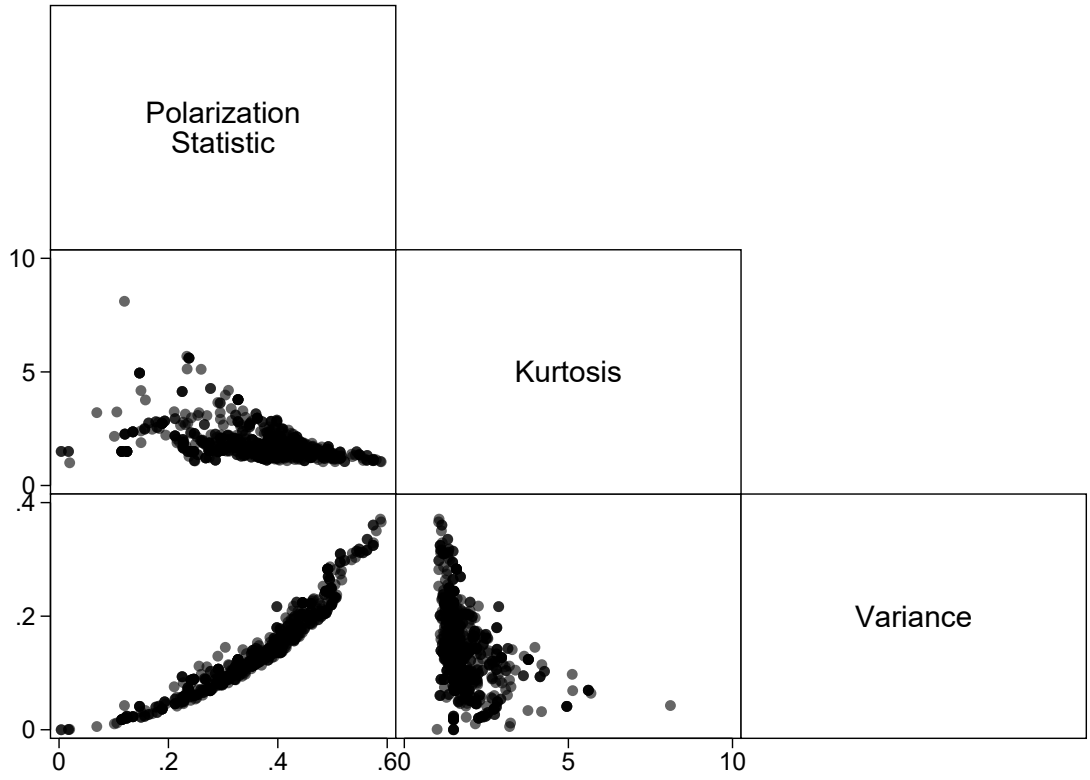


Figure 6: Correlation Matrix Polarization Measures

## Alternative Tolerance Assumptions

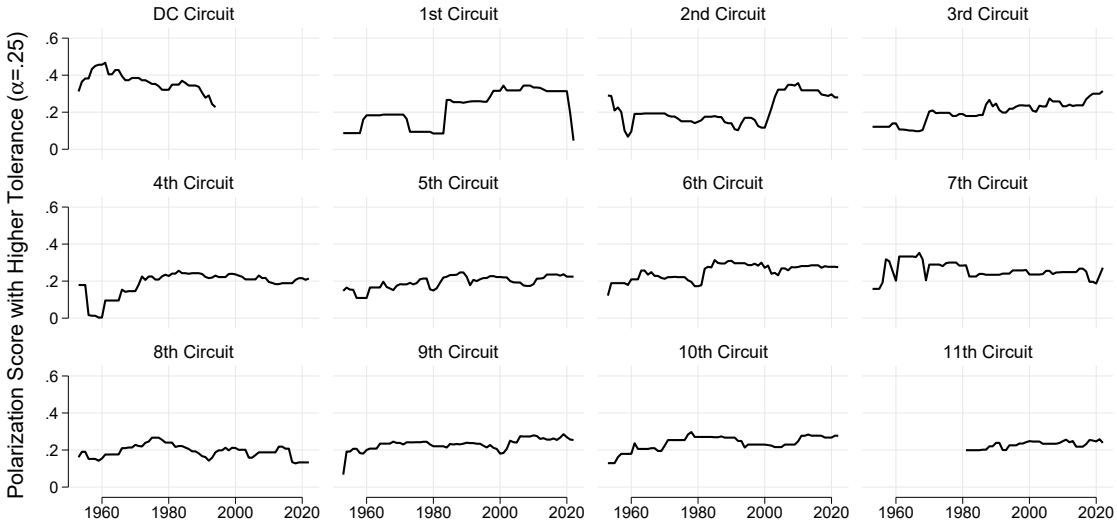


Figure 7: Higher Tolerance for Polarization ($\alpha$=.25.

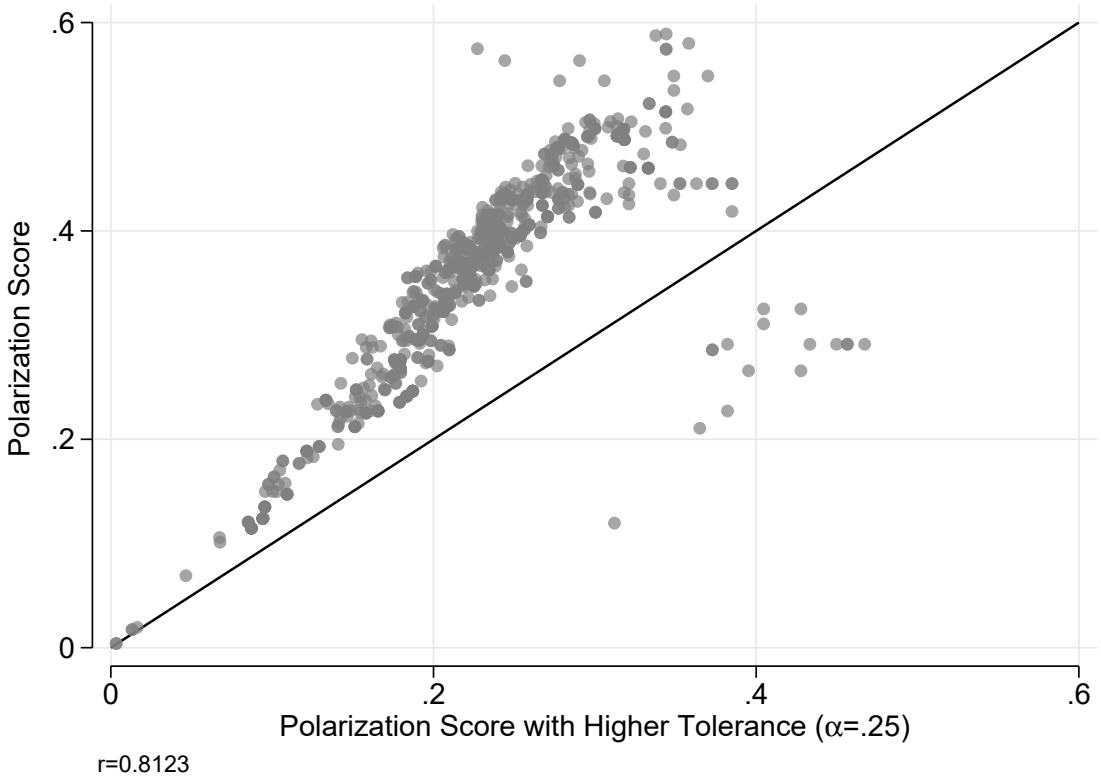


Figure 8: Comparison between Polarization as Estimated in the Manuscript and a Higher Tolerance for Polarization ($\alpha$=.25

# Predicting Polarization with Lagged Unified Delegation

Do to the relatively slow moving of judicial nominations and change in the composition of the Circuit Courts of Appeals, it may be argued that the best way to predict polarization is not based on whether the Circuit's contemporaneous Senate delegation is unified, but rather whether the lagged Senate delegation is unified. In Table 2, I present results for up to a five year lag in whether or not the Circuit's Senate delegation was unified. The results consistently show that a unified delegation leads to a less polarized court. The substantive effective is roughly similar across the length of the lagged period.

Table 2: Regression Models: Lagged Unified Delegation

| | (1) Polar. | (2) Polar. | (3) Polar. | (4) Polar. | (5) Polar. |
|---|---|---|---|---|---|
| Unified 1 Year Lag | $-0.0837^{***}$ | | | | |
| | (0.0225) | | | | |
| Unified 2 Year Lag | | $-0.0930^{***}$ | | | |
| | | (0.0229) | | | |
| Unified 3 Year Lag | | | $-0.0885^{***}$ | | |
| | | | (0.0234) | | |
| Unified 4 Year Lag | | | | $-0.0915^{***}$ | |
| | | | | (0.0238) | |
| Unified 5 Year Lag | | | | | $-0.0970^{***}$ |
| | | | | | (0.0241) |
| D.C Circuit | $0.100^{***}$ | $0.103^{***}$ | $0.105^{***}$ | $0.105^{***}$ | $0.106^{***}$ |
| | (0.0122) | (0.0122) | (0.0122) | (0.0121) | (0.0120) |
| Constant | $0.357^{***}$ | $0.359^{***}$ | $0.360^{***}$ | $0.362^{***}$ | $0.364^{***}$ |
| | (0.00363) | (0.00362) | (0.00362) | (0.00360) | (0.00356) |
| Observations | 800 | 788 | 776 | 764 | 752 |

Standard errors in parentheses
$^{*}$ $p < 0.05$, $^{**}$ $p < 0.01$, $^{***}$ $p < 0.001$

# References

Clark, Tom S. 2009. "Measuring Ideological Polarization on the United States Supreme Court." *Political Research Quarterly* 62:146–57.

DiMaggio, Paul, John Evans and Bethany Bryson. 1996. "Have American's social attitudes become more polarized?" *American journal of Sociology* 102(3):690–755.

Downey, Dennis J and Matt L Huffman. 2001. "Attitudinal polarization and trimodal distributions: measurement problems and theoretical implications." *Social science quarterly* 82(3):494–505.

Esteban, Joan-Maria and Debraj Ray. 1994. "On the measurement of polarization." *Econometrica: Journal of the Econometric Society* pp. 819–851.