

Comparative Analysis of Risk Perception between Nuclear and Coal Powers in China

Huang Lei

School of Environment
Nanjing University
P. R. China



Introduction

Table 1 Electric power capacity changes in China (Wu, 2005)

Year	Capacity/GW			
	Total	Thermal	Hydro	Nuclear
1980	66	45.6	20.3	-
1985	87	60.6	26.4	-
1990	139	101.8	36.0	-
1995	217	162.9	52.2	2.1
2001	319	237.5	79.4	2.1
2004	441	325	108	6



A diagram showing a central blue circle with the text "Coal Power plant" inside. Three light blue rounded rectangular boxes extend horizontally from the right side of the circle, containing the text "CO2", "NOX", and "SO2" respectively. The background is a light blue gradient with white lines and a decorative top border with blue and green patterns.

**Coal
Power
plant**

CO₂

NO_x

SO₂



**Nuclear
Power
plant**

Unfamiliar

Dreadful

Potentially Catastrophic

Uncontrollable

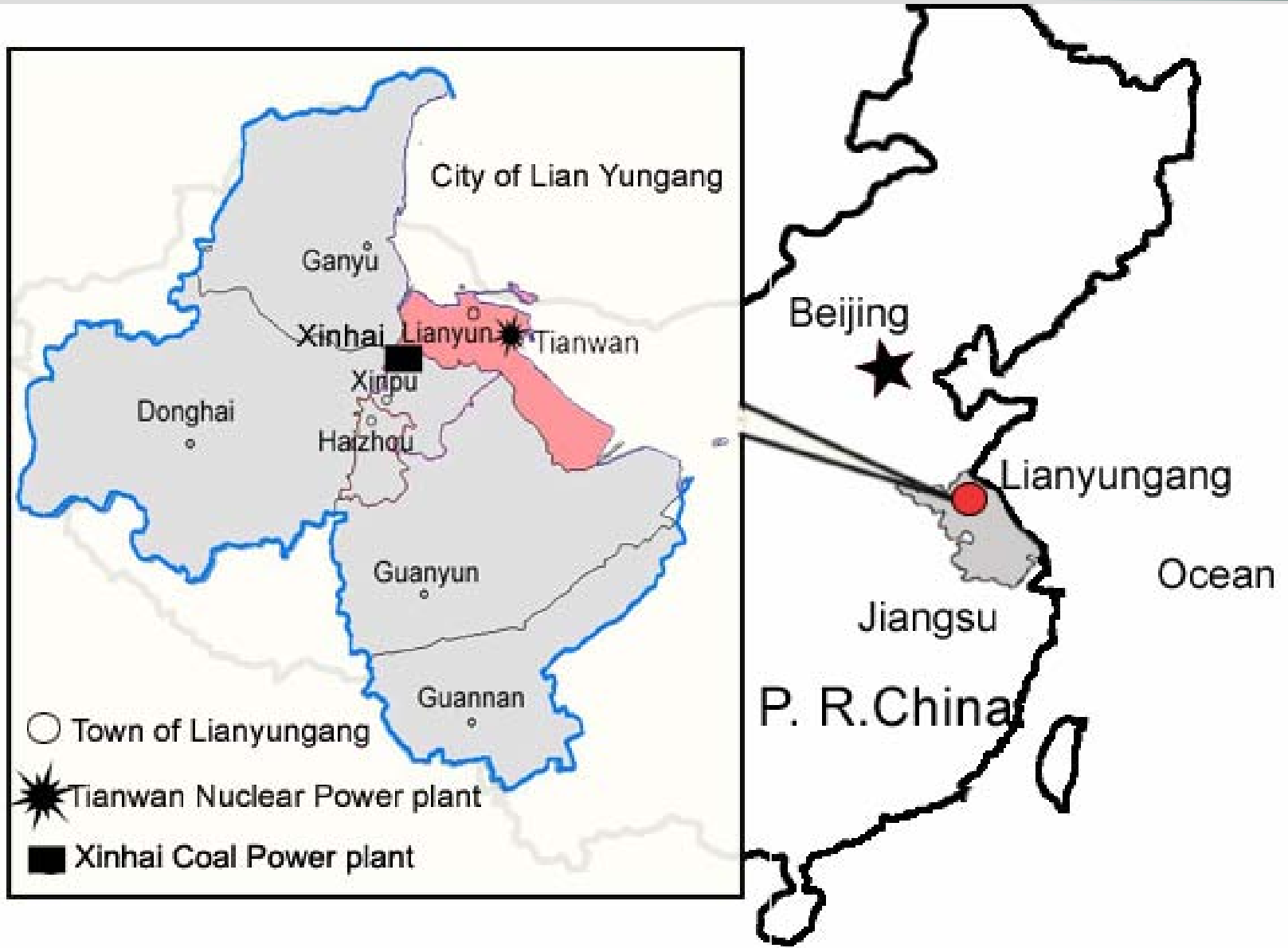
Aims

Explore the determining factors that affect individual risk perceptions to nuclear and coal powers.

Policy implications for Chinese government.

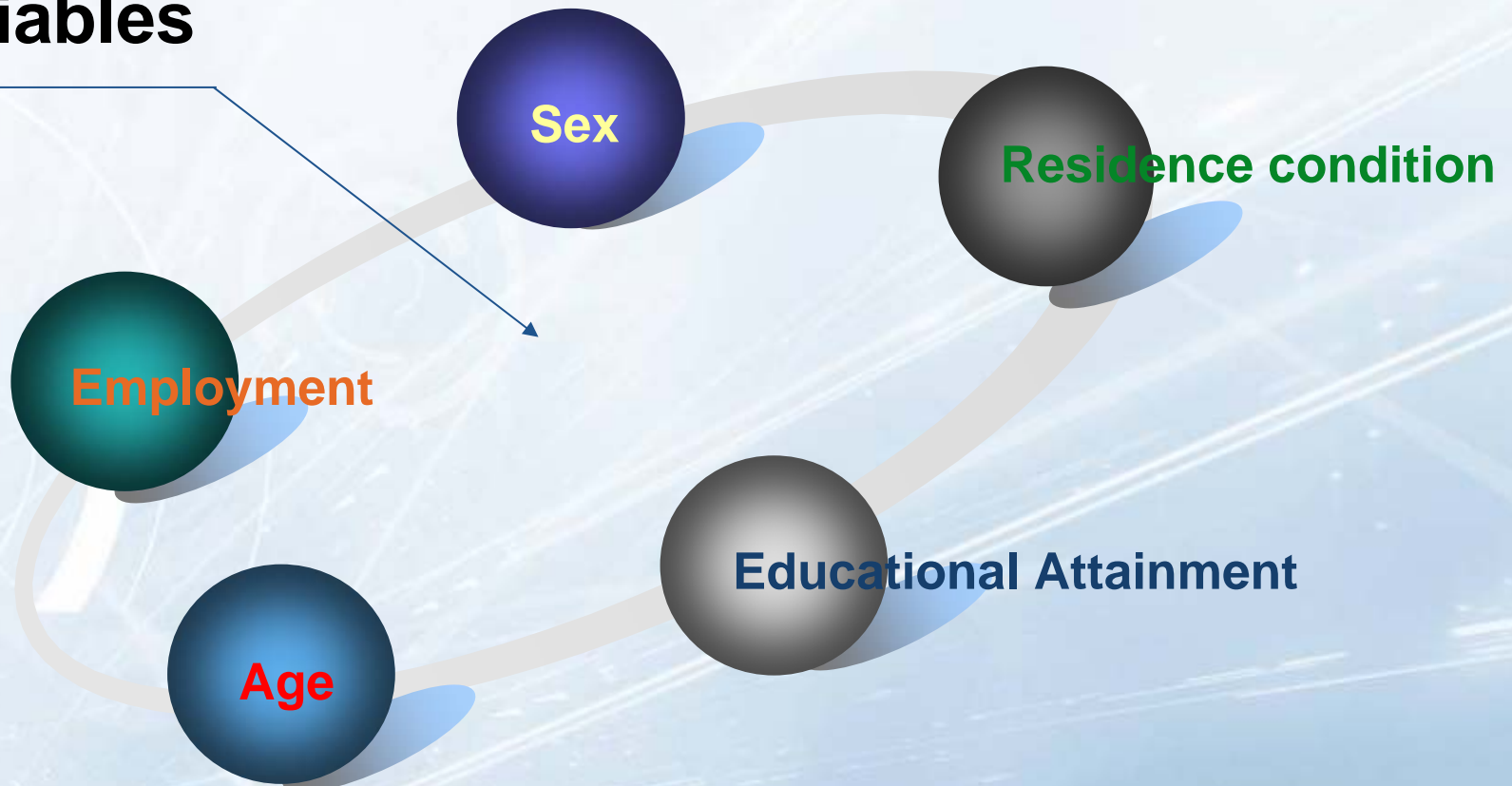
Compare WTPs of risk reduction of various groups.

Map of Lianyungang City with "Xinhai" Coal Power plant and "Tianwan" Nuclear Power Plant site



Methods

Demographic Variables



5 point Scale of risk perception difference

1

Risk perception of nuclear power much higher than that of coal power

2

Risk perception of nuclear power a little higher than that of coal power

3

The same

4

Risk perception of nuclear power a little lower than that of coal power

5

Risk perception of nuclear power much lower than that of coal power

Results

Table 2.1 Demographic Data on the Comparison of Risk Perception between Nuclear and Coal Powers

	N	Frequency	Risk perception difference		Factor Mean
			Mean#	SD	
Sex					
Male	159	53%	3.25	1.38	0.12
Female	141	47%	2.92	1.50	-0.12
Age					
10-19	51	17%	3.28	1.44	0.19
20-29	155	52%	3.11	1.41	-0.10
30-39	66	22%	2.82	1.46	-0.15*
40-49	16	5%	2.92	1.65	-0.04
50-59	9	3%	3.00	0.81	0.02
≥60	3	1%	4.13	2.82	0.24

* $p < .05$; ** $p < .01$; Note: Factor score was normalized.

Table 2.2 Demographic Data on the Comparison of Risk Perception between Nuclear and Coal Powers

	N	Frequency	Risk perception difference		Factor Mean
			Mean#	SD	
Educational attainment					
Elementary school	6	2%	3.12	1.39	0.09
Junior high	30	10%	3.20	1.42	0.15
High school	111	37%	3.32	1.34	0.06
College	60	20%	2.55	1.50	-0.14*
University	81	27%	2.86	1.49	-0.07
Postgraduate	12	4%	4.00	1.26	0.28**

* $p < .05$; ** $p < .01$; Note: Factor score was normalized.

Table 2.3 Demographic Data on the Comparison of Risk Perception between Nuclear and Coal Powers

		N	Frequency	Risk perception difference		Factor Mean
				Mean#	SD	
Employment						
	Officer	30	10%	3.60	1.52	0.48
	Enterprise employee	81	27%	3.29	1.42	0.28
	Self-employed person	54	18%	3.24	1.39	-0.02
	Students	111	37%	2.78	1.46	-0.24
	Unemployed	12	4%	2.93	1.49	-0.18
	Housewife/others	12	4%	3.78	1.30	0.05

Table 2.4 Demographic Data on the Comparison of Risk Perception between Nuclear and Coal Powers

	N	Frequency	Risk perception difference		Factor Mean	
			Mean#	SD		
Revenue						
<5000	147	49%	3.26	1.39	0.09	
5000-10000	70	23%	2.79	1.45	-0.15	
10000-30000	57	19%	2.96	1.48	-0.08	
30000-50000	18	6%	2.93	1.59	-0.21	
>50000	8	3%	3.86	1.46	0.51	
Residence						
Tourist (short)	60	20%	3.24	1.45	0.33	
Immigrant (middle)	54	18%	3.13	1.34	-0.12	
Native resident (long)	186	62%	3.04	1.47	-0.05	
Total						
All respondents	300	100%	3.10	1.44	0.00	

Multivariate Analysis Factors

Trust in Government



Table 3. Intercorrelations between factors

Factor		1	2	3	4
All respondents(n=300)					
I. Risk Perception difference	Correlation Coefficient	1.000	-0.107*	0.133*	0.170**
II. Benefit perception	Correlation Coefficient	-0.107*	1.000	-0.166**	-0.041
III. Trust in government	Correlation Coefficient	0.133*	-0.166**	1.000	0.107*
IV. acceptability	Correlation Coefficient	0.170**	-0.041	0.107*	1.000

****** Correlation is significant at the 0.01 level

***** Correlation is significant at the 0.05 level

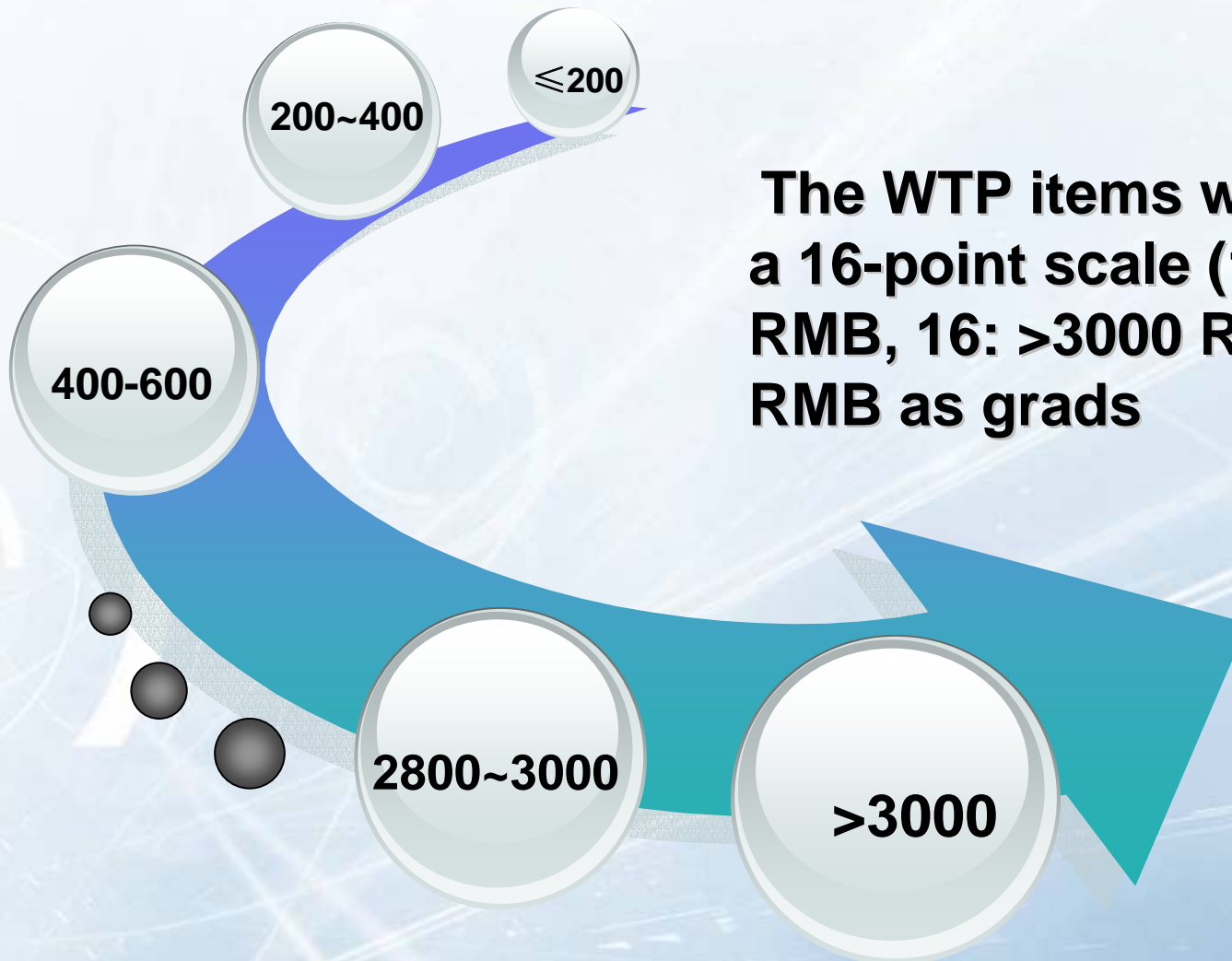
Table 4. Regression Model for " risk perception difference between nuclear and coal power"

(independent) Variable	B	SE	Beta	t
All respondents (n=300), R=0.25				
(constant)	2.297	0.384		5.975
II. Benefit perception	-0.140	0.111	-0.079	-1.260
III. Trust in government	0.151	0.082	0.115*	1.834
IV. acceptability	0.194	0.068	0.178**	2.854

Correlation is significant at the 0.01 level

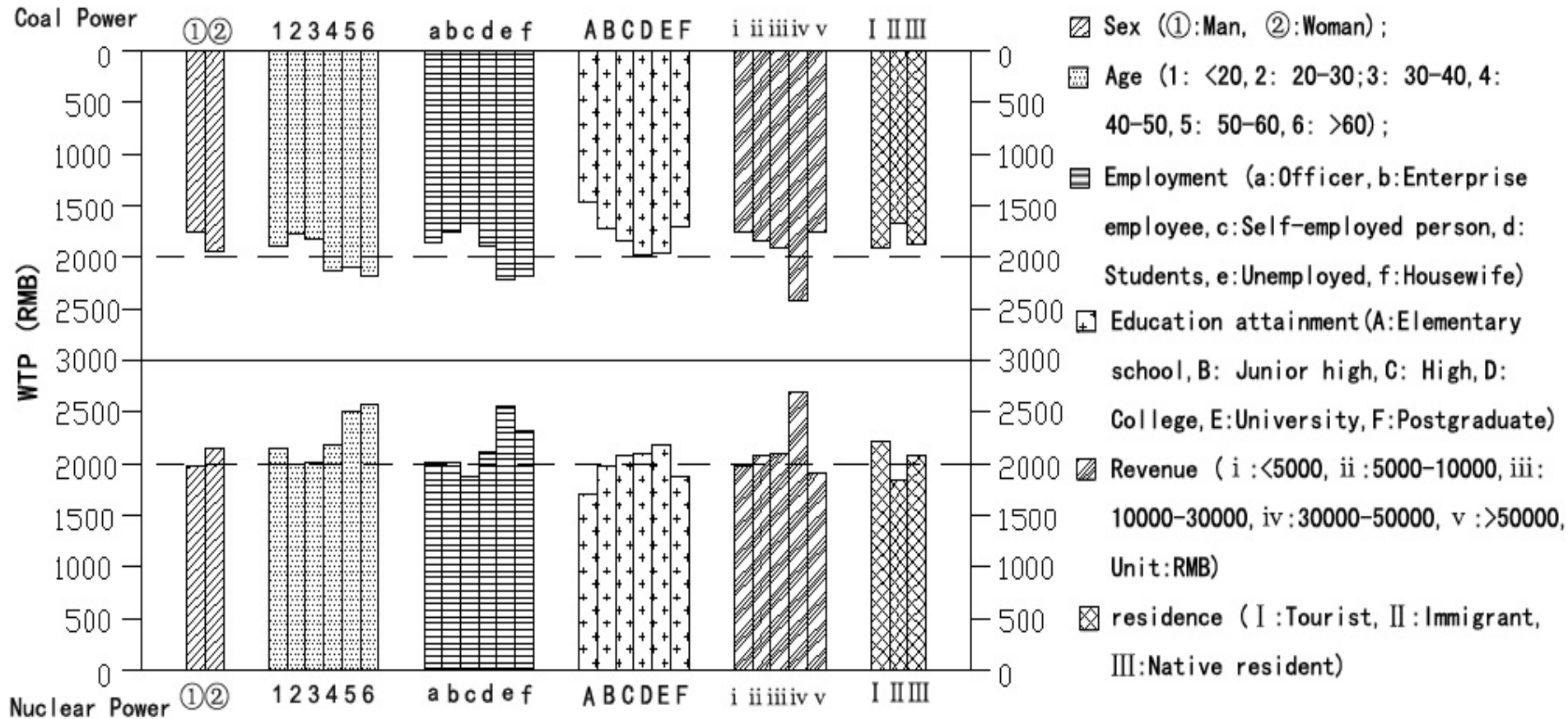
Correlation is significant at the 0.05 level

WTP



The WTP items were on a 16-point scale (1: ≤ 200 RMB, 16: >3000 RMB, 200 RMB as grads)

Figure 2 Comparison WTPs of Coal and Nuclear Power with Demographic Analysis



Discussion

For the policy maker

Chinese government act an important role in risk perception

Improve public knowledge and interesting

Need well designed risk communication

compensation level for different groups

Thank You !

