Metodological annex – Chapter 12

Public perceptions of science and technology in São Paulo State

1. Questionnaire development and application

The standardized methodology used for this survey of public perceptions of science and technology (PPST) was developed by a group of researchers at the Project to Develop an Ibero-American Standard for Indicators of Social Perception, Scientific Culture & Civic Participation. The starting-point for construction of the methodology was a review of the theoretical literature and of the main PPST surveys conducted in Ibero-America and the rest of the world, especially in Europe and the United States, with the aim of identifying advantages and disadvantages, tendencies, and problems in adapting methods and approaches to the conditions prevailing in the Ibero-American region, among other aspects. This theoretical and conceptual work was the foundation for development of a standardized survey questionnaire for Ibero-America comprising 39 common questions or sets of questions with closed, semi-open or open answers.

According to the methodology established, each region could develop its own questions to supplement the standard questionnaire according to local specificities. Thus in São Paulo State four extra questions were included (Q40-Q43), as well as a question designed to classify respondents by income and socioeconomic status (Q44).[1]

The survey questionnaire was administered in seven Ibero-American countries – Argentina, Chile, Colombia, Venezuela, Panama, Spain and Brazil – with the aim of permitting international comparison of the data collected in the capitals of the first six countries and the city of São Paulo, Brazil.

Besides the aim of assuring broad comparability across Ibero-America, the questionnaire was designed with various points of contact with other surveys in mind. Some questions are identical or similar to those used by Eurobarometer (e.g. Q37.1, Q37.2 and part of Q8), while others can be adapted for data integration purposes to facilitate comparison with data from other European countries. Ten questions were reproduced from an earlier survey conducted by Labjor (see the previous edition of this publication, FAPESP 2005), and eight items (Q38, Q39, Q40, Q41.1-4 and Q42) were also included in a questionnaire used by Brazil's Science & Technology Ministry (MCT) in a nationwide survey conducted in 2006.

Data were collected by means of personal interviews. Each interview was conducted face to face in the respondent's home by appointment.[2] Interviews were conducted by Instituto de Opinião Pública, Estatística e Qualidade (IOPEQ) in November-December 2007, at the same time as the survey was in progress in the other participating Ibero-American countries. The version of the questionnaire developed for São Paulo State, with a total of 44 questions or sets of questions, took between 35 and 45 minutes to complete.

1. The Brazilian Economic Classification Criterion (CCEB) was created in 2003 by ABEP, the Brazilian market research association, as a rough guide to urban consumer purchasing power but with no claim to classify the population into social classes. Households or individuals are scored according to ownership of specific items, facilities in the home, payment for certain personal services etc. These items include a color TV set, radio, refrigerator, freezer, vacuum cleaner, washing machine, VCR or DVD, car, salaried domestic helper, and toilet (water closet). The score also takes into account the head of household's educational attainment. The CCEB places households or individuals on a weighted scale of 0-34 comprising five socioeconomic groups (or "classes") in descending order of purchasing power, schooling, appliance ownership etc. (A1, A2, B1, B2, C, D and E). In this survey, response categories A1 and A2, B1 and B2, and D and E were grouped together for the purposes of validating association tests and calculating proportions of respondents. Thus A1 and A2 together are here referred to as A, and B1/B2 as B, while D and E constitute a single group, D/E.

2. The firm that administered the questionnaire in São Paulo State (IOPEQ) opted to supplement the household interviews with interviews conducted in high-traffic locations, also based on the randomly selected routes and street blocks. The rationale for this was to fill in gaps due, for example, to difficulties in accessing gated communities and apartment blocks by selecting new respondents with the same profile and geographic location in public spaces. These accounted for a distinctly minor proportion of the total sample.

2. Survey sample

Construction of the survey sample for the Ibero-American Project began with a random selection of neighborhoods, street blocks and dwellings. The method used to select areas and blocks followed the procedure used by Eurobarometer (European Commission, 2005), with the adaptations and enhancements described by the Argentine Ministry of Education's Department of Science, Technology & Innovation (SeCyT, 2007, pp. 126-131).

The total sample size was 1,825, of whom 1,076 were in the city of São Paulo[3] and 749 in other parts of São Paulo State.[4] The latter included the main cities of 14 administrative regions, followed by medium and small towns within a radius of 100 kilometres from the respective main city. In each case the number of interviewees was proportional to the population. The São Paulo questionnaire was administered in 35 towns and cities all told (Detailed Table M12.1). Thus in contrast with the survey conducted for the previous edition of this publication (FAPESP, 2005), which was administered in the cities of Campinas, São Paulo and Ribeirão Preto, in this case the geographic distribution of the sample was designed to represent the state in its entirety rather than focusing on areas with major research or S&T institutions, and/or a well-established industrial or service base. The fact that a multistage sample was chosen (in 33 administrative regions) proportional to the size of the population and with random household routes guarantees that it was representative of São Paulo State's population. The methodology permits a 3% margin of error for a 95% confidence interval.

The sample was also stratified by gender and age, in accordance with the methodology used in the main PPST surveys (see for example FECYT, 2005; SeCyT, 2007; European Commission, 2005). It also took into consideration population density and census gender and age strata furnished by IBGE for each cluster of cities per administrative region of São Paulo State.

"Science culture" was defined as a broad, complex process grounded mainly in science education (education for science and education in science), science diffusion, and social access to these two activities. An important point here is the presence of S&T institutions in each administrative region of the state, especially higher education institutions (HEIs). The presence of universities and colleges acts as a magnet for young students and thus tends to disseminate contact with science among that portion of the population who attend HEIs. A great many of the HEIs located in São Paulo are also responsible for science diffusion activities, such as exhibitions, events, museums etc., which relate directly and indirectly with each area's science culture. Although there are no official data on these activities in the state (or nationwide), they can safely be assumed to be concentrated in the state capital and its vicinity.

There are state universities throughout São Paulo State, and Universidade Estadual Paulista (Unesp) stands out particularly for having campuses in every administrative region (AR) except Barretos. The São Paulo (capital), Ribeirão Preto and Bauru ARs also have campuses of Universidade de São Paulo (USP), while the Campinas AR has Universidade Estadual de Campinas (Unicamp). There are also campuses of federal, municipal and private universities throughout the state. Chapter 2 of this publication contains more information on higher education.

Although we did not find significant differences between one AR and another, we know it is possible to offer different inputs for the formation of a science culture in each state. However, proposing initiatives to do so is not part of the purpose of this study.

The data analysis methodology is presented next.

3. Both sample methodology and size were identical in the other participating Ibero-American cities, with the number of interviewees amounting to about 1,000 in each city.

4. The size of the sample is comparable to that used to collect data on the population of an entire country in analogous surveys conducted in the European Union. Eurobarometer, for example, uses samples of about 1,000 for each country, rising to 1,500 for the larger countries such as Germany. This large number of interviewees in São Paulo State was necessary to guarantee stratification by gender and age while keeping the margin of error low, given that the survey was conducted jointly with the other participants in the Ibero-American Project.

Detailed Table M12.1
Sample distribution by administrative region and city surveyed – São Paulo State, 2007

Administrative region (AR)	City	Sample distribution	
		Interviewees	%
Grand total		**1,825**	**100.0**
City of São Paulo	**Total**	**1,076**	**59.0**
	São Paulo	1,076	
Araçatuba AR	**Total**	**24**	**1.3**
	Araçatuba	15	
	Birigui	9	
Central AR	**Total**	**36**	**2.0**
	Araraquara	30	
	Américo Brasiliense	6	
Barretos AR	**Total**	**18**	**1.0**
	Barretos	18	
Bauru AR	**Total**	**36**	**2.0**
	Bauru	30	
	Piratininga	6	
Franca AR	**Total**	**24**	**1.3**
	Franca	18	
	Restinga	6	
Marília AR	**Total**	**36**	**2.0**
	Marília	30	
	Vera Cruz	6	
Presidente Prudente AR	**Total**	**30**	**1.6**
	Presidente Prudente	24	
	Álvares Machado	6	
Registro AR	**Total**	**12**	**0.7**
	Registro	6	
	Sete Barras	6	
Riberão Preto AR	**Total**	**42**	**2.3**
	Riberão Preto	35	
	Sertãozinho	7	
São José do Rio Preto AR	**Total**	**54**	**3.0**
	São José do Rio Preto	47	
	Mirassol	7	

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Detailed Table M12.1 (continued)
Sample distribution by administrative region and city surveyed – São Paulo State, 2007

Administrative region (AR)	City	Sample distribution	
		Interviewees	%
São José dos Campos AR	**Total**	**82**	**4.5**
	São José dos Campos	61	
	Jacareí	21	
Sorocaba AR	**Total**	**96**	**5.3**
	Sorocaba	81	
	Votorantim	15	
Santos AR	**Total**	**60**	**3.3**
	Santos	32	
	Praia Grande	18	
	Cubatão	10	
Campinas AR	**Total**	**199**	**10.9**
	Campinas	109	
	Valinhos	12	
	Vinhedo	6	
	Paulínia	6	
	Jaguariúna	6	
	Sumaré	24	
	Hortolândia	18	
	Indaiatuba	18	

Source: Labjor (Unicamp), survey on public perceptions of S&T conducted in São Paulo State.

3. Data analysis

Data analysis was supported by the other Ibero-American researchers in discussions, although one or two minor methodological variations were adopted by each team according to their objectives.

For the findings presented in this chapter, the principal statistical methods used were as follows:

i) Frequency tables for descriptive analysis of the data, listing the value of each variable alongside the number of times it occurs;
ii) Contingency tables to record and analyze the relationships between two or more variables and specific groups;
iii) Pearson's chi-squared test for goodness of fit and independence;
iv) Cluster analysis to check for the relevance of grouping respondents on the basis of questions related to attitudes and values (e.g. risks and benefits of S&T);
v) Binary logistic regression for data modeling: logistic regression model with gender, educational attainment and age as variables, and level of interest in S&T as response variable (*Very interested* or *Interested in S&T* and *Fairly interested* or *Not interested* in S&T).

The socioeconomic variables (gender, education, socioeconomic status, age, work situation and religion) were cross-tabulated with interest in S&T (*Very interested/Interested* and *Fairly interested/Not interested*). Pearson's chi-squared test with a significance level of 5% showed that only work situation and religion were not associated with level of interest in S&T, since the p-value associated with the variables concerned was greater than 0.05 (p-value = 0.137 and 0.108 respectively).

The initial regression model showed that socioeconomic status was not significant, which was only to be expected, given that in the Brazilian context income and socioeconomic status generally are closely linked to educational attainment. The model was therefore adjusted for the three remaining variables (gender, educational attainment and age).

The odds ratio confidence interval for age groups 4 versus age group 5 included 1. Thus age group 4 (45-54) could be considered equal to age group 5 (over 55). These two variables were therefore amalgamated into a single age group, age group 4, comprising respondents aged over 45. The model was again adjusted and the odds ratio confidence interval now showed age group 3 (35-44) equal to age group 4 (45-54), giving a new age group 3 for those aged over 35. This was the final model (Detailed Table 12.6).

vi) Factorial analysis was also performed where necessary, e.g. to check the consistency of indicators such as ICIC.

3.1 Construction of ICIC

The Scientific Information Consumption Indicator (ICIC) was constructed on the basis of two questions relating to the consumption of scientific information: Q12.1, which asked respondents if they watched TV programs with S&T content; and Q12.2, which asked whether they read science news in the newspapers. Frequent information consumption scored 1; occasional consumption scored 0.5; no consumption, "don't know" (DK) and "no answer" (NA) scored zero.[5]

The sum of these values is ICIC, which ranges from 0 to 2. Despite its simplicity, statistical analysis showed ICIC to be a reliable indicator. Based on the frequency distribution, the values were grouped into four strata defining scientific information consumption (see for example SeCyT, 2007, p. 32 ff. and p. 118 ff): 0 = no consumption; 0.5 = low consumption; 1 = medium-low consumption; 1.5 = medium-high consumption; 2 = high consumption.[6]

It is worth noting that statistical analysis software was used to treat the survey data (SPSS and SAS).

5. This indicator is deliberately based on subjective and qualitative statements. Few people are capable of counting the number of times they have read news about S&T in the past month. Some will very probably lie. By allowing subjective responses based on broad categories ("never", "occasionally", "frequently"), it is possible to divide respondents according to their self-assessments as consumers of scientific information. What matters is that despite the subjectivity of the responses, ICIC proved to be a significant indicator inasmuch as the respondents who said they consumed scientific information were the same as those who demonstrated knowledge of S&T in Brazil and attitudes significantly different from the rest in the questions designed to test for these specific points.

6. Various possibilities were explored during the development of this indicator. One took into account all responses to questions on information consumption (magazines, books, radio, museums etc.), both with and without weights for the different options. An indicator based on factorials instead of simple addition was also tested. These and other possibilities are still being explored in detail by the Ibero-American Project team and will be discussed in a published paper at the appropriate time. The simple version of ICIC presented here proved easy to use in all the countries concerned and produced interesting results despite its apparently rudimentary nature.

4. The questionnaire

Interviewer:	No.:	Date:	Checked by:	Supervisor:	Questionnaire no.:	City:

Good morning/afternoon/evening. My name is _____. We're doing a survey of public opinion in São Paulo State. Could I ask you a few questions?

Name of interviewee: _____

Address: _____

Telephone no.: _____Telephone no. to leave message_____

1. Do you regularly watch TV?

Yes		About how many hours per day? _____
No	**(Skip to Q3)**	
No answer		

INSTRUCTION: (SHOW CARD WITH QUESTION AND CHOICES OF ANSWER)

2. What kind of programs do you mostly watch? SELECT UP TOP THREE KINDS, IN ORDER OF IMPORTANCE, WITH "1" BEING THE MOST WATCHED.

1. News	( )
2. Films, series	( )
3. Cultural programs	( )
4. Medicine, health	( )
5. Sport	( )
6. Environment, wildlife	( )
7. Current affairs, politics, debates	( )
8. Science documentaries	( )
9. Concerts, shows, entertainment	( )
10. Weather (climate)	( )
11. Soap operas	( )
12. Other: _____	( )

3. Do you read newspapers or magazines?

Yes, frequently		Please specify (INDICATE WHICH IS MOST READ, IF MORE THAN ONE)
Yes, occasionally		_____
No, never	**(Skip to Q5)**	
No answer		

INSTRUCTION: SHOW CARD WITH QUESTION AND CHOICES OF ANSWER

4. Which sections or kind of news do you mainly read? CAN SELECT UP TOP THREE KINDS, IN ORDER OF IMPORTANCE, WITH "1" BEING THE TYPE READ WITH THE MOST ATTENTION.

1. Domestic politics	( )
2. Economy	( )
3. Agriculture/rural	( )
4. Sport	( )
5. Science	( )
6. Horoscope	( )
7. Health	( )
8. TV programming	( )
9. Environment	( )
10. International	( )
11. Events, entertainment	( )
12. Information (about the weather)	( )
13. Crime	( )
14. Gossip column, curiosities about the lives of famous people	( )
15. Arts, culture	( )
16. Other _____	( )

5. We would like to know how much you admire certain professions. I'm going to read out a list. For each of the professions listed, please choose A great deal of admiration, Some admiration, Very little admiration or No admiration. **INSTRUCTION:** ROTATE LIST OF PROFESSIONS RANDOMLY ONE BY ONE, ASKING INTERVIEWEE TO RESPOND BEFORE MOVING ON TO NEXT ONE. ONLY ONE ANSWER PER ITEM.

	A great deal of admiration	Some admiration	Very little admiration	No admiration	Don't know (DO NOT READ)	No answer (DO NOT READ)
5.1 Doctors	( )	( )	( )	( )	( )	( )
5.2 Scientists	( )	( )	( )	( )	( )	( )
5.3 Engineers	( )	( )	( )	( )	( )	( )
5.4 Judges	( )	( )	( )	( )	( )	( )
5.5 Lawyers	( )	( )	( )	( )	( )	( )
5.6 Athletes	( )	( )	( )	( )	( )	( )
5.7 Journalists	( )	( )	( )	( )	( )	( )
5.8 Business executives	( )	( )	( )	( )	( )	( )
5.9 Teachers	( )	( )	( )	( )	( )	( )
5.10 Clergy	( )	( )	( )	( )	( )	( )
5.11 Politicians	( )	( )	( )	( )	( )	( )
5.12 Military	( )	( )	( )	( )	( )	( )
5.13 Folk healers	( )	( )	( )	( )	( )	( )
5.14 Artists	( )	( )	( )	( )	( )	( )

6. I'm going to read out a list of areas and I'd like you to say how well you think Brazil performs in each one, choosing of the following: Outstanding performance, Above-standard performance, Standard performance or Insignificant. **INSTRUCTION:** ROTATE LIST OF AREAS RANDOMLY ONE BY ONE, ASKING INTERVIEWEE TO RESPOND BEFORE MOVING ON TO NEXT ONE. ONLY ONE ANSWER PER ITEM.

	Outstanding performance	Above-standard performance	Standard performance	Insignificant	Don't know (DO NOT READ)	No answer (DO NOT READ)
6.1 Sport	( )	( )	( )	( )	( )	( )
6.2 Industry	( )	( )	( )	( )	( )	( )
6.3 Agriculture	( )	( )	( )	( )	( )	( )
6.4 Health	( )	( )	( )	( )	( )	( )
6.5 Development of technologies	( )	( )	( )	( )	( )	( )
6.6 Arts, culture	( )	( )	( )	( )	( )	( )
6.7 Scientific research	( )	( )	( )	( )	( )	( )
6.8 Tourism	( )	( )	( )	( )	( )	( )
6.9 Education	( )	( )	( )	( )	( )	( )

INSTRUCTION: SHOW CARD WITH QUESTION AND CHOICES OF ANSWER

7. Imagine you can decide how the government spends the taxpayer's money. I'm going to show you a card with a list of sectors. I'd like you to tell me in which sectors you would increase investment, by order of importance. **INSTRUCTION:** MAXIMUM OF 3 ANSWERS, WITH "1" BEING THE MOST IMPORTANT.

1. Public works	( )
2. Transport	( )
3. Science & technology	( )
4. Environment	( )
5. Defense	( )
6. Justice	( )
7. Culture	( )
8. Sport	( )

8. I'm going to read out a list of topics or areas. Please say whether you are Very interested, Interested, Fairly interested or Not interested in each one. **INSTRUCTION:** ROTATE LIST OF PROFESSIONS RANDOMLY ONE BY ONE, ASKING INTERVIEWEE TO RESPOND BEFORE MOVING ON TO NEXT ONE. ONLY ONE ANSWER PER ITEM.

	Very interested	Interested	Fairly interested	Not interested	Don't know (DO NOT READ)	No answer (DO NOT READ)
8.1 Food & consuming	( )	( )	( )	( )	( )	( )
8.2 Science & technology	( )	( )	( )	( )	( )	( )
8.3 Cinema, art & culture	( )	( )	( )	( )	( )	( )
8.4 Sport	( )	( )	( )	( )	( )	( )
8.5 Economy & business	( )	( )	( )	( )	( )	( )
8.6 Medicine & health	( )	( )	( )	( )	( )	( )

8.7 Environment & ecology	( )	( )	( )	( )	( )	( )
8.8 Astrology & occultism	( )	( )	( )	( )	( )	( )
8.9 Politics	( )	( )	( )	( )	( )	( )
8.10 Curiosities about the lives of famous people		( )	( )	( )	( )	( )

INSTRUCTION: FOR RESPONDENTS WHO CHOSE "FAIRLY INTERESTED" OR "NOT INTERESTED" IN SCIENCE & TECHNOLOGY (Q8)

9. You say you are not particularly interested in science and technology. Why not?_____

_____

_____

_____

10. How well-informed do you consider yourself on each of these same subjects? Would you say you are Highly informed, Informed, Moderately informed or Not informed? **INSTRUCTION:** ROTATE LIST OF SUBJECTS RANDOMLY ONE BY ONE, ASKING INTER VIEWEE TO RESPOND BEFORE MOVING ON TO NEXT ONE. ONLY ONE ANSWER PER ITEM.

	Highly informed	Informed	Moderately informed	Not informed	Don't know (DO NOT READ)	No answer (DO NOT READ)
10.1 Food & consuming	( )	( )	( )	( )	( )	( )
10.2 Science & technology	( )	( )	( )	( )	( )	( )
10.3 Cinema, art & culture	( )	( )	( )	( )	( )	( )
10.4 Sport	( )	( )	( )	( )	( )	( )
10.5 Economy & business	( )	( )	( )	( )	( )	( )
10.6 Medicine & health	( )	( )	( )	( )	( )	( )
10.7 Environment & ecology	( )	( )	( )	( )	( )	( )
10.8 Astrology & occultism	( )	( )	( )	( )	( )	( )
10.9 Politics	( )	( )	( )	( )	( )	( )
10.10 Curiosities about the lives of famous people	( )	( )	( )	( )	( )	( )

INSTRUCTION: FOR RESPONDENTS WHO CHOSE "MODERATELY INFORMED" OR "NOT INFORMED" ABOUT SCIENCE & TECHNOLOGY (Q10)

11. You say you are not particularly well-informed about science and technology. Why not? (INDICATE MAIN REASON)

Don't understand the subject	( )
No time	( )
Never thought about the subject	( )
Dislike the subject	( )
Interest in the subject not aroused	( )
Don't know how to get information on the subject	( )
Don't need to know about the subject	( )
No particular reason	( )
Other (specify)_____	

12. I'm going to ask some questions about habits relating to information. Please tell me in each case if this is something you do Often, Occasionally or Never.

	Often	Occasionally	Never	Don't know (DO NOT READ)	No answer (DO NOT READ)
12.1 Do you watch TV programs or documentaries about science and technology or nature?	( )	( )	( )	( )	( )
12.2 Do you read science news in the newspapers?	( )	( )	( )	( )	( )
12.3 Do you listen to radio programs about science and technology?	( )	( )	( )	( )	( )
12.4 Do you read science magazines?	( )	( )	( )	( )	( )
12.5 Do you read science books?	( )	( )	( )	( )	( )
12.6 Do you use the internet to look for information about science?	( )	( )	( )	( )	( )
12.7 Do you visit science and technology museums, centers or exhibitions?	( )	( )	( )	( )	( )
12.8 Do you talk to friends about science, technology or the environment?	( )	( )	( )	( )	( )
12.9 Do you participate or have you ever participated in activities relating to science, technology or the environment, such as demonstrations or protests, writing letters to the newspapers, attending debates, signing petitions, voting in referendums etc?	( )	( )	( )	( )	( )

INSTRUCTION: FOR RESPONDENTS WHO SAID THEY OFTEN OR OCCASIONALLY PARTICIPATE IN ACTIVITIES RELATING TO S&T OR THE ENVIRONMENT (Q13)

13. In your answers to the previous question you said you had participated or are participating in activities relating to science, technology or the environment. Please specify.

Yes	1	**Specify** 13 a _____
No	2	
Don't know		
No answer		

14. Generally speaking, do you believe the development of science and technology in the next 20 years will offer Many risks, Some risks, Few risks or No risks for the world?

Many risks	Some risks	Few risks	No risks	Don't know (DO NOT READ)	No answer (DO NOT READ)
( )	( )	( )	( )	( )	( )

15. Generally speaking, do you believe the development of science and technology in the next 20 years will offer Many benefits, Some benefits, Few benefits or No benefits for the world?

Many benefits	Some benefits	Few benefits	No benefits	Don't know (DO NOT READ)	No answer (DO NOT READ)
( )	( )	( )	( )	( )	( )

16. I'm going to read out some statements and I'd like you to say how much you agree or disagree with each one.
INSTRUCTION: ROTATE LIST OF STATEMENTS RANDOMLY ONE BY ONE, ASKING INTERVIEWEE TO RESPOND BEFORE MOVING ON TO NEXT ONE. ONLY ONE ANSWER PER ITEM.

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree	Don't know (DO NOT READ)	No answer (DO NOT READ)
16.1 There is a possibility that the people who pay for research may influence scientists to come up with results that are favorable to them	( )	( )	( )	( )	( )	( )	( )
16.2 Researchers and experts don't allow the people who fund their work to influence the results of their research	( )	( )	( )	( )	( )	( )	( )
16.3 It's wrong to impose restrictions on new technology until there is scientific proof that it may cause serious harm to human beings and the environment	( )	( )	( )	( )	( )	( )	( )
16.4 Until the consequences of new technology are known, it is necessary to act with caution to protect health and the environment	( )	( )	( )	( )	( )	( )	( )
16.5 Scientific knowledge is the best foundation for the writing of laws and regulations	( )	( )	( )	( )	( )	( )	( )
16.6 Cultural values matter as much as scientific knowledge when laws and regulations are being written	( )	( )	( )	( )	( )	( )	( )
16.7 Decisions about social problems relating to science and technology should be left to the experts	( )	( )	( )	( )	( )	( )	( )
16.8 Citizens should play a more important role in decisions about social problems relating to science and technology	( )	( )	( )	( )	( )	( )	( )

INSTRUCTION: SHOW CARD WITH QUESTION AND CHOICES OF ANSWER

17. Sometimes the results of science and technology are controversial for society. In these cases whom do you trust most when forming your opinion? UP TO THREE ANSWERS CAN BE CHOSEN, BY ORDER OF IMPORTANCE, WITH "1" BEING THE MOST TRUSTED

1. Government	( )
2. Universities, public research centers	( )
3. Political parties	( )
4. Trade unions	( )
5. Media	( )
6. Church	( )
7. Friends, family	( )
8. Consumer associations	( )
9. Environmentalist associations	( )
10. Business organizations	( )
11. Social movements	( )
12. Other _____	( )

18. How would you rate the education you received at school in the field of science and technology? Was it... (READ)

Very good	Good	Average	Poor	Very poor	Don't know (DO NOT READ)	No answer (DO NOT READ)
( )	( )	( )	( )	( )	( )	( )

19. To what extent do you agree with this statement? - "Scientific and technological knowledge improves people's ability to decide about important things in their lives" **INSTRUCTION**: READ SCALE. SINGLE ANSWER

Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Don't know (DO NOT READ)	No answer (DO NOT READ)
( )	( )	( )	( )	( )	( )	( )

20. How useful would you say scientific and technological knowledge can be in the following walks of life? Would you say it is Very useful, Fairly useful, Not very useful or Useless? **INSTRUCTION**: ROTATE ITEMS. READ AND ASK ONE BY ONE. ONLY ONE ANSWER PER ITEM.

	Very useful	Fairly useful	Not very useful	Useless	Don't know (DO NOT READ)	No answer (DO NOT READ)
20.1 Helping me understand the world	( )	( )	( )	( )	( )	( )
20.2 Helping me take care of my health and prevent illness	( )	( )	( )	( )	( )	( )
20.3 Helping protect the surroundings of my home and the environment	( )	( )	( )	( )	( )	( )
20.4 Helping me take decisions as a consumer	( )	( )	( )	( )	( )	( )
20.5 Helping me form my political and social opinions	( )	( )	( )	( )	( )	( )
20.6 Helping me in my career or work	( )	( )	( )	( )	( )	( )

21. I'm going to read out descriptions of things that some people do on a routine basis. Please tell me in each case if this is something you do Often, Occasionally or Very rarely. **INSTRUCTION**: ROTATE ITEMS. READ AND ASK ONE BY ONE. ONLY ONE ANSWER PER ITEM

	Yes, often	Yes, occasionally	No, very rarely	Don't know (DO NOT READ)	No answer (DO NOT READ
21.1 Read the patient information leaflet before taking medicine	( )	( )	( )	( )	( )
21.2 Read food labels or take an interest in the nutritional value of food	( )	( )	( )	( )	( )
21.3 Check the technical specifications or manuals of home appliances	( )	( )	( )	( )	( )
21.4 Take medical advice before following a diet	( )	( )	( )	( )	( )
21.5 Attend to public health campaigns	( )	( )	( )	( )	( )
21.6 Consult a dictionary to find out more about unfamiliar words or terms	( )	( )	( )	( )	( )

22. New applications of science and new technological developments frequently arouse controversy because they involve both risks as well as benefits. Tell me whether you agree or disagree with the following statements as they apply to such cases:
INSTRUCTION: ROTATE ITEMS. READ AND ASK ONE BY ONE. ONLY ONE ANSWER PER ITEM

	Strongly agree	**Agree**	**Neither agree nor disagree**	**Disagree**	**Strongly disagree**	**Don't know (DO NOT READ)**	**No answer (DO NOT READ)**
22.1 The citizens should be heard and their opinions taken into consideration	( )	( )	( )	( )	( )	( )	( )
22.2 Only the views of experts should be heard	( )	( )	( )	( )	( )	( )	( )
22.3 A new application of science or technology should be banned if there is the least possibility of a grave risk	( )	( )	( )	( )	( )	( )	( )
22.4 I would look at the information on each case before making a decision	( )	( )	( )	( )	( )	( )	( )
22.5 I would not be concerned as long as I was not directly affected	( )	( )	( )	( )	( )	( )	( )
22.6 I would accept as long as there was a benefit for the community	( )	( )	( )	( )	( )	( )	( )

INSTRUCTION: SHOW CARD WITH QUESTION AND MULTIPLE CHOICE ANSWER

23. Suppose you or a relative of yours had a life-threatening illness and you had to take a decision in this context. What types of information would you take most into consideration? Would you also be influenced by any other opinions or information? (ONLY ONE ANSWER FOR "MAINLY" AND MAXIMUM OF TWO ANSWERS FOR "WHAT ELSE", INDICATING ORDER OF PRIORITY)

	Mainly	What else
1. Only doctors and specialists	( )	( )
2. I would take medical opinion into account but it would not be decisive	( )	( )
3. I would consult a faith healer	( )	( )
4. I would seek help from my church	( )	( )
5. I would consider the opinions of family and friends	( )	( )
6. I would seek alternative treatment and medicine	( )	( )
7. I would search for information on my own, in books and magazines, on the web etc.	( )	( )
Don't know (DO NOT READ)	( )	( )
No answer (DO NOT READ)	( )	( )

24. Imagine that a technological facility is going to be installed near your home and this could be a hazard to your health or th environment. Please tell me how much you agree or disagree with the following statements:
INSTRUCTION: ROTATE ITEMS. READ AND ASK ONE BY ONE. ONLY ONE ANSWER PER ITEM.

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Don't know (DO NOT READ)	No answer (DO NOT READ)
24.1 My views would have to be considered	( )	( )	( )	( )	( )	( )	( )
24.2 I would do whatever it took to move	( )	( )	( )	( )	( )	( )	( )
24.3 I'd accept the facility if I were personally compensated	( )	( )	( )	( )	( )	( )	( )
24.4 I would organize with my neighbors	( )	( )	( )	( )	( )	( )	( )
24.5 I wouldn't take it very seriously, because people always exaggerate in these cases	( )	( )	( )	( )	( )	( )	( )
24.6 I would protest through the media or go to court	( )	( )	( )	( )	( )	( )	( )
24.7 I wouldn't do anything, because nothing you do in these cases makes any difference	( )	( )	( )	( )	( )	( )	( )

25. Can you name an institution that does scientific research in this country?

Yes	1	Specify: a. _____ b. _____ c. _____
No	2	
Don't know		
No answer		

26. In your opinion, is Brazil an advanced, intermediate or backward country in terms of scientific research? (SINGLE ANSWER)

Advanced	Intermediate	Backward	Don't know (DO NOT READ)	No answer (DO NOT READ)
( )	( )	( )	( )	( )

INSTRUCTION: FOR RESPONDENTS WHO CHOSE "ADVANCED" (Q26)
27. Compared with what other country or countries is Brazil advanced?

_____
_____

INSTRUCTION: FOR RESPONDENTS WHO CHOSE "BACKWARD" (Q26)
28. Compared with what other country or countries is Brazil backward?

_____
_____

29. How attractive is science as a profession?

29.1

Highly attractive for young people	Unattractive for young people	Don't know (DO NOT READ)	No answer (DO NOT READ)
( )	( )	( )	( )

29.2

Highly rewarding from the personal standpoint	Unrewarding from the personal standpoint	Don't know (DO NOT READ)	No answer (DO NOT READ)
( )	( )	( )	( )

29.3

Well-paid	Underpaid	Don't know (DO NOT READ)	No answer (DO NOT READ)
( )	( )	( )	( )

29.4

Prestigious	Unprestigious	Don't know (DO NOT READ)	No answer (DO NOT READ)
( )	( )	( )	( )

30. Have you heard recently about any controversial issue relating to science, technology or their applications, about which there are concerns and debates in society?

Yes	1	Specify:
		30.1_____
		30.2_____
		30.3_____
No	2	
Don't know		
No answer		

31. How would you rate your level of knowledge about the issue(s) you mentioned? (Q30)

	Very high	High	Regular	Low	Very low	Don't know (DO NOT READ)	No answer (DO NOT READ)
Issue **31.1**	( )	( )	( )	( )	( )	( )	( )
Issue **32.2**	( )	( )	( )	( )	( )	( )	( )
Issue **31.3**	( )	( )	( )	( )	( )	( )	( )

INTERVIEWEE DETAILS

32. How old are you? _____? (SPECIFY)

33. Gender?

MALE	( )
FEMALE	( )

34. EDUCATION

34.1 What was the highest level of formal education you attended?

What was the highest level of formal education you attended?	( ) **Skip to Q35**
Pre-primary education	( )
Primary education	( )
Secondary education	( )
Tertiary education	( ) **specify** _____
Specialization, MBA	( ) **specify** _____
Master's degree	( ) **specify** _____
PhD	( ) **specify** _____

34.2 Did you complete this level?

YES	( )
NO	( )

35. Do you work?

YES	( )
NO	( )

36. What is your religion?

Catholic	( )
Protestant	( )
Pentecostal	( )
Atheist or agnostic	( )
Spiritist	( )
Afro-Brazilian	( )
Jewish	( )
Buddhist	( )
Other _____	

37. Please say how much you agree or disagree with the following statements:
INSTRUCTION: ROTATE ITEMS. READ AND ASK ONE BY ONE. ONLY ONE ANSWER PER ITEM.

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Don't know (DO NOT READ)	No answer (DO NOT READ)
37.1 We value science too highly and religious faith too little	( )	( )	( )	( )	( )	( )	( )
37.2 Science and technology can solve any problem	( )	( )	( )	( )	( )	( )	( )

38. Who typically pays for scientific and technological research in this country?
INDICATE TWO ANSWERS BY ORDER OF PRIORITY.

1. Scientists, with their own money	( )
2. Companies	( )
3. Private foundations	( )
4. The government	( )
5. Foreign countries	( )
6. International organizations	( )
Don't know (DO NOT READ)	( )
No answer (DO NOT READ)	( )

39. What are the main motivations that lead scientists to do their research?
INDICATE TWO ANSWERS BY ORDER OF PRIORITY.

1. Power and prestige	( )
2. Their own professional interests	( )
3. Winning major prizes	( )
4. Making money	( )
5. Solving people's problems	( )
6. Doing good	( )
7. Pursuing knowledge as a calling	( )
8. Contributing to the nation's scientific and technological development	( )
Don't know (DO NOT READ)	( )
No answer (DO NOT READ)	( )

40. What is the main driver of scientific development in the world?
INDICATE TWO ANSWERS BY ORDER OF PRIORITY.

1. Economic and market demand	( )
2. Multinational corporations	( )
3. Governments of rich countries	( )
4. International organizations	( )
5. Scientists' choices	( )
Don't know (DO NOT READ)	( )
No answer (DO NOT READ)	( )

41. I'm going to read out a list of public science and technology venues or events. Please tell me whether you have visited any of these places or taken part in any of these events in the last year (last 12 months).
READ ALL POSSIBLE ANSWERS.

	Yes	**No**	Don't know (DO NOT READ)	**No answer (DO NOT READ)**
41.1. Science and technology museum or center	( )	( )	( )	( )
41.2. Public library	( )	( )	( )	( )
41.3. Art museum	( )	( )	( )	( )
41.4. Zoo, botanic garden, ecological park	( )	( )	( )	( )

INSTRUCTION: FOR RESPONDENTS WHO HAVE NOT VISITED A SCIENCE MUSEUM OR S&T CENTER (Q41.1)
42. Is there a reason why you haven't visited a science museum or science and technology center in the last year (last 12 months)?
READ ALL POSSIBLE ANSWERS

1. No time	( )
2. There aren't any in the vicinity	( )
3. Too far	( )
4. Can't afford to go	( )
5. Don't know where they are	( )
6. Not interested	( )
7. Other:_____	
Don't know (DO NOT READ)	
No answer (DO NOT READ)	

43. How well-informed do you consider yourself on the following areas of health: Highly informed, Informed, Moderately informed or Not informed?
INSTRUCTION: ROTATE ITEMS. READ ONE BY ONE. ONLY ONE ANSWER PER ITEM.

	Highly informed	Informed	Moderately informed	Not informed	Don't know (DO NOT READ)	No answer (DO NOT READ)
43.1 Obesity	( )	( )	( )	( )	( )	( )
43.2 Diabetes	( )	( )	( )	( )	( )	( )
43.3 AIDS	( )	( )	( )	( )	( )	( )

Now I'm going to ask you a few questions just for social classification purposes.

BRAZIL CRITERION

44. I'd like to know whether you have the following items in your home and if so how many:

	No	Yes					
		1	2	3	4	5	6 or more
Color TV	0	2	3	4	5	5	5
VCR / DVD	0	2	2	2	2	2	2
Radio	0	1	2	3	4	4	4
W.C.	0	2	3	4	4	4	5
Car	0	2	4	5	5	5	5
Domestic helper (monthly salary)	0	2	4	4	4	4	4
Vacuum cleaner	0	1	1	1	1	1	1
Washing machine	0	1	1	1	1	1	1
Freezerless refrigerator	0	2	2	2	2	2	2
Refrigerator freezer	0	3	3	3	3	3	3

What is the head of household's level of education?

Illiterate / Incomplete primary school	**0**
Complete primary school / Incomplete middle school	**1**
Complete middle school / Incomplete high school	**2**
Complete high school / Incomplete university (college etc.)	**3**
University degree / Post-graduate	**5**

SUM OF POINTS: _____

A1	A2	B1	B2	C	D	E
34-30	29-25	24-21	20-17	16-11	10 - 6	5 - 0
1	**2**	**3**	**4**	**5**	**6**	**7**