Trends in American Public Opinion on Global Warming Policies Between 2010 and 2012

Jon A. Krosnick

Bo MacInnis

Stanford University

April, 2012

Data for the 2010 survey reported here were collected by Abt SRBI. Data for the 2012 survey reported here were collected by Ipsos Public Affairs. Jon Krosnick is University Fellow at Resources for the Future. Address correspondence to Jon Krosnick, 432 McClatchy Hall, 450 Serra Mall, Stanford University, Stanford, California 94305 (email: Krosnick@stanford.edu).

Trends in American Public Opinion on Global Warming Policies Between 2010 and 2012

Abstract

Two sets of events in 2011 and early 2012 might have caused a drop in the proportion of Americans who endorse policies intended to reduce future global warming: (1) the fact that 2011 was an unusually cool year in terms of world-wide average temperatures, and (2) statements by most candidates running for the Republican Party's nomination for President expressing skepticism about the existence of climate change, the role of human activity in causing it, or the wisdom of implementing policies to curtail it. A comparison of surveys conducted with nationally representative samples of American adults in 2010 and 2012 revealed that: (1) majorities of Americans wanted government to take specific actions to mitigate the effects of global warming in 2010 and 2012, (2) the proportions of people favoring government action declined by 5 percentage points per year on average between 2010 and 2012, and (3) the declines were concentrated among people who did not trust environmental scientists (even more so among Republicans than among Democrats and Independents). No evidence supported the hypothesis that people living in states with economies that were struggling more manifested larger declines in policy endorsement. Thus, American public endorsement of many policies intended to reduce future warming dropped but remains high.

Trends in American Public Opinion on Global Warming Policies Between 2010 and 2012

In recent years, our research team's national surveys have produced two sets of findings with regard to endorsement of policies: (1) huge majorities of Americans have endorsed some emissions reduction policies; smaller majorities have endorsed other emissions reduction policies; and small minorities have endorsed two policies involving increasing taxes on gasoline and electricity in order to reduce consumption of these resources, and (2) the sizes of these majorities did not change notably up until 2010 (http://woods.stanford.edu/research/surveys.html).

At the same time, our surveys have documented changes in the distributions of a variety of what we call "fundamental beliefs about global warming" since 2007. Specifically, although huge majorities of Americans have said they believed that the earth's temperature has been gradually warming over the last 100 years, these majorities shrank by about 10 percentage points between 2007 and 2009. This decline was concentrated mostly among people who did not trust scientists who study the earth's climate. These skeptical citizens were also especially aware that 2008 was an unusually cool year world-wide. We posited that among people low in trust in climate scientists, the observation that the earth's temperature was unusually cool in 2008 caused a decline in the percent of people who endorsed the existence of long-term warming.

Because 2010 was an unusually warm year world-wide, we predicted that the proportion of Americans expressing the belief that global warming had been happening would increase in 2011, and our survey that year documented such a shift (http://www.ipsos-na.com/news-polls/pressrelease.aspx?id=5337; http://www.reuters.com/article/2011/09/15/us-usa-poll-ipsos-idUSTRE78D5B220110915). Because 2011 was an unusually cool year world-wide, this reasoning anticipates a drop in 2012 in the proportion of people who believe in the existence of

long-term warming, concentrated especially among people low in trust in climate scientists.

If such a drop did occur, it might have spilled over onto support for amelioration policies. Such a linkage would be quite sensible. If Americans believe that the primary purpose of policies designed to reduce future greenhouse gas emissions is to reduce future long-term warming, adopting the belief that no such warming has occurred in the past might lead people to back off of endorsement of these policies. Thus, in early 2012, we might expect to see a decline in policy endorsement.

There is a second possible reason for such a decline as well: Rhetoric expressed during the Republican Party's primary election campaigns. Most of the candidates running for the Republican Party's nomination for President of the United States expressed skepticism about the existence of global warming, its causes, or the wisdom of policies to ameliorate it in the future. For example:

> **Rick Santorum** "There is no such thing as global warming. .... It's just an excuse for more government control of your life, and I've never been for any scheme or even accepted the junk science behind the whole narrative." (Johnson and Somanader, 2011).
>
> "The apostles of this pseudo-religion believe that America and its people are the source of the earth's temperature. I do not...In contrast, radical environmentalism has a blind devotion to the promotion of a radical agenda that ignores the interests and property rights of people. Global warming became the litmus test of this movement." (Johnson, 2012).
>
> **Mitt Romney** "My view is that we don't know what's causing climate change on this planet. And the idea of spending trillions and trillions of dollars to try to reduce CO2 emissions is not the right course for us." (Henry, 2012). "I can tell you the right course

for America with regard to energy policy is to focus on job creation and not global warming." (Clark, 2011)

Newt Gingrich "I want to be clear: I don't think that we have conclusive proof of global warming. And I don't think we have conclusive proof that humans are at the center of it." (Jackson, 2011)

Ron Paul "The greatest hoax I think that has been around for many, many years if not hundreds of years has been this hoax on [...] global warming." (Paul, 2012).

Herman Cain "I don't believe ... global warming is real. Do we have climate change? Yes. Is it a crisis? No. ... Because the science, the real science, doesn't say that we have any major crisis or threat when it comes to climate change." (Dade, 2011)

Rick Perry "The fact of the matter is the science is not settled on whether or not the climate change is being impacted by man to the point where we're going to put America's economics in jeopardy." (Lehmann, 2011).

Michelle Bachmann "And also on climate change, both [Romney and Gingrich] were in support of the efforts regarding climate change. I oppose it." (Wallace, 2011).

If elite rhetoric influences the opinions of members of the public who trust those elites (see, e.g., Zaller, 1992), then we might expect to see a decline in Republican citizens' endorsement of emissions reduction policies following the fall and winter seasons of campaigning and debating.

This paper reports the results of analyses exploring these issues. Specifically, we compared policy endorsement in early 2012 with endorsement of the same policies in 2010, and we examine whether changes over time were concentrated in particular subsets of the population along the lines outlined above.

Methods

Data

2010 Survey Interviews were conducted with a nationally representative sample of 1,001 U.S. adults by telephone by Abt SRBI between November 1 and November 14, 2010. A total of 671 respondents were interviewed on a landline telephone, and 330 were interviewed on a cell phone. Interviews were administered in English and Spanish. The AAPOR Response Rate 3 was 17%.

Samples were drawn from both landline and cellular random digit dial (RDD) frames by Survey Sampling International, LLC, according to specifications from Abt SRBI. Landline telephone numbers were drawn with equal probabilities from active blocks (area code + exchange + two-digit block number) that contained one or more residential directory listings. The cell phone sample was generated through systematic sampling from 1000-blocks dedicated to cellular service according to the Telcordia database.

For the landline sample, in households with two adults, one adult was randomly selected. In households with three or more adults, a first random selection was made to choose between the adult who answered the phone and the rest of the adults, and if the remaining adults were selected, one was randomly chosen using the last or next birthday method (whereby the adult with the most recent or the upcoming birthday was selected for interviewing; the use of next vs. last birthday for each household was determined randomly). For the cell phone sample, interviews were conducted with the person who answered the phone. Interviewers verified that the person was an adult and in a safe place before administering the survey. Cell phone respondents were offered a post-paid reimbursement of $10 for their participation.

Abt SRBI created a base weight that adjusted for differential probabilities of selection

due to the number of adults in the household, the number of voice-use landlines, and the number of cell phones. The base weight also adjusted for overlap of the landline and cell phone RDD frames. Final weights were computed using a raking algorithm (DeBell and Krosnick, 2009; Pasek, 2010) that accounted for unequal probabilities of selection and post-stratified to population proportions in terms of age, sex, education, ethnicity, race, and Census region, using targets from the September 2010 Current Population Survey conducted by the U.S. Census Bureau. The weighting combined the interviews done on landlines and cell phones taking into account the rates of landline and cell phone usage documented by the 2009 National Health Interview Survey.

Table 1 displays distributions of unweighted and weighted demographics of the survey sample and national benchmarks from the 2011 March supplement of the Current Population Survey. These distributions show that the survey sample was similar to the American population before the weights were applied and was more similar after the data were weighted. The weighted sample slightly over-represented non-Hispanic whites.

2012 Surveys A random digit dial telephone surveys were conducted with representative national probability samples of U.S. adults ages 18 and older by Ipsos Public Affairs between February 2 and 8, 2012, and between March 8 and 11, 2012. For the February 2012 survey, 824 respondents were interviewed on a landline phone, and 209 were interviewed on a cell phone. The AAPOR Response Rate 3 was 6%. For the March 2012 survey, 853 respondents were interviewed on a landline phone, and 231 were interviewed on a cell phone. The AAPOR Response Rate 3 was 7%. Interviews were administrated in English and Spanish.

Samples were drawn by Survey Sampling International, LLC, from both landline and cellular random digit dial (RDD) frames to represent people with access to either a landline or

cell phone. Numbers for the landline sample were drawn with equal probabilities from active blocks (area code + exchange + two-digit block number) that contained one or more residential directory listings. The cell phone sample was drawn through a systematic sampling from 1000 blocks dedicated to cellular service according to the Telcordia database.

The data were weighted to ensure that the sample composition reflected the U.S. population as documented by figures from the U.S. Census Bureau. Weights were created to adjust for differential probabilities of selection due to the number of adults in the household, the number of voice-use landlines and cell phones, and the overlap of landline and cell phone RDD frames, as well as non-coverage and non-response through post-stratification using age, sex, education, ethnicity, race, and region using targets from the May 2011 Current Population Survey conducted by the U.S. Census Bureau.

Table 2 displays the distributions of unweighted and weighted demographics along with national benchmarks computed using the data from the March 2011 supplement of the Current Population Survey from the U.S. Census Bureau. Since a randomly selected one-third of the sample in February 2012 (N = 344) was asked the global warming policies questions, the other two-thirds were excluded from the analysis. Before the weights were applied, the sample was similar to the American population, and the weighted sample was nearly identical to the population except for an over-representation of high school graduates and an under-representation of people who had some college but without college degree. All results reported below are adjusted using sampling weights.

Measures

Attitudes Toward Policies to Ameliorate Global Warming We measured endorsement of ten policies intended to reduce future global warming and constructed a summary index using all

of these measures. Respondents were asked:

"For each of the following, please tell me whether you favor or oppose it as a way for the federal government to try to reduce future global warming.

"Do you favor or oppose the federal government giving companies tax breaks to build nuclear power plants?

"Do you favor or oppose the federal government increasing taxes on gasoline so people either drive less, or buy cars that use less gas?

"Do you favor or oppose the federal government giving companies tax breaks to build nuclear power plant?

"Do you favor or oppose the federal government giving companies tax breaks to produce more electricity from water, wind, and solar power?

"Do you favor or oppose the federal government giving tax breaks to companies that burn coal to make electricity if they use new methods to put the air pollution they generate into underground storage areas instead of letting that air pollution go up the smokestacks at their factories?

Respondents were also asked five other policy questions:

"For the next items, please tell me for each one whether it's something the government should require by law, encourage with tax breaks but not require, or stay out of entirely. How about:

"Building cars that use less gasoline?

"Building cars that run completely on electricity?

"Building air conditioners, refrigerators, and other appliances that use less electricity?

"Building new homes and offices that use less energy for heating and cooling?

"Lowering the amount of greenhouse gases that power plants are allowed to release into the air?

Demographics, party identification, and liberal/conservative ideology were measured as follows:

Gender: Interviewers recorded the gender of the respondents.

Marital status: "What is your marital status? Are you married/Living as Married/Co-Habitating, Separated, Divorced, Widowed, or Never married?"

Education: "What is the highest grade of school you completed?"

Age: "In what year were you born?"

Race and Ethnicity: "Are you Spanish, Hispanic, or Latino?" and "What race or races do you consider yourself to be?"

Employment status: "Which statement best describes your current employment status? Working as a paid employee, Working and self-employed, Not working and on temporary layoff from a job, Not working and looking for work, or Not working for pay and not looking for work?"

Party Identification: "Do you consider yourself a Democrat, a Republican, an Independent, or none of these?"

Ideology: "Generally speaking, do you consider yourself liberal, moderate, or a conservative?"

Trust in Climate Scientists A question measuring trust in climate scientists was included in the 2010 survey. It asked: "How much do you trust the things that scientists say about the environment - completely, a lot, a moderate amount, a little, or not at all?" However, this question was not asked in the 2012 survey. Therefore, we constructed a measure of trust for

respondents in both years using the following method. First, we stacked together data from national RDD telephone surveys that we had conducted in 2006, 2007, 2008, 2009, and 2010 in which respondents had been asked the trust question. We observed no significant change in the distribution of responses to this question over these years (p = .14), so combining these data seemed justifiable. We then computed the percent of respondents in each state who said that they trusted the things scientists say about the environment completely, a lot, or a moderate amount. High trust states were those whose percentage was 80% or more, and low trust states were those with percentages less than 80%. Each respondent in 2010 and 2012 was then categorized as high or low in trust using the categorization of his/her state.

Struggling Economy To identify the degree of economic struggle unfolding in each state, we collected the annual state unemployment rates in 2010 and monthly state seasonally adjusted unemployment rates in January, 2012, from the Bureau of Labor Statistics. As of the time of writing this report, the January 2012 rates were the available ones closest in time to the times of our 2012 survey data collection in February and March. Since the 2010 survey was conducted in November, we used the annual 2010 unemployment rates to reflect the overall conditions of the economy throughout 2010. States in which the unemployment rate dropped between 2010 and 2012 by the national average or more and in which the January, 2012, state unemployment rate was at or below the national average unemployment rate were categorized as not struggling states. The remaining states were categorized as struggling economically.

Results

Public Endorsement of Polices in 2010

In 2010, majorities or large majorities endorsed each of a series of policies. For example, 78% said the federal government should require or encourage auto manufacturers to build cars

that use less gasoline, 65% said so about requiring the manufacture of cars that run completely on electricity, 77% said so about building appliances that use less electricity, 78% said so about requiring that new homes and offices be built to use less energy for heating and cooling, and 78% said so about reducing the amount of greenhouse gasses that power plants are allowed to emit (see column 1 of Table 3). 86% of respondents said they favored the federal government giving tax breaks to companies to produce more electricity from water, wind, and solar energy, and 62% favored the federal government giving tax breaks to coal-burning utilities to employ carbon sequestration (see column 1 of Table 4).

Only minorities endorsed three other policies: 47% favored the federal government giving tax breaks for building nuclear power plants (see column 1 of Table 4), 33% favored increasing gasoline taxes to reduce consumption, and 24% favored increasing electricity taxes in order to reduce consumption (see column 1 of Table 5).

Public Endorsement of Polices in 2012

For every one of these policies, fewer Americans favored them in 2012 than did so in 2010 (see the last column of Tables 3, 4, and 5). These drops were statistically significant for 8 of the 10 policies and approached marginal significance for the remaining two (p = .17 and .20). The significant decreases ranged in magnitude from 13 percentage points to 6 percentage points. Across all of the policies, the average decrease was 9 percentage points over two years. However, in no case did a majority in 2010 become a minority in 2012. That is, the seven policies that were favored by majorities of Americans in 2010 were still favored by majorities in 2012.

The proportion of the eight policies listed in Tables 3 and 4 that each respondent endorsed declined from 72% on average in 2010 to 62% in 2012 (Δ = 10%, $p < .01$),

5 percentage points on average per year. The null hypothesis that the decline was the same magnitude across the ten policy measures shown in Tables 3-5 was not rejected ($p = .11$). Therefore, the decline did not appear to be especially large for any of these measures.

Explaining the Decline

Trust in Scientists To explore whether the decline was concentrated among people who did not trust environmental scientists, we estimated the parameters of an OLS regression equation predicting the policy endorsement index using a dichotomous variable for year (coded 1 is for 2012 and 0 for 2010), the dichotomous trust variable (coded 1 is for respondents in low trust states and 0 for respondents in high trust states), and the interaction of these two variables, as well as a series of control variables (gender, race, ethnicity, age, education, marital status, employment status, political party identification, and liberal/conservative ideology).

As expected, the decline from 2010 to 2012 was statistically significant among people living in low trust states (marginal effect = -.10, $p < .01$) and was non-significant in the high trust states (marginal effect = .01, $p = .87$). The interaction of low trust and year was negative and significant (marginal effect = -.10, $p = .01$).

Party Identification To explore whether the decline was concentrated among Republicans, we conducted another OLS regression replacing the trust variable with a dummy variable identifying Republican respondents. As expected, the decline from 2010 to 2012 was statistically significant among Republicans (marginal effect = -.14, $p < .01$) and the decline was also significant but smaller among Independents and Democrats (marginal effect = -.07, $p < .01$). The interaction between year and Republican party identification was negative and statistically significant (marginal effect = -.07, $p = .03$).

Struggling Economies When we replaced Republican party identification with the

dummy variable identifying whether the respondent's state's economy was struggling, we observed no support for the "struggling economy" hypothesis. Among people living in struggling economies, policy endorsement declined significantly between 2010 and 2012 (marginal effect = -.07, p = <.01). And among people living in states without struggling economies, the drop in policy endorsement was larger and statistically significant (marginal effect = -.15, p < .01). The interaction of year with struggling economy was positive and statistically significant (marginal effect = .08, p < .01). Thus, the interaction ran in the direction opposite to the claim that people living in the most difficult economic conditions would manifest the largest declines in policy endorsement.

Finally, we estimated the parameters of an equation including all of the interactions testing all three moderation hypotheses (see Table 6). The findings were consistent with the findings when each factor was examined individually. Among the "base group" respondents– Democrats or Independents who lived in high trust states without struggling economies, the decline between 2010 and 2012 was not significant (marginal effect = -.03, p = .43). The interaction between year and low trust was negative and statistically significant (marginal effect = -.13, p < .01); the interaction between year and Republican Party identification was negative and statistically significant (marginal effect = -.06, p = .05), and the interaction between year with struggling economy was positive and statistically significant (marginal effect = .10, p < .01).

Figure 1 displays patterns of change documented by this analysis. The decline in the index of green opinions is greatest for Republicans who were low in trust in scientists, a bit less steep for Democrats and Independents who were low in trust in scientists, and invisible for people high in trust in scientists.

Conclusions

In summary:

(1) Majorities of Americans wanted government to take specific actions to mitigate the effects of global warming in 2010 and 2012

(2) The proportions of people favoring government action declined between 2010 and 2012, and

(3) The declines were greater among people who did not trust environmental scientists and were greater among Republicans than among Democrats and Independents.

(4) No evidence supported the hypothesis that people living in states with economies that were struggling more manifested larger declines in policy endorsement.

Thus, American public endorsement of many policies intended to reduce future warming dropped but remains high.

.

References

Clark, Kyle. (2011) Romney Talks Economy, Taxes, Energy Plan. <http://www.9news.com/news/article/227664/339/Romney-talks-economy-taxes-energy-plan-faith>. Accessed April 2, 2012.

Dade, Corey. (2011). In Their Own Words: GOP Candidates and Science. National Public Radio. <http://www.npr.org/2011/09/07/140071973/in-their-own-words-gop-candidates-and-science>. Accessed April 2, 2012.

DeBell, Matthew, and Jon A. Krosnick. (2009). *Computing Weights for American National Election Study Survey Data.* ANES Technical Report series, no. nes012427. Ann Arbor, MI, and Palo Alto, CA: American National Election Studies. Available at http://www.electionstidies.org

Henry, David. (2012). Climate-Change Lessons From Down Under for the Republicans: The Ticker. < http://www.bloomberg.com/news/2012-03-14/climate-change-lessons-from-down-under-for-the-republicans-the-ticker.html>. Accessed April 2, 2012.

Jackson, Brooks. (2011). Fact Check: Gingrich on Climate Change. USA Today. <http://www.usatoday.com/news/politics/story/2011-12-05/fact-check-gingrich-climate-change/51661486/1>. Accessed April 2, 2012.

Johnson, Brad, and Tanya Somanader. (2011). Santorum: 'There's No Such Thing As Global Warming. Think Progress. < http://thinkprogress.org/green/2011/06/24/253389/santorum-theres-no-such-thing-as-global-warming/>. Accessed April 2, 2012.

Johnson, Brad. (2012). Santorum Proudly Fails the "Litmus Test' Of Climate Science. Think Progress. < http://thinkprogress.org/green/2012/03/12/442814/santorum-proudly-fails-the-litmus-test-of-climate-science/>. Accessed April 2, 2012.

Lehmann, Evan. (2011). Huntsman Warns That GOP Can't Win the White House by Denying Climate Science. New York Times. <http://www.nytimes.com/cwire/2011/09/08/08climatewire-huntsman-warns-that-gop-cant-win-the-white-h-82737.html>. Accessed April 2, 2012.

Paul, Ron. (2012) Global Warming. < http://www.ronpaul.com/on-the-issues/global-warming/>. Accessed April 2, 2012.

Pasek, Josh. (2010). *anesrake: ANES Raking Implementation.* Comprehensive R Archive Network. Version 0.4. <http://cran.r-project.org/web/packages/anesrake/index.html>. Accessed July 12, 2010.

Wallace, Chris. (2011). Michele Bachmann Talks Presidential Politics; Sens. Coburn, Conrad on Extending the Payroll Tax Cut. Fox News. < http://www.foxnews.com/on-air/fox-news-sunday/2011/12/04/michele-bachmann-talks-presidential-politics-sens-coburn-conrad-extending-payroll-tax-cut>. Accessed April 2, 2012.

Zaller, J. (1992). The nature and origins of mass opinion. New York, NY: Cambridge University Press.

Table 1: Demographics of the 2010 Survey and the Current Population Survey

	2010 Survey (unweighted)	2010 Survey (weighted)	CPS March 2011	2010 Survey (weighted) – CPS 2011
Gender				
Male	46.9%	48.5%	48.6%	-.1%
Female	53.2	51.5	51.4	.1
Total	100.0%	100.0%	100.0%	
	(N = 1001)	(N = 1001)	(N = 149,071)	
Age				
18-24	10.3%	12.6%	12.8%	-.2%
25-34	10.9	17.9	18.0	-.1
35-44	12.9	17.5	17.2	.3
45-54	21.0	19.3	19.0	.3
55-64	18.4	15.8	16.0	-.2
65+	26.4	17.0	17.0	.0
Total	100.0%	100.0%	100.0%	
	(N = 960)	(N = 960)	(N = 149,071)	
Race and Ethnicity				
Non-Hispanic White	69.9%	74.5%	67.8%	6.7%
Non-Hispanic Black	9.2	10.2	11.5	-1.4
Hispanic	10.6	11.7	14.0	-2.3
Other	10.3	3.7	6.7	-3.0
Total	100.0%	100.0%	100.0%	
	(N = 1001)	(N = 1001)	(N = 149,071)	
Education				
Less than HS	7.5%	13.0%	13.3%	-.3%
HS graduates	27.9	31.1	30.4	.7
Some college	23.5	28.1	28.5	-.4
College or higher	41.2	27.9	27.8	.1
Total	100.0%	100.0%	100.0%	
	(N = 980)	(N = 980)	(N = 149,071)	
Region				
Northeast	19.3%	18.5%	18.3%	.2%
Midwest	23.0	23.0	21.8	.0
South	36.4	36.4	36.8	-.2
West	21.4	21.4	23.2	.0
Total	100.0%	100.0%	100.0%	
	(N = 1001)	(N = 1001)	(N = 149,071)	

Table 2: Demographics of the 2012 Surveys and the Current Population Survey

	2012 Surveys (unweighted)	2012 Surveys (weighted)	CPS March 2011	2012 Surveys (weighted) – CPS 2011
Gender				
Male	51.4%	48.6%	48.6%	.0%
Female	48.6	51.4	51.4	.0
Total	100.0%	100.0%	100.0%	
	(N = 1428)	(N = 1428)	(N = 149,071)	
Age				
18-24	8.2%	14.7%	12.8%	1.9%
25-34	11.0	16.6	18.0	-1.4
35-44	11.9	13.8	17.2	-3.4
45-54	19.5	23.2	19.0	4.2
55-64	22.5	13.4	16.0	-2.6
65+	27.0	18.3	17.0	1.3
Total	100.0%	100.0%	100.0%	
	(N = 1423)	(N = 1423)	(N = 149,071)	
Race and Ethnicity				
Non-Hispanic White	71.9%	67.8%	67.8%	.1%
Non-Hispanic Black	10.3	11.0	11.5	-.6
Hispanic	11.8	14.0	14.0	.0
Other	6.0	7.2	6.7	.5
Total	100.0%	100.0%	100.0%	
	(N = 1428)	(N = 1428)	(N = 149,071)	
Education				
Less than HS	7.5%	13.9%	13.3%	.6%
HS graduates	19.5	35.5	30.4	5.1
Some college	33.6	23.4	28.5	-5.2
College or higher	39.5	27.3	27.8	-.5
Total	100.0%	100.0%	100.0%	
	(N = 1418)	(N = 1418)	(N = 149,071)	
Region				
Northeast	19.0%	17.8%	18.3%	-.5%
Midwest	21.7	21.7	21.8	-.1
South	37.2	37.9	36.8	1.1
West	22.1	22.6	23.2	-.6
Total	100.0%	100.0%	100.0%	
	(N = 1428)	(N = 1428)	(N = 149,071)	

Table 3: Americans' Opinions About Whether the Government Should Require Various Practices by Law or Encourage Them with Tax Breaks

Question/Response	2010	2012	Difference: 2012 - 2010
Building cars that use less gasoline			
Require by law or encourage with tax breaks	78.1%	65.1%	-13.0%
Stay out of entirely	21.6	33.0	11.5
DK/RF	.4	1.9	1.6
Total	100.0% (N = 1001)	100.0% (N = 1428)	$p < .01$
Building cars that run completely on electricity			
Require by law or encourage with tax breaks	64.8%	52.9%	-11.9%
Stay out of entirely	33.9	44.9	11.1
DK/RF	1.3	2.2	.8
Total	100.0% (N = 1001)	100.0% (N = 1428)	$p < .01$
Building air conditioners, refrigerators, and other appliances that use less electricity			
Require by law or encourage with tax breaks	77.1%	64.6%	-12.5%
Stay out of entirely	22.3	33.2	11.0
DK/RF	.7	2.2	1.6
Total	100.0% (N = 1001)	100.0% (N = 1428)	$p < .01$
Building new homes and offices that use less energy for heating and cooling			
Require by law or encourage with tax breaks	78.0%	67.3%	-10.7%
Stay out of entirely	21.5	30.4	8.8
DK/RF	.5	2.4	1.9
Total	100.0% (N = 1001)	100.0% (N = 1428)	$p < .01$
Lowering the amount of greenhouse gases that power plants are allowed to release into the air			
Require by law or encourage with tax breaks	77.8%	69.9%	-7.9%
Stay out of entirely	20.3	27.1	6.8
DK/RF	1.9	3.0	1.1
Total	100.0% (N = 1001)	100.0% (N = 1428)	$p < .01$

Table 4: Opinions on Various Global Warming Policies

Question/Response	2010	2012	Difference: 2012 - 2010
Do you favor or oppose the federal government giving companies tax breaks to produce more electricity from water, wind, and solar power?			
Favor	85.8%	72.9%	-12.9%
Oppose	13.3	25.0	11.8
DK/RF	1.0	2.0	1.1
Total	100.0% (N = 1001)	100.0% (N = 1428)	$p < .01$
Do you favor or oppose the federal government giving tax breaks to companies that burn coal to make electricity if they use new methods to put the air pollution they generate into underground storage areas instead of letting that air pollution go up the smokestacks at their factories?			
Favor	62.3%	58.5%	-3.9%
Oppose	34.4	36.9	2.5
DK/RF	3.3	4.7	1.4
Total	100.0% (N = 1001)	100.0% (N = 1428)	$p = .17$
Do you favor or oppose the federal government giving companies tax breaks to build nuclear power plants?			
Favor	47.2%	43.0%	-4.2%
Oppose	48.9	53.5	4.6
DK/RF	4.0	3.5	-.4
Total	100.0% (N = 1001)	100.0% (N = 1428)	$p = .20$

Table 5: Opinions of Consumption Taxes

Question/Response	2010	2012	Difference: 2012 - 2010
Do you favor or oppose the federal government increasing taxes on gasoline so that people use less, or buy cars that use less gas?			
Favor	33.0%	26.0%	-7.0%
Oppose	66.6	72.5	5.9
DK/RF	.4	1.5	1.1
Total	100.0% (N = 1001)	100.0% (N = 1428)	$p < .01$
Do you favor or oppose the federal government increasing taxes on electricity so that people use less of it?			
Favor	23.9%	18.0%	-5.9%
Oppose	75.6	80.4	4.8
DK/RF	.5	1.6	1.1
Total	100.0% (N = 1001)	100.0% (N = 1428)	$p < .01$

Table 6: OLS Regression Predicting Global Warming Policy Endorsement

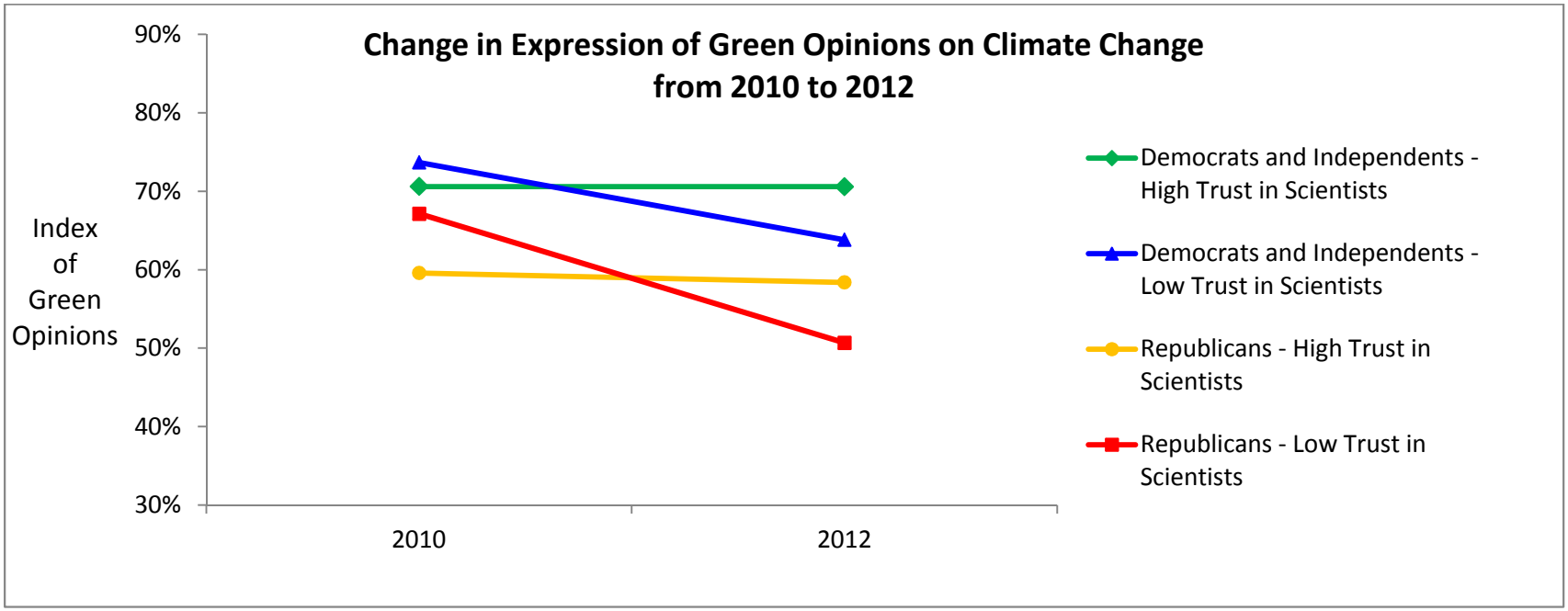
Predictor	GW Policy Endorsement Index
Year (1 = 2012, 0 = 2010)	-0.03
	(0.04)
Low trust states	0.06**
	(0.03)
Year x Low trust states	-0.13***
	(0.04)
Struggling economy	-0.07***
	(0.02)
Year x Struggling economy	0.10***
	(0.03)
Republican	-0.03
	(0.02)
Year x Republican	-0.06**
	(0.03)
Liberal ideology	0.04**
	(0.02)
Conservative ideology	-0.08***
	(0.02)
Female	-0.02
	(0.01)
Hispanic	0.02
	(0.02)
Non-Hispanic Black	-0.03
	(0.02)
Non-Hispanic Other race	-0.02
	(0.03)
Employed	0.03
	(0.02)
Unemployed	0.02
	(0.03)
Married	-0.00
	(0.01)
Age 25-34	0.23***
	(0.07)
Age 35-44	0.23***
	(0.07)
Age 45-54	0.20***
	(0.07)
Age 55-64	0.17**
	(0.07)
Age 65 or older	0.14**

	(0.07)
Age missing	0.09
	(0.07)
High school graduates	0.08
	(0.09)
Some college	0.09
	(0.09)
College degree or higher	0.12
	(0.09)
Education missing	0.17*
	(0.09)
Constant	0.44***
	(0.10)
Sample size	2,371
R-squared	0.17

Notes: Presented are the OLS regression coefficients (standard errors in parentheses) of GW policy endorsement index (ranging from 0 to 1) among respondents from the 2010 and 2012 surveys adjusted for sampling weights. All predictors are dichotomous. Omitted categories are male, not-Hispanic white, moderate ideology, not working, not married, age 18-25, less than high school education. 58 observations were excluded from the analysis because of incorrect zip code of the respondents from which the state of residence was determined.

*** p<0.01, ** p<0.05, * p<0.1

Figure 1


Change in Expression of Green Opinions on Climate Change from 2010 to 2012
Index of Green Opinions
90%
80%
70%
60%
50%
40%
30%
2010
2012
Democrats and Independents - High Trust in Scientists
Democrats and Independents - Low Trust in Scientists
Republicans - High Trust in Scientists
Republicans - Low Trust in Scientists