

# **A Continuing Analysis of Chinese and American Public Support for an International Climate Change Mitigation Treaty**

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## Introduction

The importance of global climate change in society cannot be overstated. As the world's two largest greenhouse gas (GHG) polluters and two largest economies, China and the United States share prominent roles in the development of international climate change mitigation strategies.

Efforts to address climate change through international cooperation have largely taken place through the United Nations Framework Convention on Climate Change (UNFCCC). These negotiations have been highlighted by tensions between developed and developing countries regarding what actions to take and who should bear the costs.

Despite some successes, UNFCCC negotiations have largely failed due to the differential treatment of developed and developing nations, specifically the lack of U.S. and Chinese involvement.

Because meaningful climate change action will require the cooperation and participation of both China and the U.S., a better understanding of public support for climate policy action in both countries is paramount.

Surveys were conducted of Chinese and American citizens from May – October 2015 (N=7,556). We investigated support for signing an international climate treaty and also what factors influence support for a climate treaty in each country.

We used three questions randomized across respondents specifically referring to the 2015 UNFCCC COP-21 meeting in Paris, France. One question is unconditional with no mention of the other country, while the other two questions are conditional on knowing the other country will or will not also sign the treaty.

## Method

Face-to-face intercept surveys were conducted of Chinese adults using a non-probability convenience sample in many locations in and around the cities of Xi'an and Chengdu during May and June of 2015.

Online surveys were conducted of adults in the U.S. through random sampling of respondent panels from all fifty states through Survey Sampling International in October 2015. Note that Wisconsin residents were oversampled (13.1%).

The U.S. surveys were written in English and the Chinese surveys were written in Chinese characters as translated by Chinese professors and student research assistants.

- China Adult N = 1,203, estimated response rate = 40%
- U.S. Adult N = 2,001, estimated response rate = 20%

Online surveys were conducted of college students in the U.S. using a non-probability convenience sample between September and November 2015 in thirteen states. Note that Wisconsin students were oversampled (44.5%).

Online surveys were also conducted of Chinese college students using a nonprobability convenience sample over the same period in five provinces. The largest portion of our sample comes from Sichuan Province (35.8%).

The U.S. surveys were written in English and the Chinese surveys were written in Chinese with English translations included.

- U.S. College N = 2,926, response rate = 65%
- China College N = 1,426, response rate = 64%

### **Overview of Survey Results**

Our survey included questions ranging from if climate change was happening and what was causing it to how concerned people were. Additionally, we asked questions about people's perception of the scientific consensus on human-caused climate change. Table 1 presents summary statistics for a variety of variables generated from responses to survey questions.

A brief overview of results from these questions show several striking differences between Chinese and American responses as well as some similarities.

- Chinese respondents show a greater belief that climate change is happening and that it is primarily caused by human actions.
- Both Chinese and American respondents misunderstand the scientific consensus on anthropogenic climate change.
- Although U.S. respondents show a higher likelihood of being concerned about climate change, both groups are relatively unconcerned.
- Nearly twice as many Chinese respondents believe every person has an obligation to act to prevent climate change.

Our research question is, do these differences in climate change views translate into differing opinions regarding climate change policy?

We asked respondents in both countries about international climate change policy in terms of the level of public support for an international climate change treaty.

We use three questions randomized across respondents specifically referring to the 2015 UNFCCC COP-21 meeting in Paris, France.

One question is unconditional with no mention of the other country, while the other two are conditional on knowing the other country will or will not also sign the treaty.

**Table 1: Descriptive Statistics**

Variable \ Description	United States			China		
	N	Mean	SD	N	Mean	SD
<i>Demographic Variables</i>						
<b>Adult \ Indicator for adult</b> 0 = College, 1 = Adult	4927	0.406	0.491	2629	0.458	0.498
<b>Age \ Respondent's age (in years)</b>	4893	29.6	14.1	2572	28.6	12.3
<b>Male \ Indicator for gender</b> 0 = Female, 1 = Male	4894	0.491	0.500	2572	0.464	0.499
<b>Minority \ Indicator for minority race/ethnicity</b> 0 = Not minority, 1 = Minority	4890	0.217	0.412	2563	0.055	0.227
<b>Income \ Annual Household Income (US Thousands \$, and Chinese Thousands ¥)</b>	4861	82.8	53.3	2556	78.0	60.2
<b>Degree \ Indicator for college degree</b> 0 = Else, 1 = At least bachelor's degree	4890	0.543	0.498	2561	0.228	0.419
<i>Environmental \ Policy variables</i>						
<b>HapYes \ Do you think climate change is happening?</b> 0 = Not happening or not sure, 1 = Happening	4927	0.807	0.395	2629	0.947	0.225
<b>CausHum \ Which comes closest to your understanding about the cause of CC?</b> 0 = Else, 1 = Primarily human caused	4927	0.586	0.493	2629	0.813	0.390
<b>ConcHi \ How concerned are you about climate change?</b> 0 = Else, 1 = Concerned or very concerned	4927	0.429	0.495	2629	0.351	0.478
<b>ObStrAgr \ Every person has the obligation to act to prevent climate change</b> 0 = Else, 1 = Strongly agree	4927	0.316	0.465	2629	0.567	0.496
<b>Sci90 \ What percent of climate scientists agree human-caused climate change is happening?</b> 0 = Else, 1 = 90% or more	4927	0.369	0.483	2629	0.285	0.452
<b>TrtyA \ Should your country sign an international climate change treaty? (unconditional)</b> 0 = Else, 1 = Somewhat or strongly support	1649	0.657	0.475	870	0.836	0.371
<b>TrtyB \ Should your country sign an international climate change treaty? (known participant)</b> 0 = Else, 1 = Somewhat or strongly support	1671	0.688	0.463	894	0.789	0.409
<b>TrtyC \ Should your country sign an international climate change treaty? (known non-participant)</b> 0 = Else, 1 = Somewhat or strongly support	1576	0.516	0.500	797	0.681	0.466
<i>Political Affiliation</i>						
<b>Lib \ Liberal political ideology</b> 0 = Not liberal, 1 = Liberal	4888	0.297	0.457			
<b>Mod \ Moderate political ideology</b> 0 = Not moderate, 1 = Moderate	4888	0.396	0.489			
<b>Cons \ Conservative political ideology</b> 0 = Not conservative, 1 = Conservative	4888	0.306	0.461			

## International Policy Question

Government leaders from around the world will meet in Paris, France in November, 2015 to negotiate a new international treaty to limit greenhouse gas emissions.

全球政界首脑将于2015年11月在法国巴黎会见商榷有关限制温室气体排放的国际新协议。

How much do you support/oppose United States signing such a treaty to commit to reducing its greenhouse gas emissions?

请问您对中国签署承诺减少温室气体排放协议的支持程度？

- Strongly oppose 非常支持
- Somewhat oppose 有些支持
- Neither support or oppose 既不支持也不反对
- Somewhat support 有些反对
- Strongly support 非常反对

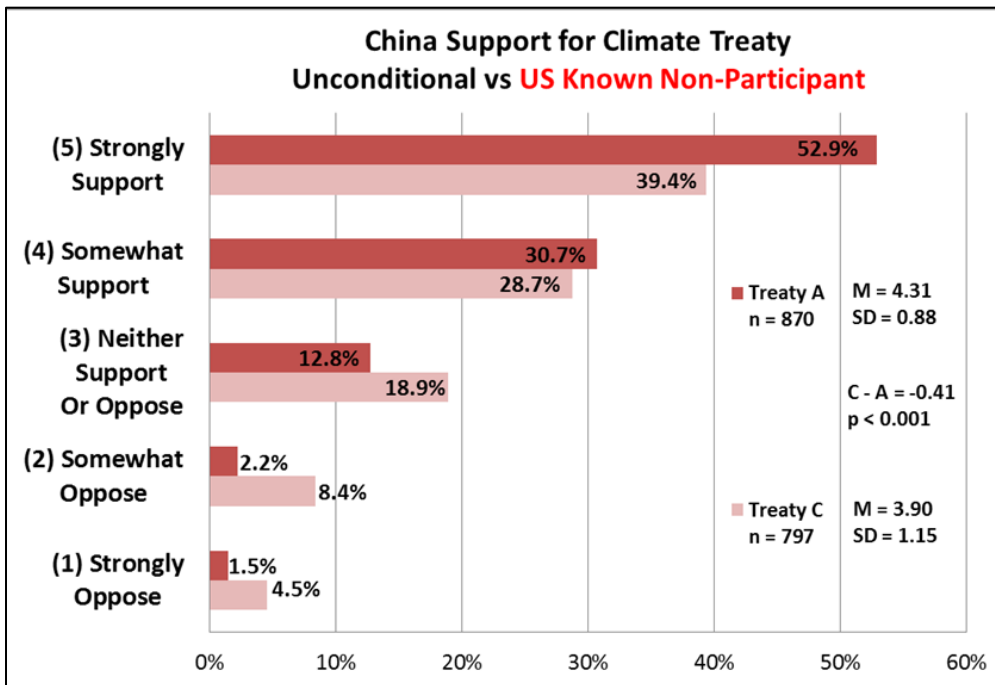
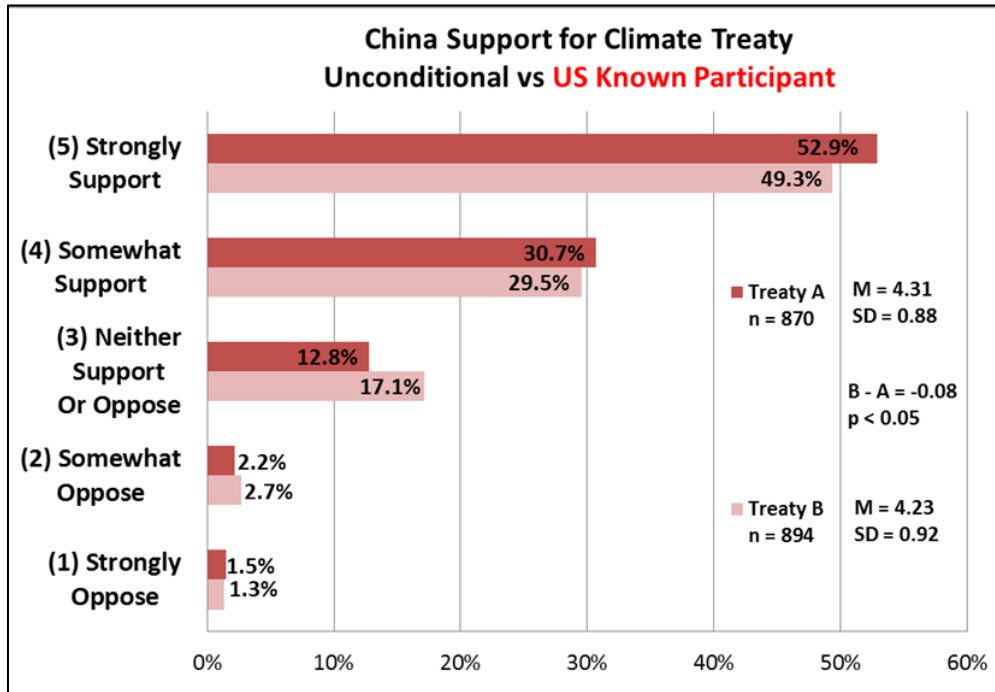
Results from these questions are presented graphically in Figures 1 – 4



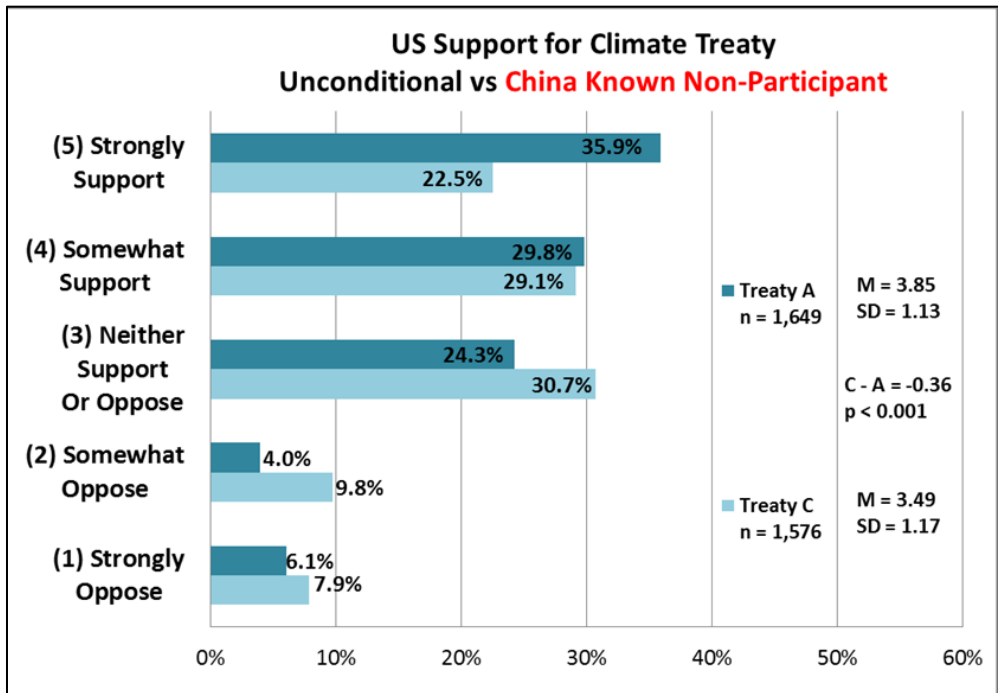
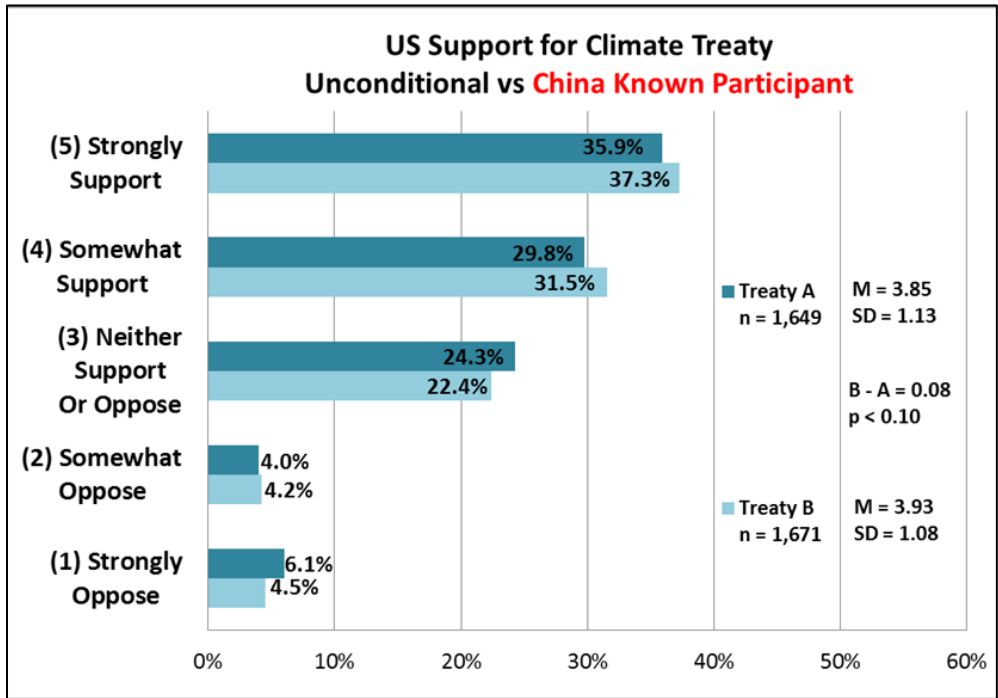
Figures 1 - 4 show greater support for an international climate change treaty among Chinese respondents compared to Americans across all scenarios.

- Chinese respondents show greater unconditional support for an international treaty (Treaty A).
- Support declines in both countries conditional on the other country not participating (Treaty C).
- U.S. support increases slightly when China is a known participant, while there is a slight decline in support in China when the U.S. is a known participant (Treaty B).

Figures 1 & 2: Graphical Results for China



Figures 3 & 4: Graphical Results for United States



## Regression Analysis Model

To better understand what factors influence public support for an international climate change treaty in China and the U.S. we use probit regression analysis.

- Discrete choice dependent variable, support =1 / otherwise = 0
- The parameters  $\beta$  are estimated by maximum likelihood

$$\Pr(Y = 1 | X) = \Phi(X'\beta) \quad Y = \begin{cases} 1 \\ 0 \end{cases}$$

Table 2 presents results from the regression model examining what factors influence support for joining an international climate change treaty.

Support in both countries drops significantly when it is known other country will not participate.

Climate change awareness variables are positively correlated with support in both countries.

Adult and minority respondents show lower support in the U.S.

In the U.S., those with liberal and moderate political affiliation exhibit greater support compared to conservatives.

**Table 2: Regression Results**

Variable	US	CH
TrtyB	0.036 (0.019)	-0.053* (0.022)
TrtyC	-0.179** (0.019)	-0.166** (0.023)
HapYes	0.250** (0.022)	0.096* (0.044)
CausHum	0.200** (0.017)	0.073** (0.026)
ConcHi	0.185** (0.018)	0.066** (0.018)
ObStrAgr	0.106** (0.019)	0.117** (0.018)
Sci90	0.069** (0.017)	0.023 (0.019)
Adult	-0.096** (0.032)	-0.002 (0.026)
Age	-0.0009 (0.001)	-0.001 (0.001)
Male	0.031 (0.016)	-0.020 (0.017)
IncPPP	0.0002 (0.0002)	0.00008 (0.0006)
Degree	0.025 (0.017)	-0.013 (0.022)
Minority	-0.068** (0.019)	0.035 (0.034)
Lib	0.177** (0.019)	
Mod	0.054** (0.018)	
Pseudo R2	0.268	0.070
N	4.855	2.545



## Conclusion & Discussion

This study presents findings comparing views on climate change across citizens in the two countries most central to achieving international cooperation to address this very important issue.

Given the lack of involvement and participation from the U.S. and China in past UNFCCC climate policy negotiations, public support for climate action among citizens in both countries is crucial in the development of domestic policies leading to a successful international climate treaty.

A general overview of our survey results show many striking differences between Chinese and American responses as well as some similarities.

- Chinese respondents show a greater acceptance of climate change realities compared to Americans.
- Both Chinese and Americans misunderstand the high degree of consensus among climate scientists regarding human-caused climate change.
- A majority of American respondents favor the U.S. signing an international climate treaty, but support among Chinese respondents is stronger.

Additionally, a variety of variables reflecting climate change perceptions are positively correlated with support for a climate treaty in both countries. We also find political affiliation to have an important influence on support for an international climate treaty in the U.S. with liberals and moderates being more supportive.

Most importantly, our results show that citizen support for an international climate change treaty declines significantly in both countries when it is known that the other country will not be a participant.

Because there will be costs associated with taking action, our next research question examines the degree to which citizens in China and the U.S. are willing-to-pay for climate change mitigation policy action.

**Please see our further related research report titled *A Continuing Analysis of Chinese and American Public Willingness-to-Pay for Climate Change Mitigation Policy Action for a presentation of the results from this extended research.***