A Scoring and Grouping System of Climate Change Acceptance/Knowledge/Concern for Citizens in the United States, China and Vietnam

University of Wisconsin Eau Claire | The Power of AND

Students: Kayla Coonen, Cora Cornett, Ryan Hammer, Hunter Hermes, Austin Holmes, Tung Nguyen, Ashley Pike, Anastasia Rauland & Dylan Wilson
Faculty Mentors: Dr. Eric Jamelske, Dr. James Boulter & Dr. Won Jang

SUSTAINABILITY | The Power of AND

Introduction

With mounting scientific evidence regarding the realities of climate change including causes and consequences, the international/global importance of this issue cannot be overstated.

Significant research has assessed public climate change views in developed countries including the United States and in the European Union. However, much less is known about public climate change views in developing countries.

Surveys were conducted of American (4,927), Chinese (2,629) and Vietnamese (1,496) citizens in 2015-16 to provide comparisons of how citizens in developed/developing countries view climate change.

We construct a scoring and group classification system based on responses to survey questions. This process yields an understandable metric for comparing acceptance/knowledge/concern of basic climate change realities across citizens in these three countries.

Method

Sample Overall sample size N = 9,052

United States N = 4,927
- -2,001 adults (online)
- -2,926 college (online)
- -All 50 States (partial convenience)

China N = 2,629
- -1,203 adults (face-to-face)
- -1,426 college (online)
- -Six provinces, mostly Sichuan (convenience)

Vietnam N = 1,496
- -745 adults (face-to-face)
- -751 college (online)
- -Hanoi area (convenience)

Scoring Calculations

- Eight survey questions
  - Score assigned based on response to each question
- Cumulative summation across eight questions (five parts)
  - **Possible range from a low of -10 to a high of 10**
- Five groupings based on classification score
  - More Acceptance/Knowledge….Less Acceptance/Knowledge
  - Alarmed, Concerned….Doubtful, Dismissive

Q2 X Q3 + Q4 X Q5 + Q6 + Q7 + Q8 X Q9 = CC SCORE

-2 X 1 + -2 X 1 + -2 + -2 + -2 X 1 = -10

2 X 1 + 2 X 1 + 2 + 2 + 2 X 1 = 10

2. Do you think *climate change* is happening?
- No = -2
- Yes = +2
- I am not sure = 0

3. How confident or certain are you of your answer to the previous question?
- Not very confident = 0.25
- Somewhat confident = 0.5
- Confident = 0.75
- Very confident = 1

4. Do you think *climate change* is PRIMARILY caused by human actions or natural environmental changes?
- Neither, because *climate change* **is not** happening = -2
- Primarily natural environmental changes = -1
- Primarily human actions = +2
- I am not sure = 0

5. How confident or certain are you of your answer to the previous question?
- Not very confident = 0.25
- Somewhat confident = 0.5
- Confident = 0.75
- Very confident = 1

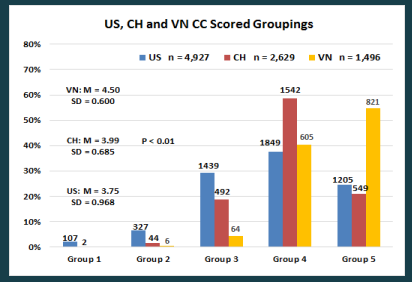
6. How concerned are you about *climate change*?
- Not at all concerned = -2
- Not very concerned = -1
- Somewhat concerned = 0
- Concerned = +1
- Very concerned = +2

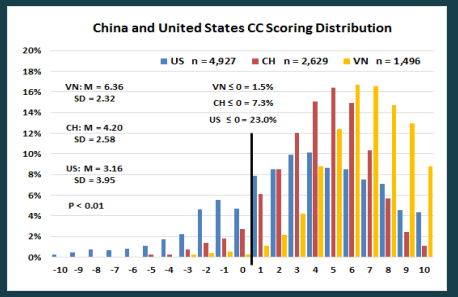
7. How much do you agree/disagree with the following statement? Every person has an obligation to contribute to preventing *climate change*?
- Strongly disagree = -2
- Somewhat disagree = -1
- Neither agree nor disagree = 0
- Somewhat agree = +1
- Strongly Agree = +2

8. To the best of your knowledge, what percentage of climate scientists have concluded that human-caused *climate change is* happening?
- Less than 10% = -2
- Between 10% and 30% = -2
- Between 30% and 50% = -1
- Between 50% and 70% = 0
- Between 70% and 90% = +1
- More than 90% = +2

9. How confident or certain are you of your answer to the previous question?
- Not very confident = 0.25
- Somewhat confident = 0.5
- Confident = 0.75
- Very confident = 1

Figures 1 & 2: Score/Group Distributions





Tables 1 & 2: Country Information

Total Measures by Country

Country	GDP (US $ PPP)	CO2 (Metric Tons)	Population
US	17,946,996,000,000	5,271,268,648	321,418,820
CH	10,866,443,998,394	10,421,272,000	1,371,220,000
VN	193,599,379,095	155,896,460	91,703,800

Per Capita Measures by Country

Country	GDP (US $ PPP)	CO2 (Metric Tons)
US	55,837	16.4
CH	7,925	7.6
VN	2,111	1.7

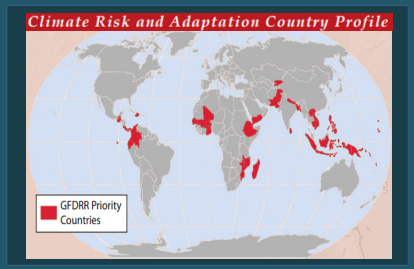


Table 3: Sample Descriptive Statistics

	United States N	United States Mean	United States SD	China N	China Mean	China SD	Vietnam N	Vietnam Mean	Vietnam SD
Demographic Variables									
Adult \ Indicator for college student or adult *0 = College, 1 = Adult*	4927	0.406	0.491	2629	0.458	0.498	1496	0.498	0.500
Age \ Respondent's age *(in years)*	4893	29.6	14.1	2572	28.6	12.3	1456	28.8	10.9
Male \ Indicator for gender *0 = Female, 1 = Male*	4894	0.491	0.500	2572	0.464	0.499	1454	0.415	0.493
Minority \ Indicator for minority race/ethnicity *0 = Not minority, 1 = Minority*	4890	0.217	0.412	2563	0.055	0.227	1456	0.027	0.164
IncPPP \ Annual Household Income *(Thousands of international $, PPP)*	4861	82.8	53.3	2556	20.9	16.2	1456	13.6	18.9
Degree \ Indicator for college degree *0 = Else, 1 = At least bachelor's degree*	4890	0.543	0.498	2561	0.228	0.419	1456	0.515	0.500
Environmental/Policy Variables									
HapYes \ Do you think climate change is happening? *0 = Not happening or not sure, 1 = Happening*	4927	0.807	0.395	2629	0.947	0.225	1496	0.980	0.140
CausHum \ Which comes closest to your understanding about the cause of CC? *0 = Else, 1 = Primarily human caused*	4927	0.586	0.493	2629	0.813	0.390	1496	0.928	0.258
ConcHi \ How concerned are you about climate change? *0 = Else, 1 = Very concerned or concerned*	4927	0.429	0.495	2629	0.351	0.478	1496	0.755	0.430
ObStrAgr \ Every person has the obligation to act to prevent climate change *0 = Else, 1 = Strongly agree*	4927	0.316	0.465	2629	0.567	0.496	1496	0.489	0.500
Sci90 \ What percent of climate scientists agree human-caused climate change is happening? *0 = Else, 1 = 90% or more*	4927	0.369	0.483	2629	0.285	0.452	1496	0.378	0.485
CCScore \ Acceptance/Knowledge score *-10 = Little/None, 10 = A lot/Great*	4927	3.16	3.95	2629	4.20	2.58	1496	6.36	2.32
TrtyA \ Should your country sign an international climate change treaty? (unconditional) *0 = Else, 1 = Somewhat or strongly support*	1649	0.657	0.475	870	0.836	0.371	450	0.893	0.309
TrtyB \ Should your country sign an international climate change treaty? (known participant) *0 = Else, 1 = Somewhat or strongly support*	1671	0.688	0.463	894	0.789	0.409	472	0.875	0.331
TrtyC \ Should your country sign an international climate change treaty? (known non-participant) *0 = Else, 1 = Somewhat or strongly support*	1576	0.516	0.500	797	0.681	0.466	529	0.703	0.457
Media/Politics									
Media \ Aggregate media source index *1 = None, 5 = A great deal*	4906	2.23	0.880	2507	2.41	0.625	--	--	--
Lib \ Liberal political ideology *0 = Not liberal, 1 = Liberal*	4888	0.297	0.457	--	--	--	--	--	--
Mod \ Moderate political ideology *0 = Not moderate, 1 = Moderate*	4888	0.396	0.489	--	--	--	--	--	--
Cons \ Conservative political ideology *0 = Not conservative, 1= Conservative*	4888	0.306	0.461	--	--	--	--	--	--

Conclusion & Discussion

Our results show significantly greater acceptance/knowledge/concern of climate change realities for citizens in Vietnam and China compared to the United States. Vietnamese citizens have the highest scores largely driven by higher concern and greater understanding of the scientific consensus on anthropogenic climate change.

We also find significantly more variation in American climate change acceptance/knowledge/concern scores compared to both Chinese and Vietnamese citizens.

Please see our second poster titled, *Assessing Public Support for an International Climate Treaty Including Willingness-to-Pay in the United States, China and Vietnam* for results from an extended/continued analysis using the same survey data.

We gratefully acknowledge generous funding support from the University of Wisconsin-Eau Claire Office of Research & Sponsored Programs, Blugold Commitment and International Fellows Program. We would also like to give a special thank you to our international partners for their assistance.