Replication of "Predispositions and the Political Behavior of American Economic Elites: Evidence from Technology Entrepreneurs"

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1 Abstract[1]

Broockman, Ferenstein, and Malhotra (2019) show that technology entrepreneurs have a unique set of political beliefs: they are liberal on social issues, globalism, and redistribution, but very conservative on government regulation. The replication of almost all the models succeeded. An extension looking into treating missing data more rigorously returned some differences in a model. Analyzing technology elites' political beliefs is an increasingly timely task as the technology industry becomes more influential in politics.

2 Introduction

Broockman, Ferenstein, and Malhotra (2019) seek to disprove the assumption that economic elites are homogenous and that increases in their political power necessarily increases inequality across the board—specifically, they focus on describing the political behavior of technology elites, who are growing increasingly wealthy and politically influential. They use four original surveys—of technology entrepreneurs in which the modal respondent is a millionaire who founded or runs a tech industry company with around 100 employees; of partisan donors with an oversample of top 1% donors; and subsamples of wealthy individuals and partisans in the mass public from Survey Sampling International. Throughout the paper, they compare the political beliefs of technology entrepreneurs to these other groups. They demonstrate that technology entrepreneurs support liberal redistributive, social, and globalist policies, but conservative regulatory policies. This is a unique bundle among other economic elites that the authors speculate stem from technology entrepreneurs' unique predispositions. Technology entrepreneurs believe more strongly in markets and entrepreneurship than general Democrats and large Democratic donors—they are more opposed than Democrats to regulation regardless of the industry and generally prefer private to public-sector management. Uniquely among groups, they support redistribution but oppose regulation. Thus, despite some popular belief, they are not very likely to be libertarians. Furthermore, the authors compared the results of entrepreneurs to Stanford CS and biology majors to show that these political predispositions are apparent in STEM undergraduates before they enter the tech workforce. Like the general public, economic elites' political views stem from values and predispositions, and if similar-minded people tend to cluster in similar industries, views of elites can be distinguished among industries. The authors surmise that their findings provide evidence of looming changes in the Democratic Party, since technology elites are have the financial means to influence candidates but are opposed to many government interventions that have been the standard Democratic answer to inequality and receive support from traditionally Democratic interest groups such as unions.

3 Literature Review

There is very little literature available on the political beliefs of members of the technology industry. Much research in this area has been conducted by the authors themselves. Of particular interest is Ferenstein's "The Age of Optimists"

[1] All analysis for this paper is available at https://github.com/michgao87/gov1006-milestone6

4 Replication

There is one linear regression model that I was unable to replicate fully. In Table 6: "Technology Entrepreneurs No More Likely to Oppose Regulating Technology Products Than Democratic Groups," my linear regression contains the wrong coefficients relating to the "tech product/service" indicator variable.

5 Extension

My extension is to handle missing data using multiple imputation via the mice package in R. I noticed that there were often sizable proportions of missing data for many variables used in the research. The original authors omitted the missing data when running their regressions, as did I when replicating their work. However, I wondered how handling the missingness might change the results. Because there were multiple models run in the paper, I chose only one to extend using multiple imputation for the missing data. The model I found most interesting was regressing views towards government intervention in the economy, private sector management, and opinion of entrpreneurs by group (tech entrepreneur, Democratic and Republican donors, and Democratic and Republican mass public).

According to Rubin (1976)'s classification, there are three types of missing data: Missing Completely at Random, Missing at Random, and Missing Not at Random. MNAR is extremely problematic, as it implies that there are unobservable characteristics driving the observed phenomena. MCAR is ideal because it would not affect the results but is generally unrealistic. Assuming MAR, multiple imputation is a possible solution. Multiple imputation is a procedure that substitutes missing values using an appropriate model that includes random variation; creates independent imputed datasets; and calculates the final parameter estimates as the average of the estimates across each of those datasets. The new standard errors must also take into account the uncertainty generated by the multiple imputed datasets. The mice package in R uses Conditional Multiple Imputation, which models a variable's conditional distribution on the other variables (rather than assuming one distribution for the entire dataset).

Missing Data

Variable	# Missing	% Missing
gov_goodjob	368	10.89
pref_for_private	355	10.51
govruns	352	10.42
entrepreneurstoomuchcredit	237	7.02
sampletext	75	2.22

This table shows that the regression results with the imputed data are slightly different than the original results without. Though all the coefficients are slightly different, all the significances are identical except one: the coefficient for Republican Donors on the question of "Entrepreneurs get too much credit" is significant in the extension, but was originally insignificant. However, the actual difference in the coefficient is just 0.01. Here you can see the influence of having somewhat arbitrary p-value cut-offs. The standard error for the coefficient using the imputed data is much lower than the standard error with the missing data that was omitted. Nevertheless, the overall finding for that column, which is that tech entrepreneurs have beliefs on entrepreneurship most similar to Republican donors, still holds, since the Republican donor coefficient is so much lower than the coefficient for other subgroups.

As for implications for the other models in the paper, it seems that this multiple implication procedure may tend to make variables appear significant even if they did not appear that way with the missing data omitted. The more interesting question remains, is Missing At Random a reasonable assumption for this data?

Extension: Regression With and Without Imputed Data

	Approval of Privately Run Programs (1–5) Minus Approval of Govt-Run Social Programs (1–5)		Govt Does Good Job Running Social Programs (1–4)		Entrepreneurs Get Too Much Credit (1–4)	
Dem. Donors	−1.67***	−1.73***	0.63***	0.64***	0.42***	0.43***
	(0.04)	(0.10)	(0.02)	(0.05)	(0.02)	(0.05)
Dem. (Mass Public)	−0.58***	−0.62***	0.16***	0.17***	0.76***	0.76***
	(0.04)	(0.10)	(0.02)	(0.05)	(0.02)	(0.05)
Rep. Donors	1.20***	1.16***	−0.89***	−0.89***	−0.07***	−0.06
	(0.05)	(0.13)	(0.03)	(0.07)	(0.02)	(0.06)
Rep. (Mass Public)	0.002	−0.05	−0.16***	−0.15***	0.75***	0.76***
	(0.04)	(0.10)	(0.02)	(0.05)	(0.02)	(0.05)
Constant (Tech Entrepeneurs)	0.39***	0.44***	2.20***	2.19***	2.21***	2.20***
	(0.03)	(0.08)	(0.01)	(0.04)	(0.01)	(0.04)
Observations	19,842	2,952	19,830	2,940	19,959	3,069
R^2	0.21	0.22	0.20	0.21	0.13	0.13
Note:	*p<0.1; **p<0.05; ***p<0.01					

6 Appendix

Below are replicated figures and tables in the order they appear in the paper. I did not replicate text-only tables.

Milestone 5 Graphic: I included a caption for Figure 4, "Average of Policy Indices by Area." Since I replicated all figures, I put them all here in the Appendix, but that would be considered my graphic from Milestone 5.

Figure 1: Technology Entrepreneurs' Wealth Is Growing, and They Increasingly Contribute It to Democrats

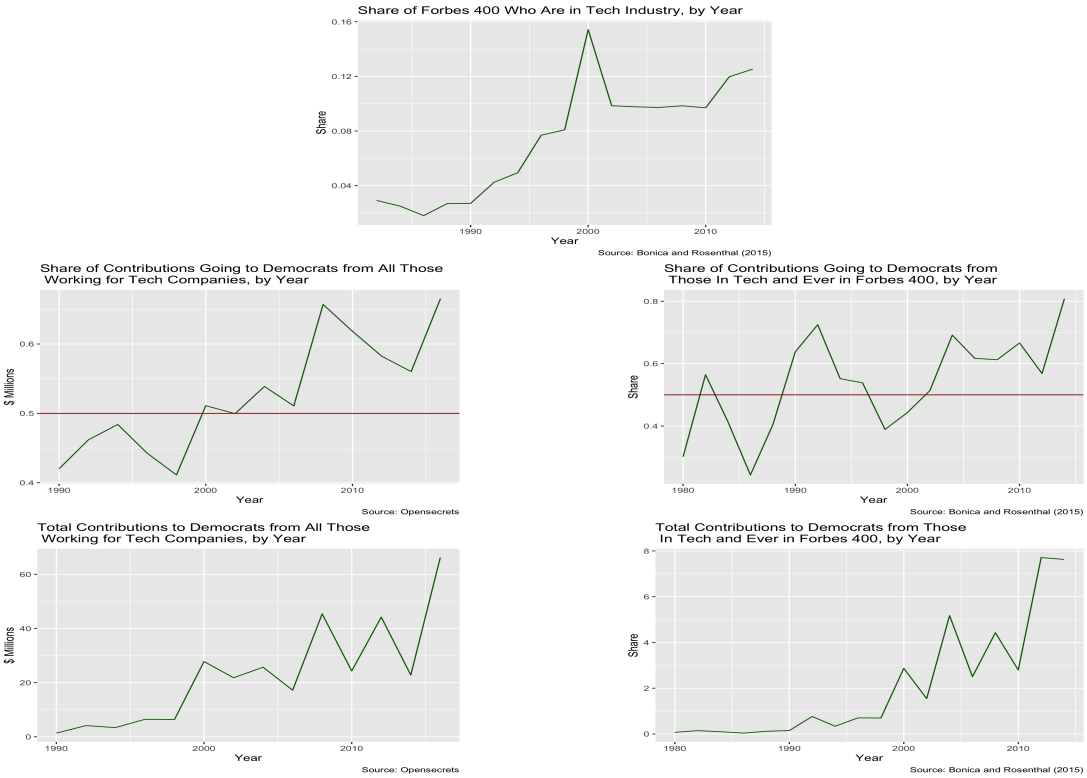


Figure 2: Democratic Donors' Forecasts of Groups That Will Gain and Lose Influence in the Party

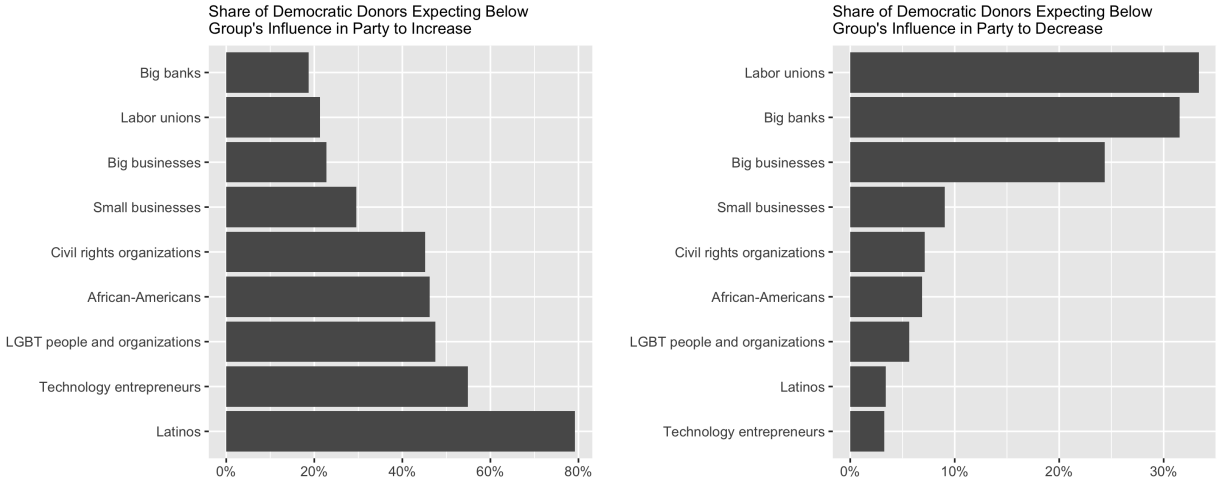


Figure 3: Self−Reported Respondent Characteristics: Technology Entrepreneur Survey

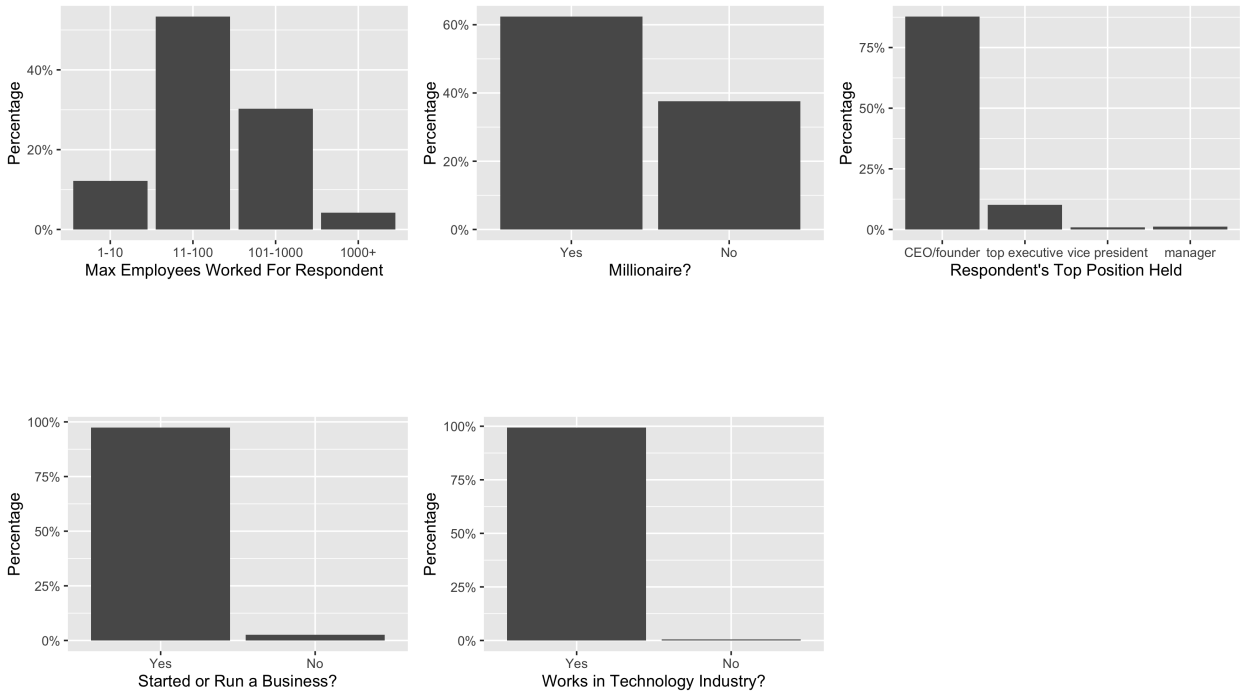


Table 2: Technology Entrepreneurs Do Not Agree with Libertarian Philosophy

	Technology Entrepreneur Survey	Democratic Donor Survey	Republican Donor Survey	Democrats (Public Survey)	Republicans (Public Survey)
Agree with Libertarian Philosophy	22.4%	5.1%	68.4%	43.8%	62.5%

Table 3: Technology Entrepreneurs Uniquely Support Redistribution But Oppose Regulation

	Technology Entrepreneurs	Democratic Donors	Republican Donors	Democrats (Public)	Republicans (Public)	Millionaires (Public)
Do Reg, Do Redist	17.9%	62.6%	2.8%	53.8%	28.8%	31.8%
Don't Reg, Do Redist	60.1%	34.7%	20.9%	36.3%	34.5%	30.3%
Do Reg, Don't Redist	2.8%	1.2%	1.6%	6.0%	9.3%	9.1%
Don't Reg, Don't Redist	19.3%	1.5%	74.7%	3.9%	27.4%	28.8%

Figure 4: Average of Policy Indices by Area

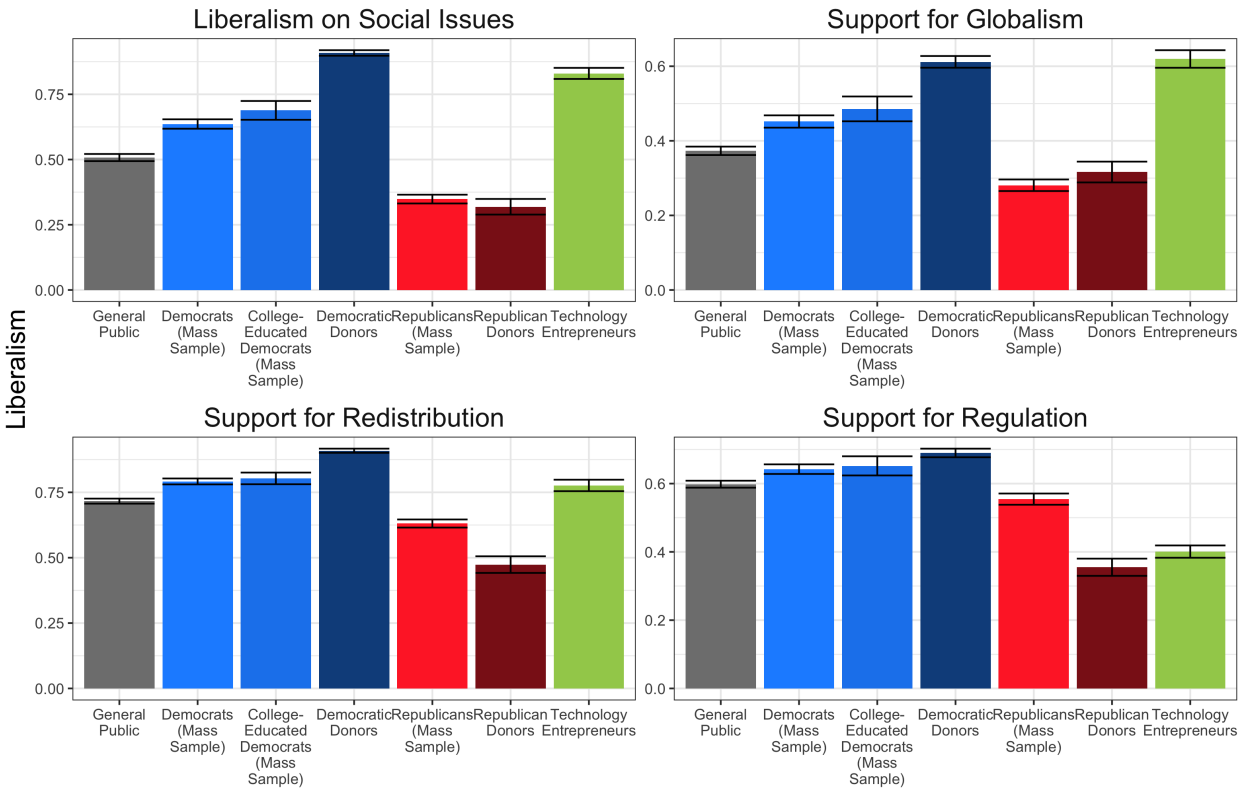
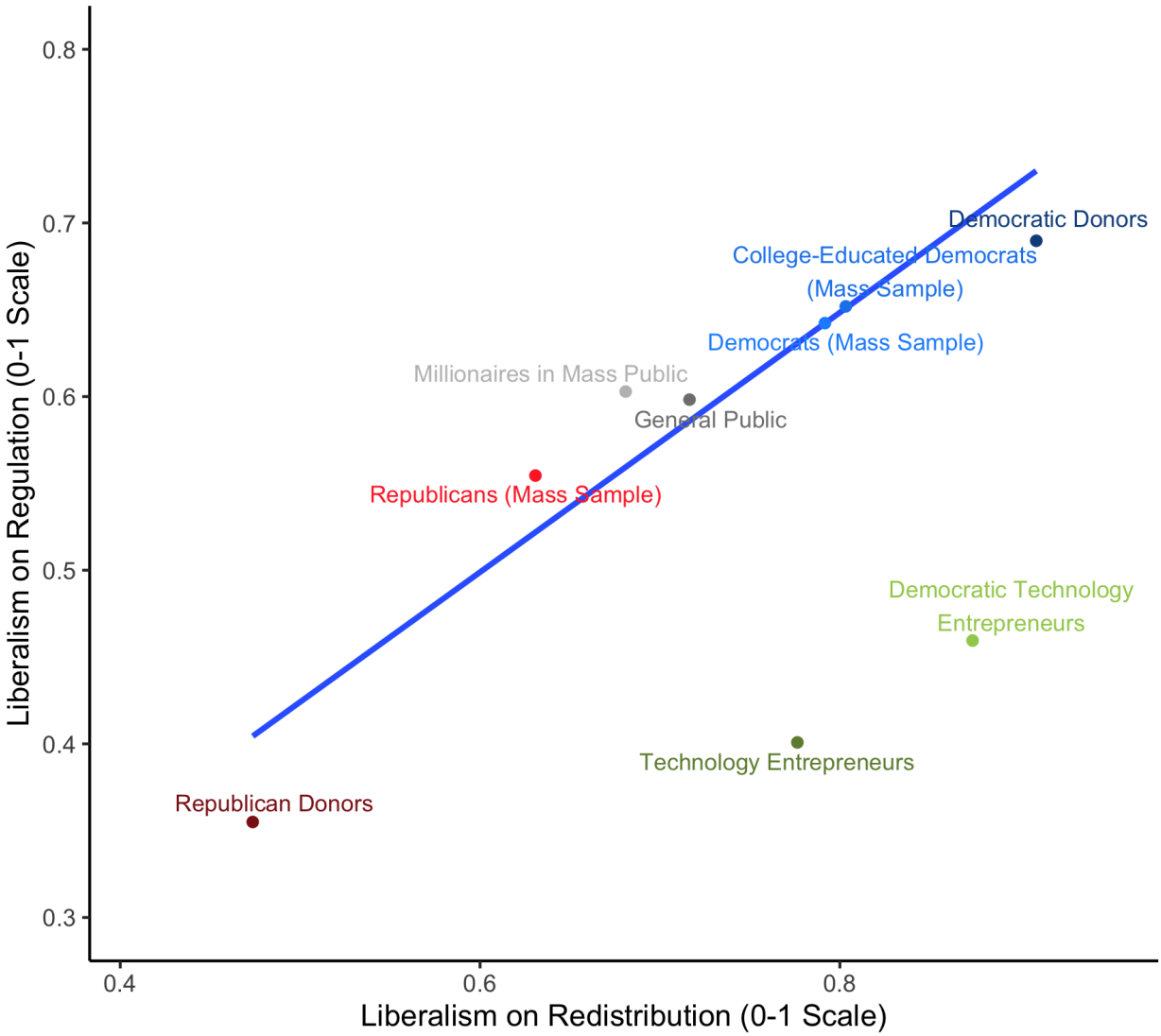


Figure 4 sums up the main finding of the paper – technology entrepreneurs' distinctive bundle of policy views. Technology entrepreneurs have liberal views in many areas. On social issues, globalism, and redistribution, they are more supportive than the Democratic public, educated Democrats, and Democratic donors. Yet on the topic of regulation (the questions included "government regulation of business does more harm than good" and "regulate 'gig' workers like regular workers"), tech entrepreneurs were significantly less supportive than those same groups of Democrats. On regulation, tech entrepreneurs actually resemble Republicans much more.

Figure 5: Technology Entrepreneurs' Distinctive Set of Economic Views



x-s y-axes, respectively. The blue line shows the line of best fit for samples other than the technology sample.

Figure 6: Values and Predispositions

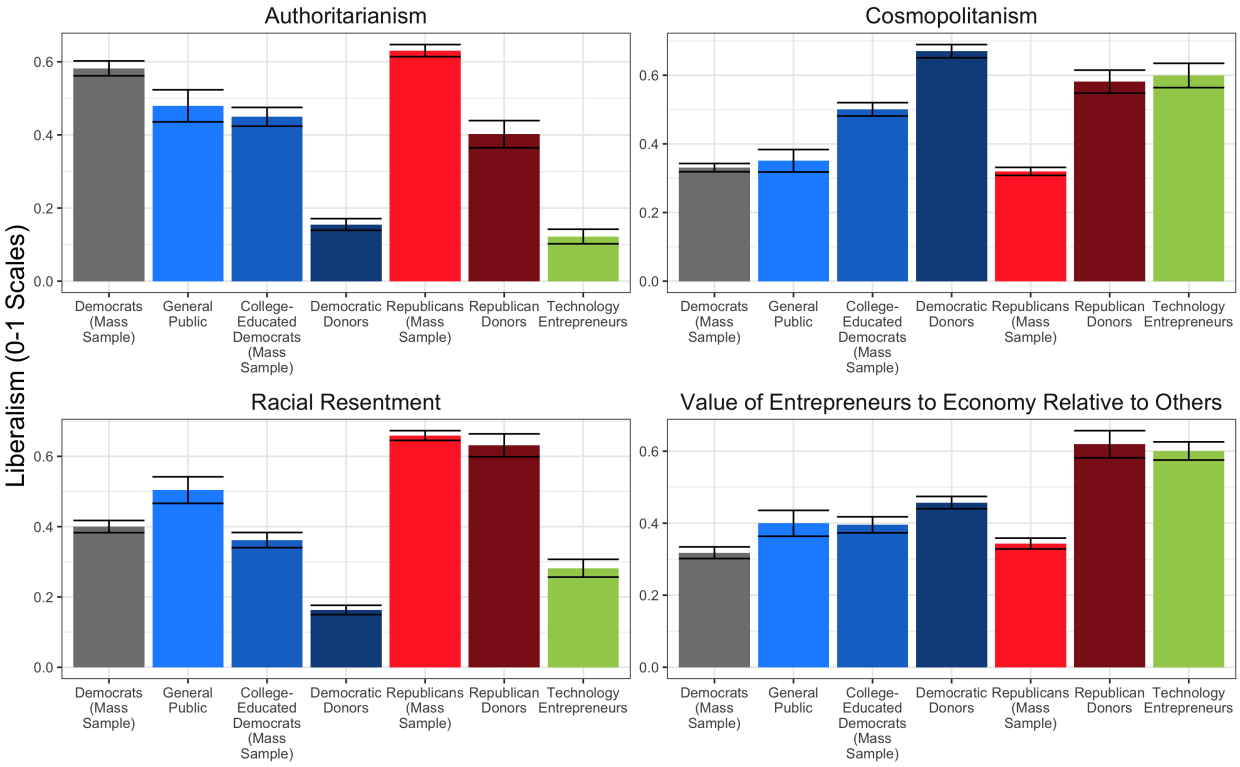
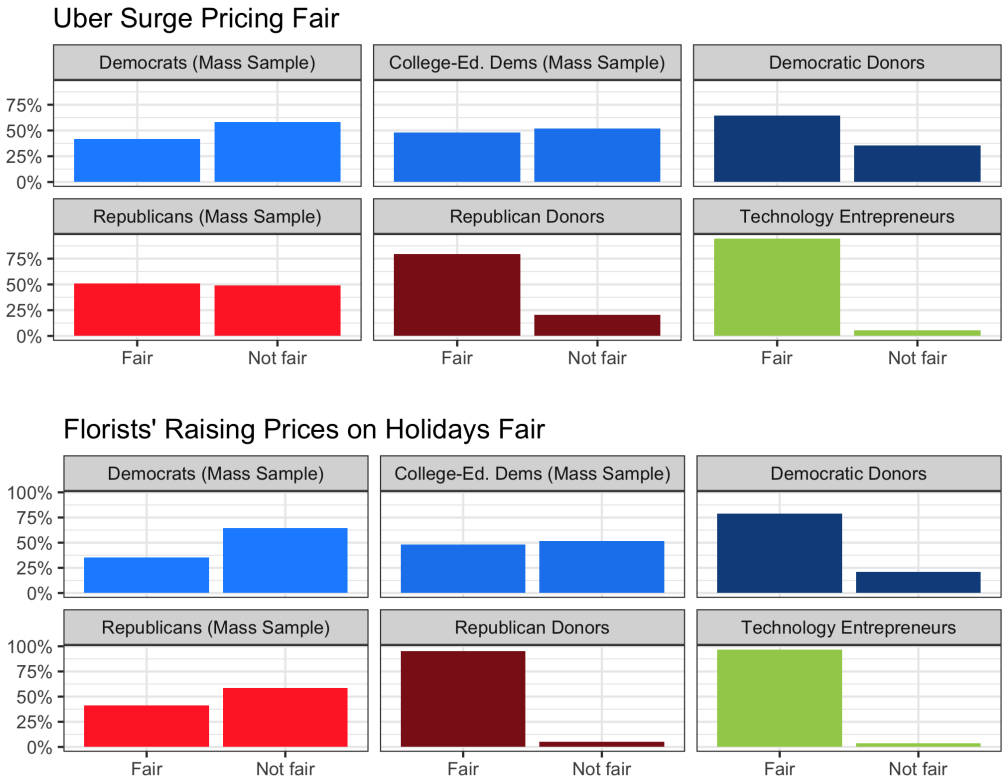


Figure 7: Uber versus Florists Survey Experiment




```
##
## Call:
## lm(formula = value ~ tech * tech_policy, data = survey)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -0.6965 -0.5069 -0.2004  0.3035  1.4931
##
## Coefficients:
##                  Estimate Std. Error t value Pr(>|t|)
## (Intercept)      0.200420   0.007526  26.631  < 2e-16 ***
## tech             0.082599   0.016446   5.023 5.17e-07 ***
## tech_policy      1.306479   0.010644 122.746  < 2e-16 ***
## tech:tech_policy 0.107038   0.023247   4.604 4.18e-06 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.5323 on 12652 degrees of freedom
##   (1288 observations deleted due to missingness)
## Multiple R-squared:  0.6111, Adjusted R-squared:  0.611
## F-statistic:  6628 on 3 and 12652 DF,  p-value: < 2.2e-16
```

Table 5: Technology Entrepreneurs More Likely to Oppose Regulation of Technology, and Less Likely to Oppose of Other Industries, But So Are Other Democrats

	DV = "Government regulation of [CATEGORY] does more harm than good." (1–4 scale)			
	Technology Entrepreneurs	Democratic Donors	Democratic Partisans	All Three Groups
Treatments				
"the technology industry"	0.28**	0.46***	0.19**	0.28**
	(0.11)	(0.07)	(0.09)	(0.11)
"the financial industry (such as banks)"	−0.50***	−0.32***	−0.20**	−0.50***
	(0.11)	(0.08)	(0.09)	(0.12)
"the pharmaceutical industry"	−0.37***	−0.08	−0.10	−0.37***
	(0.11)	(0.07)	(0.08)	(0.11)
Sample Dummies (Technology Entrepeneurs = Base Category)				
Democratic Donors				−0.94***
				(0.10)
Democrats (Mass Public)				−0.03
				(0.10)
Treatment x Sample Interactions				
Technology × Democratic Donors				0.18
				(0.14)
Technology × Democrats (Mass Public)				−0.09
				(0.14)
Finance × Democratic Donors				0.19
				(0.14)
Finance × Democrats (Mass Public)				0.30**
				(0.14)
Pharmaceuticals × Democratic Donors				0.29**
				(0.14)
Pharmaceuticals × Democrats (Mass Public)				0.27*
				(0.14)
Constant (Base Category = Tech. Entrepeneurs' Responses When No Industry Is Specified)	2.61***	1.67***	2.58***	2.61***
	(0.08)	(0.05)	(0.06)	(0.08)
Observations	439	846	817	2,102
R^2	0.13	0.12	0.02	0.25
Note:	*p<0.1; **p<0.05; ***p<0.01			

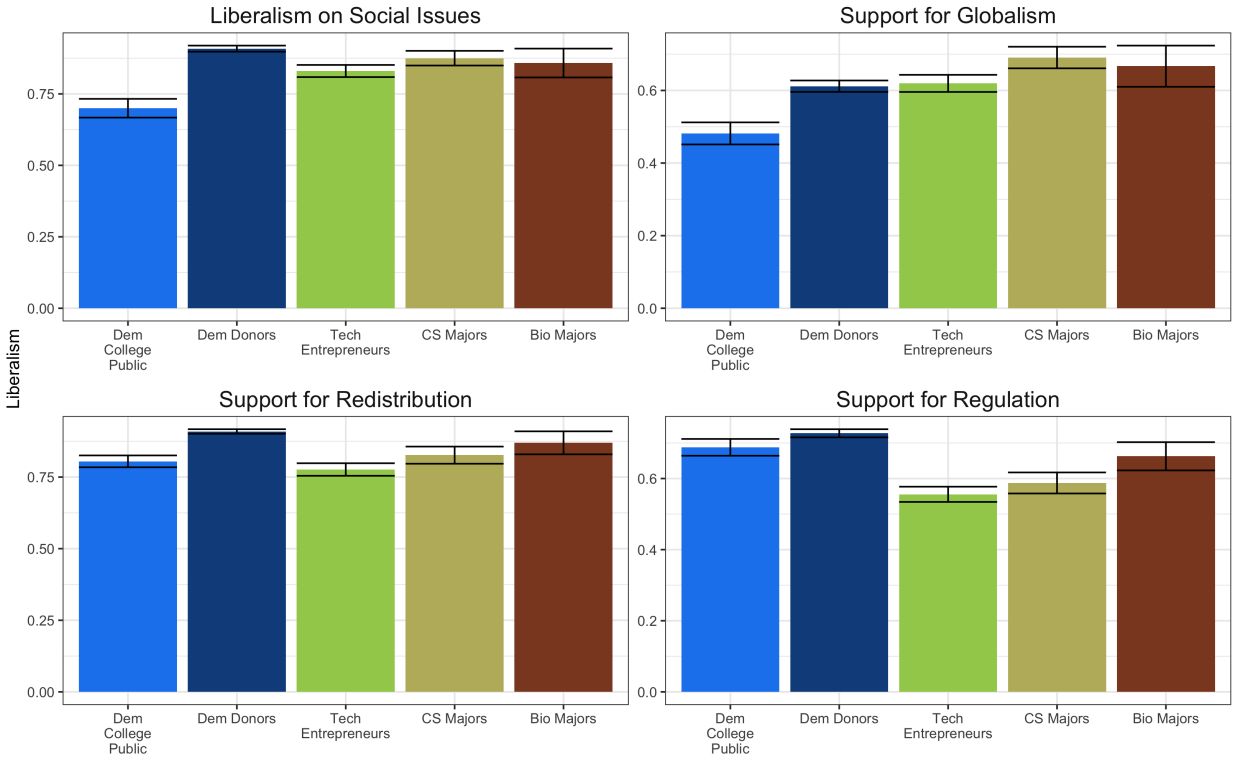
Table 6: Technology Entrepreneurs No More Likely to Oppose Regulating Technology Products Than Democratic Groups

	DV = "Opposition to regulation of particular products and services" (0-1 scale)
Technology Elites	0.083***
	(0.016)
Tech Product/Service	1.306***
	(0.011)
Technology Elites x Tech Product/Service	0.107***
	(0.023)
Constant (Base Category = Democratic Samples)	0.200***
	(0.008)
Observations	12,656
R^2	0.611
Note:	*p<0.1; **p<0.05; ***p<0.01

Table 7: Relative to Democrats, Technology Entrepreneurs Prefer Private- to Public-Sector Management Generally

	Approval of Privately Run Programs (1–5) Minus Approval of Govt-Run Social Programs (1–5)	Govt Does Good Job Running Social Programs (1–4)	Entrepreneurs Get Too Much Credit (1–4)
Dem. Donors	−1.73***	0.64***	0.43***
	(0.10)	(0.05)	(0.05)
Dem. (Mass Public)	−0.62***	0.17***	0.76***
	(0.10)	(0.05)	(0.05)
Rep. Donors	1.16***	−0.89***	−0.06
	(0.13)	(0.07)	(0.06)
Rep. (Mass Public)	−0.05	−0.15***	0.76***
	(0.10)	(0.05)	(0.05)
Constant (Tech Entrepeneurs)	0.44***	2.19***	2.20***
	(0.08)	(0.04)	(0.04)
Observations	2,952	2,940	3,069
R^2	0.22	0.21	0.13
Note:	*p<0.1; **p<0.05; ***p<0.01		

Figure 8: Comparing Democrats, Technology Entrepreneurs, and Undergraduates: Policy Views



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