VALUES AND PRINCIPLES OF CONSPIRATIONISTS: ITALY CASE STUDY

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ABSTRACT

Conspiracy theories have gained significant prominence in the public discourse, particularly during the Covid-19 pandemic. This study aims to investigate the factors driving individuals' inclination towards conspiracy. Specifically, the research explores the role of human and social values, as well as levels of trust in individuals and institutions, in predicting conspiracy beliefs. Data are from the European Social Survey and the focus is on Italy.

The results indicate that the models' explanatory power is modest, which is not uncommon in social science research. Notably, the model assessing "science conspiracy" exhibits the highest variance explained (adjusted R-squared = 0.166), while the model predicting "secret elite conspiracy" ranks last (adjusted R-squared = 0.079). Analyzing the human values component, it becomes evident that conspiracy believers attach greater importance to values associated with curiosity and pleasure. Conversely, values related to altruism and peacefulness exhibit a negative correlation with conspiracy beliefs. Regarding trust, in all models, a negative correlation is observed between trust and conspiracy beliefs.

These findings contribute to our understanding of the drivers behind conspiracy beliefs and underscore the importance of addressing such beliefs to safeguard individual and societal well-being.

INTRODUCTION

Conspiracy theories have always been present throughout human history. However, the Covid-19 pandemic and its consequences have played a fundamental role in fueling conspiracy theories and bringing them to a new level of visibility in the mainstream discussion. As governments, healthcare organizations and scientific communities struggled with that challenging situation, a wave of conspiracy theories invaded the public sphere. This type of conspiracy and misinformation pose a serious risk for individual and society's well-being. Hence, it is a social interest to try identifying which factors drive people to encompass these beliefs and engage in behaviors potentially harmful for themselves and the collectivity.

In the last years there has been an increasing trend regarding studies and research about conspiracy beliefs, the majority of whom focuses on depicting this phenomenon, its connection to social media, and possible predictors and drivers of conspiracy theorists' behavior (Mahl et al. 2023). The latter is the category of interest of this study: our goal is analyzing the role that human and social values play in the conspiracy beliefs. In other words, we wanted to see if determinate values are more likely to be encountered in those individuals' keener to believe fake news and misinformation. Another variable we deemed worth to be analyzed, together with the human values, is the level of trust that people have toward other individuals and different institutions. Essentially, our hypothesis for the following analysis are that people with higher beliefs in conspiracy theories: (1) are more likely to regard highly the individualistic values (such as seek of pleasure); (2) generally score lower on the scale measuring their trust toward other people, institutions and science.

The data used in this study has been taken from the European Social Survey that consists of the answer of a cross-national survey administered to citizen in over 40 countries. We decided to focus only on the country of Italy because, among the European countries, it is one of those where the Covid-19 pandemic began earlier and that has undergone stricter restrictions.

MATHERIALS AND METHODOLOGY

Dataset

The data we have used to perform our analysis comes from the last round of surveys, administered between 2020 (2021 for Italy) and 2022, produced by the European Social Survey (ESS). This survey contains of several questions regarding different topics such as socio-economic status, politics, social values, perception of democracy, impact of Covid-19.

Before proceeding with the variables' explanation, we need to mention that, for the sake of consistency and interpretability, several variables have been recoded by reversing their scale. In this way, the lower values of all ordinal variables are meant to be negative answers, and positive answer for the upper values. Moreover, after the recoding process, we standardized the variables in order to have scales centered on the same number; however, the plots and the scales presented in the following paragraphs are the originals since they are more intuitive. After handling the missing values, we are left with a total of 1777 observations.

Variables of interest: dependent

In the dataset there are two variables that we took in consideration as measure of how much an individual believes in conspiracy theory: secgrdec and scidecpb (Table 1, Figure 1, Figure 2).

Table 1

 Variable
 Survey statement (1- Disagree strongly to 5 – Agree strongly)

 secgrdec
 A small secret group of people is responsible for making all major decisions in world politic

¹ https://ess-search.nsd.no/en/study/172ac431-2a06-41df-9dab-c1fd8f3877e7

scidecpb

Groups of scientists manipulate, fabricate, or suppress evidence in order to deceive the public.

Figure 1

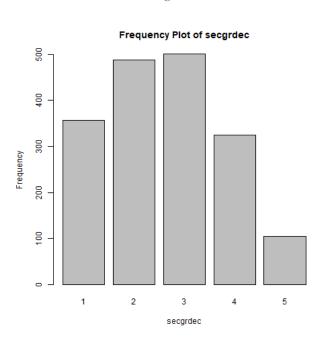
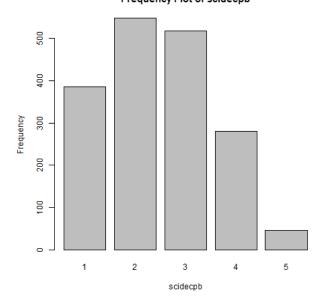


Figure 2

Frequency Plot of scidecpb



Variables of interest: human values

These are the first set of variables of main interest: 21 statements about human values and principles (Table 2).

Table 2

Variable	Survey statement (1- Not like me at all to 6 – Very much like me)
ipertiv	Important to think new ideas and being creative
imprich	Important to be rich, have money and expensive things
ipeqopt	Important that every person in the world should be treated equally and
	everyone should have equal opportunities in life.
ipshabt	Important to show abilities and be admired
impsafe	Important to live in secure and safe surroundings
impdiff	Important to try new and different things in life
ipfrule	Important to do what is told and follow rules
ipudrst	Important to understand different people
ipmodst	Important to be humble and modest, not draw attention
ipgdtim	Important to have a good time
impfree	Important to make own decisions and be free
iphlppl	Important to help people and care for others well-being
ipsuces	Important to be successful and that people recognise achievements
ipstrgv	Important that government is strong and ensures safety
ipadvnt	Important to seek adventures and have an exciting life
ipbhprp	Important to behave properly
iprspot	Important to get respect from others
iplylfr	Important to be loyal to friends and devote to people close
impenv	Important to care for nature and environment
imptrad	Important to follow traditions and customs
impfun	Important to seek fun and things that give pleasure

Variables of interest: trust

The other main set of variables we considered is about trust (Table 3).

Table 3

Variable	Survey statement (0- No trust at all to 10 – Complete trust)
ppltrst	Most people can be trusted
trstlgl	Trust in the legal system
trstplc	Trust in the police
trstplt	Trust in politicians
trstep	Trust in the European Parliament
trstsci	Trust in scientists
viepol	The views of ordinary people prevail over the views of the political elite
	(trust in democracy)

Variables of interest: control variables

We considered also a series of control variables (Table 4).

Table 4

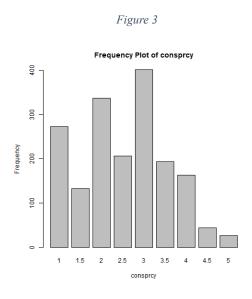
Variable	Description
nwspol	Time spent watching, reading or listening to news about politics and
	current affairs, in minutes
pbldmna	Taken part in public demonstration last 12 months (binary)
stflife	How satisfied with life as a whole (0 to 10)
sclmeet	How often socially meet with friends, relatives or colleagues (1 – never
	to 7 – every day)
hhmmb	Number of people living regularly as member of household
gndr	Gender (binary, 1 = male)
agea	Age of respondent
polintr	How interested in politics (1 – not at all interested to 4 – very interested)
domicil	Domicile, respondent's description (1 – farm or home countryside to
	(increasing in size) 5 – big city)
edlveit	Highest level of education (1 – no titles to 21 - PhD)
hincfel	Feeling about household's income nowadays (1 – very difficult on
	present income to 4 – living comfortably)

memsinf	Online/mobile communication exposes people to misinformation (0 to
	10)
panfolru	More important for you personally to follow government rules or to
	make your own decisions when fighting a pandemic (0 – make your own
	decision to 10 – follow government rules)
gvhanc19	How satisfied with government's handling of COVID-19 in country (0 -
	10)
respc19	Respondent had COVID-19 (binary)
reshhc19	Anyone living with respondent had COVID-19 (binary)
getavc19	Get vaccinated against coronavirus with a vaccine (binary)

In the Appendix are shown the summaries (Figure 11) of all variables of interest and their frequency plot (Histograms 1).

Dependent variables merge

In the context of the Covid-19 pandemic, is seems reasonable to assume the two alternative dependent variables, secgrdec and scidecpb, convey very similar information (correlation of 0.64). For this reason, we decided to merge these two variables together throughout a row mean operation. We called the resulting variable: consprey, as for conspiracy (Figure 3).



To verify the correctness of our operation, we computed the Cronbach's alpha, that is a method used to measure the internal consistency of a survey. We obtained an alpha value of 0.781, above the Acceptable threshold of $\alpha > 0.7$.

Model

This is the formalization of the model we try to estimate:

$$conspiracy \sim \beta_0 + \beta_1 human \ values + \beta_2 \ trust + \beta_3 control + \epsilon$$

Before proceeding with that, since we have a number quite big of predictors, we decided to perform a dimension reduction method.

Unsupervised learning part

We performed Principal Component Analysis separately for the human values set and for the trust variables set.

PCA: human values

To choose the optimal number of components, we plot the Cattel scree test together with the Kaiser–Harris criterion: the so-called parallel analysis. (Figure 4). From the graph it appears that the Kaiser-Harris criterion would suggest us to use 4 factors, since the 4th x is just above the eigenvalue line of 1, on the other hand the Scree method advises us to use 3 components. We assume reasonable to choose 4 components, also because the variance explained by the 3rd and 4th is very close (PCA 1 in Appendix). This principal component analysis has been made with the rotation of the component of the type 'varimax', such that the components keep their orthogonality between each other. The loadings are displayed in Figure 5.

Figure 4

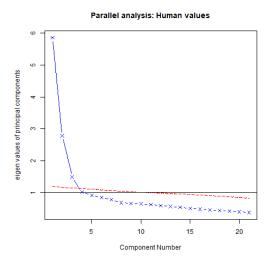


Figure 5

	RC1 <s3: asis=""></s3:>	RC2 <s3: asis=""></s3:>	RC4 <\$3: Asls>	RC3 <s3: asis=""></s3:>
ipcrtiv	0.44	0.41	-0.11	0.25
imprich	-0.14	0.48	-0.05	0.54
ipeqopt	0.73	0.03	0.01	0.00
pshabt	0.19	0.25	0.06	0.70
impsafe	0.51	-0.06	0.40	0.25
mpdiff	0.40	0.50	0.00	0.18
pfrule	0.10	0.11	0.64	0.01
pudrst	0.71	0.16	0.19	-0.13
pmodst	0.51	-0.08	0.43	-0.32
pgdtim	0.07	0.73	0.04	0.21
mpfree	0.53	0.30	-0.04	0.28
phlppl	0.71	0.08	0.18	0.11
psuces	0.37	0.28	0.14	0.57
pstrgv	0.48	0.01	0.35	0.22
padvnt	-0.08	0.75	-0.08	0.08
pbhprp	0.19	-0.05	0.67	0.22
prspot	0.12	-0.02	0.44	0.61
plylfr	0.67	0.05	0.25	0.21
mpenv	0.69	0.01	0.23	0.14
mptrad	0.15	-0.02	0.69	0.02
impfun	0.16	0.80	0.13	0.00

PCA: trust

Similarly, as for the human values, the PCA has been made with the rotation of the component of the type 'varimax'. From the parallel analysis graph, we can see that the optimal number of components is 2 (Figure 6). The loadings are displayed in Figure 7 (PCA 2 in Appendix)

Figure 6

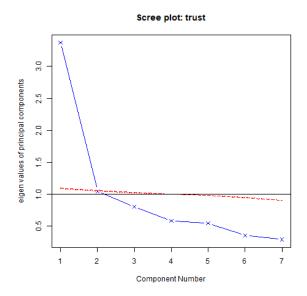


Figure 7

	RC1	RC2
	<s3: asis=""></s3:>	<s3: asis=""></s3:>
ppltrst	0.55	0.15
trstlgl	0.53	0.64
trstplc	0.17	0.80
trstplt	0.80	0.31
trstep	0.62	0.55
trstsci	0.05	0.83
viepolc	0.79	-0.03
7 rouse		

7 rows

At this point, we removed the single human values and trust variables from our model, and we kept instead the respective components obtained through PCA. Displayed in Figure 12 in Appendix there is the correlation heatmap.

Supervised learning part

In the next part we analyzed the relationship between the principal components previously obtained and the dependent variable. We estimated three regression models using as dependent variable: consprey, seegrdec and scidecpb. For each of them we tested for multicollinearity with the VIF test, obtaining for each of the three models small values never higher than 2, meaning that we do not consider multicollinearity a problem. We then performed the stepwise selection, in both directions, in order to

identify the optimal combination of predictors (due to the number of parameters, it was unfeasible to perform the best subset selection)

We displayed here the three final regression models, with dependent variable: consprcy (Figure 8); secgrdec (Figure 9); scidecpb (Figure 10).

Figure 8

		consprcy	
Predictors	Estimates	CI	p
(Intercept)	0.24	-0.00 - 0.48	0.052
rc1 val	-0.04	-0.09 - 0.01	0.096
rc2 val	0.06	0.01 - 0.11	0.014
rc3 val	0.05	0.01 - 0.10	0.020
rc1 tr	-0.16	-0.210.10	<0.001
rc2 tr	-0.08	-0.130.03	0.002
sclmeet	-0.07	-0.110.02	0.005
agea	0.04	-0.01 - 0.09	0.109
polintr	-0.05	-0.09 - 0.00	0.054
domicil	-0.04	-0.09 - 0.00	0.058
hincfel	-0.10	-0.140.05	<0.001
memsinf	-0.05	-0.090.01	0.027
panfolru	-0.11	-0.160.06	<0.001
gvhanc19	-0.11	-0.17 – -0.06	<0.001
gndr	0.09	0.01 - 0.18	0.038
getavc19	-0.30	-0.540.05	0.016
Observations	1777		

Observations 1777

 $R^2 \, / \, R^2 \, \, \text{adjusted} \quad \, 0.146 \, / \, 0.138$

Figure 9

		secgrdec	
Predictors	Estimates	CI	p
(Intercept)	0.30	0.05 - 0.54	0.016
rc1 val	-0.05	-0.100.00	0.042
rc2 val	0.05	0.01 - 0.10	0.030
rc1 tr	-0.13	-0.180.08	<0.001
sclmeet	-0.05	-0.100.01	0.025
domicil	-0.06	-0.110.01	0.009
hincfel	-0.09	-0.130.04	<0.001
panfolru	-0.10	-0.150.05	<0.001
gvhanc19	-0.09	-0.140.04	0.001
getavc19	-0.31	-0.560.06	0.015
Observations	1777		

Observations 1777

 $R^2 \, / \, R^2 \, adjusted \quad 0.084 \, / \, 0.079$

Figure 10

		scidecpb	
Predictors	Estimates	CI	p
(Intercept)	0.20	-0.04 - 0.44	0.106
rc2 val	0.06	0.01 - 0.11	0.014
rc3 val	0.07	0.02 - 0.11	0.002
rc1 tr	-0.15	-0.200.10	<0.001
rc2 tr	-0.14	-0.180.09	<0.001
sclmeet	-0.08	-0.130.04	0.001
agea	0.04	-0.01 - 0.09	0.113
polintr	-0.06	-0.110.02	0.009
edlveit	-0.04	-0.09 - 0.01	0.096
hincfel	-0.09	-0.130.04	<0.001
memsinf	-0.07	-0.110.02	0.002
panfolru	-0.10	-0.150.05	<0.001
gvhanc19	-0.12	-0.170.07	<0.001
gndr	0.12	0.03 - 0.21	0.006
respc19	-0.09	-0.18 - 0.01	0.087
getavc19	-0.24	-0.480.00	0.046
01 (1222		

Observations 1777

 $R^2 \, / \, R^2 \, \, \text{adjusted} \quad \, 0.173 \, / \, 0.166$

RESULTS AND DISCUSSION

At a first glance it appears that the R-squared of the three models are low, but this is not unusual when working with social science data. We can appreciate that the model with as dependent variable the "science conspiracy" (scidecpb) is the one whose predictors are able to explain the most variance (adjusted R-squared = 0.166); while the model predicting the "secret group conspiracy" (secgrdec) rank third with an adjusted R-squared of 0.079.

Human values

Analyzing deeper the loadings of the second component found for the human values, RC_2, that is statistically significant for each of the three models, we can see that the main drivers are: impdiff (try new things), ipgdtim (having a good time), ipadvnt (adventurous life), impfun (seek fun). We might classify the RC_2 component as relating to curiosity and pleasure. In short, these values seem to be regarded more important among the conspiracy believers. Focusing on the RC_1, that is statistically significant only for the case of predicting secgrdec, its main drivers are: ipcrtiv (creativity), ipquopt (equality), impsafe (safety), ipudrst (understanding), impfree (freedom), iphlppl (helping others), ipstrgv (strong government), iplylfr(loyalty to friends) and impenv (environment). In short, we deem reasonable classify this component as relating to altruism and peacefulness. From our model we see that these qualities are negatively correlated to the conspiracy beliefs.

Trust

Classification of the trust components is more immediate: RC_1 is mostly driven by ppltrst (trust individuals), trstplt (politician), trstep (European Parliament), viepolc (democratic process). We classify RC_1 as social trust (or people trust); while RC_2 is

classified as institutional trust. Regardless of the type of trust, in all three models there is negative correlation between trust and conspiracy believers.

Conclusion

Finally, referring to our hypothesis, we have just seen, from our models, that conspiracy theorists generally score lower on the scale measuring any kind of trust (2). On the other hand, it appears that seekers of pleasure and adventure are more likely to believe conspiracy theories (1) but other individualistic values do not seem to be correlated with conspiracy beliefs.

BIBLIOGRAPHY

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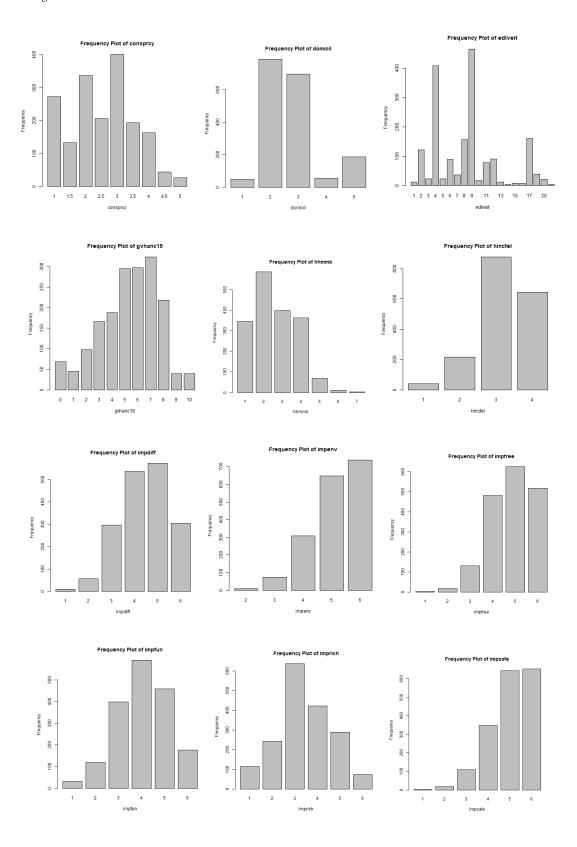
European Social Survey https://ess-search.nsd.no/en/study/172ac431-2a06-41df-9dab-c1fd8f3877e7

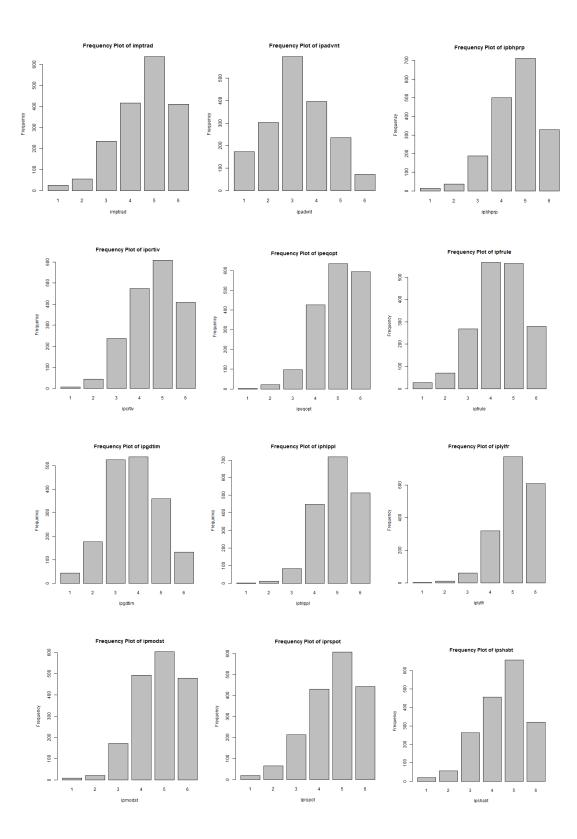
APPENDIX

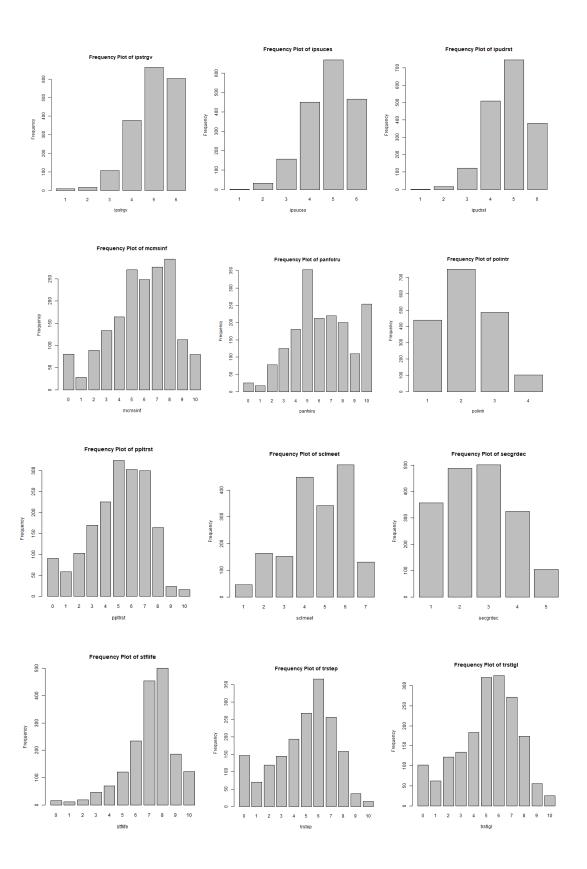
Figure 11

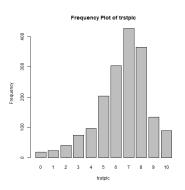
secgrdec	scidecpb	nwspol	pb1dmna	stflife	sclmeet
Min. :1.0000	Min. :1.000	Min. : 0.00	Min. :0.00000	Min. : 0.000	
1st Qu.:2.0000	1st Qu.:2.000	1st Qu.: 30.00	1st Qu.:0.00000	1st Qu.: 6.000	
Median :3.0000	Median :2.000	Median : 60.00	Median :0.00000	Median : 7.000	0 Median :5.0000
Mean :2.6246	Mean :2.466	Mean : 162.42	Mean :0.10467	Mean : 7.0619	
3rd Qu.:3.0000	3rd Qu.:3.000	3rd Qu.: 120.00	3rd Qu.:0.00000	3rd Qu.: 8.000	
Max. :5.0000	Max. :5.000	Max. :1320.00	Max. :1.00000	Max. :10.000	
hhmmb	gndr	agea	polintr	domicil	edlveit
Min. :1.0000	Min. :0.00000		Min. :1.0000	Min. :1.0000	
1st Qu.:2.0000	1st Qu.:0.00000		1st Qu.:2.0000	1st Qu.:2.0000	1st Qu.: 4.0000
Median :2.0000	Median :0.00000		Median :2.0000	Median :3.0000	Median : 9.0000
Mean :2.5886	Mean :0.49522		Mean :2.1418	Mean :2.7417	Mean : 8.3399
3rd Qu.:4.0000	3rd Qu.:1.00000		3rd Qu.:3.0000	3rd Qu.:3.0000	3rd Qu.: 9.0000
Max. :7.0000	Max. :1.00000		Max. :4.0000	Max. :5.0000	Max. :21.0000
hincfel	mcmsinf	panfolru	gvhanc19	respc19	1-12.0000
Min. :1.0000	Min. : 0.0000				000
1st Qu.:3.0000	1st Qu.: 4.0000				
Median :3.0000	Median : 6.0000				
Mean :3.1975	Mean : 5.7456				
3rd Qu.:4.0000	3rd Qu.: 8.0000				
Max. :4.0000	Max. :10.0000				
reshhc19	getavc19	ppltrst	trstlgl	trstplc	
Min. :0.00000	Min. :0.0000				0000
1st Qu.:0.00000	1st Qu.:1.0000		00 1st Qu.: 4.00		
Median :0.00000	Median :1.0000				
Mean :0.27237	Mean :0.9639				
3rd Qu.:1.00000	3rd Qu.:1.0000				
Max. :1.00000	Max. :1.0000				
trstplt	trstep	trstsci	viepolc	ipcrtiv	
Min. : 0.0000	Min. : 0.000	0 Min. : 0.000			00
1st Qu.: 1.0000	1st Qu.: 3.000	0 1st Qu.: 6.000			
Median : 3.0000	Median : 5.000	0 Median : 7.000	00 Median : 4.00		
Mean : 3.1745	Mean : 4.842	4 Mean : 7.168			
3rd Qu.: 5.0000	3rd Qu.: 7.000	0 3rd Qu.: 8.000	00 3rd Qu.: 5.00	0 3rd Qu.:5.000	00
Max. :10.0000	Max. :10.000	0 Max. :10.000	00 Max. :10.00	0 Max. :6.000	00
imprich	ipeqopt	ipshabt	impsafe	impdiff	ipfrule
Min. :1.0000	Min. :1.000	Min. :1.0000	Min. :1.0000	Min. :1.0000	Min. :1.0000
1st Qu.:3.0000	1st Qu.:4.000	1st Qu.:4.0000	1st Qu.:4.0000	1st Qu.:4.0000	1st Qu.:4.0000
Median :3.0000	Median :5.000	Median :5.0000	Median :5.0000	Median :4.0000	Median :4.0000
Mean :3.4215	Mean :4.942	Mean :4.4834		Mean :4.4187	Mean :4.3534
3rd Qu.:4.0000	3rd Qu.:6.000	3rd Qu.:5.0000	3rd Qu.:6.0000	3rd Qu.:5.0000	3rd Qu.:5.0000
Max. :6.0000	Max. :6.000	Max. :6.0000		Max. ::6.0000	Max. :6.0000
ipudrst	ipmodst	ipgdtim	impfree	iphlppl	ipsuces
Min. :1.000	Min. :1.0000	Min. :1.0000		Min. :1.0000	Min. :1.0000
1st Qu.:4.000	1st Qu.:4.0000	1st Qu.:3.0000		1st_Qu.:4.0000	1st Qu.:4.0000
Median :5.000	Median :5.0000	Median :4.0000		Median :5.0000	Median :5.0000
Mean :4.758	Mean :4.7473	Mean :3.7822		Mean :4.9212	Mean :4.7727
3rd Qu.:5.000	3rd Qu.:6.0000	3rd Qu.:5.0000		3rd Qu.:6.0000	3rd Qu.:6.0000
Max. :6.000	Max. :6.0000	Max. :6.0000		Max. :6.0000	Max. :6.0000
ipstrgv	ipadvnt	ipbhprp	iprspot	iplylfr	impenv
Min. :1.0000	Min. :2.0000				
1st Qu.:4.0000	1st Qu.:2.0000	1st Qu.:4.0000	1st Qu.:4.0000	1st Qu.:5.0000	1st Qu.:5.0000
Median :5.0000	Median :3.0000	Median :5.0000	Median :5.0000	Median :5.0000	Median :5.0000
Mean :4.9612	Mean :3.2465	Mean :4.5999	Mean :4.6168	Mean :5.0715	Mean :5.1435
3rd Qu.:6.0000 Max. :6.0000	3rd Qu.:4.0000 Max. :6.0000	3rd Qu.:5.0000 Max. :6.0000	3rd Qu.:5.0000 Max. :6.0000	3rd Qu.:6.0000 Max. :6.0000	3rd Qu.:6.0000 Max. :6.0000
imptrad	impfun	consprcy	max0.0000	ax0.0000	ax0.0000
Min. :1.0000	Min. :1.0000	Min. :1.0000			
1st Qu.:4.0000	1st Qu.:3.0000	1st Qu.:2.0000			
Median :5.0000	Median :4.0000	Median :2.5000			
Mean :4.5824	Mean :4.0422	Mean :2.5453			
3rd Qu.:5.0000	3rd Qu.:5.0000	3rd Qu.:3.0000			
Max. :6.0000	Max. :6.0000	Max. :5.0000			

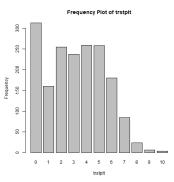
Histograms 1

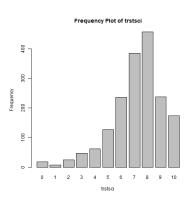


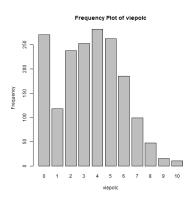












PCA 1: human values

	RC1	RC2	RC4	RC3
SS loadings	4.15	2.68	2.26	2.05
Proportion Var	0.20	0.13	0.11	0.10
Cumulative Var	0.20	0.33	0.43	0.53
Proportion Explained	0.37	0.24	0.20	0.18
Cumulative Proportion	0.37	0.61	0.82	1.00

PCA 2: trust

		RC1	RC2
SS loadings		2.26	2.16
Proportion '	Var	0.32	0.31
Cumulative '			0.63
Proportion	Explained	0.51	0.49
Cumulative	Proportion	0.51	1.00

