

# Economic Inequality and Belief in Meritocracy in the United States\*

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## Abstract

How does the context of income inequality in which people live affect their belief in meritocracy, the ability to get ahead through hard work? One prominent recent study, Newman, Johnston, and Lown (2015*a*), argues that exposure to higher levels of local income inequality lead low-income people to become more likely to reject the dominant U.S. ideology of meritocracy. Here, we show that this sanguine conclusion is not supported by the study’s own empirical results and further that analysis of more and better data yields precisely the opposite conclusion. Consistent with relative power theory, among those with lower incomes, local contexts of greater inequality are associated with more widespread belief that people can get ahead if they are willing to work hard.

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Meritocracy—the idea that if one works hard, one can get ahead—is a core tenet of the American Dream (see, e.g., Hochschild 1995, 21-23). How belief in meritocracy, and in turn the country’s dominant ideology, fares in the face of the stark economic inequality that has come to characterize life in the United States is therefore crucial to understanding not only support for redistributive policies to address this inequality but also the continuing legitimacy of the U.S. economic system as a whole.<sup>1</sup> Not surprisingly, this question and related ones regarding the relationship between economic inequality and political attitudes and beliefs have attracted considerable scholarly attention of late.

In contrast to a range of earlier studies that found that greater inequality tends to be associated with attitudes that reinforce the status quo, Newman, Johnston, and Lown (2015*a*, hereafter NJL) advances the argument that inequality in the United States activates class conflict, leading poorer individuals in local contexts of higher inequality to reject meritocracy and become more class conscious. We demonstrate here, however, that that article crucially misinterprets the interaction term in its model (see, e.g., Brambor, Clark, and Golder 2006). Correcting this error reveals that there is no support for the paper’s conclusion that mere exposure to high levels of inequality stimulates a rejection of meritocracy.

Further, in reproducing the above result from the materials the authors provide (Newman, Johnston, and Lown 2015*b*), we uncovered problems with manner in which the dependent variable was measured. We therefore present here a full, independent replication, bringing more and better data to examine how, if at all, local contexts across the United States shape beliefs about whether people can get ahead if they are willing to work hard. This analysis

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<sup>1</sup>On the negative relationship between belief in the American Dream and preferences for redistributive policies, see, e.g., Brooks and Manza (2014).

finds no evidence for the argument advanced by NJL (p.329) that high levels of economic inequality work to activate an “oppositional consciousness” among lower-income individuals and so are ultimately self-correcting. To the contrary, but consistent with previous research, the results indicate that lower-income individuals are *less* likely to reject the meritocratic ideal where economic inequality is greater.

## A Review of the Theories at Stake

The crucial relationship between economic inequality and system-supporting beliefs like meritocracy is the subject of two diametrically opposed theories: the conflict theory and the relative power theory. We briefly review these two theories in this section.

As noted above, NJL advocates the conflict theory. This theory maintains that, for lower-income individuals, being confronted with higher levels of inequality locally “increases the salience of their disadvantaged position within a conspicuous local economic hierarchy” (NJL, p.327), promotes class consciousness, and, in turn, increases demand for redistribution. Higher-income individuals in high inequality contexts, on the other hand, are expected to avoid guilt while simultaneously and self-interestedly protecting their privilege by becoming even more likely to believe in the importance of individual effort to the distribution of economic rewards. The conflict theory has received sustained attention, particularly in studies of political participation, but empirical support has been at best mixed (on the U.S. case, see Oliver 2001; Brady 2004; Solt 2010).

The relative power theory, on the other hand, starts with the proposition that money is a political resource: that is, that it can be used to influence others. Therefore, the theory

contends, where the rich are richer relative to the poor, they will also be more powerful relative to the poor (Goodin and Dryzek 1980). With regard to attitudes and beliefs like meritocracy, this theory suggests that the greater power imbalance that results from higher levels of economic inequality provides higher-income people with more resources to spread their views in the public sphere while depriving poorer people to a greater degree of the resources needed to resist these efforts. This gives poorer people “a greater susceptibility to the internalization of the values, beliefs, or rules of the game of the powerful as a further adaptive response—i.e., as a means of escaping the subjective sense of powerlessness, if not its objective condition” (Gaventa 1980, 17). Patterns of religiosity (Solt, Habel, and Grant 2011; Solt 2014), respect for authority (Solt 2012), and policy mood (Kelly and Enns 2010) have provided support for this theory.

As Huber and Stephens (2012, 37) summarize the two theories, relative power theory can be seen as a straightforward implication of “the usual assumption in sociology, political science, and anthropology ...that social structures reproduce themselves,” while conflict theory is grounded in the seemingly implausible premise that social structures are self-negating. Regardless of the theories’ plausibility *a priori*, which of the two is actually supported by the evidence is crucial to understanding the political consequences of economic inequality.

# Reproduced Results and Corrected Interpretation

Using the data files and R commands provided (Newman, Johnston, and Lown 2015*b*), we were able to reproduce a close approximation of the article’s main results.<sup>2</sup> As these files note that the authors are themselves unable to reproduce the published estimates exactly, and the differences are indeed quite small, we proceed to interpretation.

NJL (p.334) claims that its analysis “reveals that among low-income citizens, those residing in highly unequal contexts are significantly more likely to reject meritocratic ideals than those in relatively equal contexts [and] indicates that as we move from those with the lowest to highest incomes, the effect of increasing county inequality reverses and is associated with a decrease in the probability of rejecting meritocracy.” This claim is incorrect.

The error lies in the interpretation of the multiplicative interaction term. Though it has been well known for over a decade that models containing multiplicative interaction terms require particular care in interpretation (see, e.g., Golder 2003; Braumoeller 2004; Brambor, Clark, and Golder 2006), many political scientists continue to struggle with them: improperly specified or interpreted interaction terms appear at the top of Nyhan’s (2015) list of “recurring statistical errors” for which reviewers should be sure to check. In the multilevel logistic regression model employed in NJL, the logged odds of rejecting meritocracy for individual  $i$  in local context  $j$  are estimated as follows:

$$\begin{aligned} \text{Reject Meritocracy}_{ij} = & X\gamma + \gamma_{10}\text{Income}_{ij} + \gamma_{01}\text{Inequality}_j \\ & + \gamma_{11}\text{Inequality}_j \times \text{Income}_{ij} \end{aligned} \tag{1}$$

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<sup>2</sup>We were not able to reproduce the auxiliary analysis on class consciousness presented in Table 3 at all, however, as the number of random effects to be estimated in the model, 1322, exceeds the number of observations in the data, 1067 (see NJL, p.336). We restrict our focus here, though, to the article’s main analysis of the rejection of meritocracy as presented in Table 1, Model 1 (“White Rs”).

$$+ r_{1j}Income_{ij} + u_{ij}$$

NJL (p.334) offers two pieces of evidence as support for its claim: first, that the coefficient for local income inequality (that is,  $\gamma_{01}$ ) is estimated to be positive and statistically significant, and second, that the coefficient for the interaction between inequality and respondents' incomes ( $\gamma_{11}$ ) is negative and statistically significant (NJL, 334).

Neither of the two actually provide any support. First, the coefficient  $\gamma_{01}$  indicates only the effect of *Inequality* when the other variable in the interaction, *Income*, takes on the value of zero (see, e.g. Brambor, Clark, and Golder 2006, 72). However, inspection of the NJL data reveals that the nine categories of income in the Pew surveys the article employs were recoded to take on nine evenly-spaced values ranging from .21 to 1 (see Newman, Johnston, and Lown 2015b). Because this income variable never actually equals zero,  $\gamma_{01}$  is not directly interpretable. Second, Brambor, Clark, and Golder (2006, 74) specifically advise that one “cannot even infer whether  $X$  has a meaningful conditional effect on  $Y$  from the magnitude and significance of the coefficient on the interaction term.” Instead, the conditional effect of inequality is found by taking the partial derivative of Equation 1 with respect to inequality:

$$\frac{\partial \text{Reject Meritocracy}}{\partial \text{Inequality}} = \gamma_{01} + \gamma_{11} \times \text{Income}_{ij} \quad (2)$$

In short,  $\gamma_{11}$  is only part of the conditional effect; the magnitude and statistical significance depend also on  $\gamma_{01}$  and the value of *Income*. To properly interpret the conditional effect of *Inequality*, then, one cannot examine  $\gamma_{01}$  or  $\gamma_{11}$  in isolation, as NJL does; instead the conditional effect must be calculated using Equation 2 for all observed values of *Income* (see, e.g., Braumoeller 2004; Brambor, Clark, and Golder 2006; Berry, Golder, and Milton 2012).

We plot the conditional effect of *Inequality* at each observed value of *Income* in Figure 1 using the R package `interplot` (Solt and Hu 2015b). Contrary to the interpretation offered

in NJL (p.334), this plot reveals that the coefficient for county income inequality fails to reach statistical significance at any observed level of respondent income.<sup>3</sup> The article’s own results do not provide evidence for its conclusion that poorer people are more likely to reject and richer people more likely to embrace meritocracy where local income inequality is greater.

[Figure 1 about here.]

## Replication

In reproducing the above analysis, our attention was drawn to an additional issue that led us to pursue an independent replication: the measurement of the dependent variable. To amass observations from a sufficient range of local contexts, NJL (p.330-331) combines in a single analysis data from four surveys using three different measures of its dependent variable, rejection of meritocracy. Measure 1 was drawn from 2005 and 2006 surveys that asked respondents which of two statements came closest to their own opinion: “Most people who want to get ahead can make it if they’re willing to work hard” or “Hard work and determination are no guarantee of success for most people.” Those who chose the latter were coded as rejecting meritocracy. The 2007 and 2009 surveys employed did not include this item. Instead, they asked respondents to assess on a four-point agree-disagree scale two separate statements: (1) “Hard work offers little guarantee of success” and (2) “Success in life is pretty much determined by forces outside our control.” In Measure 2, used with

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<sup>3</sup>The coefficient estimate for those with the lowest incomes, under \$10,000 per year, approaches but does not reach statistical significance at conventional levels. In any event, only 4% of the sample employed in NJL had incomes this low; even if this coefficient did reach statistical significance, it would provide little support for the conflict theory (see Berry, Golder, and Milton 2012, 660-661).

data from the 2007 survey, those who mostly or completely agreed with both statements were coded as rejecting meritocracy. Although the 2009 survey included these same two statements, and so made Measure 2 easily calculable, respondents to that survey were coded in yet a third manner: in Measure 3, those who mostly or completely agreed with statement (1) were coded as rejecting meritocracy regardless of how they responded to statement (2).<sup>4</sup>

To assess whether these three very different measures are in fact comparable, we collected Pew surveys conducted between 1999 and 2012 that asked any of the items just described and plot the estimated percentage of the population to reject meritocracy according each of three versions of the dependent variable in Figure 2. The figure reveals that Measure 2 results in much lower levels of rejection of meritocracy than either of the others and that Measure 3 often yields considerably higher levels than Measure 1. In light of their evident lack of comparability, we conclude that pooling them in a single analysis cannot be justified.<sup>5</sup>

[Figure 2 about here.]

In our replication, we instead employ the U.S. Religious Landscape Survey (RLS) conducted by the Pew Forum on Religion and Public Life in 2007, which includes Measure 1 of the dependent variable. Further, with more than ten times the number of respondents of the much smaller Pew surveys examined in NJL, the RLS was designed to provide a particularly

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<sup>4</sup>For another example of uncritically mixing these three measures, see Newman (2016). Of the five Pew surveys listed in Table 1 and pooled in the article’s analysis, Measure 1 is used in the 2011 Political Typology Survey, Measure 2 is used in the 2009 and 2012 Values Surveys, and Measure 3 is used in the 2008 and 2012 Middle Class Surveys.

<sup>5</sup>In a footnote and the article’s online appendix, NJL argues that mixing these different measures is not problematic on the basis that the 2005 and 2006 surveys alone, which use Measure 1, yield results for the variables of interest similar to those produced by the four surveys together (NJL, p.331). Using the same four surveys, in Appendix A, we demonstrate that the results obtained for the NJL model differ considerably across the three measures of the dependent variable and confirm that the conditional effect of inequality fails to reach statistical significance at any observed level of income, just as in the full sample described above, regardless of how the dependent variable is measured.



fine-grained picture of geographic variation in attitudes and beliefs across the continental United States; it is therefore perfectly suited to providing observations across a broad range of local contexts. To make use of all of the available data, we analyze the entire sample of survey respondents, rather than only non-Latino white respondents; as NJL (p.330) notes, this should be expected to bias the results toward the expectations of the conflict theory.

We otherwise adopt the approach employed in NJL. As in that article, we use the Gini coefficient of household income inequality for each county calculated by the U.S. Census Bureau from the 2005-2009 American Community Survey (five-year estimates) to measure income inequality at the local level. Like in the Pew surveys analyzed in NJL, respondents' incomes are measured in the RLS on a nine-point scale ranging from less than \$10,000 to over \$150,000, which we straightforwardly coded with values 1 to 9.

At the contextual level, we follow NJL in controlling for average income, the black share of the population, the percentage of votes won by George W. Bush in 2004, and the total population size.<sup>6</sup> At the individual level, the analyses include controls for age, education, sex, race, citizenship, partisan identification, political ideology, and church attendance. The models are estimated using multilevel logistic regression of individuals nested in counties, with both the intercept and the coefficient for income allowed to vary across the counties. Model 1 assesses the average effect of inequality across people of all incomes, but because both conflict and relative power theories suggest that the effect of income inequality on meritocratic beliefs depends on an individual's income, a cross-level interaction between

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<sup>6</sup>Additional analyses adding controls for two contextual variables not considered in NJL, objective economic mobility and residential income segregation, are presented in the Appendix. The results of these analyses are substantively similar to those presented in the text.

these two variables is included in Model 2, as in Equation 1 above.

Figure 3 displays a dot-and-whisker plot of the results: the dots represent the estimated change in the logged odds of rejecting meritocracy for a change of two standard deviations in each variable in the model, and the whiskers represent the 95% confidence intervals of these estimates (see Kastellec and Leoni 2007; Solt and Hu 2015*a*).

[Figure 3 about here.]

The coefficient of income inequality is negative and the coefficient of the interaction term is positive. Both are statistically significant, but as income never takes on a value of zero and the coefficient of the interaction term is only part of the conditional effect, these results do not reveal much. Figure 4 plots conditional effects for inequality at each observed value of income. It shows that inequality's estimated marginal effects on rejecting meritocracy are negative and statistically significant for those with incomes of up to \$40,000, that is, for the poorest two quintiles by income in the sample. They are not distinguishable from zero for those with higher incomes.

[Figure 4 about here.]

Of course, given the dichotomous dependent variable, these estimates are in logits and so their magnitudes are not easily interpretable directly. Figure 5 presents the predicted probability of rejecting meritocracy according to Model 1 across the observed range of local income inequality at various incomes when all other variables are assumed to take on their median values. Given that assumption, those with the lowest incomes living where the context of income inequality is at the highest observed level are 17 percentage points (plus or minus 8 points) *less* likely to reject meritocracy than similarly low-income people living where inequality is at its lowest observed level. For people with incomes between \$30,000 to

\$40,000 and otherwise median characteristics, the predicted probability of rejecting meritocracy declines from  $40 \pm 3\%$  to  $32 \pm 4\%$  over the observed range of inequality. For those with the highest incomes, given the confidence intervals, the predicted probabilities of rejecting meritocracy are consistent with no change across all levels of local income inequality. These results are contrary to the predictions of conflict theory, but consistent with those of the relative power theory.

[Figure 5 about here.]

## Conclusions

One of the most important questions underlying recent research on economic inequality and democracy is whether inequality is self-correcting or instead self-reinforcing. Newman, Johnston, and Lown (2015*a*) argues in favor of the former, more optimistic view. It contends that mere exposure to high levels of local income inequality prompt those with lower incomes to become more likely to reject an important ideological prop of persistent inequality, the idea that those who work hard can get ahead, supporting the conflict theory. Unfortunately, the article's own reported results do not support this conclusion, and its analysis suffers from measurement issues that render even those results untrustworthy. Our independent replication using more and better data, in fact, yields the opposite result: lower-income people living where local levels of income inequality are higher are less likely to reject meritocracy than those living where the income distribution is more egalitarian, in line with the predictions of the relative power theory.

These results have important political implications. For those who would prefer higher

levels of redistribution, which of the two theories better describes political reality is crucial to understanding the effort that will be required to reverse the decades-long trend of rising income inequality in the United States. If the NJL results were sound, and the conflict theory supported, advocates of greater redistribution could remain relatively quiescent, confident that by activating conflict, higher levels of inequality would more or less automatically deliver the votes needed for the policies they prefer.

The results presented here, however, suggest that the current social structure will not simply undermine itself in this fashion. That lower-income individuals living in localities with higher levels of income inequality tend to be less likely to reject the meritocratic ideology that sustains the status quo means that change, if it is to occur, will only result from concerted effort, from the difficult and much-constrained work of organization and mobilization. Absent such undertakings, the greater relative power of the wealthy to shape the views of their poorer fellow citizens in contexts of greater inequality will go uncontested.

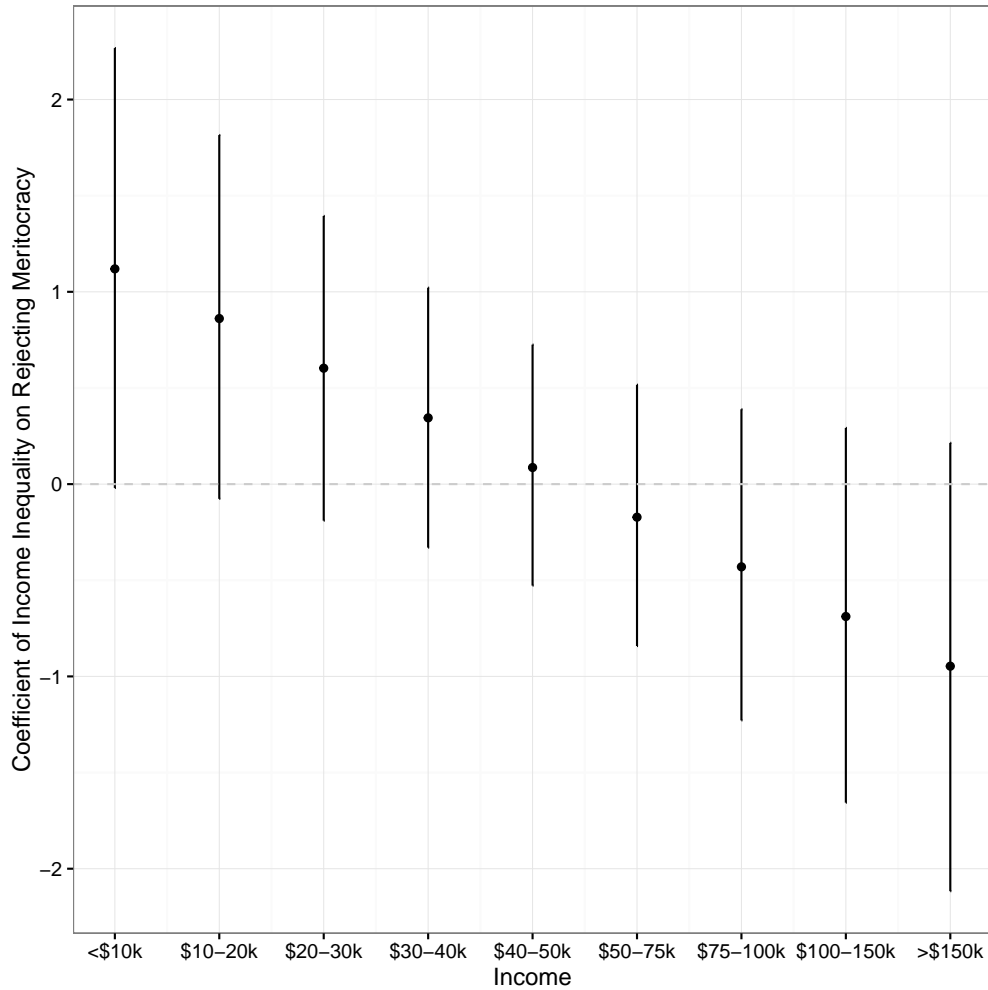
## References

- Berry, William D., Matt Golder, and Daniel Milton. 2012. "Improving Tests of Theories Positing Interaction." *Journal of Politics* 74(3):653–671.
- Brady, Henry E. 2004. An Analytical Perspective on Participatory Inequality and Income Inequality. In *Social Inequality*, ed. Kathryn M. Neckerman. New York: Russell Sage Foundation pp. 667–702.
- Brambor, Thomas, William Roberts Clark, and Matt Golder. 2006. "Understanding Interaction Models: Improving Empirical Analyses." *Political Analysis* 14(1):63–82.
- Braumoeller, Bear F. 2004. "Hypothesis Testing and Multiplicative Interaction Terms." *International Organization* 58(4):807–820.
- Brooks, Clem, and Jeff Manza. 2014. "Prisoners of the American Dream? Americans' Attitudes Towards Taxes and Inequality in a New Gilded Age." Working paper.
- Gaventa, John. 1980. *Power and Powerlessness: Quiescence and Rebellion in an Appalachian Valley*. Urbana: University of Illinois Press.
- Golder, Matt. 2003. "Explaining Variation in the Success of Extreme Right Parties in Western Europe." *Comparative Political Studies* 36(4):432–466.
- Goodin, Robert, and John Dryzek. 1980. "Rational Participation: The Politics of Relative Power." *British Journal of Political Science* 10(3):273–292.
- Hochschild, Jennifer L. 1995. *Facing Up to the American Dream: Race, Class, and the Soul of the Nation*. Princeton, N.J.: Princeton University Press.
- Huber, Evelyne, and John D. Stephens. 2012. *Democracy and the Left: Social Policy and Inequality in Latin America*. Chicago: University of Chicago Press.
- Kastellec, Jonathan P., and Eduardo L. Leoni. 2007. "Using Graphs Instead of Tables in Political Science." *Perspectives on Politics* 5(4):755–771.
- Kelly, Nathan J., and Peter K. Enns. 2010. "Inequality and the Dynamics of Public Opinion: The Self-Reinforcing Link Between Economic Inequality and Mass Preferences." *American Journal of Political Science* 54(4):855–870.
- Newman, Benjamin J. 2016. "Breaking the Glass Ceiling: Local Gender-Based Earnings Inequality and Women's Belief in the American Dream." *American Journal of Political Science* 60.
- Newman, Benjamin J., Christopher D. Johnston, and Patrick L. Lown. 2015a. "False Consciousness or Class Awareness? Local Income Inequality, Personal Economic Position, and Belief in American Meritocracy." *American Journal of Political Science* 59(2):326–340.

- Newman, Benjamin J., Christopher D. Johnston, and Patrick L. Lown. 2015*b*. “Replication data for: False Consciousness or Class Awareness? Local Income Inequality, Personal Economic Position, and Belief in American Meritocracy.” <http://dx.doi.org/10.7910/DVN/26584>, Harvard Dataverse, V2.
- Nyhan, Brendan. 2015. “A Checklist Manifesto for Peer Review.” *Political Methodologist* 23(1):4–6.
- Oliver, J. Eric. 2001. *Democracy in Suburbia*. Princeton: Princeton University Press.
- Solt, Frederick. 2010. “Does Economic Inequality Depress Electoral Participation? Testing the Schattschneider Hypothesis.” *Political Behavior* 32(2):285–301.
- Solt, Frederick. 2012. “The Social Origins of Authoritarianism.” *Political Research Quarterly* 65(4):703–713.
- Solt, Frederick. 2014. Reversing the Arrow? Economic Inequality’s Effect on Religiosity. In *Religion and Inequality in America: Research and Theory on Religion’s Role in Stratification*. Cambridge University Press pp. 337–353.
- Solt, Frederick, Philip Habel, and J. Tobin Grant. 2011. “Economic Inequality, Relative Power, and Religiosity.” *Social Science Quarterly* 92(2):447–465.
- Solt, Frederick, and Yue Hu. 2015*a*. “dotwhisker: Dot-and-Whisker Plots of Regression Results.” Available at the Comprehensive R Archive Network (CRAN).
- Solt, Frederick, and Yue Hu. 2015*b*. “interplot: Plot the Effects of Variables in Interaction Terms.” Available at the Comprehensive R Archive Network (CRAN).

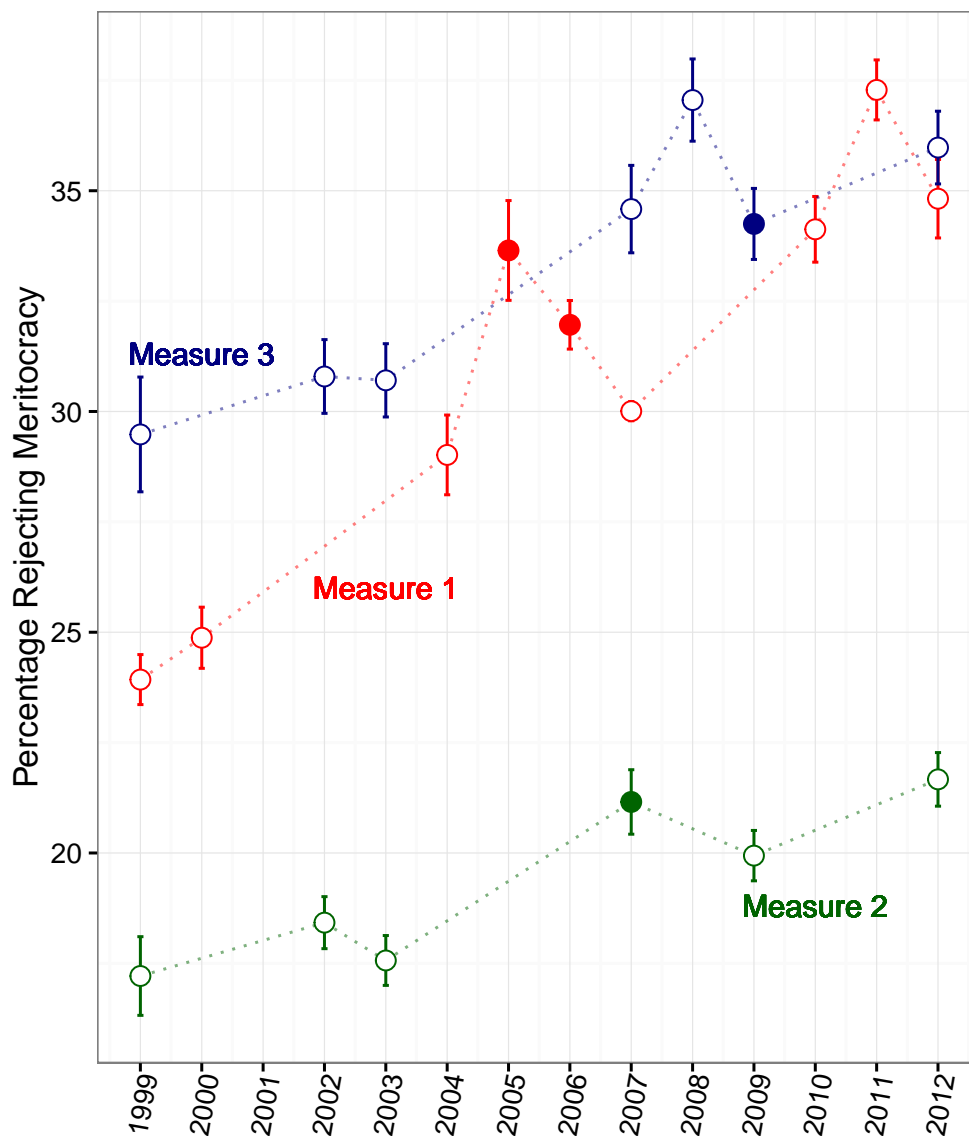
# Figures

Figure 1: Logit Coefficients of Local Income Inequality on Rejection of Meritocracy by Income, Newman, Johnston, and Lown (2015a), Table 1, Model 1, From Replication Data



*Notes:* The dots represent coefficients of income inequality within respondents' county on their rejection of meritocracy for all values of respondent income, estimated from the data and model provided in Newman, Johnston, and Lown (2015b); the whiskers represent the 95% confidence intervals of these estimates. Contrary to the interpretation offered in Newman, Johnston, and Lown (2015a, 334), the coefficient for county income inequality fails to reach statistical significance at any observed level of respondent family income.

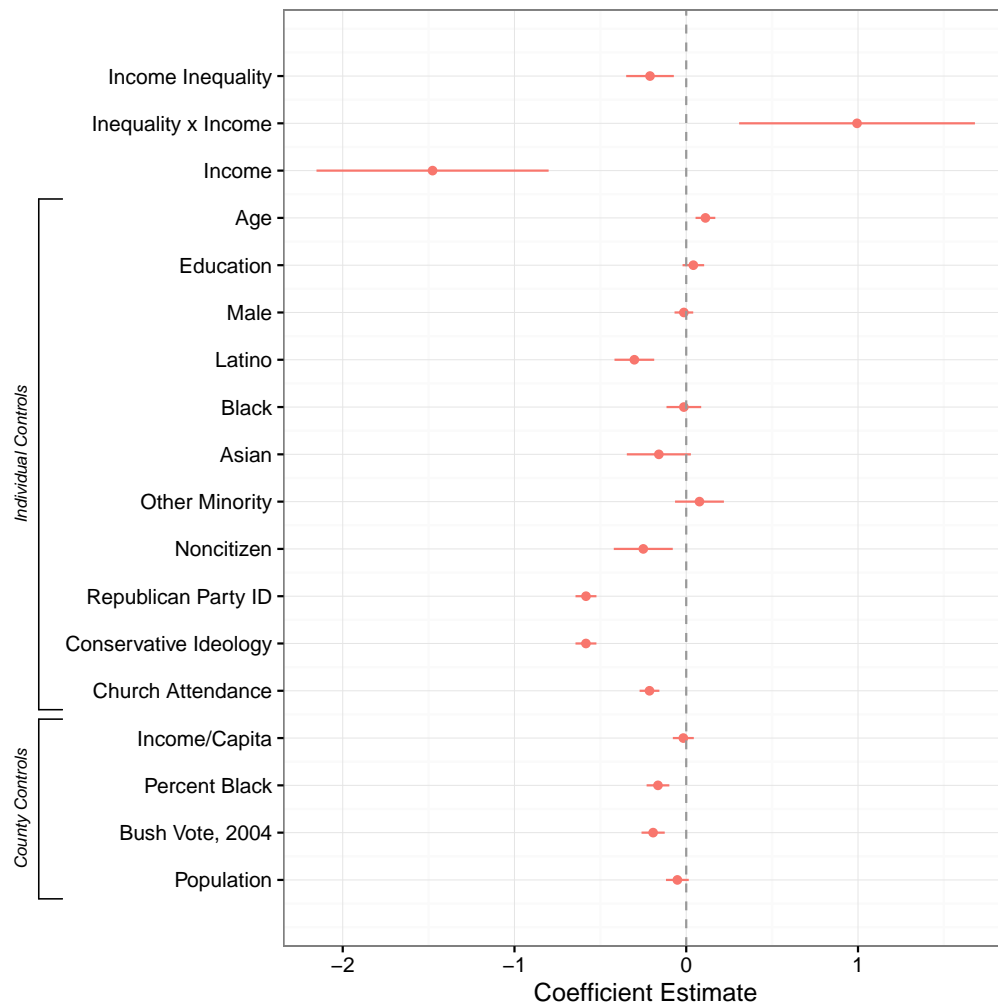
Figure 2: Comparing Three Measures of Rejection of Meritocracy Pooled by Newman, Johnston, and Lown (2015a)



*Notes:* The analyses presented in Table 1 of Newman, Johnston, and Lown (2015a, 333) were conducted on pooled observations with the dependent variable, rejection of meritocracy, measured in one of three different ways (see Newman, Johnston, and Lown 2015a, 331). Here, solid circles represent the data used by Newman, Johnston, and Lown (2015a); hollow circles represent data in other available Pew surveys. The whiskers are 95% confidence intervals for each estimate. Plotting the weighted percentage of respondents to reject meritocracy by each of these measures reveals that the second measure results in much lower levels of rejection of meritocracy than either of the others and the third often yields considerably higher levels than the first. In light of the evident lack of comparability of these three measures, pooling them into a single analysis cannot be justified.

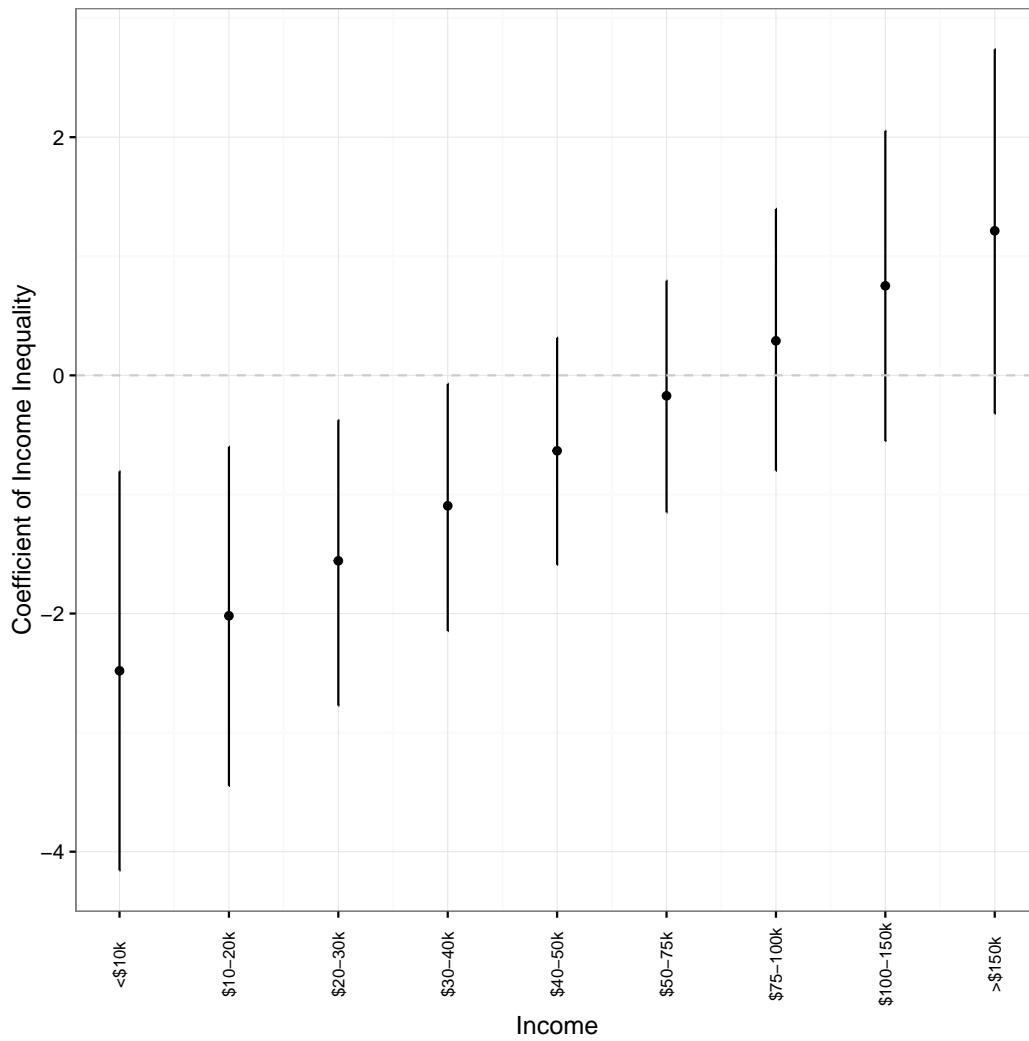


Figure 3: Predicting Rejection of Meritocracy



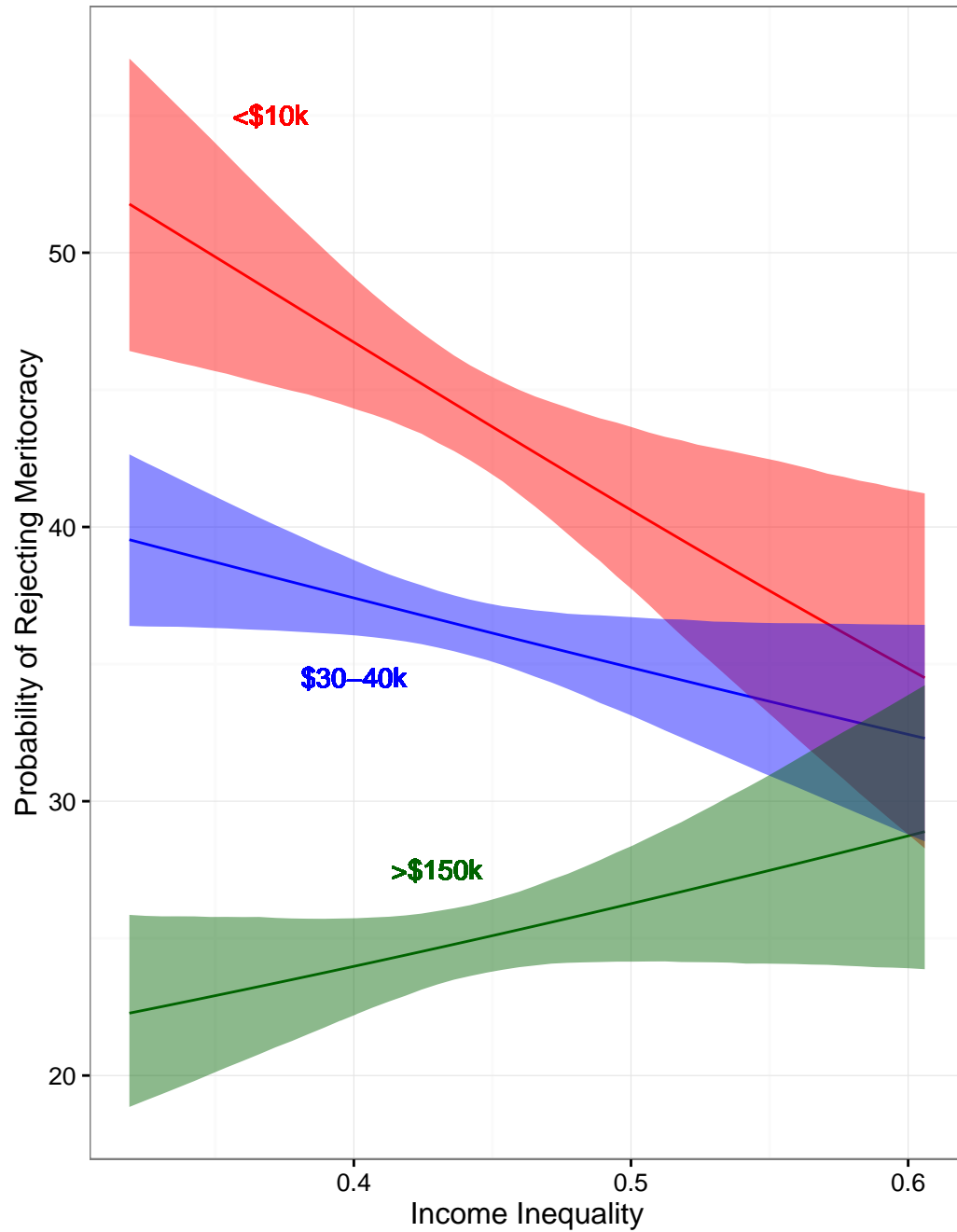
*Note:* The dots represent the estimated change in the logged odds of rejecting meritocracy for a change of two standard deviations in the independent variable; the whiskers represent the 95% confidence intervals of these estimates. Multilevel logistic regression analyses of 28,633 individual respondents living in 691 commuting zones.

Figure 4: Estimated Coefficients of Income Inequality by Income



*Source:* Results presented in Figure 3. The dots represent estimated coefficients of income inequality within respondents' commuting zones on their rejection of meritocracy for all values of respondent family income; the whiskers represent the 95% confidence intervals of these estimates. The estimates are negative and statistically significant for those with lower incomes, while the coefficients for those with higher incomes are not distinguishable from zero.

Figure 5: Predicted Probability of Rejecting Meritocracy by Income and Level of Inequality



*Source:* Results presented in Figure 3. Solid lines represent predicted probabilities and shaded regions represent the 95% confidence intervals of these predictions. The predicted probabilities were generated by fixing all other variables at their median values.