

# Nuclear Energy: Kahan scale and Economic Political value scale

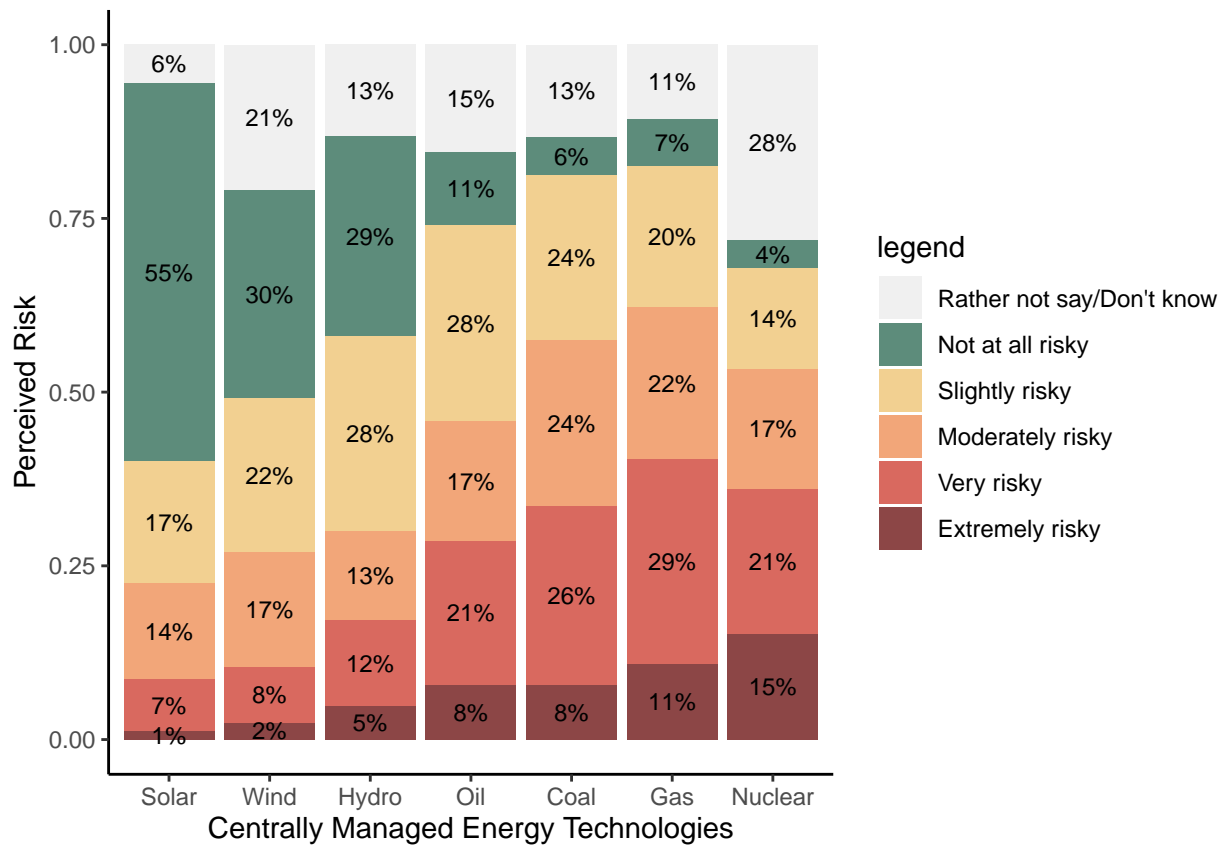
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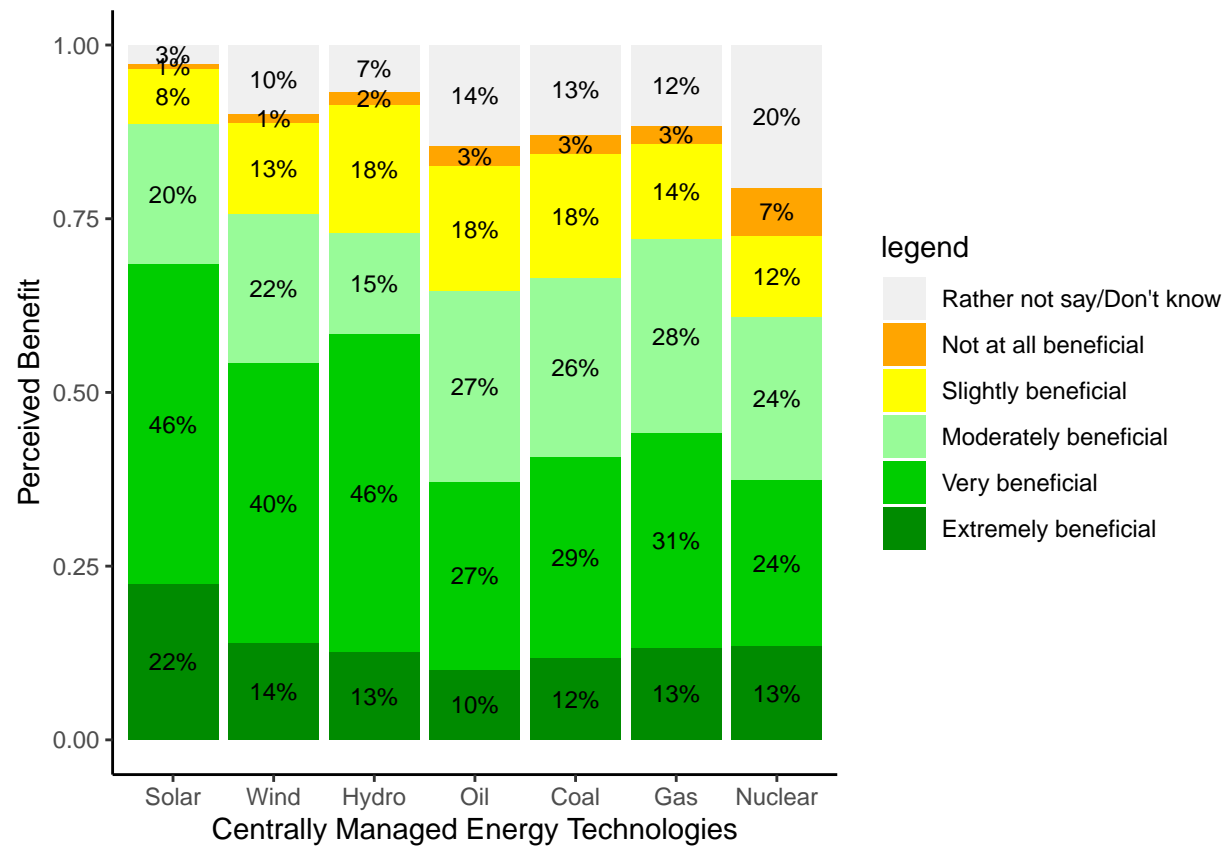
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# H1: Nuclear Energy will be seen as riskier than other energy technologies in India.

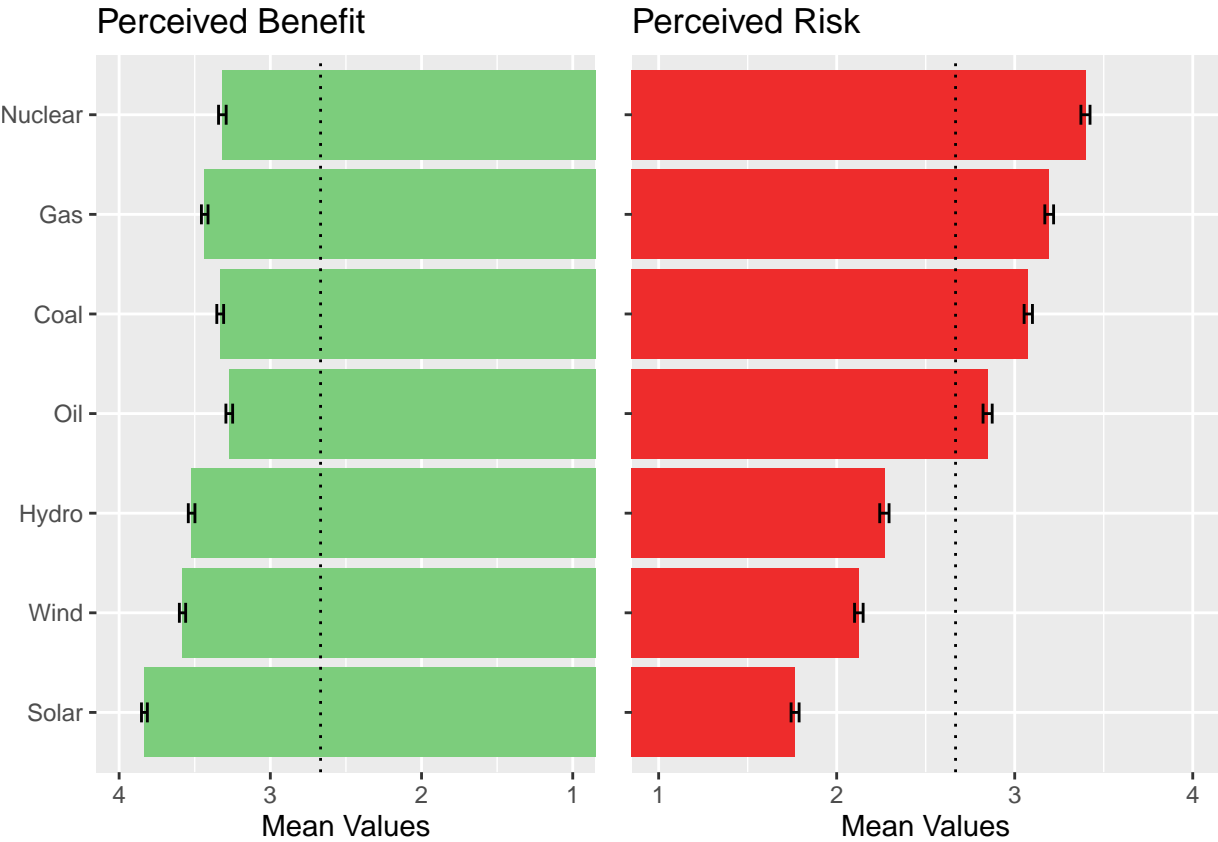
## Likert Responses (n= 2160)

The percentages are rounded off to whole numbers.

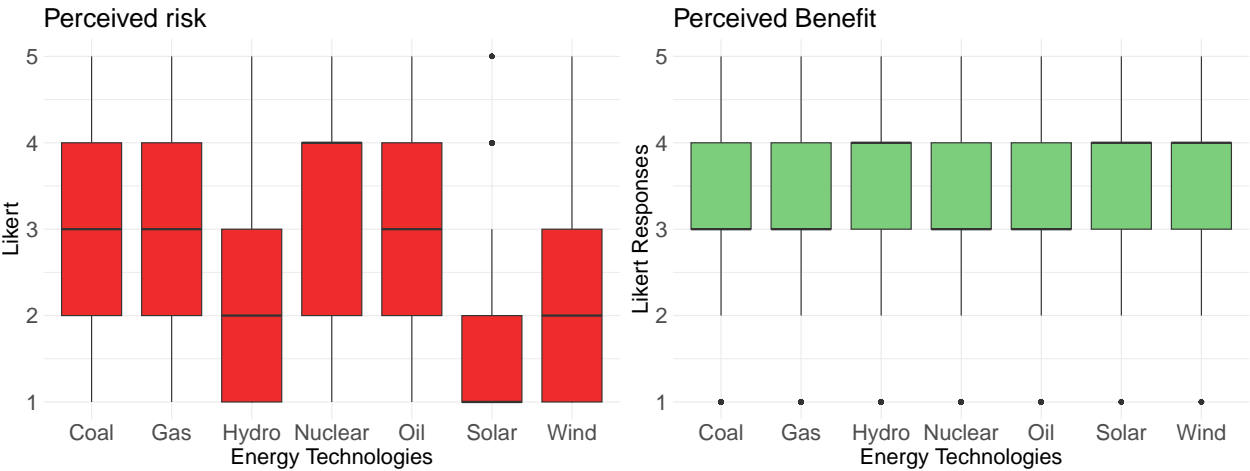




Mean Perceived Risk and Mean Perceived Benefit for all energy technologies.

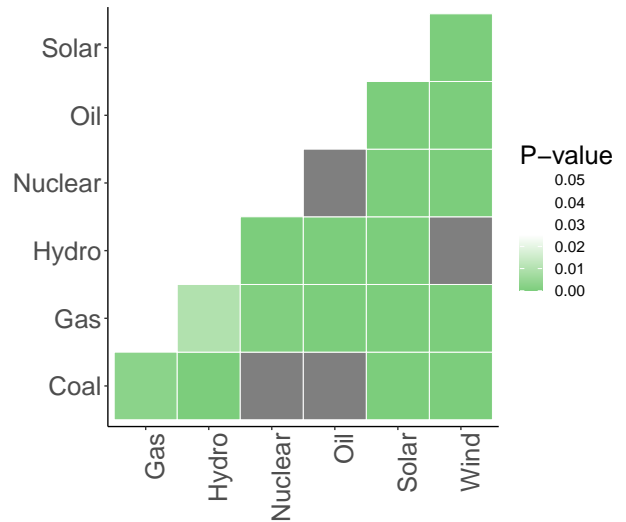
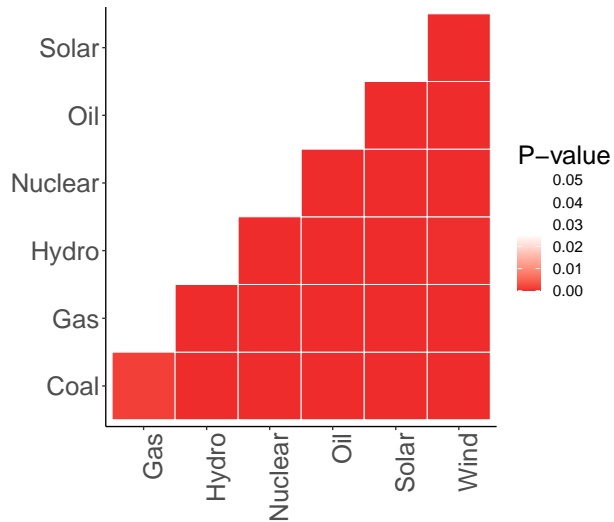


Boxplot for perceived benefit and perceived risk by technology



## Pairwise T-test: Mean perceived risk and mean perceived benefit (all energy technologies)

The red and green pairs indicate that there is a statistically significant difference between the means of the two groups. White and grey indicate - no differences between the means of the two groups.



## H2: Gender and Caste will have significant impact like Gender and Race in the US studies of risk.

### two linear regression models

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Table 1: Results from 2 linear regression models		
	<i>Dependent variable:</i>	
	Risky_Nuclear	
	(1)	(2)
Uppercaste	0.141** (0.064)	-0.117** (0.059)
Male	0.131** (0.064)	0.023 (0.059)
Hindu	-0.122 (0.076)	-0.032 (0.069)
UrbanUrban	-0.082 (0.063)	0.081 (0.064)
age	0.015 (0.027)	-0.028 (0.025)
StateRajasthan		0.245*** (0.093)
StateTamil Nadu		-0.233*** (0.087)
StateUttar Pradesh		-0.154 (0.119)
StateWest Bengal		1.319*** (0.081)
Constant	3.360*** (0.104)	3.209*** (0.096)
Observations	1,554	1,554
R <sup>2</sup>	0.011	0.215
Adjusted R <sup>2</sup>	0.007	0.210
Residual Std. Error	1.184 (df = 1548)	1.056 (df = 1544)
F Statistic	3.302*** (df = 5; 1548)	46.913*** (df = 9; 1544)
<i>Note:</i> *p<0.1; **p<0.05; ***p<0.01		

### H3: Regional differences will have a strong impact

#### Linear regression where Mean value is the intercept

Same model with mean value as intercept.

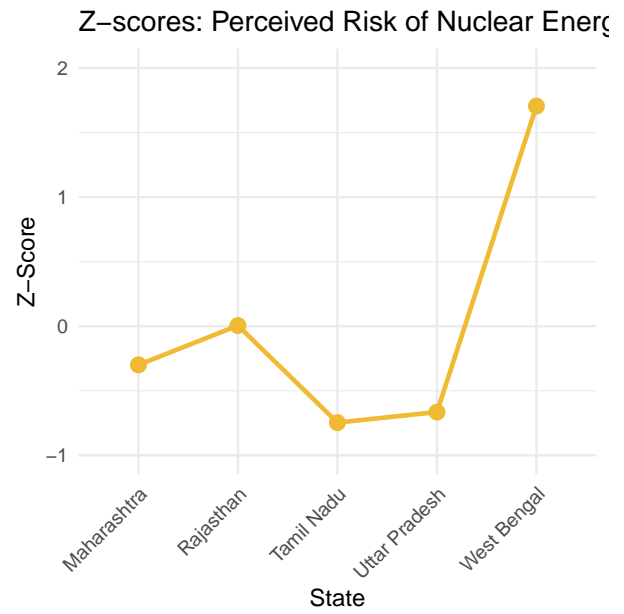
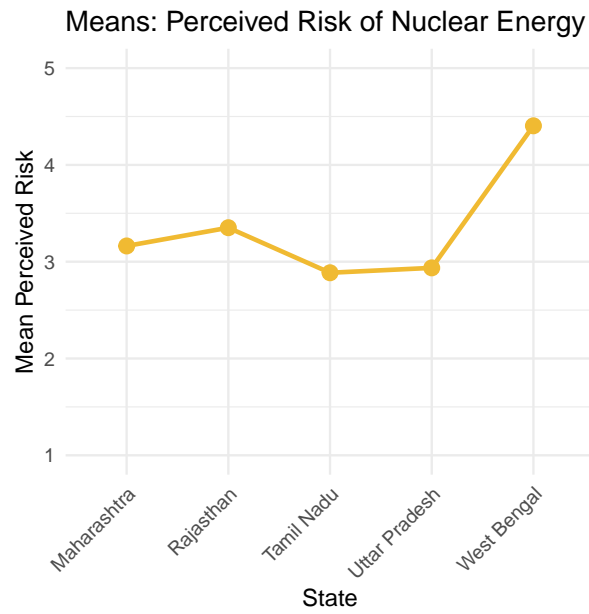
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Table 2: Results from 2 linear regression models

	<i>Dependent variable:</i>	
	Risky_Nuclear	
	(1)	(2)
Uppercaste_centered	0.141** (0.064)	-0.117** (0.059)
Male_centered	0.131** (0.064)	0.023 (0.059)
Hindu_centered	-0.122 (0.076)	-0.032 (0.069)
Urban_centered	-0.082 (0.063)	0.081 (0.064)
age_centered	0.015 (0.027)	-0.028 (0.025)
StateMaharashtra		-0.245*** (0.093)
StateTamil Nadu		-0.479*** (0.099)
StateUttar Pradesh		-0.400*** (0.122)
StateWest Bengal		1.074*** (0.092)
Constant	3.398*** (0.031)	3.359*** (0.072)
Observations	1,554	1,554
R <sup>2</sup>	0.011	0.215
Adjusted R <sup>2</sup>	0.007	0.210
Residual Std. Error	1.184 (df = 1548)	1.056 (df = 1544)
F Statistic	3.302*** (df = 5; 1548)	46.913*** (df = 9; 1544)
<i>Note:</i>		*p<0.1; **p<0.05; ***p<0.01

## Regional Differences Graph

Following is a graph of z scores calculated from mean perceived risk from nuclear energy by state.





## Confirmatory Factor Analysis(CFA): Kahan Scale

### Cronbach's Alpha on Kahan et al(2007) Scale: A Note

The Individualism items (indicated by K\_I) were bringing down the Cronbach's alpha values in the Kahan scale. The Alpha for Individualism- Communitarian scale was 0.49. After removing the Individualism items (K\_I) the alpha for this factor was 0.71. The reasons for this could be that the individualism items are not well adapted to the Indian population.

Table 3: Fit Measures from the CFA

Measure	Value
Comparative Fit Index (CFI)	0.954
Tucker-Lewis Index (TLI)	0.925
Root Mean Square Error of Approximation(RMSEA)	0.074
RMSEA 90 Percent confidence interval - lower	0.100
RMSEA 90 Percent confidence interval - upper	0.050

Table 4: Confirmatory Factor Analysis(CFA) on Kahan et al(2007) scale adapted to India

Scale	Items	Loadings	Standard Error	zvalue	pvalue	ci.lower	ci.upper	std.lv	std.all
Individualism	Sometimes the government needs to make laws that keep people from hurting themselves.	0.704	0.064	11.037	0	0.5786531	0.8285358	0.7035944	0.6207523
Individualism	The government should put limits on the choices individuals can make so they don't get in the way of what's good for society.	0.765	0.066	11.655	0	0.6366205	0.8940208	0.7653206	0.6579374
Individualism	The government should do more to advance society's goals, even if that means limiting the freedom and choices of individuals.	0.546	0.065	8.385	0	0.4184991	0.6738458	0.5461725	0.4767128
Hierarchy-Egalitarianism	We have gone too far in pushing equal rights in this country.	0.686	0.062	11.139	0	0.5656331	0.8071956	0.6864143	0.5687108
Hierarchy-Egalitarianism	We need to dramatically reduce inequalities between the rich and the poor.	-0.803	0.052	-15.402	0	-0.9054554	-0.7010198	-0.8032376	-0.7469721
Hierarchy-Egalitarianism	Our society would be better off if the distribution of wealth was more equal.	-0.640	0.061	-10.478	0	-0.7600516	-0.5205128	-0.6402822	-0.5396459
Hierarchy-Egalitarianism	We need to dramatically reduce inequalities between men and women.	-0.857	0.055	-15.539	0	-0.9650777	-0.7488861	-0.8569819	-0.7525525

# Factor Analysis: New Eco-political Scale

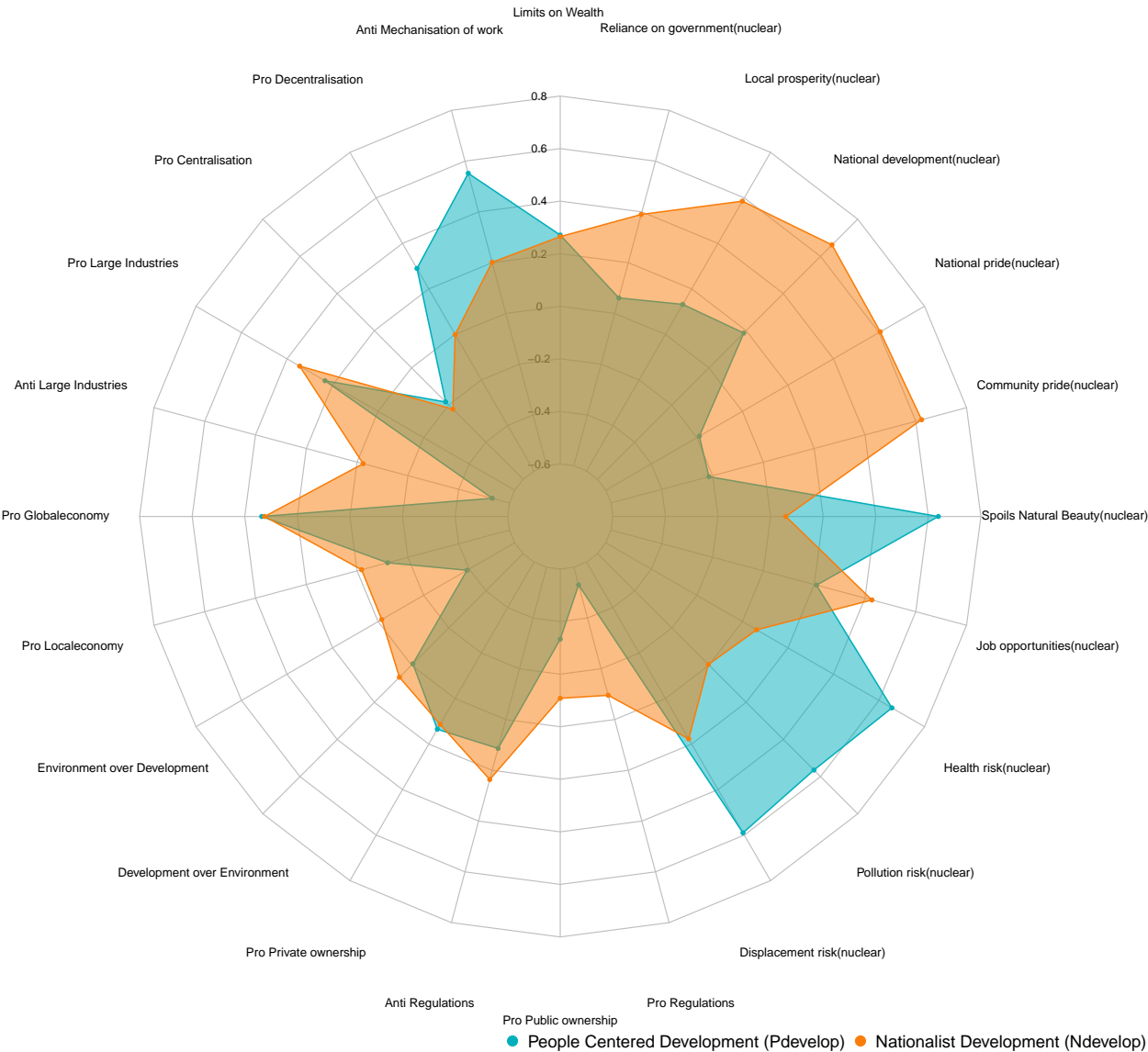


Table 5: Eco-Pol Values Factor Analysis Table

Items	Pdevelop	Ndevelop	Communality	Uniqueness	Complexity
Health risk(nuclear)	0.657		0.435	0.565	1.018
Spoils Natural Beauty(nuclear)	0.638		0.410	0.590	1.017
Displacement risk(nuclear)	0.59		0.380	0.620	1.178
Pollution risk(nuclear)	0.565		0.319	0.681	1.000
Anti Mechanisation of work	0.552		0.345	0.655	1.262
Anti Large Industries	-0.532		0.284	0.716	1.004
Pro Regulations	-0.53		0.290	0.710	1.065
Environment over Development			0.153	0.847	1.003
Pro Globaleconomy			0.218	0.782	1.998
Pro Public ownership			0.123	0.877	1.208
Pro Decentralisation			0.084	0.916	1.000
Limits on Wealth			0.144	0.856	1.999
Pro Private ownership			0.031	0.969	1.943
Pro Localeconomy			0.015	0.985	1.043
National development(nuclear)	0.662		0.473	0.527	1.159
Community pride(nuclear)	0.623		0.434	0.566	1.234
National pride(nuclear)	0.605		0.402	0.598	1.193
Local prosperity(nuclear)	0.586		0.360	0.640	1.101
Job opportunities(nuclear)	0.427		0.226	0.774	1.453
Reliance on government(nuclear)			0.156	0.844	1.049
Pro Large Industries			0.173	0.827	1.758
Anti Regulations			0.069	0.931	1.440
Pro Centralisation			0.083	0.917	1.930
Development over Environment			0.004	0.996	1.025

Table 6: Eigenvalues and Variance Explained for Rotated Factor Solution

Property	Pdevelop	Ndevelop
SS loadings	3.224	2.388
Proportion Var	0.134	0.099
Cumulative Var	0.134	0.234
Proportion Explained	0.575	0.425
Cumulative Proportion	0.575	1.000

Table 7: Two Factor Solution: Economic and Political Values Scale

Scale	Code	Items and Loadings	Alpha	Variance
People Centered Development (Pdevelop)	Health risk(nuclear)	Nuclear energy poses a great risk to the health of people living around it.(0.657)	0.757	
	Spoils Natural Beauty(nuclear)	Nuclear energy spoils the natural beauty of the landscape.(0.638)		
	Anti Mechanisation of work	Rapid mechanization of work is taking away jobs from workers in this country.(0.552)		
	Anti Large Industries	Large corporations are destroying the local industries in India and benefiting only a handful of people.(-0.532)		
	Displacement risk(nuclear)	Nuclear energy is leading to displacement of people from their land.(0.59)		
	Pollution risk(nuclear)	Nuclear energy increases pollution of air/water/land.(0.565)		
Nationalist Development (Ndevelop)	Pro Regulations	Regardless of ownership, the government should pass strong regulations and implement them.(-0.53)	0.725	
	National development(nuclear)	Nuclear energy pushes forward the country's development.(0.662)		
	Community pride(nuclear)	I would be proud if my community used nuclear energy.(0.623)		
	National pride(nuclear)	Nuclear energy is a mark of pride for our nation.(0.605)		
	Local prosperity(nuclear)	Nuclear energy brings economic prosperity to the surrounding regions.(0.586)		
	Job opportunities(nuclear)	Nuclear energy will bring jobs to the local community.(0.427)		

## H4 : Economic and Political Values will be important in explaining perceived risk from Nuclear Energy

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Table 8: Results from 2 linear regression models

	<i>Dependent variable:</i>	
	Risky_Nuclear	
	(1)	(2)
Uppercaste	−0.029 (0.107)	−0.035 (0.105)
Male	−0.102 (0.117)	−0.085 (0.116)
Hindu	−0.025 (0.118)	0.025 (0.117)
UrbanUrban	−0.003 (0.112)	0.021 (0.111)
age	0.050 (0.052)	0.036 (0.051)
StateRajasthan	0.445*** (0.169)	0.186 (0.181)
StateTamil Nadu	1.141*** (0.197)	1.282*** (0.240)
StateUttar Pradesh	−0.006 (0.192)	−0.061 (0.193)
StateWest Bengal	1.120*** (0.216)	0.965*** (0.226)
KahanS	−0.202* (0.110)	−0.120 (0.111)
KahanH	0.077 (0.102)	−0.012 (0.102)
Pdevelop		0.159** (0.075)
Ndevelop		0.230*** (0.061)
Constant	3.008*** (0.173)	3.033*** (0.172)
Observations	405	405
R <sup>2</sup>	0.260	0.290
Adjusted R <sup>2</sup>	0.240	0.267
Residual Std. Error	0.941 (df = 393)	0.924 (df = 391)
F Statistic	12.573*** (df = 11; 393)	12.298*** (df = 13; 391)
<i>Note:</i>		
*p<0.1; **p<0.05; ***p<0.01		

## Appendix: Characteristics of the Sample

The following graph shows that distribution of different demographic variables in our sample of 2,160 from the combined dataset from both surveys. The percentages are rounded off to whole numbers.

