

Online Appendix for:
Combining double sampling and bounds to address
non-ignorable missing outcomes in randomized
experiments

authors' names withheld

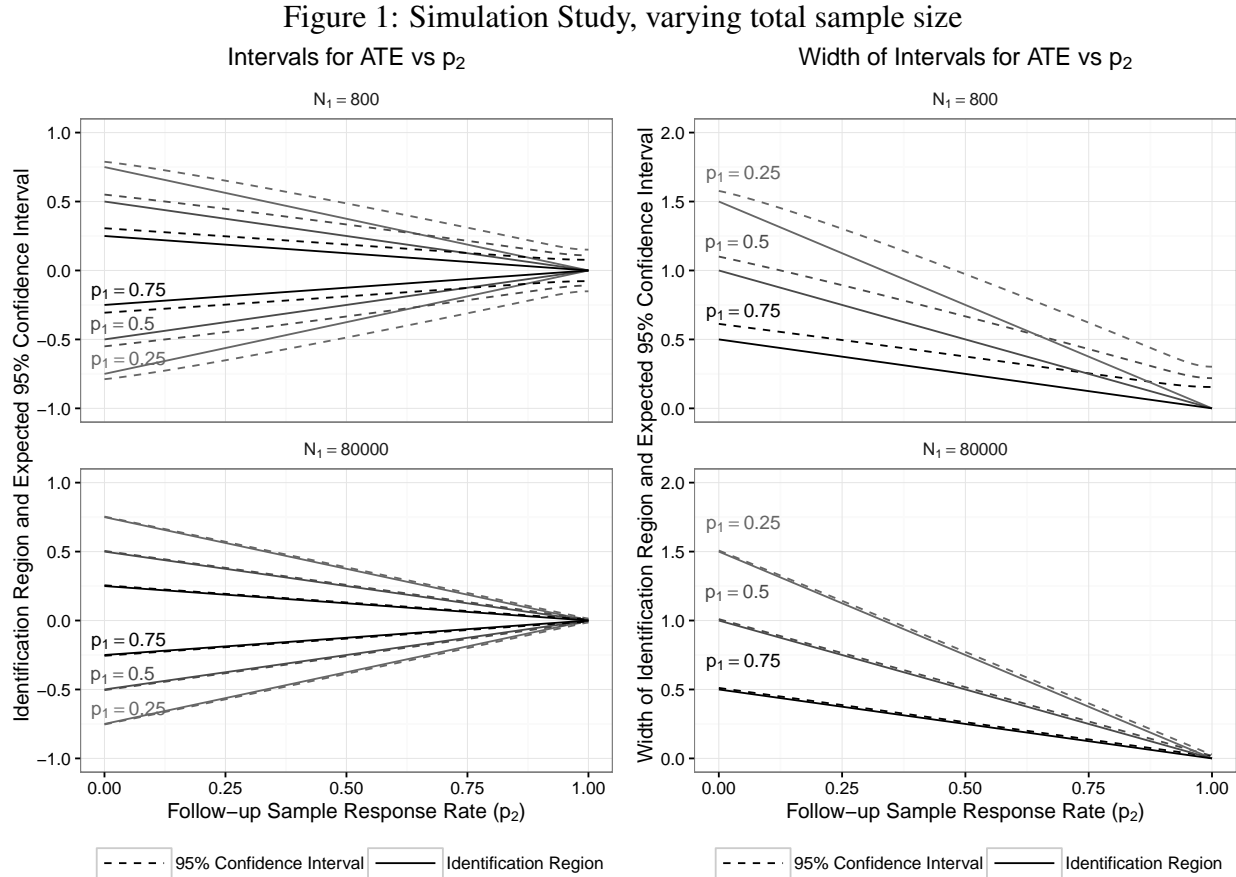
March 15, 2016

Contents

1	Simulation Study	2
2	Analysis Assuming MIPO	3
3	Worst-case Bounds for All Pairwise Comparisons	4
4	Experimental Materials	5
4.1	Treatment Condition: Moderate	5
4.2	Treatment Condition: Polarized	6
4.3	Treatment Condition: Placebo	7

1 Simulation Study

Figure 1 shows the implications of an increased sample size for the width of the identification region and 95% confidence intervals. We consider two scenarios: the first uses a total of 800 subjects and is identical to the scenario presented in the main text. The second increases the sample size 100-fold to 80,000 subjects. Instead of sampling 50 of the missing in each arm in the follow-up sample, we sample 5,000 of the missing. The implications are clear: the 95% confidence intervals shrink with increased sample size, but the identification region does not.



2 Analysis Assuming MIPO

In this section we present analyses under an assumption that missingness is independent of potential outcomes (MIPO, Gerber and Green 2012, p. 219). Formally, we assume that $Y_i(z) \perp\!\!\!\perp R_i(z)$. This assumption would be violated, for example, if subjects whose potential outcomes under treatment were relatively higher were more likely to respond in the initial sample. The table below presents effect estimates among those who respond in the initial Wave 2 sample. This analysis mimics what we might have learned from the experiments if we had not invited subjects to the follow-up sample. We show the effects of treatment both immediately in Wave 1 and ten days later in Wave 2.

In the main text, we focus exclusively on the *Perceived Polarization* dependent variable, which is calculated as the average difference (in absolute value) of subjects' placement of "typical" Republican and Democratic voters' policy positions. A second dependent variable, *Extremity*, is constructed from subjects' own policy views. *Extremity* is the average of the absolute value of subjects' responses to the four policy questions, all of which are on 7-point scales from -3 to 3.

We observe strong average effect of the *Polarized* treatment on *Perceived Polarization* in Wave 1 (0.468 points). This effect is much diminished by Wave 2, descending to 0.126 over the course of 10 days. The treatment appears to have had negligible average effects on *Extremity* across both waves of measurement.

Table 1: Immediate and Over Time Effects of Treatment

	Perceived Polarization		Extremity	
Treatment: Placebo	0.352*** (0.067)	0.042 (0.066)	0.019 (0.035)	-0.011 (0.034)
Treatment: Polarized	0.468*** (0.067)	0.126* (0.066)	-0.031 (0.034)	-0.030 (0.034)
Constant	3.108 (0.046)	3.542 (0.046)	1.531 (0.024)	1.617 (0.024)
Wave	Wave 1	Wave 2	Wave 1	Wave 2
N	2,156	2,156	2,156	2,156
R ²	0.024	0.002	0.001	0.0004

*p < .1; **p < .05; ***p < .01

All models are estimated among those who respond in the initial Wave 2 sample.

Robust standard errors are in parentheses.

3 Worst-case Bounds for All Pairwise Comparisons

In the main text, we compare the *Polarized* and *Moderate* treatment conditions. However, the experiment included a *Placebo* condition, in which subjects read an article about a reality TV show. In our preanalysis plan (available on egap.org), we indicated that we would present worst-case bounds for all pairwise comparisons for both dependent variables. This analysis is presented in Table 2.

Table 2: Double Sampling Bounds for Pairwise Comparisons

	Polarized vs. Moderate		Polarized vs. Placebo		Moderate vs. Placebo	
	DV: PP	DV: EX	DV: PP	DV: EX	DV: PP	DV: EX
95% CI Lower Bound	-0.5283	-0.6087	-0.6171	-0.6004	-0.6119	-0.4778
95% CI Upper Bound	0.7452	0.6032	0.7262	0.6944	0.5044	0.5769
Worst-Case Bound: Low Estimate	-0.3417	-0.4710	-0.4339	-0.4491	-0.4424	-0.3284
Worst-Case Bound: High Estimate	0.5718	0.4426	0.5502	0.5350	0.3286	0.4426
Variance of Low Estimate	0.0129	0.0070	0.0124	0.0085	0.0106	0.0083
Variance of High Estimate	0.0111	0.0095	0.0114	0.0094	0.0114	0.0067

DV: PP refers to the *Perceived Polarization* dependent variable.

DV: EX refers to the *Extremity* dependent variable.

4 Experimental Materials

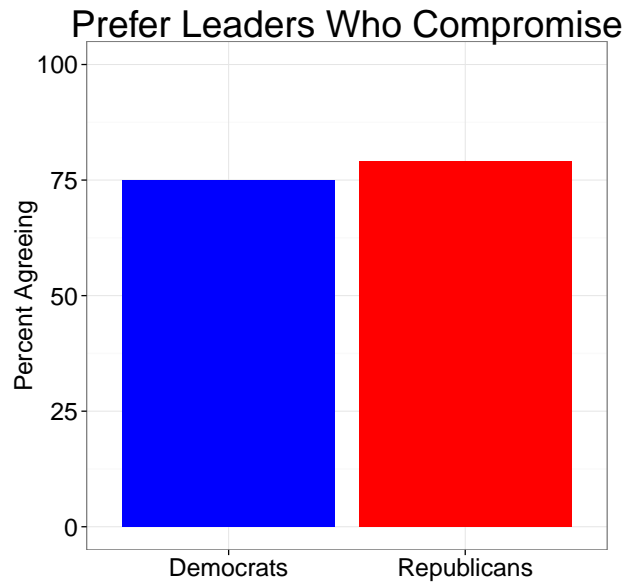
4.1 Treatment Condition: Moderate

Electorate Remains Moderate
Jefferson Graham (USA Today)

In the aftermath of the 2012 presidential election, interviews with voters at a diner in Smithfield, PA reveal few real divisions in the electorate. When asked about Obama's victory, Republican Marlene Evers of nearby Fairchance said, "I don't agree with all of Obama's economic policies, but he seems to be trying hard to resolve America's economic problems. He's doing things that we all agree with, like trying to bring down the deficit. He's also trying to find a middle ground on social issues like his gay marriage decision. While he supports gay marriage, he did not push to change federal policy on this issue, knowing that it might upset some voters. I am pro-life, but I agree with President Obama that women need access to safe and affordable family planning tools."

Later on that evening, Democratic voter and Obama supporter Dan Thompson of Masontown pointed to economic issues as influencing his vote in the election. "I'm not an ideologue. I find myself mostly in the middle, and really just want the country to get back on track and find common-sense solutions to get our economy fixed." Thompson also noted that he wanted a break from the culture wars, and wants politicians to stop focusing on controversial social issues like abortion. "Americans can all agree that, even if we support the right to abortion, it should be rare and avoided, and the President's policies are trying to reduce the need for abortion in this country."

As we left Smithfield, it is surprising to find that Republicans and Democrats in the electorate seem to want the same things, very different from the picture we get from Washington. This same pattern also holds nationally: Democrats and Republicans across the country are not really very divided. For example, recent data from the Pew Center for the People and the Press show that Democrats and Republicans alike overwhelmingly support leaders who compromise to get things done. 75 percent of Democrats feel this way, as do 79 percent of Republicans, a nearly identical level (see figure). "This shows that there is no divide between ordinary Democrats and Republicans," says Stanford political science professor Neil Malhotra. "Democrats and Republicans really do want the same things."



4.2 Treatment Condition: Polarized

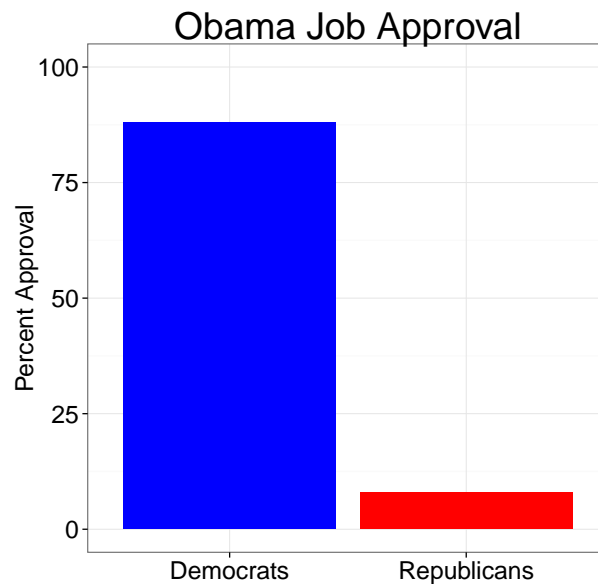
Electorate as Divided as Ever
Jefferson Graham (USA Today)

In the aftermath of the 2012 presidential election, interviews with voters at a diner in Smithfield, PA reveal an electorate as divided as ever. When asked about the importance of the election results, Republican Marlene Evers of nearby Fairchance said, “I can’t believe Obama won. He is a radical socialist. He will destroy the Christian values set forth by the Founding Fathers that have made this country great. If he gets his way, he’ll overturn 5,000 years of tradition and allow gay marriage, destroying the American family. We must stop him any way we can.”

Later on that evening, Democratic voter and Obama supporter Dan Thompson of Masontown pointed to economic issues as influencing his vote in the election. “The Republican Party is for corporate greed and will do nothing but destroy the lives and hopes of regular working people in this country. They tried to use voter ID laws to steal this election, because they know the American people reject their ideas.” He added, “Bush was a complete idiot who bankrupted this nation with the Iraq War, and Romney would have been just as bad, destroying the economy. Republicans want to roll back women’s reproductive freedom by restricting access to contraception and labeling women who defend it sluts and prostitutes.”

As we left Smithfield, it is clear that Republicans and Democrats in the area seem as divided as ever before. This same pattern also holds nationally: Democrats and Republicans across the country are deeply divided. For example, Gallup data released last week shows that while nearly 9 in 10 Democratic voters (88 percent) approve of President Obama’s job as president, less than 1 in 10 Republicans (8 percent) approves. This 80 point gap between the parties in approval is among the largest ever recorded (see figure). “Differences in Obama’s approval reflect fundamental

divides between the parties,” says Stanford political science professor Neil Malhotra. “Democrats and Republicans really do hold different beliefs.”



4.3 Treatment Condition: Placebo

The Lasting Appeal of So You Think You Can Dance

After 12 seasons of dance, you’ve got to shake things up a bit and bring in something fresh and the new format really has done that. From what I’ve seen, being in Vegas and watching the audition cities that I had not seen previously, we are getting some of the best of the best talent. And on my side, the Street side, we’re getting some incredible people who previously would not have even tried for So You Think You Can Dance. We’re dealing with people who have never left their cities, much less taken any dance classes or had any formal training, and now they’re starting to come out and wanting to show what they can do because they have the chance to do what it is that they do.

There’s something about a family show like So You Think You Can Dance offering a wide variety of talent in many different packages whether it be color, creed, size, anything because you get to see these people doing what it is they’re strongest at, and you never know who that’s going to inspire as they’re watching. And I think that’s been one of the strongest common threads through every season: that it’s ongoing inspiration for the future generation, and there’s always somebody that you can connect with. Out of the 20, there’s at least one person, and even if they don’t make it to the top 20, if you watch through the audition specials, you’ll see someone that you connect with; they’ll strike a chord. It moves you.

References

Gerber, Alan S. and Donald P. Green. 2012. *Field experiments: Design, analysis, and interpretation*. W. W. Norton.