



International Comparison Report of the National Survey on Public Perception of Science and Technology 2015

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Summary

The First National Survey on Public Perception of Science and Technology in Chile, administered from October 2015 until January 2016, provides several indicators that can be compared with similar surveys from different countries such as Argentina, Brazil, Colombia, Mexico, Spain, the United States and the United Kingdom. This contributes to the comparative analysis of the State of Chile, in terms of the relation between society and science and technology, with neighboring countries or countries that belong to a same group (i.e. the Organisation for Economic Co-operation and Development, OECD).

Some particularly outstanding findings arise from this comparison. First, it shows that a similar percentage of the population in both Chile and Colombia (16% and 18%, respectively) answers “do not know” or “nothing” to the open-ended question about what comes to mind when they hear “science”. In contrast, the results for the United Kingdom are quite different, where only 6% (approximately one-third of the population of these Latin American countries) say that “nothing” comes to mind or “does not respond”.

Analyzing people’s perceptions, the words that come to mind when they hear the concepts “technology” and “innovation” indicate a closer connection to the former in Chile, with only 11% of the population indicating that no idea comes to mind (no response), while in Colombia the percentage reaches 15%. The difference is even greater for the “innovation” concept, since in Chile only 15% of the population did not respond, while in Colombia the share is double, with 31% of the population not being able to provide a response associated with the concept.

On the other hand, the compared results show that -among Chile, Argentina and Colombia- Chile is the country with the greatest coexistence of the perception that, over the next 20 years, science and technology will bring about “many risks” and “many benefits”, with a difference of only 10 percentage points between them. In contrast, Argentina and Colombia reveal higher percentages for “many benefits” than for “many risks”, with differences of 30 and 20 percentage points, respectively, between benefits and risks.

Regarding the perception the countries have on whether the disciplines are scientific or not, the comparisons show that, just as in Chile, people from Spain and Mexico also perceive medicine and physics as the two most scientific disciplines out of the set presented to them in the survey. The results for the main reasons why interviewees identify that a person could dedicate to science are along the same line. Both in Colombia and Chile, the two main responses are “vocation for research” and “to get to know the truth”. At the same time, the least important reason in the two countries is “having power”.

The information about people’s interest in science and technology places Brazil at the top with 60% of the population stating they are interested or very interested, followed by the Argentines and Chileans, with 52% of both populations showing interest, while 40% of the Spanish population and only 36% of the Mexican population declares to be interested in the topic.

Moreover, regarding their level of information, Brazilians once again take the lead with 59% of their population saying they are highly informed or well informed about science and technology. Argentineans follow with 37%, Mexicans and Spanish with 24%, while Chile is last in the ranking of the analyzed countries, with only 18% of the population indicating it is highly or well informed on topics related to science and technology.

Surveys like the ones in Argentina, Brazil and the United Kingdom also ask about the image and knowledge of the population about the institutional system for science and technology. Results show that -among Argentina, Chile and Brazil- in Argentina most people know of an institution working on scientific and technological research, with 25% of the population, followed by Chile with 17% and Brazil -the country that also considers itself to be most interested and informed- with only 12%.

Finally, regarding the sector perceived by the surveyed population as being the main source of funding for scientific and technological research, it is noteworthy that Argentina and Chile mention the State as the main funding sector, which is correct, since in both countries the greatest investment in this field is made by the State. The situation in the United Kingdom is different, because the main funding sector is made up of private companies. However, people believe that science and technology are funded through taxes, that is, by the State, which reveals a lower knowledge of the population regarding the actual funding system for scientific and technological activities.

This is a report that seeks to present the questions and indicator for each topic dimension of the survey in a comparison to the results obtained in other countries. It is of a descriptive nature and based on the selection of questions that can be compared with those of other international questionnaires.

Background on the Chilean Questionnaire

First, it is important to highlight that the questionnaire administered in Chile for the First National Survey on Public Perception of Science and Technology in 2015, was designed considering different benchmark revision sources, which are the following:

1. Conceptual framework of the document elaborated by the National Commission of Experts on Scientific Culture, titled “Considerations for the Definition and Measurement of Scientific Culture in Chile”, November 2014.
2. 2015 Antigua Manual of the Ibero-American Network of Science and Technology Indicators (RICYT by its acronym in Spanish), which gathers previous experience in these measurements in several countries of the region, providing standardized guidelines to facilitate the international comparison of results.
3. Review of surveys on public perception of science and technology administered in other countries, identified in the following table:

Country	Name of the Survey	Year
Argentina	Second and Third National Surveys on Public Perception of Science	2006 – 2012
Colombia	Third National Survey on Public Perception of Science and Technology	2012
México	Survey on Public Perception of Science and Technology in Mexico	2011
Spain	VI Public Perception of Science and Technology	2012
United States	Science and Technology: Public Attitudes and Understanding	2008
United Kingdom	Public Attitudes to Science	2014

4. Review of national surveys on topics that could be related to the subject, identified in the following table:

Name of the Survey	Name of the Survey	Year
Survey on Public Perception of Science and Technology	National Commission for Scientific and Technological Research	2007
National Survey on Cultural Participation and Consumption	National Council of Culture and the Arts	2012
Quality of Life and Health Survey	Ministry of Health	2000 - 2006
National Socioeconomic Characterization Survey	Ministry of Social Development	2011

In addition to the process of reviewing and analyzing the benchmark surveys, the questionnaire design phase included a process of cognitive interviews and two piloting processes in order to validate the questions and to make adjustments and improvements when building the final instrument.

The final questionnaire of the First National Survey on Public Perception of Science and Technology includes 37 questions, of which 11 are self-elaborated questions -that were not obtained from any

of the sources reviewed and were domestically created-, 9 are identical (literal) to questions in questionnaires of other countries, and 17 are adapted from the international review performed. Of these 17 questions, whose topics coincide with those of the other countries, only 11 allow making a partial comparison between surveys.

Identification of Countries Included in the International Comparison: Questionnaires and Key Questions

The second step, and closely related to the process for designing the Chilean questionnaire, was to identify the countries that could participate in the comparison of results, which had to meet at least one of the following conditions:

- a) Sharing **literal questions** with the Chilean questionnaire: That is, questions that are identical in their phrasing, as well as in their statements and response alternatives. One example of this is the open-ended question on what comes to mind when talking about science, which is made in the same manner in the Colombia and United Kingdom surveys.
- b) Sharing **partial questions** with the Chilean questionnaire: That is, questions that are similarly phrased, aiming at the same thing, but with a modification in light of local pertinence, and with similar response categories, or that allow regrouping results. One example of this is the question about activities interviewees carried out over the past year related to science and technology. Even though the topic is the same and the questions in their different versions seek to measure scientific consumption in Argentina, Colombia, Mexico and Spain, not all of them offer the same set of activities. Hence, only some activities can be compared.

It is important to mention that for countries where more than one survey had been administered and questions were repeated, the last version administered was always the one considered, in order to reduce the temporal distortion effect in the comparison between countries.

The countries that were finally included in this comparison are: Argentina, Colombia, Spain, the United States, Mexico and the United Kingdom.

Meanwhile, the specific surveys (version, year) and the questions finally included in the comparison for each country are presented in the following chapter, providing background information for each participating country.

Contextualizing the Comparison: Context Fact Sheets by Country

Moreover, with the aim of contextualizing the results of the countries included in this comparison and achieving a better understanding of their realities, Context Fact Sheets are included to provide a common outlook based on general indicators of the reality in each of the countries.

The general indicator and the sources of information from which the data were obtained are detailed below in each of the country Context Fact Sheets.

Population

The first source to obtain population data was the Organisation for Economic Co-operation and Development (OECD) and when that information was not available, such as in the cases of Brazil and Colombia, the alternative source was the World Bank.

- Country Population Estimates (Argentina, Spain, the United States, Mexico, the United Kingdom and Chile) OECD 2015 <https://stats.oecd.org/>
- Population estimates for Brazil and Colombia. World Bank (Database) <http://databank.worldbank.org/data/home.aspx>

Statistics on Religion

Statistics on religion -which are only applicable to Chile and Mexico- are extracted from the Population and Housing censuses and grouped according to the categories of the questionnaire for the First National Survey on Public Perception of Science and Technology in Chile 2015.

- Mexico. Population and Housing Census 2010:
<http://www.inegi.org.mx/est/contenidos/proyectos/ccpv/cpv2010/Default.aspx>
Tabulation by consultation: Religion
<http://www3.inegi.org.mx/sistemas/tabuladosbasicos/default.aspx?c=27302&s=est>
- Chile. Population and Housing Census 2002: <http://www.ine.cl/cd2002/sintesis censal.pdf>

GDP Per Capita

The Purchasing Power Parity (PPP) was used to estimate each country's GDP Per Capita and the source was the 2015 calculation made by the World Bank for all countries, except Argentina, whose last figure is from 2013.

- GDP Per Capita estimate (Database) <http://databank.worldbank.org/data/home.aspx>

GDP Expenditure and Science and Technology (Expenditure in Research and Development expressed as a percentage of the GDP)

The main source for the 2014 estimate is the OECD, except for the United States, whose last figure is from 2013, and Brazil and Colombia, whose data were obtained from the 2013 RICYT and the 2014 RICYT, respectively.

- Countries (Argentina, Spain, the United States, Mexico, the United Kingdom and Chile) OECD 2014 <https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm>
- RICYT <http://www.ricyt.org/por-pais-sp-980863014>
 - Brazil (2013) <http://db.ricyt.org/query/BR/1990,2014/calculados>
 - Colombia (2014) <http://db.ricyt.org/query/CO/1990,2014/calculados>

PISA Test

- PISA test. 2012 Science Results by country: <http://www.oecd.org/pisa/keyfindings/pisa-2012-results.htm>

CHILE

National Commission for Scientific and Technological Research (CONICYT by its acronym in Spanish)

The National Council of Innovation for Development (CNID by its acronym in Spanish), along with the organizations that make up the National Innovation System (SNI by its acronym in Spanish) has highlighted the importance of promoting a Scientific Culture among the population and generating Science and Technology dissemination actions as key elements for development. The role of CONICYT's Explora in this task is crucial, given that its mission is to contribute to build a scientific and technological culture in the community.

ESTIMATED
POPULATION 2015
18,044,700

GDP PER CAPITA
(PPP) 2015
USD 22,316

GDP EXPENDITURE
IN Sc&T 2014
0.38%

PISA TEST RESULTS
(2012)*
SCIENCES
445 POINTS

STATISTICS ON RELIGION

CATHOLIC	70.0 %
EVANGELICAL	15.1%
OTHER	6.6%
ATHEIST	8.3%

In Chile, the Survey on Public Perception of Science and Technology under analysis provides the baseline for collecting information on the national population's perception and representation of science and technology, as well as a view on their valuation and sense of appropriation of it. This survey was commissioned by the National Commission for Scientific and Technological Research (CONICYT by its acronym in Spanish) to the Studies Department (DESUC by its acronym in Spanish) of the Pontifical Catholic University of Chile.

*Technical Fact Sheet **First National Survey on Public Perception of Science and Technology in Chile***

Name	National Survey on Public Perception of Science and Technology
Year of Administration	October 2015 – January 2016
Target Population	Population 15 years or older, residing in urban and rural area in all regions of the country.
Sample Design	Probability, stratified and multi-stage area sampling
Data Collection Method	Face-to-face surveys administered at interviewees' homes
Sample Size	7,637
Comparison	Literal and partial with 19 questions.

ARGENTINA

**Ministry of Science, Technology and Productive Innovation -
MINCyT (by its acronym in Spanish)**

The dissemination of science and technology is one of the strategic lines of the MINCyT that aims directly at developing a model for expanding dissemination, scientific culture and scientific and technological literacy. Likewise, the agencies that depend on the Ministry carry out actions in line with the strategic guidelines, such as CONICET's VOCAR, which promotes the vocation for science.

**ESTIMATED
POPULATION 2015
41,803,130**

**GDP PER CAPITA
(PPP) 2013*
USD 14,715**

**GDP EXPENDITURE
IN SC&T 2014*
0.61%**

**PISA TEST RESULTS
(2012)*
SCIENCES
406 POINTS**

AGENCIES

National Agency for Science
and Technology Promotion
(ANPCYT by its acronym in
Spanish)

National Scientific and
Technical Research Council
(CONICET by its acronym in
Spanish)

In Argentina, the first survey on science was conducted by the Secretariat for Science, Technology and Productive Innovation (SECYT by its acronym in Spanish) in 2003, followed by a second survey was conducted in 2006. In 2007, the Ministry of Science, Technology and Productive Innovation was created and surveys on the topic were conducted five years later, in 2012 and the fourth survey in 2015. These last two surveys will be used for comparing the pertinent questions with the Chilean results.

Technical Fact Sheet III National Survey on Public Perception of Science in Argentina

Name	Third National Survey on Public Perception of Science
Year of Administration	November – December 2012
Target Population	National population, in urban areas (over 10,000 inhabitants), people 18 years or older
Sample Design	Probability sampling with quotas at the last stage (interviewee selection)
Data Collection Method	Face-to-face surveys administered at interviewees' homes
Sample Size	1,680
Comparison	Literal and partial with 3 questions (Q4, Q11, and Q12)

Technical Fact Sheet IV National Survey on Public Perception of Science in Argentina

Name	Fourth National Survey on Public Perception of Science
Year of Administration	April – May 2015
Target Population	National population, in urban areas (over 10,000 inhabitants), people 18 years or older
Sample Design	Probability sampling with quotas at the last stage (interviewee selection)
Data Collection Method	Face-to-face surveys administered at interviewees' homes
Sample Size	1,936
Comparison	Literal and partial with 6 questions (Q3, Q5, Q6, Q13, Q19 y Q27)

BRAZIL

Ministry of Science, Technology, Innovation and Communication (MCTIC by its acronym in Portuguese)

The popularization of science, technology and innovation - *Popularização da CT&I* – is key in the State policy for the development of science, technology and innovation in Brazil. Thus, two of the most important Brazilian agencies (*CNPq* and *FAPESP*) have developed scientific promotion and dissemination lines by means of granting Lifetime Achievement Awards for dissemination and supporting research on science education.

ESTIMATED
POPULATION 2015
207,847,528

GDP PER CAPITA
(PPP) 2015
USD 15,359

GDP EXPENDITURE
IN SC&T 2013*
1.19%

PISA TEST RESULTS
(2012)*
SCIENCES
405 POINTS

AGENCIES

National Council for
Scientific and Technological
Development (CNPq by its
acronym in Portuguese)
Popularização da Ciência

São Paulo Research
Foundation (FAPESP by its
acronym in Portuguese)
Divulgação Científica

Four surveys have been coordinated and conducted to date by the Ministry of Science, Technology, Innovation and Communication. The first survey was conducted in 1987, with the following ones being administered in 2006, 2010 and 2015. This last measurement was carried out together with the Center for Strategic Studies and Management Science, Technology and Innovation (CGEE by its acronym in Portuguese), a social organization supervised by the Ministry of Science, Technology, Innovation and Communication.

Technical Fact Sheet **Survey on Public Perception of Science and Technology in Brazil**

Name	Public Perception of Science and Technology in Brazil
Year of Administration	December 2014 – March 2015
Target Population	National population, 16 years or older
Sample Design	Probability, with gender, age, schooling and declared income quotas
Data Collection Method	Computer Assisted Telephone Interviewing
Sample Size	1,962
Comparison	Literal and partial with 7 questions (Q2, Q3, Q4, Q5, Q6, Q23 and Q27)

**ESTIMATED
POPULATION 2015
48,228,704**

**GDP PER CAPITA
(PPP) 2015
USD 13,800**

**GDP EXPENDITURE
IN SC&T 2014*
0.25%**

**PISA TEST RESULTS
(2012)*
SCIENCES
399 POINTS**

COLOMBIA

Administrative Department of Science, Technology and Innovation (COLCIENCIAS by its acronym in Spanish)

Scientific Mentality and Culture is one of the four areas of work developed by COLCIENCIAS (the other three are Innovation, Education for research and Research). Its focus is on building a science culture that values and manages knowledge and innovation.

AGENCY

Observatory of Science and Technology – OCyT (by its acronym in Spanish)

Through its Administrative Department of Science, Technology and Innovation (COLCIENCIAS by its acronym in Spanish), Colombia has conducted three surveys: the first taking place in 1994, the second in 2004 and, eight years later, the third one, which was administered by the Colombian Observatory of Science and Technology. This last survey will be used for the comparison with that country.

Technical Fact Sheet III National Survey on Public Perception of Science and Technology in Colombia

Name	Third National Survey on Public Perception of Science and Technology
Year of Administration	2012
Target Population	National population, in urban areas, people 16 years or older
Sample Design	Multi-stage sampling, with probability sampling at all stages
Data Collection Method	Face-to-face surveys
Sample Size	6,113
Comparison	Literal and partial with 9 questions (Q2, Q3, Q7, Q8, Q11, Q12, Q15, Q23 and Q29)

MEXICO

National Council of Science and Technology (CONACYT by its acronym in Spanish)

The Directorate of Science and Technology Dissemination of the CONACYT and the Mexican Council of Science and Technology (COMECYT by its acronym in Spanish) are the two government agencies in charge of promoting and disseminating science. Both are tasked with bringing science and society closer together and develop, through their program lines, actions to foster a decentralized and long-term science culture.

**ESTIMATED
POPULATION 2015
121,005,000**

**GDP PER CAPITA
(PPP) 2015
USD 17,276**

**GDP EXPENDITURE
IN SC&T 2014
0.54%**

**PISA TEST RESULTS
(2012)*
SCIENCES
415 POINTS**

STATISTICS ON RELIGION

CATHOLIC	82.7%
EVANGELICAL	2.3%
PROTESTANT	9.1%
OTHER	0.2%
ATHEIST	4.7%

The National Council of Science and Technology (CONACYT by its acronym in Spanish), together with the National Institute of Statistics and Geography (INEGI by its acronym in Spanish), have conducted seven surveys on Public Perception of Science and Technology. However, the first one was conducted by CONACYT alone, in 1997. The following seven surveys were conducted jointly with INEGI in 2001, 2003, 2005, 2007, 2009, 2011 and 2013¹.

*Technical Fact Sheet: **Survey on Public Perception of Science and Technology in Mexico***

Name	Survey on Public Perception of Science and Technology in Mexico
Year of Administration	August 2013
Target Population	National population, in urban areas (over 100,000 inhabitants), people 18 years or older
Sample Design	One-Stage Cluster Sample
Data Collection Method	Face-to-face surveys
Sample Size	3,200
Comparison	Literal and partial with 8 questions (Q1, Q3, Q5, Q6, Q9, Q13, Q24 and Q29)

¹ The eighth survey was conducted in 2015, but the results have not been published yet.

SPAIN

Ministry of Economy, Industry and Competitiveness

State Secretariat for Research, Development and Innovation

Through its State Secretariat for Research, Development and Innovation, the Ministry of Economy, Industry and Competitiveness carry out efforts to contribute to the promotion of scientific activity. The role of the Spanish Foundation for Science and Technology (FECYT by its acronym in Spanish) is also essential, with its main lines of action aimed at promoting science culture and dissemination, increasing social participation in science, metric analysis and

**ESTIMATED
POPULATION 2015
46,426,000**

**GDP PER CAPITA
(PPP) 2015
USD 34,526**

**GDP EXPENDITURE
IN SC&T 2014
1.23%**

**PISA TEST RESULTS
(2012)*
SCIENCES
496 POINTS**

AGENCIES

Spanish National Research
Council (CSIC by its acronym
in Spanish)

Spanish Foundation for
Science and Technology
(FECYT by its acronym in
Spanish)

Since 2002, the Spanish Foundation for Science and Technology (FECYT by its acronym in Spanish) has conducted this quantitative survey, complementing it with other data collection techniques. To date, the FECYT has conducted seven surveys every two years, with a structured questionnaire that has been gradually modified in accordance with the needs identified. Only the results for the 2014 survey will be considered for the comparison with Chile.

Technical Fact Sheet VII Public Perception of Science and Technology in Spain

Name	Seventh Public Perception of Science and Technology
Year of Administration	November to December 2014
Target Population	National population, in urban and rural areas, people 15 years or older
Sample Design	Multi-stage sampling, with probability sampling at all stages
Data Collection Method	Face-to-face surveys administered at interviewees' homes
Sample Size	6,355
Comparison	Literal and partial with 6 questions (Q2, Q3, Q5, Q6, Q9 and Q26)

UNITED KINGDOM

Government Office for Science

Bringing science closer to society is a significant part of the actions developed by the State policies for the promotion of scientific activity.

**ESTIMATED
POPULATION 2015
65,097,000**

**GDP PER CAPITA
(PPP) 2015
USD 41,324**

**GDP EXPENDITURE
IN SC&T 2014
1.70%**

**PISA TEST RESULTS
(2012)*
SCIENCES
514 POINTS**

AGENCY

Department for Business,
Innovation and Skills (BIS)

To date, the United Kingdom has conducted five surveys to find out the population's opinion on science, scientists and science policies. The surveys are conducted by Ipsos MORI, in collaboration with the British Science Association (BSA), and commissioned by the Department for Business, Innovation and Skills (BIS) and the Economic and Social Research Council (ESRC). The data for the last survey available will be used for this comparative analysis, survey administered in 2013 and published in 2014.

Technical Fact Sheet **Public Attitudes to Science (PAS) in the United Kingdom**

Name	Public Attitudes to Science (PAS)
Year of Administration	July – November 2013
Target Population	National population, in urban areas, people 16 years or older
Sample Design	Probability sampling with quotas at the last stage (interviewee selection)
Data Collection Method	Face-to-face surveys
Sample Size	1,749
Comparison	Literal and partial with 4 questions (Q3, Q7, Q13 and Q19)

UNITED STATES

Office of Science and Technology Policy (OSTP)

Bringing science closer to society is one of the responsibilities of each of the organizations that make up the United States' science and technology system, including public and private efforts in this task.

**ESTIMATED
POPULATION 2015
321,643,000**

**GDP PER CAPITA
(PPP) 2015
USD 55,836**

**GDP EXPENDITURE
IN SC&T 2013
2.74%**

**PISA TEST RESULTS
(2012)*
SCIENCES
497 POINTS**

AGENCY

National Science Foundation
(NSF)

Since 1973, the United States conducts face-to-face surveys on general social interest topics² every two years. Starting in 2006, they include a special module that reports on indicators on science and technology. This survey is conducted by the National Opinion Research Center (NORC) of the University of Chicago. The data from the 2012 survey, which includes the necessary required information, will be used for the comparison with the Chilean survey.

*Technical Fact Sheet: **Science and Technology Module of the General Social Survey of the United States***

Name	General Social Survey –Science and Technology (S&T) Module
Year of Administration	2012
Target Population	National population, in urban areas, people 18 years or older
Sample Design	Multi-stage sampling, with probability sampling at all stages
Data Collection Method	Face-to-face surveys
Sample Size	2,256
Comparison	Partial with Q3 and Q13

² General Social Survey (GSS)

International Comparison

The questionnaire of the First National Survey on Public Perception of Science and Technology in Chile was built considering some questions from surveys in different countries, such as Argentina, Brazil, Colombia, Spain, the United States, Mexico and the United Kingdom. This allows the comparison with at least one question from each of the surveys in these countries. There are questions that remained the same, which makes them fully comparable, while in other cases the questions were modified and/or local pertinence adjustments were made according to the Chilean context, which prevents their full comparison. Hence, we have denominated them as partial comparisons.

The Chilean survey includes 37 open-ended and closed-ended questions, with the latter having single or multiple response options. Out of the total amount of questions 9 can be fully compared with those of other countries because they are identical, while 11 questions can only be partially compared, because their language has been adapted and/or their indicators or set of statements have been shortened. Therefore, the results presented in this document correspond to a total of 20 questions of the Chilean survey, which is, in the end, the subset of questions that can be compared. These 20 questions are organized according to the four dimensions into which the survey indicators were grouped: Mental Representation; Appropriation; Valuation; and Institutional System³.

Mental Representation Dimension

Q7. When I talk about “science”, what comes to mind?

Q8. When I talk about “technology”, what comes to mind?

Q35. When I talk about “innovation”, what comes to mind?

Only some surveys include open-ended questions in their questionnaires, given their high complexity at the time of making them as well as in their later analysis. The 2012 survey in Colombia includes this type of measurement, which allows for a comparison to be made with the results obtained in Chile.

In both countries, the open-ended question is aimed at learning about what comes to people’s minds or what they think of when talking about science, technology and innovation and the results are similar, since 18.4% of Colombian interviewees were not able to provide a response for “science”, while this percentage reached 15.8% in Chile (*Graph 1*). A greater difference is observed when comparing the results obtained for “technology”, with 15% of Colombian interviewees not being able to provide a response -any term or idea, whatever it may be-, in contrast to 10.8% of Chileans who did not respond (*Graph 2*), revealing a difference of 4.2 percentage points.

The results for “innovation” are different. In this case, a difference of 16 percentage points is observed between the results for Colombia and Chile, showing a greater distance among Colombians, with 31.8% of them being unable to associate words with the concept, while in Chile this percentage reaches only 15.1%. It is important to mention that there is a 3-year difference between both surveys, hence, this last concept could be associated with more current cultural

³ For further information on the dimensions or the survey, please see the “Executive Summary” at: <http://www.conicyt.cl/wp-content/uploads/2017/05/EXECUTIVE-SUMMARY-SURVEY-PPSyT-2016.pdf>.

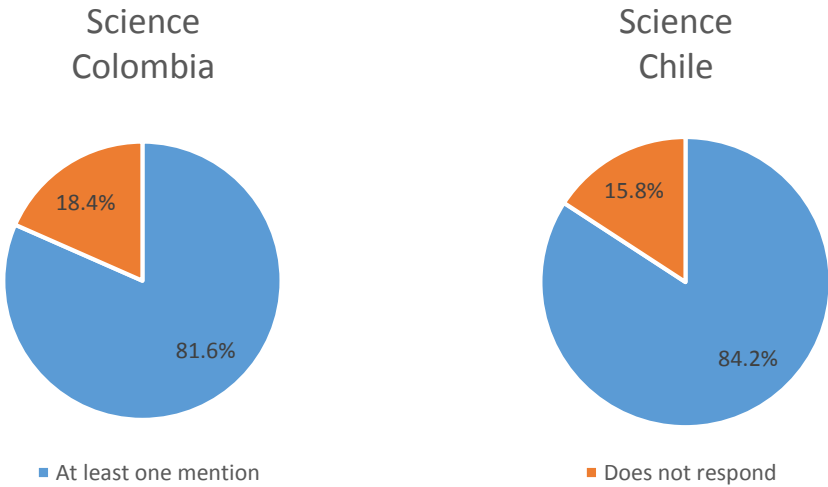
dynamics and, therefore, greater knowledge about it could be reflected in more recent surveys as the one conducted in Chile.

It is worth highlighting that the response trend in both countries is similar for “science” and “technology”. That is, in both cases it is observed that providing a response for the word “science” is more complex than for “technology”, noticing a greater intuitive proximity with the latter topic.

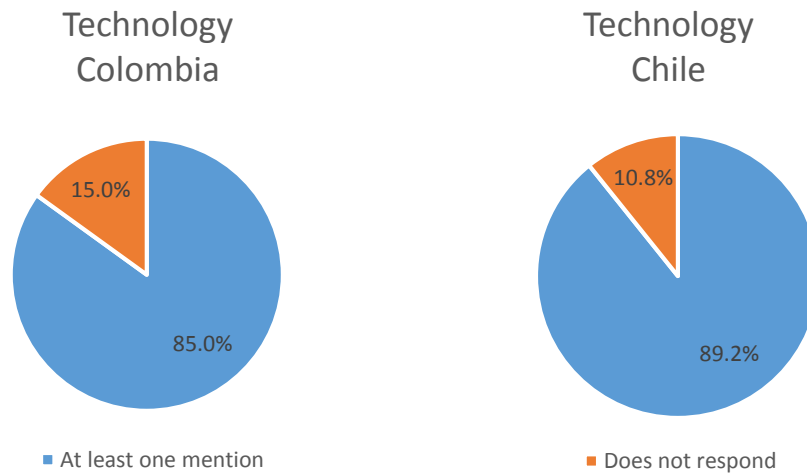
Table 1: Comparison of Phrasings for Questions 7, 8 and 35 with Colombia

Chile	Colombia
Q7. When I talk about “science”, what comes to mind?	P301: When talking about science, what word do you think of?
Q8. When I talk about “technology”, what comes to mind?	P302: When talking about technology, what word do you think of?
Q35. When I talk about “innovation”, what comes to mind?	P303: When talking about innovation, what word do you think of?

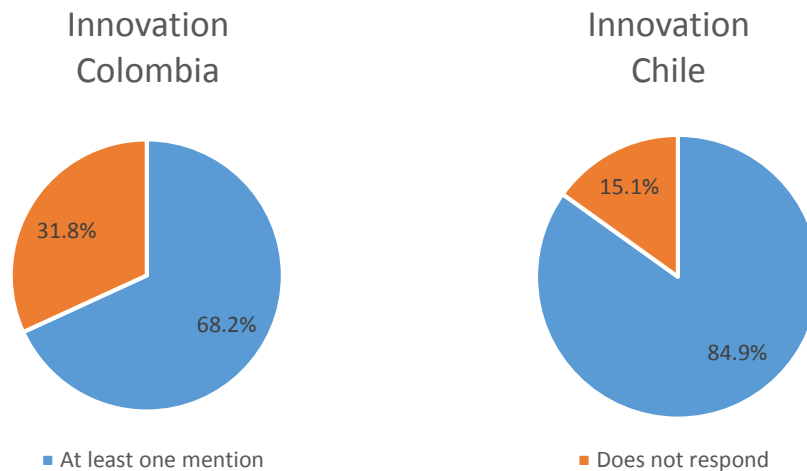
Graph 1: When I talk about “science”, what comes to mind?



Graph 2: When I talk about “technology”, what comes to mind?



Graph 3: When I talk about “innovation”, what comes to mind?



In addition, the survey conducted in the United Kingdom in 2013 also asks what comes to mind when talking about “science”⁴ and shows that the British population has greater proximity to the concept, since only 5.8% of interviewees declare not knowing or do not respond to the question, which is significantly lower than in the Chilean case, representing one-third of the Chilean results (15.8%) for the does not respond/does not know options.

⁴ Q1: When I talk about “science”, what comes to mind?

Q9. Next, I will read a list of disciplines. For each of them, indicate if, in your opinion, their application is scientific or not.

The classification of a discipline as scientific or non-scientific, according to the population's perception, offers another edge for learning what people understand by science and what its imaginary is about the topic.

Countries like Spain and Mexico also consider this indicator in their measurements. However, their response scale differs from the one used in Chile. Hence, it is necessary to adjust responses so that they will allow the comparison to be made. The adjustment groups into the "scientific" category the subcategories from "somehow"/ "little scientific" to "highly scientific", while the "non-scientific" category is equated to "not scientific at all".

The comparison (*Graph 4*) shows that both in Spain and in Mexico the population's perception regarding whether a discipline is scientific or not is greater for all comparable disciplines than in Chile. That is, these societies believe, to a greater extent than Chilean society, that each of the disciplines asked about is scientific. In addition, a result that stands out is that, in both countries, "economy" is considered to be scientific by more than 60% of the population, while in Chile this is true for only 37.7% of the population. However, in Mexico "acupuncture" is also considered highly scientific (70.9%), while in our country there is a low level of perception of it as being scientific (38.9%).

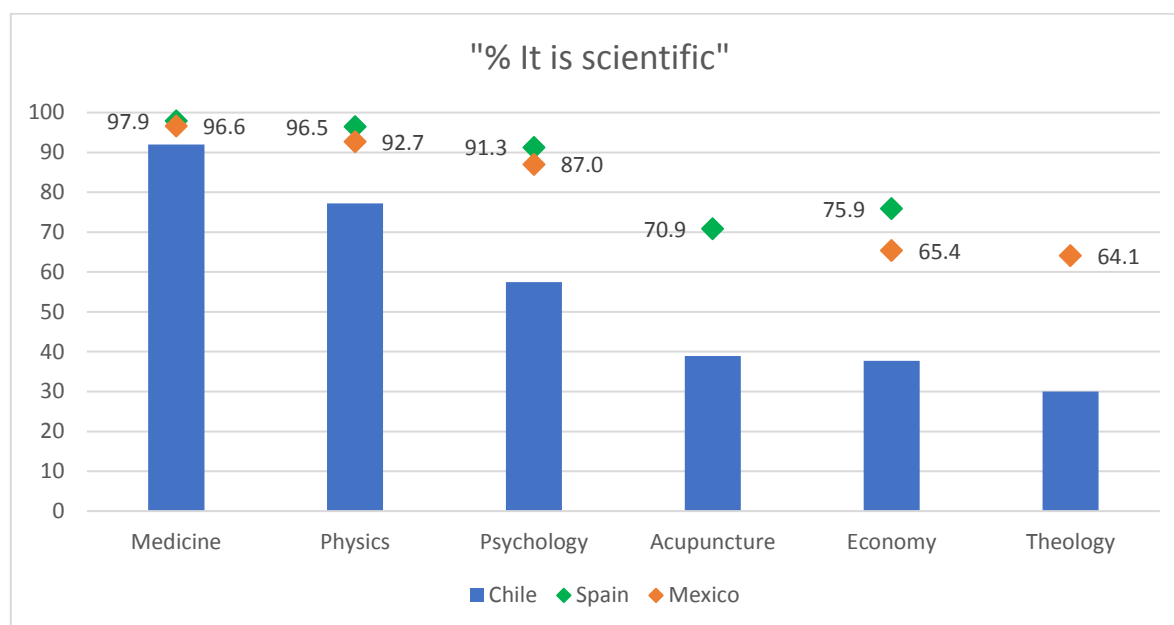
Table 2: Comparison of Phrasings for Question 9, Chile, Spain and Mexico

Chile	Spain¹	Mexico²
Q9: Next, I will read a list of disciplines. For each of them, indicate if, in your opinion, their application is scientific or not. (Dichotomous)	Q28: People may have different opinions regarding what is scientific and what isn't. I will read a list of topics. For each of them, please tell me to what extent you think it is scientific, using a scale from 1 to 5, where the number 5 means it is "Highly scientific" and the number 1 means it is "Not scientific at all". With the intermediate numbers, you can provide different degrees for your response. (5 alternatives)	Q16: For the following disciplines, tell me if you consider each of them as being highly scientific, scientific, somewhat scientific or non-scientific; if you do not know some of them, let me know. (4 alternatives)
Medicine	Medicine	Medicine
Theology	--	Theology
Engineering	--	--
Ancestral medicine	--	--
Physics	Physics	Physics
Economy	Economy	Economy
Acupuncture	Acupuncture	--
Psychology	Psychology	Psychology

¹ : It also includes biology, astronomy, history, horoscopes, mathematics, homeopathy

² : It also includes biology, astronomy, history, homeopathy, astrology, mathematics, parapsychology

Graph 4: Next, I will read a list of disciplines. For each of them, indicate if, in your opinion, their application is scientific or not.



Q23. From the following list, which do you think are the reasons why a person decides to work in science and/or technology?

Another question that contributes to understanding people's imaginary on scientists is the one regarding the reasons why they think a person works in science. Two countries from the analysis set, Colombia and Brazil, include this question in their surveys. Their methodology for the response alternatives differs from the Chilean one, since in both countries interviewees are asked to choose three or two characteristics from a list, while the Chilean questionnaire asks individuals to define if they believe or not (dichotomous) that each characteristic on the list is a reason for working in science. It is possible to make a comparison for the characteristics that received more mentions. Therefore, the comparison is not numerical in nature, but rather considers the ranking of the characteristics. That is, the prioritization of the reasons provided by interviewees in each country under comparison.

In Brazil, the main motivations of scientists are "Helping humankind", "Contributing to the progress of knowledge" and "Contributing to the scientific development of the country", but none of them can be compared with the Chilean results because these options are not included in the survey. However, in Brazil, the option "Earn money" ranks fourth on top of the alternative "Solve the problems of the people", which is placed sixth. These results are opposed to the ones for Chile, where the reason "Solving people's problems" ranks higher than the reason "Earn money" (Table 4).

Greater similarities are found with Colombia, since the two main reasons are the same as the ones identified by the Chilean population. That is, "Vocation for research" followed by "Get to know the

truth". The other reasons change in priority from one country to another, yet, the last reason identified in both countries for scientists is "Having power" (Table 4).

Table 3: Comparison of Phrasings for Question 23, Chile, Colombia and Brazil

Chile	Colombia	Brazil
<i>Q23: From the following list, which do you think are the reasons why a person decides to work in science and/or technology?</i>	<i>Q309: From the following list, please choose the THREE characteristics you consider better describe a person working in science.</i>	<i>Q59: Which of the following reasons lead scientists to work on their research? (Choose two in order of importance)</i>
Earn money	Earn money	Earn money
Vocation for research	Vocation for research	--
Having prestige	Having prestige	Having a prestigious position
Solve the problems of the people	Solve the problems of the people	Solve the problems of the people
Having power	Having power	Gaining power
Get to know the truth	Get to know the truth	--
Better understand the environment	Better understand the environment	--

Brazil also includes "Helping humankind", "Satisfy their own professional interests", "Contributing to the progress of knowledge", "Winning important awards", "Satisfy their curiosity" and "Contributing to the scientific development of the country".

Table 4: Q23: From the following list, which do you think are the reasons why a person decides to work in science and/or technology?

Reasons	Chile¹	Colombia²	Brazil³
Vocation for research	87.9	75.6	--
Get to know the truth	87.7	60.3	--
Better understand the environment	86.4	46.2	--
Solve the problems of the people	78.6	57.3	5.1
Having prestige	69.1	16.5	1.3
Earn money	64.2	33.8	6.3
Having power	49.2	8.0	5.2
Helping humankind	--	--	36.0
Contributing to the progress of knowledge	--	--	17.6
Contributing to the scientific development of the country	--	--	14.2
Satisfy their own professional interests	--	--	4.7
Satisfy their curiosity	--	--	3.6
Winning important awards	--	--	1.7

¹ : % of "Yes" response for each reason

² : Colombia, % de mentions (choosing 3 reasons)

³ : Brazil, % of first mention (choosing 2 reasons)

Note: Percentages are only referential, not comparative.

Appropriation Dimension

Q5. I would like for you to tell me whether or not you are interested in the topics I will read to you.

With the aim of learning about people's interests in science and technology, they are asked to respond regarding their level of interest from a broad set of possible topics. To that end, the Chilean survey selected a set of six topics to ask interviewees if they were of interest to them or not. With the same purpose, other measurements in countries such as Argentina, Brazil, Spain and Mexico have made this same question but with different sub questions⁵ and types of responses, which in all four cases are based on scale responses.

In order to make this comparison, adjustments were made assuming that whoever declares interest in one topic will be equal to whoever declares as being "very interested" or "quite interested". In addition, the science and technology categories had to be grouped (*Table 5* presents the details for each country's question).

Graph 5 shows the (partial) comparison with the countries being analyzed, revealing that Chile stands out as being the one with the greatest interest in sports. However, regarding "science and technology", our declared level of interest (51.9%) is lower than that of Brazil (60.9%), almost the same as the one declared by Argentina (52%) and higher than the levels in Spain and Mexico (40.1% and 35.6%, respectively).

It is worth highlighting that the "movies and culture" topic presents similar levels of interest in all countries under comparison, with approximately 55% of the population, except for Chile, where the level of interest is slightly lower, with 51.5%.

⁵ This refers to the sub questions of a question, generally presented as statements. Sometimes the question consists of a set of sub questions.

Table 5: Comparison of Phrasings for Question 5, Chile, Argentina, Brazil, Spain and Mexico.

Chile	Argentina ¹	Brazil ²	Spain ³	Mexico ⁴
Q5: I would like for you to tell me whether or not you are interested in the topics I will read to you. (Dichotomous)	Level of interest in each of the topics. Very interested, quite interested, little interested, not interested (4 alternatives)	Q15-23: Regarding these topics, I would like you to tell me what is your level of interest in each of them (Not interested/Little interested/Interested/Very interested) (4 alternatives)	Q2: Now, I would like to know if you are very little, little, quite or very interested in the following topics. (4 alternatives)	Q1A: Please tell me if your interest in the topics I will mention is very high, high, moderate or inexistent. (4 alternatives)
Sports	Sports	Sports	Sports	Sports
Science and Technology *	Science and Technology	Science and Technology	Science and Technology	"New scientific discoveries" - "New inventions and technology"*
Police and crime	--	--	--	--
Movies and theater	Arts and culture	Arts and culture	Movies, arts and culture	--
Politics	Politics	Politics	Politics	Politics

*: Chile and Mexico ask about these topics separately, they are grouped only for comparison purposes.

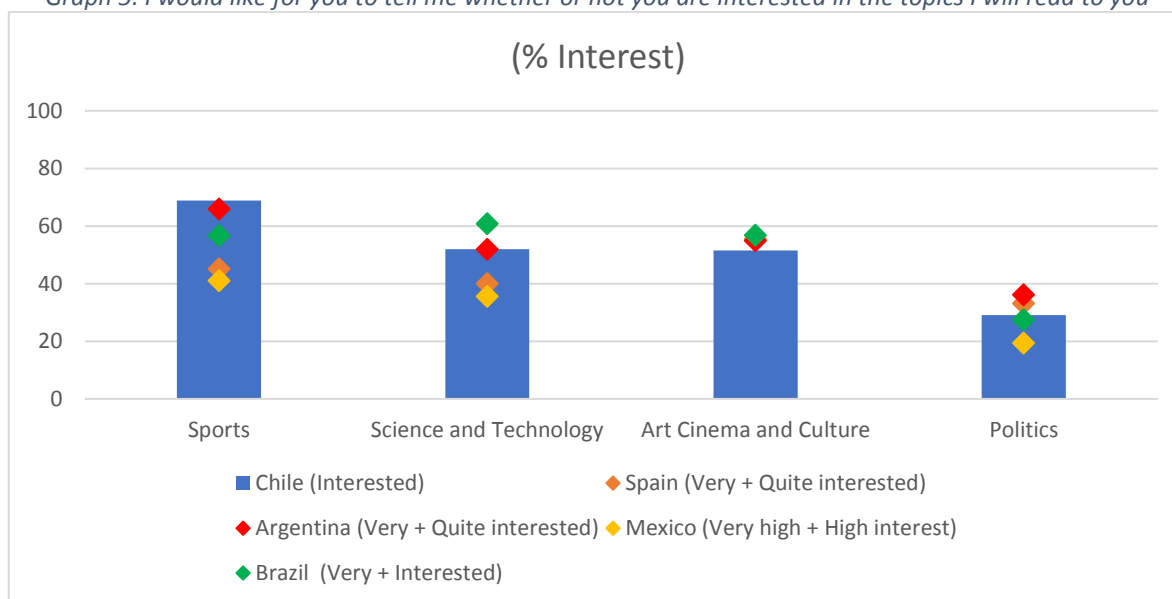
¹: It includes "Medicine and Health", "Environment and Ecology", "Economy", "Religion"

²: It includes "Medicine and Health", "Environment", "Fashion", "Economy", "Religion"

³: It includes "Food and Consumption", "Economy and Companies", "Medicine and Health", "Environment and Ecology", "Topics about Celebrities"

⁴: It includes "Environmental Pollution", "Society Pages and Entertainment", "Economy and Finance"

Graph 5: I would like for you to tell me whether or not you are interested in the topics I will read to you



Q6. I would like you to tell me to what extent you feel informed about a series of topics I will read to you.

Using the same set of topics to learn the level of interest in them, people are then asked about the level of information they perceive as having for each of the topics. This allows for the comparison between interest and level of information. The same countries for the previous analysis are included for this question. That is, Argentina, Brazil, Spain and Mexico.

The comparison with the countries being analyzed shows that Chile has a lower perception of its overall level of information for all the topics considered. In addition, this difference is greater for science and technology, since Chileans have approximately 40 percentage points less in their perceived level of information than Brazilians. The smaller difference is with Mexico, which has 6 percentage points more (Graph 6).

In terms of level of interest, Chile ranked first in its interest in sports. However, it is not the one with the highest perception of its level of information on that topic, having the same level as Spain and Mexico and a lower declared level of information than Brazil.

Table 6: Comparison of Phrasings for Question 6, Chile, Argentina, Brazil, Spain and Mexico.

Chile	Argentina¹	Brazil²	Spain³	Mexico⁴
<i>Q6: I would like for you to tell me to what extent you feel informed about a series of topics I will read to you. (4 alternatives)</i>	<i>Level of information on each of the topics. Highly informed, quite informed, Little informed or not informed. (4 alternatives)</i>	<i>Q24-28: How much do you inform yourself about the following topics? Nothing /A little/So-so – Reasonable /Very (4 alternatives)</i>	<i>Q3: Now, I would like to know if you consider yourself to be very little, little, quite or very informed about each of the same topics. (5 alternatives)</i>	<i>Q2A: Do you consider that your level of information in the same topics is very high, high, moderate or inexistent. (4 alternatives)</i>
Sports	Sports	Sports	Sports	Sports
Science and Technology *	Science and Technology	Science and Technology	Science and Technology	"New scientific discoveries" - "New inventions and technology"*
Police and crime	--	--	--	--
Movies and theater	Arts and culture	--	Movies, arts and culture	--
Politics	Politics	Politics	Politics	Politics

*: Chile and Mexico ask about these topics separately, they are grouped only for comparison purposes.

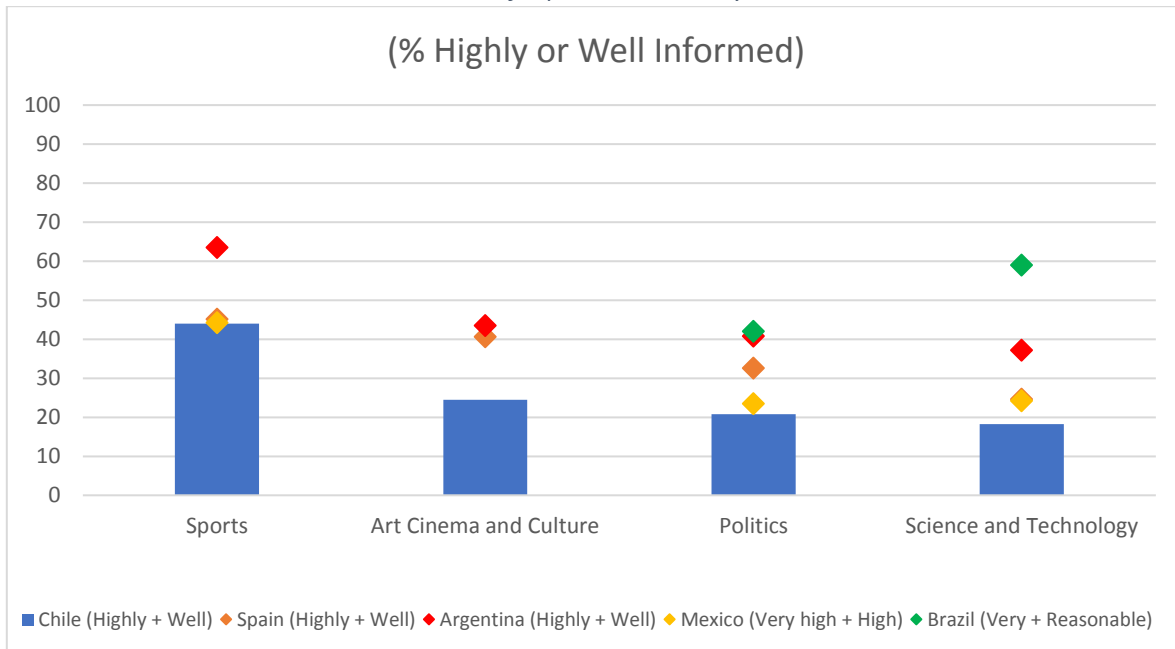
¹: It includes "Medicine and Health", "Environment and Ecology", "Economy", "Religion"

²: It includes "Medicine and Health", "Environment", "Religion"

³: It includes "Food and Consumption", "Economy and Companies", "Medicine and Health", "Environment and Ecology", "Topics about Celebrities"

⁴: It includes "Environmental Pollution", "Society Pages and Entertainment", "Economy and Finance"

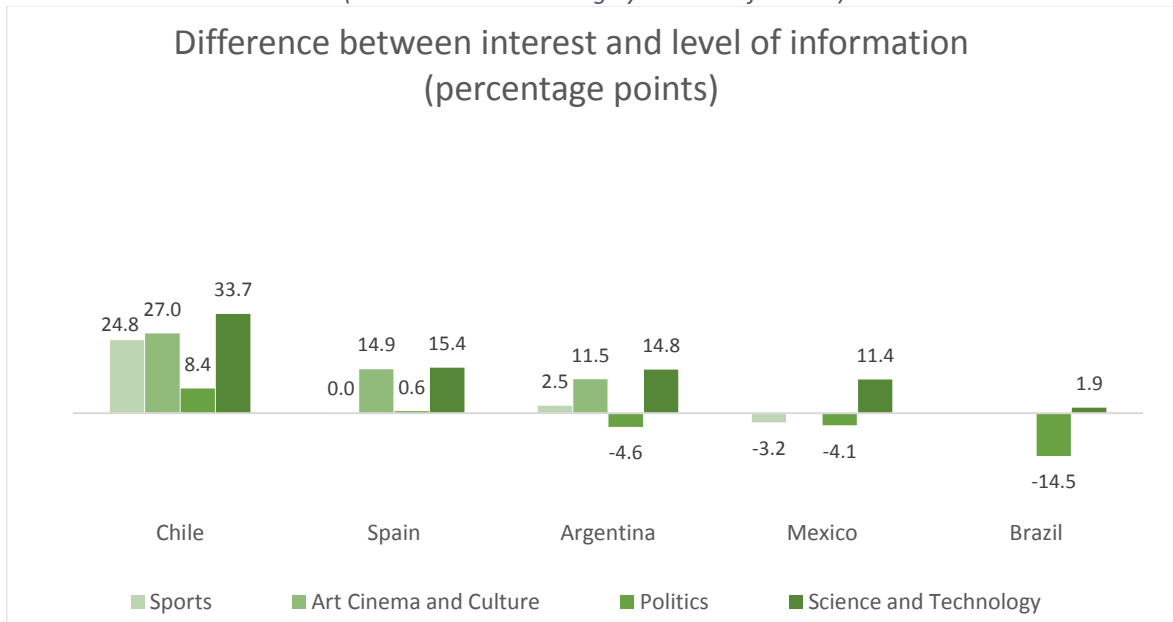
Graph 6: I would like you to tell me to what extent you feel informed about a series of topics I will read to you.



In addition, a comparison is made between the interest and the declared level of information for each topic and country. Chile shows the greatest differences on all topics in both the level of interest and information, always appearing to be more interested than informed (positive difference).

The “science and technology” topic is the one with the greatest differences in all countries and, at the same time, shows the greatest difference in Chile (33.7 percentage points). That is, all countries analyzed present a greater percentage of interest in “science and technology” than the percentage for the perception of being “highly or well informed”. Noting that Brazil shows the greatest negative difference in “politics” as they feel more informed than interested in this topic (*Graph 7*).

Graph 7: Difference between Interest and Level of Information
 ("% Interested" – "% Highly or Well Informed")



Note: Negative differences indicate a greater level of information than interest. Positive differences indicate a greater interest than the level of information.

Q3. Could you tell me if you performed any of the following activities over the past year (the past 12 months)?

In order to learn about the habits and interests of a society, a measurement is made of the activities, from a predetermined set, which people have performed over the last year. Different surveys have made this question, including those of Argentina Colombia, Mexico, Spain, Brazil, the United States and the United Kingdom. Therefore, there is ample capacity for comparison. However, it is necessary to always bear in mind that the analysis of the results for this question should be highly linked to the level of available activities offered in each country.

Graph 8 shows the results for each activity by country, revealing that, overall, in the compared countries, the activity less performed from the available set is that of visiting a science and technology museum. It is also observed that the people who declare performing this activity the most are those from the United States and the United Kingdom. In contrast, countries such as Brazil, Chile, Spain and Mexico are the ones with the lowest percentage of declared visits to science and technology museums (12%, 15%, 16% and 16%, respectively).

In addition, the measurement in the United States stands out for the large percentage of its population (64%) that declares having visited a public library over the last year. In this topic, Chile is at the lowest level of the analyzed countries, with only 21% of interviewees.

Graph 8: Could you tell me if you performed any of the following activities over the past year
(the past 12 months)?

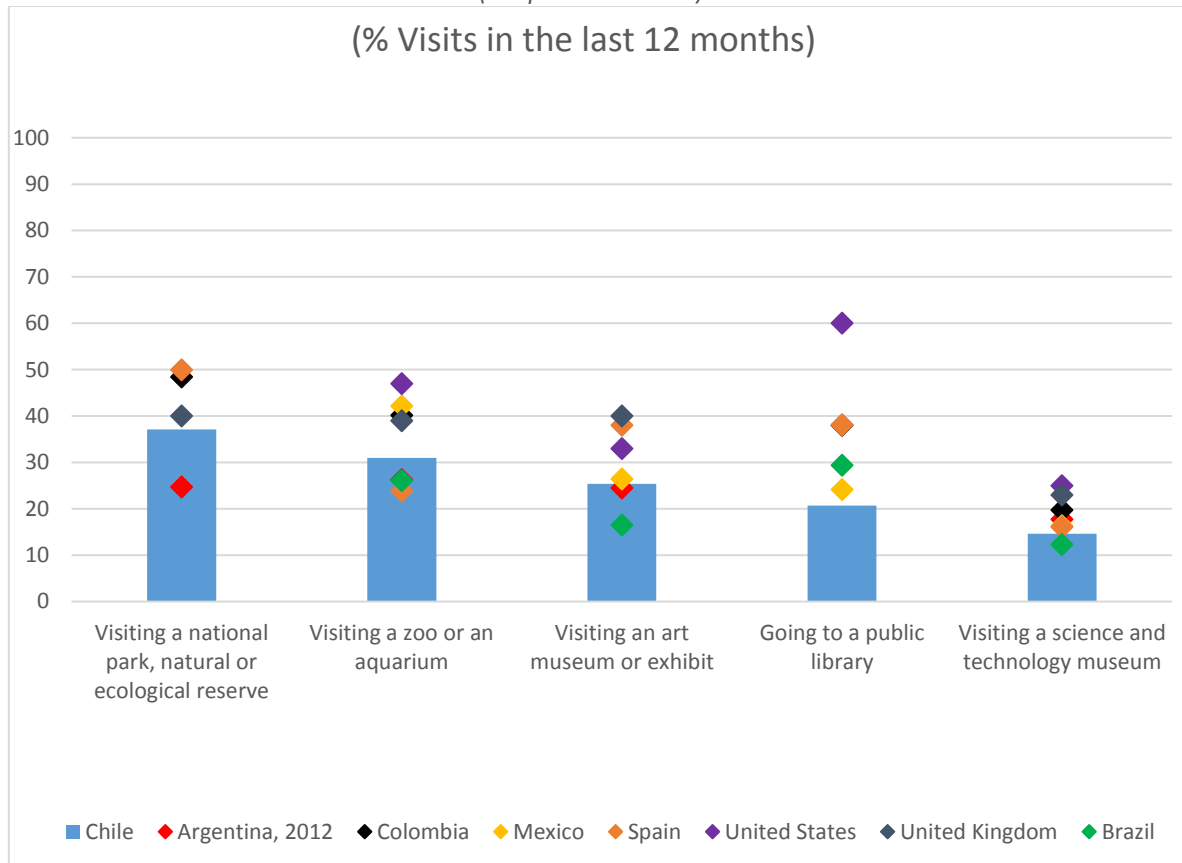


Table 7: Comparison of Phrasings for Question 4, Chile, Argentina, Colombia, Brazil, Spain, the United States, Mexico and the United Kingdom.

Q4. Could you tell me if you performed any of the following activities over the past year (the past 12 months)?

Chile	Argentina ¹ , 2012	Colombia ²	Brazil ³	Spain ⁴	United States	Mexico ⁵	United Kingdom
Q3: Could you tell me if you performed any of the following activities over the past year (the past 12 months)? (Dichotomous)	Q3: Tell me if, over the last year, you performed any of these activities (Dichotomous)	Q401b: Over the last two years, have you visited a...? (Dichotomous)	Q29-35: I will read a list of places to visit or public events linked to Science and technology. Tell me which ones you visited or participated in over the last 12 months. (Dichotomous)	Q4A: Now, I will read to you a series of activities. Tell me, for each of them, which ones you have performed on some occasion over the last 12 months. (Dichotomous)	How many times have you visited a [item] during the last year? (Frequency)	Q12: I will read a list of places so that you can tell me whether you visited them over the last year. (Dichotomous)	Q13: Which, if any, of the things on this list have you visited or attended in the last 12 months? Just read out the letter or letters that apply. (Dichotomous)
Visiting a shopping mall	---	---		---	---	---	---
Going to a movie theater	---	---	---	Going to the theater, the movies or concerts	---	Theater	---
Going to a stadium to see a match or sports competition	---	---	---	---	---	---	---
Visiting an art museum or exhibit	Visiting an art museum or exhibit	---	Art Museum	Visiting art museums or exhibits	Art Museum	Art Museum	Art Gallery
Visiting a science and technology museum	Visiting a science and technology museum or fair	Visiting science and technology museums	Science and Technology Museum or Science and Technology Center	Visiting science and technology museums	Science or Technology Museum	Science and Technology Museum	Science Museum
Visiting a national park, natural or ecological reserve	Visiting a national park, natural or ecological reserve	Visiting natural parks	Visiting a botanical garden or natural park	Visiting natural parks	--	---	Nature Reserve
Visiting a zoo or an aquarium	Visiting a zoo, a botanical garden or an aquarium	Visiting a zoo or an aquarium	Visiting a botanical garden	Visiting a zoo or an aquarium	Zoo or aquarium	Zoo or aquarium	Zoo or aquarium
Going to a public library	---	Going to a library	Library	Going to libraries	Public Library	Public Library	---
Visiting a science and technology laboratory or institution	---	---	---	---	---	---	---

¹: It also includes "Attending a National Science Week activity "

²: It also includes "Attending National Science Week" and "Attending an academic lecture or conference"

³: It also includes "Science Fairs / Science or Math Olympics" and "Activities of the National Science and Technology Week"

⁴: It also includes "Visiting historical monuments" and "Attending an activity of the Science Week"

⁵: It also includes "Planetary", "Technological or industrial exhibits", "National Science and Technology Week", "Amusement park"

Regarding people's habits in relation to scientific activities, they are also asked about the frequency with which they perform a set of activities linked to scientific and technological contents. The

Chilean case can only be compared with the surveys of Argentina⁶ and Brazil. It is worth noting that the three countries consider a response scale with three options, hence, they are equivalent.

Graph 9 contains the results for each activity and country, showing that Chile presents the greatest percentage of “Always or most of the time” responses for performing the activities mentioned, in comparison with the other two countries, except for the activity of “Visiting science and technology museums, centers or exhibits”, which in Argentina is ranked on top of Chile.

The activity practiced the most in the three countries is “Watching television shows on science and technology and nature”. However, it is important to highlight that, in terms of percentages, Argentina and Chile present a similar behavior (38%), while Brazil has a significantly lower percentage (20.8%). Nevertheless, this last country does not include “nature” in its statement, which could have had an influence on the lower percentage in the described category.

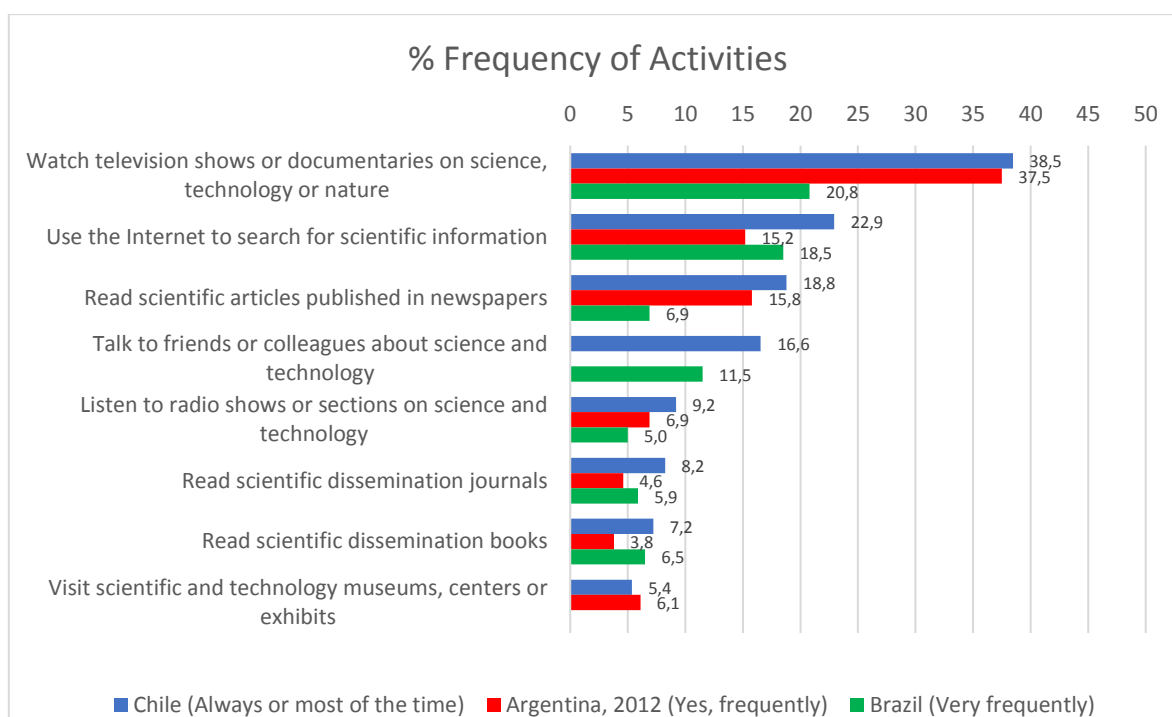
Table 8: Comparison of Phrasings for Question 4, Chile, Argentina and Brazil.

Chile	Argentina, 2012	Brazil¹
<i>Q4: I will ask you to indicate the frequency with which you perform the following activities. (3 alternatives)</i>	<i>Q4: I am going to read some phrases to you about different information habits. I will ask you to respond for each case if you are informed frequently, sometimes or never (3 alternatives)</i>	<i>Q78-85: For the following questions, respond the frequency with which you...? Never or rarely / Little frequency / High frequency (3 alternatives)</i>
Watch television shows or documentaries on science, technology or nature (animals or vegetation)	Do you watch television shows or documentaries on science, technology or nature?	Do you watch television shows on science and technology?
Read scientific articles published in newspapers	Do you read scientific articles published in newspapers?	Do you read about Science and technology in newspapers?
Listen to radio shows or sections on science and technology	Do you listen to radio shows or sections on science and technology?	Do you listen to radio about science and technology?
Read scientific dissemination journals	Do you read scientific dissemination journals?	Do you read about science and technology in journals?
Read scientific dissemination books	Do you read scientific dissemination books?	Do you read about science and technology in books?
Use the Internet to search for scientific information	Do you use the Internet to search for scientific information?	Do you read about science and technology in Internet or social media?
Visit scientific and technology museums, centers or exhibits	Do you visit scientific and technology museums, centers or exhibits?	--
Talk to friends or colleagues about science and technology	--	Do you talk to friends about science and technology?

¹: Brazil also includes “Attends/Participates in events related to science and technology”

⁶ It corresponds to the measurement for 2012. The measurement for 2015 does not report results for this question.

Graph 9: Q4: I will ask you to indicate the frequency with which you perform the following activities.



Q1. Could you tell me if you believe, are not sure or do not believe?

This question is one of the recommendations for second and third level indicators recently developed by the RICYT⁷ in the 2015 Antigua Manual, which seeks to standardize surveys in Ibero-America in order to facilitate their international comparability. However, it has not been used yet in the questionnaires of Argentina and Spain (the main benchmarks for our questionnaire). Nevertheless, Mexico has measured some sub questions for this question in its last two available measurements (2011-2013), allowing for a partial comparison to be made with the Chilean measurement.

The question in Mexico related to pseudosciences contains seven statements out of which only two can be compared with Chile. In order to make this comparison, it is necessary to consider the assumption that the people who declare to agree or strongly agree with the statements (Mexican case) are equivalent to the people who declare that they believe in these same statements (Chilean case).

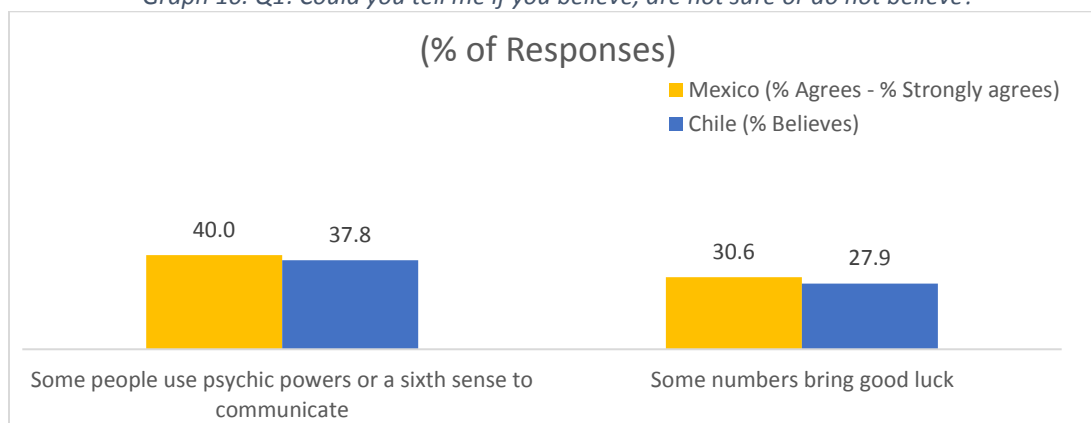
The comparison (*Graph 10*) between Chile and Mexico of these two statements shows that in both countries the perception of pseudosciences is similar, with a difference of only 2.2 and 2.7 percentage points, respectively. It is clear, then, that both in Chile and in Mexico the belief in “lucky numbers” and in “people having psychic powers” is similar in numerical terms and encompass approximately one-third of the population.

⁷ Network of Science and Technology Indicators.

Table 9: Comparison of Phrasings for Question 1, Chile and Mexico.

Chile	Mexico
Q1: Now I will read to you a series of things that people believe in. For each one of them, could you tell me if you believe, are not sure or do not believe?	Q33.2: I will read some statements such as the ones you may find in a newspaper or a magazine. For each of them, please tell me if you strongly agree, agree, disagree or strongly disagree:
- Some numbers bring good luck	- Some numbers bring good luck
- Some people use psychic powers or a sixth sense to communicate	- Some people use psychic powers or a sixth sense to communicate

Graph 10. Q1: Could you tell me if you believe, are not sure or do not believe?



Q24. Tell me if you believe each of the following statements to be true or false.

In order to have an estimate of the population's level of knowledge on science topics, Chile selected a set of six statements, out of which some are correct and others are incorrect. Four of these statements on science contents are also used by the survey in Mexico, which makes it possible to compare them. Table 10 reveals that only two statements are exactly the same, while the other two were slightly modified, being phrased in an affirmative manner in one country and in a negative manner in the other. However, it is possible to perform a reverse analysis and make the comparison by using the correct responses.

The results reveal that the statement "Sound travels faster than light" is confusing in both countries, generating equivalent percentages of people responding that it is true and false. Despite this equivalence, Mexico shows a slightly greater percentage of correct responses than Chile (50.2% and 45.1%, respectively).

The statement on the relationship between acid rain and gas emissions by cars shows a difference of 10 percentage points between both countries. Although this statement is not exactly the same, it is possible to compare the correct results in both cases (for Chile the statement is true and for Mexico the statement is false, given the way they are phrased). In this sub question, a greater percentage of the population answered correctly in Chile than in Mexico.

The statement related with the origin of oxygen shows a similar behavior between both countries, since 69.8% of the Chilean population answered correctly, which is close to the 72% of the Mexican population.

Finally, for the statement related to the gene that determines if a baby will be a boy or a girl, the results show that there is a greater percentage of correct responses in Mexico, as 62.4% believes that the gene of father is the decisive one, while in Chile only 56.3% answered correctly, since most people declare, incorrectly, that the gene of the mother is the decisive one.

Table 10: Q24: Tell me if you believe each of the following statements to be true or false.

Chile			Mexico		
Q24: Tell me if you believe each of the following statements to be true or false.	True (%)	False (%)	Q19: Tell me if you believe each of the following statements to be true or false¹	True (%)	False (%)
All the oxygen we breathe comes from plants	69.8	26.2	All the oxygen we breathe comes from plants	72.0	25.7
The gene of the mother determines if a baby will be a boy or a girl	26.7	56.3	The gene of the father determines if a baby will be a boy or a girl	62.4	30.2
Sound travels faster than light	43.5	45.1	Sound travels faster than light	39.2	50.2
Acid rain is related to the gases produced by the exhaust pipes of cars	63.4	22.4	The emission of gases from car exhaust pipes has no relation to acid rain	30.9	53.1

¹: Mexico includes 16 statements more on “literacy”.

Q2. Now I will read to you phrases that describe behaviors that people can adopt in their daily lives. Tell me how frequently you...

This question seeks to learn how frequently people perform certain actions related to scientific activities in their daily lives. Countries such as Brazil⁸ and Spain also measure these characteristics among their population.

Graph 11 reveals the comparative results between the statements that apply for each country, which are obtained with the percentages associated with the high frequency categories (comparing the “always or most of the time” responses in Chile with the “very frequently” responses in Brazil and the “yes, frequently” responses in Spain).

The graph highlights that the Brazilian and Spanish populations performed with greater frequency the activity “seek information when facing a sanitation warning” is than Chileans, with a difference of more than 20 percentage points (89%, 69% and 46%, respectively). However, the activity “read the patient package inserts of medications” shows greater similarity in its level of frequency between the Chilean, Brazilian and Spanish populations with 48.8%, 50%, and 53.8%, respectively.

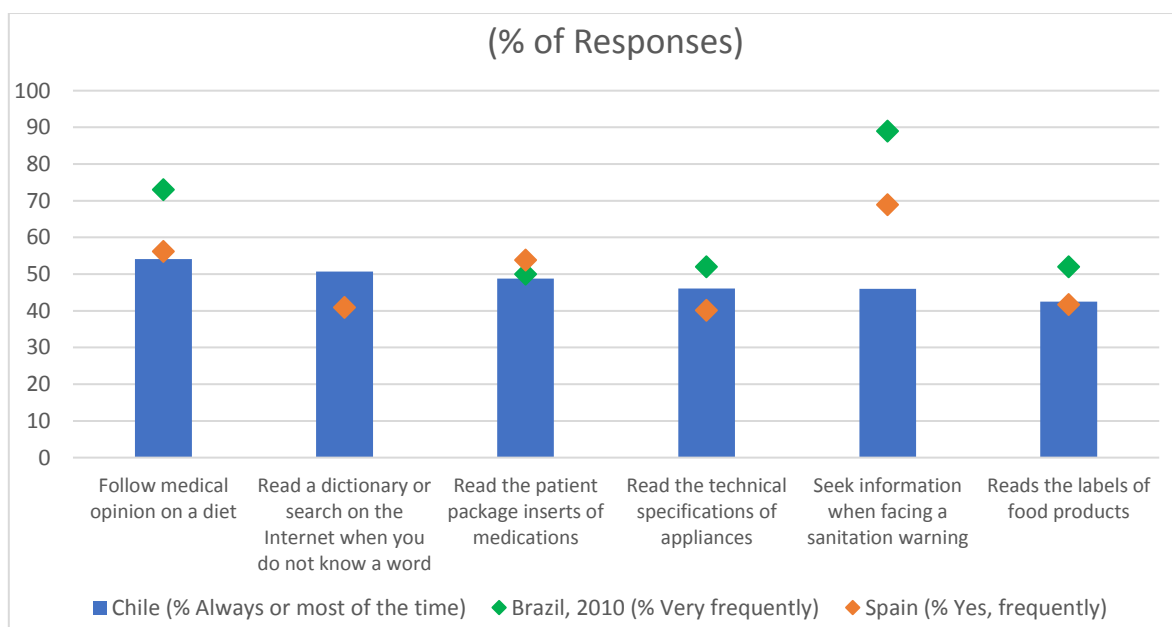
Meanwhile, Chileans show a similar behavior to the Spanish regarding the activity “reading the labels of food products”, with both countries have 10 percentage points less than the results for Brazil in terms of the frequency with which this information habit is practiced. In the case of “reading the technical specifications of appliances”, the results for Chile (46.1%) are higher than those for Spain (40.2%) but lower than Brazil (52%), with a difference of 6 percentage points in both situations.

⁸ The last measurement with this question was done in 2010. The 2015 survey does not present this set of statements.

Table 11: Comparison of Phrasings for Question 2, Chile, Brazil and Spain.

Chile	Brazil, 2010	Spain
Q2: Now I will read to you phrases that describe behaviors that people can adopt in their daily lives. Tell me how frequently you...	Behavior in relation to available information	Q29: Now I will read to you phrases that describe behaviors that people can adopt in their daily lives. For each one, please tell me, if it describes something that you do frequently, sometimes or very rarely
Follow medical opinion on an illness	--	--
Follow medical opinion on a diet	Follow medical instructions when undergoing a treatment or a diet	Take into consideration medical opinion when following a diet
Read a dictionary or search on the Internet when you do not know a word	--	Review a dictionary when you do not understand a word or term
Read the patient package inserts of medications	Read the patient package inserts of medications	Read the patient package inserts of medications before using them
Read the technical specifications of appliances	Verify the technical specifications of appliances or of their user manuals	Pay attention to the technical specifications of appliances or of their user manuals
Seek information when facing a sanitation warning	Keep informed when there is an epidemic (dengue, flu, etc.)	Try to keep informed when facing a sanitation warning
Reads the labels of food products	The information on the labels of food products	Read the labels of food products or are you interested in their qualities

Graph 11: Now I will read to you phrases that describe behaviors that people can adopt in their daily lives. Tell me how frequently you...

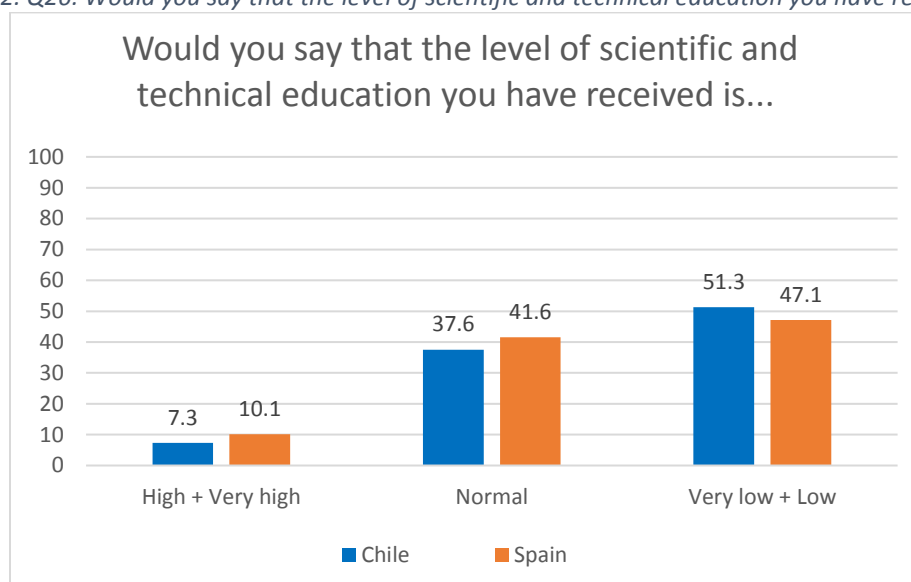


Q26. Would you say that the level of scientific and technical education you have received is...

Learning the population's perception of the level of scientific and technical education it has received is a comprehensive context indicator, which provides information regarding the perception of a long-term relation people have had with science and technology, generating interesting inputs for contextualizing results.

Out of all the other countries analyzed, only Spain asks this question, allowing for a literal comparison of results. *Graph 12* reveals that Chile and Spain behave similarly for the groupings represented, with small differences observed among the categories that do not exceed 4 percentage points between both countries. The Spanish population has an overall perception that is slightly more positive of the quality of education they have received.

Graph 12. Q26: Would you say that the level of scientific and technical education you have received is...



Valuation Dimension

Q11. I would like to ask you the following: Do you believe that over the next twenty years the development of science and technology will bring about many, several, few or no benefits to our world?

Q12. And do you believe that over the next twenty years the development of science will bring about many, several, few or no risks to our world?

The perception concerning the benefits and risks that science and technology will bring about in the following years contributes to learning how much the population values scientific and technological developments and their impacts.

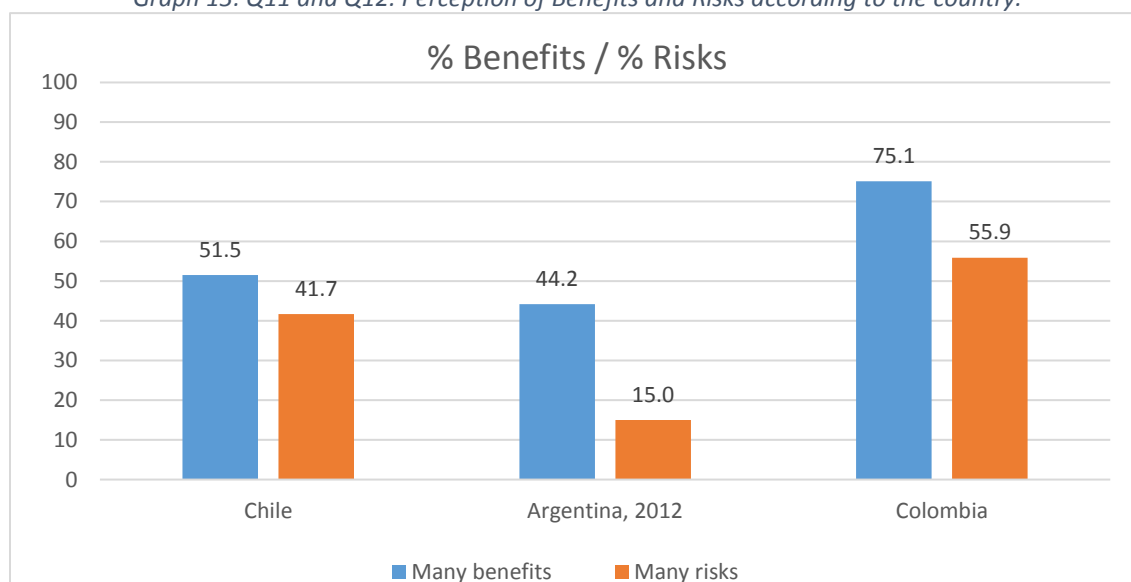
In this survey, people are asked in parallel about the risks and benefits they believe science and technology will bring about over the next twenty years, with a response scale of “many”, “several”,

“few” or “no risk/benefit”. Likewise, Argentina⁹ and Colombia have asked this question. However, the latter country presents a small modification in its responses¹⁰, which prevents making the comparison with all of them, limiting it to the “Many Benefits”/ “Many Risks” responses.

Graph 13 shows that the perception of benefits is much higher in Colombia, which could be related to the modification of its response, since they no longer have the alternative of “several”. At the same time, risks are also perceived more by Colombia than by Chile.

Regarding Argentina, the country with which the comparison is more precise, their survey reveals the lowest levels of perception of both many benefits and many risks, with the latter being mentioned much less than in Chile and Colombia (by only 15% of the Argentinean population). At the same time, Argentina is the country with the greatest difference among these (many benefits-many risks), reaching a difference of 29.2 percentage points, with a greater percentage of perception of benefits than risks. It is followed by Colombia, with 19.3 percentage points, where the population also perceives more benefits than risks and, finally, by Chile, with a smaller difference of only 9.8 percentage points. This reveals that, out of the three countries analyzed, Chileans present the greatest coexistence of both characteristics.

Graph 13: Q11 and Q12: Perception of Benefits and Risks according to the country.



Q13. I would like for you to tell me if you “strongly disagree”, “disagree”, “neither agree nor disagree”, “agree” or “strongly agree” with each of the following statements.

Another way of learning how much people value scientific and technological development is applied in the survey by asking about statements that characterize science and technology, linking them to daily life and aspects that are closer and more specific to people.

⁹ It does not report results for the last measurement in Argentina. Hence, the comparison was made with the Third National Survey on Public Perception of Science (2012).

¹⁰ Colombia does not consider “several benefits” among its responses, it rather uses the option “neither many nor few benefits”. The same response scale is used for the question about risks.

Most of the countries in the comparative analysis, except for Colombia, include a similar set of statements, which allowed contrasting results for some of the statements included in the Chilean set. *Table 12* presents all the countries and statements that can be compared with Chile.

Table 13 shows each of the compared results, revealing that overall, the percentages of people declaring they “strongly agree or agree” with the statements are similar among the countries, which indicates that there are similar trends in terms of the understanding of the way science and technology have impacts on the daily lives of the populations in the countries being compared.

However, it is interesting to notice that Chile’s perception on the usefulness of scientific and technological development for reducing social inequalities is the lowest both within the country (29%) as well as between the countries with which this statement is compared (Argentina and Brazil, 35% and 52%, respectively). In addition, Chile is the country where most people consider that “we depend too much on science and not enough on faith”, with 65% in agreement, while only 44% agrees with this statement in Brazil and 30% in the United Kingdom.

Making science and technology responsible for the largest part of environmental issues is a similar attitude in Chile, Argentina and Brazil, showing results of 55%, 57% and 57% in agreement, respectively.

Table 12: Comparison of Phrasings for Question 13, Chile, Argentina, Brazil, the United States, Mexico and the United Kingdom.

Chile	Argentina	Brazil	United States	Mexico	United Kingdom
Q13: I would like for you to tell me if you “strongly disagree”, “disagree”, “neither agree nor disagree”, “agree” or “strongly agree” with each one of the following statements. (5 alternatives)	Q29: In order to wrap up the survey, I will ask you to read some statements. I would like for you to tell me if you “strongly agree”, “agree”, “neither agree nor disagree”, “disagree”, or “strongly disagree” with each one of the following. (5 alternatives)	Q41-57: I am going to read some statements related to science and technology. Tell me how much you “agree” or “disagree” with each of them: (4 alternatives)	I’m going to read to you some statements like those you might find in a newspaper or magazine article. For each statement, please tell me if you strongly agree, agree, disagree, or strongly disagree. (4 alternatives)	Q33.2: I am going to read to you some statements like those you might find in a newspaper or magazine article. For each statement, please tell me if you strongly agree, agree, disagree, or strongly disagree. (4 alternatives)	Q29; Q12: Here are some statements about how science is communicated and discussed. For each, please could you tell me the extent to which you agree or disagree? (5 alternatives)
Science and technology are responsible for most of the environmental issues that we currently face	Science and technology are responsible for most of the environmental issues that we currently face	Science and technology are responsible for most of the current environmental issues	--	--	--
The scientific and technological	The scientific and technological	The scientific and technological	--	--	--

development will help reduce social inequalities	development will help reduce social inequalities	development will lead to a reduction in the social inequalities of the country			
Science and technology are making our lives easier and more comfortable	Science and technology are making our lives easier and more comfortable	--	--	--	--
Scientists make little effort to inform the public about their work	Scientists make little effort to inform the public about their work	--	--	--	Scientists put too little effort into informing the public about their work
Science and technology are producing an artificial life style	The statement of Argentina is "Science and Technology are producing an artificial and inhumane life style"	--	--	Science and Technology are producing an artificial and dehumanized life style	--
Science makes our way of life change too quickly	--	--	Science makes our way of life change too fast	The application of science makes our way of life change too quickly	--
We depend too much on science and not enough on faith	--	Our society depends too much on science and little on religious faith	--	--	We depend too much on science and not enough on faith

Table 13. Q13. I would like for you to tell me if you "strongly disagree", "disagree", "neither agree nor disagree", "agree" or "strongly agree" with each of the following statements. – Strongly agree + Agree %

Statement	Chile	Argentina	Brazil	United States	Mexico	United Kingdom
Science and technology are responsible for most of the environmental issues that we currently face	55	57	57	--	--	--
The scientific and technological development will help reduce social inequalities	29	35	52	--	--	--
Science and technology are making our lives easier and more comfortable	74	84	--	--	--	--
Scientists make little effort to inform the public about their work	62	47	--	--	--	58
Science and technology are producing an artificial life style	71	38	--	--	56	--
Science makes our way of life change too quickly	77	--	--	42	78	--
We depend too much on science and not enough on faith	65	--	44	--	--	30

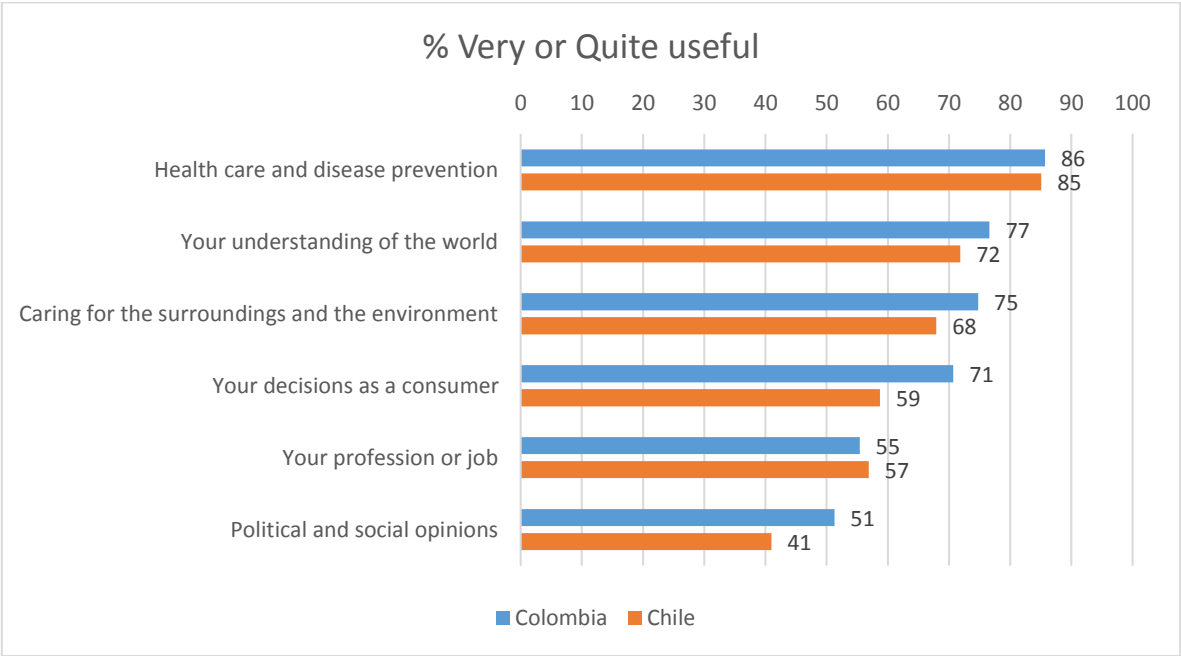
Q15. To what extent would you say that scientific and technological knowledge is useful in the following specific areas of life?

Another aspect of the valuation of scientific and technological development and knowledge relates to the usefulness people assign to them in solving specific and global issues. To that end, a set of statements was presented addressing different issues with a response scale of four alternatives that range from “very useful” to “not useful” and also include “quite” and “a little” useful.

Chile includes this question literally, using as source the questionnaire from Colombia, thus allowing a direct comparison of each of the statements and responses. *Graph 14* shows the results obtained in both measurements for the grouped “very and quite useful”, revealing that scientific and technological knowledge is similarly considered “very and quite useful” for issues related to health and diseases in both countries, with 85% of the population considering them so.

Meanwhile, continuing with Colombia and Chile, greater differences are observed between both countries for statements about their usefulness for consumer decisions and shaping public opinion. In these cases, the Colombian interviewees showed greater percentages than the Chilean interviewees (12 and 10 percentage points, respectively). That is, the Colombian population perceives scientific and technological development as being more useful when making decisions as a consumer and shaping political and social opinions than the Chilean population.

Graph 14: Q15. To what extent would you say that scientific and technological knowledge is useful in the following specific areas of life? ...



Institutional System Dimension

Q19. Who do you think contributes more money for scientific and technological research in the country?

This question seeks to learn about the image people have regarding which institutions mainly fund scientific and technological research. In the case of Chile, this question identifies the State as the main entity contributing more money for that purpose (30%), followed by universities (22%) and private foundations (18%)¹¹.

In the case of Argentina, the historical series shows that the image of the government as a financing entity has increased over the years, currently ranking first and gathering more than 40% of the mentions of the population regarding the sector that contributes more money, followed by universities, private foundations and companies, with much lower percentages that range between 13 and 15% of the population¹².

The results for the United Kingdom are different, since the study in 2014 detected that 70% of the mentions identify scientific and technological research as being funded by State taxes, followed by 36% who reckon private companies are the main funding sources for science and technology. However, as mentioned in the report of the survey results, this image would not be altogether true, since official studies indicate that more than half of the resources are indeed, provided by private companies¹³.

Q27. Do you know any institution focused on conducting scientific and technological research in our country?

The question regarding the knowledge people have on institutions working on scientific and technological research is included in the questionnaires of Chile, Argentina and Brazil.

Out of the three countries, Argentina stands out as having the greatest percentage of people who know some institution working on science and technology, with 25% of the population, by Chile with 17% of the population declaring they know an institution and, finally, Brazil with a lower percentage of only 12% of the population declaring they remember some institution working on scientific research in the country.

Country	Question
Chile	Q27: Do you know any institution focused on conducting scientific and technological research in our country?
Argentina	Q9: Do you know any institution focused on conducting scientific and technological research in our country?
Brazil	Q71: Do you remember any institution focused on conducting scientific research in our country?

¹¹ Results based on the first mention.

¹² "Fourth National Survey on Public Perception of Science: The Evolution of Public Perception of Science and Technology in Argentina, 2003-2015" ("*Cuarta Encuesta Nacional de percepción pública de la Ciencia: la evolución de la percepción pública de la ciencia y la tecnología en la Argentina, 2003-2015*"), Ministerio de Ciencia, Tecnología e Innovación Productiva, 2016.

¹³ Main and technical report: "Public Attitudes to Science 2014", Ipsos Mori.

Q29. Prior to this survey, did you know the National Commission for Scientific and Technological Research, CONICYT?

Another question that provides additional information regarding the knowledge of the institutional system for science and technology, is asking about whether or not people know CONICYT.

In this question, the results for Chile indicate that only 10% of the population knew about the institution before the survey was administered, while in Colombia the knowledge about the corresponding institution (COLCIENCIAS) reaches 22% of the population. In Mexico, the results increase, since 49% of the population declares knowing about or having heard of their country's institution (CONACYT). However, it is important to highlight that the question for the latter country was broader because it did not necessarily involve knowing about the institution, but rather “having heard” of it, which is a more ambiguous approach that could influence the higher results obtained.

Country	Question
Chile	Q29. Prior to this survey, did you know the National Commission for Scientific and Technological Research, CONICYT?
Colombia	Q615: Do you know what the Administrative Department of Science, Technology and Innovation (COLCIENCIAS by its acronym in Spanish) is?
Mexico	Q1V. Do you know what the National Council of Science and Technology (CONACYT by its acronym in Spanish) is or have you at least heard of it?

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Argentina

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Brazil

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- Graphs from the web page: <http://percepcaocti.cgee.org.br/faca-sua-analise/>

Colombia

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Spain

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- Results Report: *“VII Encuesta de Percepción Social de la Ciencia”*
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<http://icono.fecyt.es/informespublicaciones/Paginas/Percepcion-Social-de-la-Ciencia.aspx> (*Informe Percepción Social de la Ciencia y la Tecnología 2014. Data files in *.sav*)

United Kingdom

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- Data obtained from the database downloaded from the website: <https://www.ipsos-mori.com/researchpublications/researcharchive/3357/Public-Attitudes-to-Science-2014.aspx>

United States

- Chapter 7: “Science and Technology: Public Attitudes and Understanding”; “*Science and Engineering Indicators 2014*”