REPORT ON PUBLIC ENGAGEMENT WITH SCIENCE & TECHNOLOGY

PREPARED FOR:

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
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CONTENTS

1. SUMMARY

THE OVERALL ENGAGEMENT INDEX IS DOWN SLIGHTLY

This reduction is due to fewer science-related activities being undertaken in 2017 compared with 2014.

INDEX RESULTS

Compared with 2014 results, public attitudes to science and technology in 2017 are much the same, while the level of science and technology related activities has dropped back a little. The Attitudinal Index has increased from 66.4 to 66.6 out of 100, while the Behavioural Index fell by 2.9 points from 27.6 to 24.7 out of 100. Consequently, the Overall Engagement Index has fallen slightly from 43.1 to 41.5 out of 100 (a decline of 1.6 points).

OVERALL ATTITUDES TO SCIENCE AND TECHNOLOGY

In general, the New Zealand public aged 15 or more is strongly positive about science and technology with 77% agreeing that *they enjoy finding out about new ideas in science* and 81% agreeing that *they enjoy finding out about new ideas in technology*

INTEREST IN SCIENCE AND TECHNOLOGY

Their interest in science and technology is also generally high, although only around five in ten (48%) are interested *in learning more about how Mātauranga Māori (traditional Māori knowledge) relates to science*:

TOPIC AREA	% WHO ARE INTERESTED
Developments in science and technology	83%
Doing more science/ technology activities with your children/young people you spend time with	68%
Having your say on ethical issues around science	68%
Having your say on what scientific areas government should invest in	65%
Taking part in scientific projects of benefit to your community	65%
Learning more about how Mātauranga Māori (traditional Māori knowledge) relates to science	48%

The three main reasons people expressed for being interested in developments in science included:

- Being interested in how science and technology can improve our environment (63%)
- It feels good to hear about scientific and technological breakthroughs (61%)
- Being interested in how science and technology can improve our society (60%)

By contrast, for the 15% of people who are not very or not at all interested in science developments, the main reasons were:

- I'd rather leave it to the experts (39%)
- I don't know how to judge whether scientific findings are correct (36%)
- A lot of scientific studies have conflicting results (30%)
- I have not studied science or technology (30%)

+0.2

VIRTUALLY NO CHANGE IN THE ATTITUDINAL INDEX FROM 2014 TO 2017

-2.9

THE BEHAVIOURAL INDEX DROPPED BY ALMOST 3 POINTS

-1.6

THE OVERALL ENGAGEMENT INDEX IS DOWN SLIGHTLY

77%

ENJOY FINDING OUT ABOUT NEW IDEAS IN SCIENCE

WIDE RECOGNITION OF THE IMPORTANCE OF SCIENCE & TECHNOLOGY

Science and technology is seen as an important area to study leading to good career opportunities. Science is also seen to have a vital role in addressing societal challenges. However, the public is less likely to feel that science is important in their daily lives.

IMPORTANCE OF SCIENCE & TECHNOLOGY IN PEOPLE'S LIVES

While only 56% feel science is important in their daily lives, there is strong support for people studying and pursuing careers in science and technology:

TOPIC AREA	% WHO VIEW THE AREA AS IMPORTANT
Technology is an important subject to study at school	90%
Science is an important subject to study at school	89%
Knowledge of science is useful for increasing career opportunities	83%
Science is a worthwhile career to pursue	81%
It is important to be kept up-to-date on science issues	77%
Science is important in my daily life	56%

IMPORTANCE FOR SOCIETY, THE ENVIRONMENT & THE ECONOMY

A large proportion also feel science is important in a range of areas relating to improving society, the environment and the economy:

TOPIC AREA	% WHO VIEW THE AREA AS IMPORTANT
Science is important for improving human health	91%
Science is important for the preservation of New Zealand's environment	86%
Science is important for addressing key challenges affecting our society	82%
NZ needs to develop its scientific & technology sector in order to enhance its international competitiveness	78%
The government should fund scientific research even if we can't be sure of economic benefits	66%

UNDERSTANDING OF SCIENCE AND TECHNOLOGY

Public understanding of science and technology is somewhat weaker, with almost a third (32%) feeling that *science and technology is too specialised for me to understand* and 49% feeling that *there is so much conflicting information about science that it is hard to know what to believe.*

90%

SAY TECHNOLOGY IS AN IMPORTANT SUBJECT TO STUDY AT SCHOOL

91%

RECOGNISE THE IMPORTANCE OF SCIENCE FOR IMPROVING HUMAN HEALTH

86%

FEEL SCIENCE IS IMPORTANT FOR PRESERVING NEW ZEALAND'S ENVIRONMENT

A POLARISED VIEW REGARDING THE AMOUNT OF INFORMATION PEOPLE RECEIVE & HOW WELL INFORMED THEY FEEL

Main media sources used are TV and online videos.

LEVEL OF INFORMATION RELATING TO SCIENCE

Almost half those surveyed (48%) feel they get about the right amount of information about science these days. A slightly smaller proportion (43%) feel they get too little information, while only 7% feel they get too much

HOW WELL INFORMED PEOPLE FEEL

Public views on how well they are informed about developments in science and technology are somewhat polarised – while 60% feel well informed, 37% feel they are not well informed

MEDIA SOURCES USED

The public engages with science and technology via the following main media sources:.

MAIN MEDIA SOURCES USED	% USING THIS SOURCE IN THE LAST YEAR
Watched a programme with a scientific theme on TV	69%
Viewed a video on a scientific topic online e.g. on YouTube or TED.com	45%
Read scientific article/s in newspaper/s or magazine/s	45%
Visited an online news site and checked out breaking news about science e.g. on Stuff.co.nz	45%
Conducted personal research for yourself on the Internet regarding scientific topic/s	42%
Downloaded a science app e.g. the Geonet quake app or bird apps etc.	21%
Read or responded to a blog on a scientific topic	19%
Discussed a scientific matter on a social media site e.g. Facebook	18%

48%

SAY THEY GET ABOUT THE RIGHT AMOUNT OF INFORMATION ABOUT SCIENCE

43%

FEEL THEY RECEIVE TOO LITTLE INFORMATION

60%

FEEL WELL INFORMED

37%

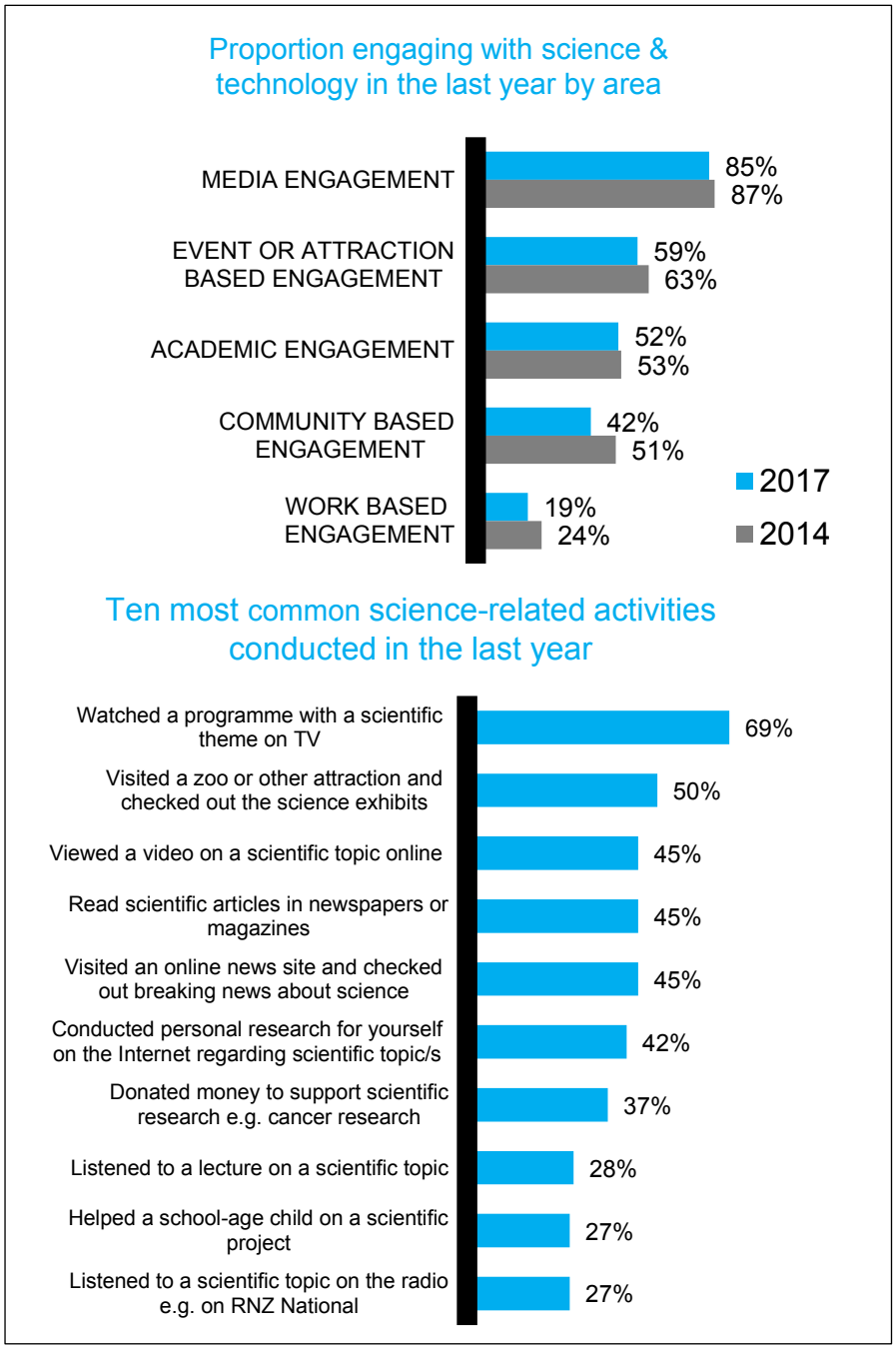
DON'T FEEL WELL INFORMED

UNDERTAKING SCIENCE-RELATED ACTIVITIES IS VERY COMMON

However, the level of activity in 2017 is a little down from 2014.

LEVEL OF SCIENCE RELATED ACTIVITIES

Nine out of ten people (90%) had engaged in an activity relating to science and technology in the last year, most commonly via the media (85%). This level of activity is very similar to 2014 when 92% had engaged in at least one activity



90%

HAVE UNDERTAKEN A SCIENCE-RELATED ACTIVITY IN THE LAST YEAR

-2pts

REDUCED LEVEL OF ACTIVITY SINCE 2014

TV PROGRAMMES, ZOO, MUSEUM, PLANETARIUM, SCIENCE CENTRE, ONLINE VIDEOS

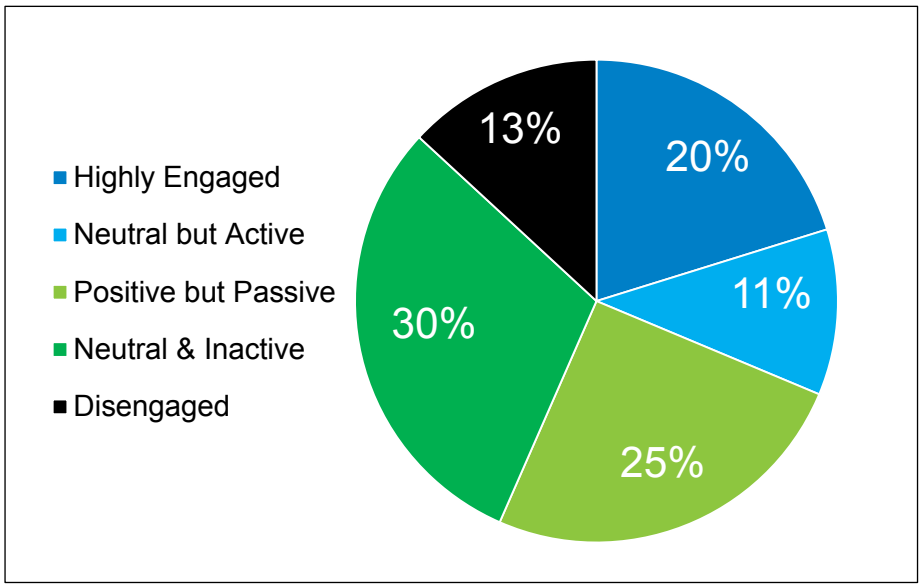
KEY WAYS TO ENGAGE WITH SCIENCE

WE IDENTIFIED FIVE SEGMENTS WITH VARYING LEVELS OF ENGAGEMENT WITH SCIENCE & TECHNOLOGY

SEGMENTING THE POPULATION

Three segments who are the most engaged with science and technology account for 56% of the population i.e. the Highly Engaged, Neutral but Active and Positive but Passive segments.

By contrast, 43% are in two less engaged segments ie. the Disengaged and Neutral & Inactive segments.



20%

ARE IN THE HIGHLY ENGAGED SEGMENT

13%

ARE DISENGAGED

	DISENGAGED	NEUTRAL & INACTIVE	POSITIVE BUT PASSIVE	NEUTRAL BUT ACTIVE	HIGHLY ENGAGED
ATTITUDES	✗✗✗	✓	✓✓	✓	✓✓✓
BEHAVIOUR	✗✗✗	✗✗	✓	✓✓	✓✓✓

LESS ENGAGED ⟷ MORE ENGAGED

DEMOGRAPHIC GROUPS WITH MORE AND LESS ENGAGEMENT WITH SCIENCE

Across many of the engagement questions in the survey, the following groups of people are relatively more and less engaged with science and technology.

LESS ENGAGED	MORE ENGAGED
FEMALE	**MALE**
LESS EDUCATED e.g. with no qualification or a high school qualification only	**MORE HIGHLY EDUCATED** e.g. university graduates and those with postgraduate degrees
NO FORMAL SCIENTIFIC TRAINING	**SOME FORMAL SCIENTIFIC TRAINING**
HAVE NOT STUDIED SCIENCE OR ONLY AT HIGH SCHOOL LEVEL	**HAVE STUDIED SCIENCE AT UNIVERSITY LEVEL**
LOWER PERSONAL INCOME Less than $40,000 per year	**HIGHER PERSONAL INCOME** More than $80,000 per annum
PACIFIC ISLANDS OR MĀORI ETHNICITY	**ASIAN**

INTERNATIONAL BENCHMARKING

INTRODUCTION

New Zealand results from the 2017 survey were compared with a number of international studies conducted from 2013 to 2017 in Ireland, Canada, Australia, UK and the European Union.

The Irish study is the most pertinent as it included 15 to 20 measures from the MBIE New Zealand survey.

Specific results are included in Section 9 – page 68.

COMPARED WITH IRELAND

New Zealanders are more likely to enjoy finding out about new technologies & new scientific ideas .

The Irish public is more likely than New Zealanders to feel overwhelmed by conflicting scientific information and to feel that scientists should listen more to ordinary people.

New Zealanders are a little more inclined to trust the opinion of scientists or engineers than the Irish.

Both Irish people and New Zealanders have a similar high appreciation of the importance of science in preserving the environment, improving human health and addressing key societal challenges.

Both New Zealanders and Irish people are very positive about science and technology education and careers.

COMPARED WITH IRELAND AND THE UK:

There is broad agreement from NZ, Ireland and the UK with the need to invest in the science and technology sector to enhance competitiveness.

COMPARED WITH CANADA AND THE UK:

Two-thirds of New Zealanders support funding scientific research without being sure of its economic benefits – this is lower than in Canada and the UK where almost eight out of ten support this type of investment.

COMPARED WITH THE UK:

New Zealanders are more likely than people from the UK to feel they receive the right level of information about science and technology .

COMPARED WITH AUSTRALIA AND THE EUROPEAN UNION:

While New Zealanders lag behind Australians in feeling well informed about science and technology, New Zealand is well ahead of the European average.

SOME COMPARISONS WITH IRELAND

77% NZ
67% IR

ENJOY FINDING OUT ABOUT NEW IDEAS IN SCIENCE

58% NZ
71% IR

SCIENTISTS SHOULD LISTEN MORE TO WHAT ORDINARY PEOPLE THINK

78% NZ
85% IR

NEW ZEALAND/IRELAND NEEDS TO DEVELOP ITS SCIENTIFIC AND TECHNOLOGY SECTOR IN ORDER TO ENHANCE ITS INTERNATIONAL COMPETITIVENESS

2. BACKGROUND, OBJECTIVES AND METHODOLOGY

2.1 BACKGROUND

The New Zealand government has identified that science, and the knowledge and innovation that flow from scientific progress, have a critical role in defining New Zealand's future. Accordingly the government has developed a national strategic plan for science in society; A Nation of Curious Minds – He Whenua Hihiri i te Mahara, It is part of a wide range of activities that the Government has initiated to lift science and innovation.

The Ministry of Business, Innovation & Employment (MBIE) commissioned Nielsen to conduct research into public engagement with science and technology to track progress in this area. Previous surveys in this area were conducted by Nielsen for MBIE and MoRST in 2002, 2005, 2010 and 2014.

The 2014 and 2017 surveys recognise the multi-dimensional nature of engagement with science and technology and cover attitudinal engagement (emotive and cognitive) as well as behavioural engagement in a range of areas (academic, event or attraction-based, community-based, work-based and media engagement).

The following report presents the key findings from the 2017 survey comparing results with the previous surveys conducted for MBIE and MoRST and with international benchmarks.

2.2 RESEARCH OBJECTIVES

The main objectives of Survey were as follows:

- To provide a nationally representative measure of public attitudes to science and technology
- To cross-analyse the results by demographic variables to determine the types of people who are more and less likely to be engaged with science and technology
- To segment the public in terms of their varying levels of engagement with science and technology
- To track changes since the 2014 study of public attitudes to science and technology as well as other similar studies conducted by Nielsen in 2005 and 2010.
- Where possible to benchmark the results against recent international studies from Ireland, Canada, the UK, Australia and Europe

2.3 METHODOLOGY

A representative sample of 3,003 New Zealanders aged 15 or more was surveyed using a mixed methodology, involving both an online survey and a telephone CATI survey (Computer Assisted Telephone Interviewing). This mixed approach was adopted because internet usage has become much more common than having a landline telephone, as shown in the table below, and relying on just a CATI approach would not have delivered representative results for the total population.

% OF THE POPULATION AGED 15 PLUS WHO….	Y/E MARCH 2014	Y/E MARCH 2017
ACCESSED THE INTERNET IN THE LAST 4 WEEKS	86%	92%
HAVE A LANDLINE TELEPHONE	69%	55%
EITHER ACCESSED THE INTERNET OR HAVE A LANDLINE TELEPHONE	96%	98%

Source: *Nielsen Consumer and Media Insights Survey 2014 and 2017.*

The online survey was hosted on a Nielsen server. Anonymity was guaranteed and participants could ask questions about the survey and resolve any connection issues by emailing Nielsen. The first 100 interviews constituted a pilot of the online survey to ensure it was understandable and flowed correctly.

Infield International, Nielsen's fieldwork partner, conducted the telephone interviews using a CATI approach (Computer Assisted Telephone Interviewing). Interviewers were briefed thoroughly before the survey commenced and 30 pilot CATI interviews were conducted, mainly focusing on the interview duration.

INTERVIEW BREAKDOWN	INTERVIEW DURATION	NUMBER OF INTERVIEWS	PREDICTED MARGIN OF ERROR
ONLINE SURVEY	10 minutes	2,502	±2.0%
CATI SURVEY	17 minutes	501	±4.4%
TOTAL	-	**3,003**	**±1.8%**

2.4 QUESTIONNAIRE DESIGN

The questionnaires for each survey were developed in consultation with MBIE and other interested public sector organisations including the Ministry of Education, the Office of the Prime Minister's Chief Science Advisor, the Ministry of Primary Industries and the Science Media Centre. We also presented a summary of the feedback from these stakeholders to the Nation of Curious Minds Steering Group and received their advice on the best way to proceed.

Questionnaire design incorporated:

- Questions from the 2014 survey to enable tracking of results
- New questions suggested by MBIE and the other public sector stakeholders covering: Māori involvement and leadership in science and technology; trust in the opinions of scientists or engineers; and who should decide the direction of scientific research
- Fine-tuning of some of the demographic questions

One feature of the online survey was that "don't know" answers that were not read out directly to respondents in the CATI survey were presented in a less obtrusive colour in the online survey to help maintain consistency between the two surveys.

A broad definition of 'science' was used in the study to cover the range of STEM disciplines. Before answering survey questions participants were told the following: *This survey is about science and technology. Please think about this area in a broad way including science, technology, engineering and mathematics*

2.5 SAMPLE SOURCES

In order to provide the most representative results, survey participants were drawn from two sources as listed below:

SURVEY	SAMPLE SOURCES
ONLINE SURVEY	The Survey Sampling International (SSI) online research panel. Members are rewarded for the time they spend answering surveys with incentives including vouchers, movie tickets, pre-pay phone vouchers, as well as the opportunity to donate to a range of charities. Recruitment also stresses intangible benefits - "the chance to have your say". This panel is used for research purposes only and there is no inherent bias amongst panellists towards any particular products or services.
CATI TELEPHONE SURVEY	Randomly generated landline telephone numbers were used to create the sample frame. To ensure a random selection of respondents, after ringing the household the interviewer asked to speak to the person in the household aged 15 years or older with the next birthday. Then, towards the end of fieldwork when quotas had been filled, recruitment was more direct e.g. asking if there was a male aged 15 to 24 available.

2.6 SURVEY RELIABILITY

With an overall sample size of 3,003, the total results are highly robust, with a maximum predicted margin of error of ± 1.8%.

Achieving such a large overall sample means that results are very reliable at the total level. Moreover, the sizes of individual sub-samples (e.g. for various demographic groups) are also generally sufficient to provide reliable results. Some examples for special interest groups are listed below:

SUB-SAMPLE	UNWEIGHTED SAMPLE SIZES n=	MAXIMUM PREDICTED MARGIN OF ERROR
Age 15 to 19	176	±7.4%
Age 75 plus	147	±8.1%
Young couple with no children	134	±8.5%
Living in a rural centre (a small town of 300 to 999 population)	181	±7.3%
Living in a rural area (includes living in a very small town of less than 300 people)	203	±6.9%
Tertiary students	147	±8.1%
Māori	310	±5.6%
Pacific people	128	±8.7%
Asian	359	±5.2%

THE LARGE SAMPLE SIZE ENSURES RELIABLE RESULTS FOR SMALL SUB-SAMPLES

2.7 QUOTAS AND WEIGHTING

QUOTAS

To ensure a representative sample, quotas were set by age, gender and region to reflect the national population aged 15 plus based on the 2013 Census.

WEIGHTING

As this study involved sample surveys, some groups (based on age, gender, ethnicity and location) are under- or over-represented in the survey responses. To account for this, the responses were weighted by age, gender, region and ethnicity to be representative of the national population aged 15 plus. The CATI and online survey responses were also merged in proportion to the number of people who regularly access the Internet versus the number living in households with telephone landlines. Technical details of the weighting are included in Appendix 2.

2.8 SURVEY TIMING

Fieldwork dates for each survey were:

SURVEY	START DATE	END DATE
THE ONLINE SURVEY	29 September	13 October
CATI TELEPHONE SURVEY	17 September	5 October

2.9 QUALITY CONTROL

PILOTING THE SURVEYS

Both surveys were piloted to ensure all questions were asked and question routing was working correctly. These pilots interviews also acted as a check on the survey duration.

ONLINE SURVEY CHECKS

Online survey responses were monitored to check for :

- '**Speedsters'** – people completing the survey very quickly with little care
- **'Straight-liners**' – those who responded to grid questions in the survey by giving the same response each time e.g. 5 on a 5-point scale, indicating they were putting little thought into their responses
- **'Nonsense verbatim answers'** – those who responded to open-ended questions with nonsensical comments

We detected 41 instances of these issues through the course of the survey (1.6% of total responses) and we removed responses from these people from the survey data.

CATI SURVEY CHECKS

We conducted a briefing with the CATI interviewing team covering the purpose of the survey and how various questions should be asked including the correct pronunciation of Mātauranga Māori. All the CATI interviews were recorded and Nielsen's offline survey team audited 10% of these recordings to ensure questions were being asked correctly.

2.10 INTERPRETING THE RESULTS

Throughout the report, we report on weighted results while unweighted sample bases are provided. Results are given for the combined Online and CATI surveys.

Some results do not add up to 100%, either due to rounding of the results or because multiple responses were allowed for the question.

When analysing differences in the results, only statistically significant differences are reported. Where we examine pairs of variables e.g. males vs. females, significance testing compares one result directly against the other. By contrast, where three or more variables are measured e.g. for different age groups, the significance testing compares results for one result at a time against the total excluding that result. These differences are identified at the 95% confidence level and account for variations in sample size.

Note that a result can be statistically significant, but not meaningful. For instance, a significant difference could involve 48% agreeing with a statement in 2014 compared with 51% in 2017. A small difference such as this may have no practical meaning, as the results are relatively close (they both represent around half the population). For this reason, we only highlight statistically significant differences of a at least 4 percentage points, with the exception of Index results where differences of at least 3 percentage points from the total are highlighted.

KEY:

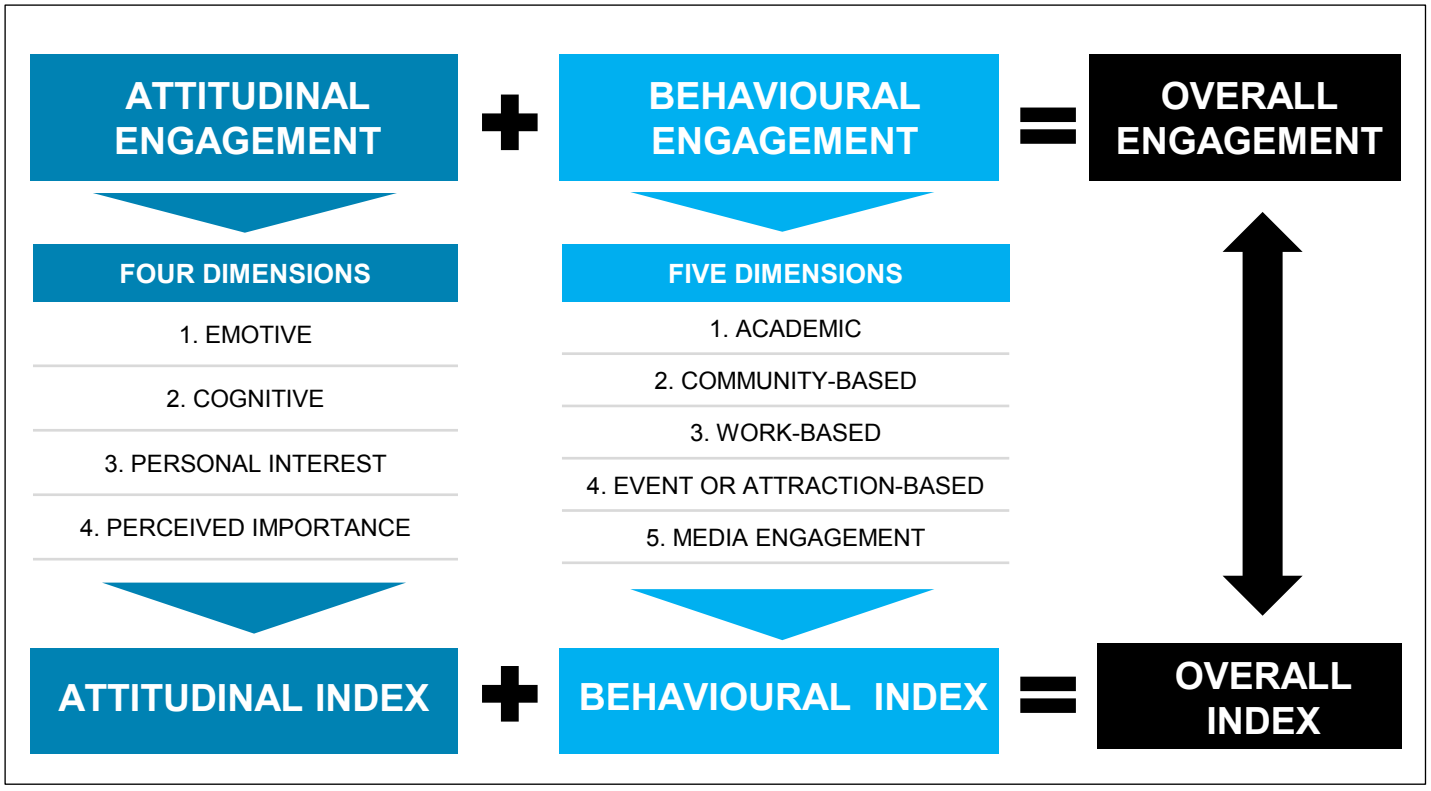
A significant increase of at least 4 percentage points

A significant decrease of at least 4 percentage points

Where we refer to Pākehā/European people this includes people who identified their ethnicity either as NZ European/Pākehā or Other European.

2.11 MODEL OF ENGAGEMENT WITH SCIENCE & TECHNOLOGY

The model of engagement with science & technology developed in 2014 is illustrated below:



This model incorporates four dimensions of people's attitudes and five dimensions of their behaviour into three different Indices: the Attitudinal Index, the Behavioural Index and the Overall Index.

2.12 SCORING SYSTEM FOR INDEX CALCULATIONS

Attitudes and Behaviour are combined in the Overall Index in a ratio of 40:60, on the theory that behaviour represents a higher level of engagement than just having positive attitudes:

ATTITUDINAL ENGAGEMENT

FOUR DIMENSIONS	MAX POINTS
1. EMOTIVE	25
2. COGNITIVE	25
3. PERSONAL INTEREST	25
4. PERCEIVED IMPORTANCE	25
ATITUDINAL INDEX MAXIMUM POINTS	**100**

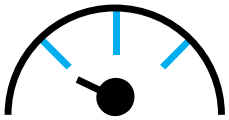
40%

BEHAVIOURAL ENGAGEMENT

FIVE DIMENSIONS	MAX POINTS
1. ACADEMIC	20
2. COMMUNITY-BASED	20
3. WORK-BASED	20
4. EVENT OR ATTRACTION-BASED	20
5. MEDIA ENGAGEMENT	20
BEHAVIOURAL INDEX MAXIMUM POINTS	**100**

60%

OVERALL INDEX



3. ATTITUDES TO SCIENCE AND TECHNOLOGY

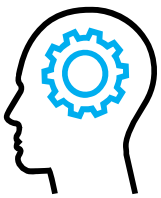
SUMMARY OF ATTITUDES

ON THE ONE HAND, A GREAT DEAL OF POSITIVITY

The New Zealand public is largely very positive about science and technology and this enjoyment has increased since 2005. Key reasons for peoples' positivity include being interested in how science and technology can improve our environment and society and feeling good hearing about scientific and technological breakthroughs. People generally feel that science and technology are important topics to study at school and can lead to good career opportunities. Over eight out of ten (83%) are interested in developments in science and technology. Furthermore, a very high proportion recognise the importance of science and technology e.g. for improving human health, to help preserve the environment, to address key societal challenges and enhance New Zealand's international competitiveness.

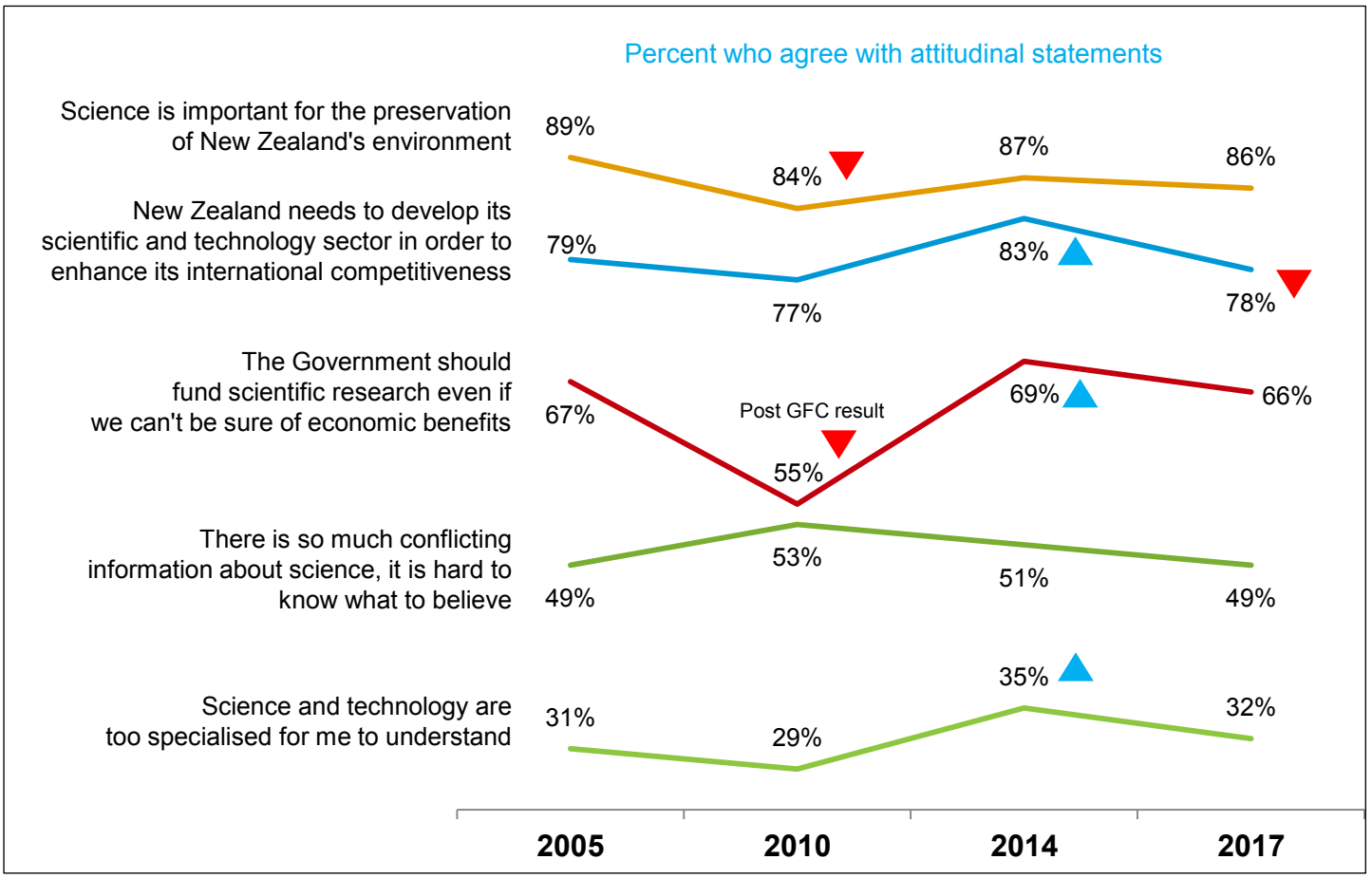
ON THE OTHER HAND, A LACK OF TRUST AND RELEVANCE IN DAILY LIFE

Despite the overall level of positivity, science can be difficult to grasp with around a third of people feeling that science and technology is too specialised to understand and half the population feeling there is so much conflicting information, it is hard to know what to believe. Moreover, only six out of ten say that science is *important in my daily life*. Very few people have complete trust in the opinions of scientists and engineers. Main reasons for being turned off science include preferring to leave it to the experts, not knowing how to judge whether scientific findings are correct, many scientific studies having conflicting results and not having studied science or technology.



3.1 ATTITUDINAL TRENDS 2005 to 2017

Public attitudes to science and technology are fairly consistent over the twelve years from 2005 to 2017.



Next are some statements some people have made about science and technology. Please indicate how much you agree or disagree with them…
Base Total Sample 2017 n= 3,003, 2014 n=3,004, 2010 n=1,200, 2005 n=800.

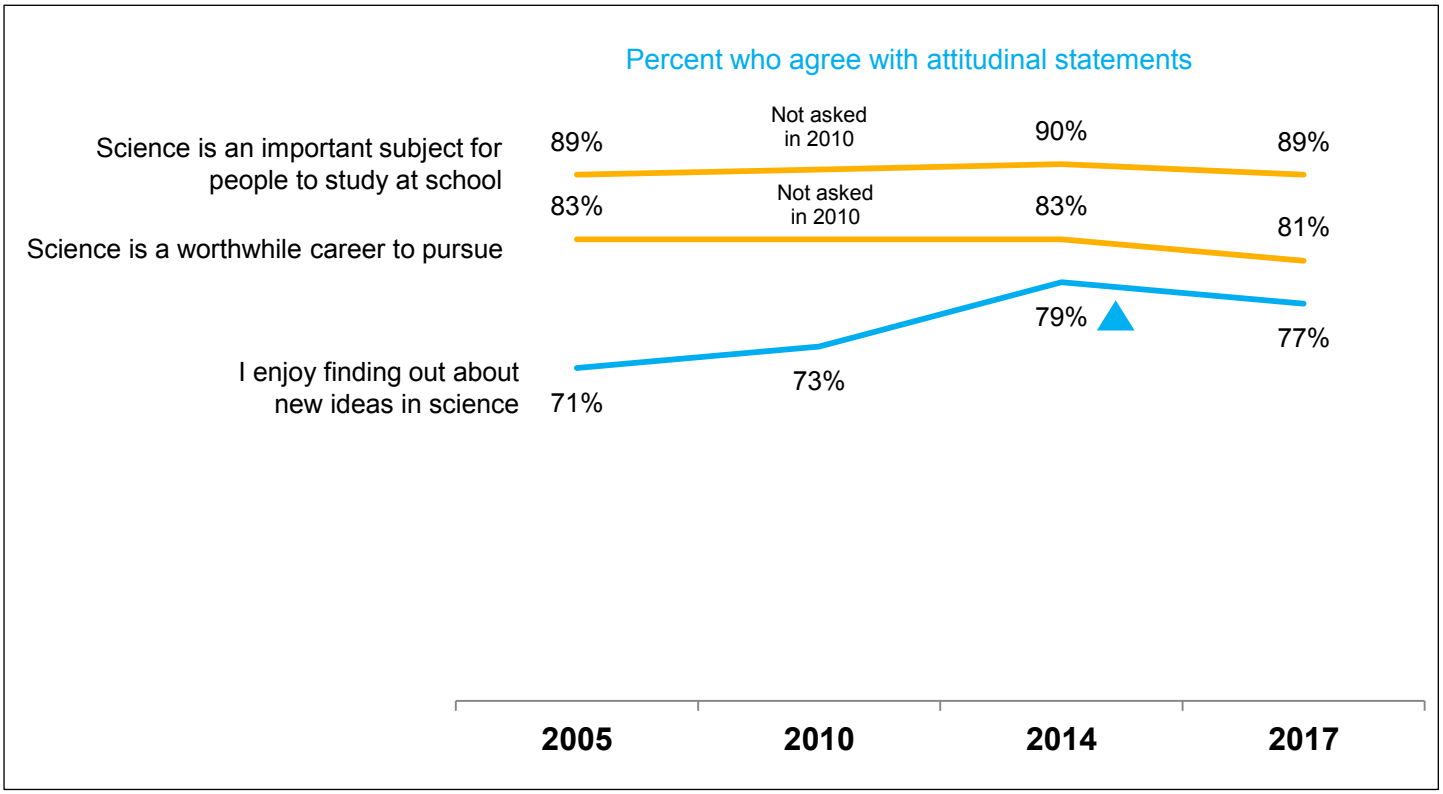
There is ongoing strong recognition by the public of the role of science in preserving the environment (89% agreed in 2005 compared with 86% in 2017)

While there has been a decline in the latest survey results in those who agree that New Zealand needs to develop its scientific and technology sector in order to enhance its international competitiveness from 83% to 78%, the latest result is very similar to that recorded in 2005 and 2010 (79% and 77% respectively).

Support for 'pure science' (the Government funding scientific research even if we can't be sure of its economic benefits) dropped sharply in the 2010 survey (immediately after the Global Financial Crisis) but rebounded in 2014.

Comparing 2005 with 2017 results, there is little change in the proportion who have difficulties understanding science i.e. those who agree that there is so much conflicting information about science, it is hard to know what to believe and who feel science and technology are too specialised to understand

ATTITUDINAL TRENDS 2005 to 2017 CONT'D



Next are some statements some people have made about science and technology. Please indicate how much you agree or disagree with them…
Base Total Sample 2017 n= 3,003, 2014 n=3,004, 2010 n=1,200, 2005 n=800.

Support remains very solid for science education and science careers with the level of agreement to two statements being much the same in 2017 as in 2005.

There has been a marked increase in enjoying discovering new science ideas from 2005 to 2017 (77% in 2017 vs. 71% in 2005)

ENJOY DISCOVERING NEW SCIENTIFIC IDEAS

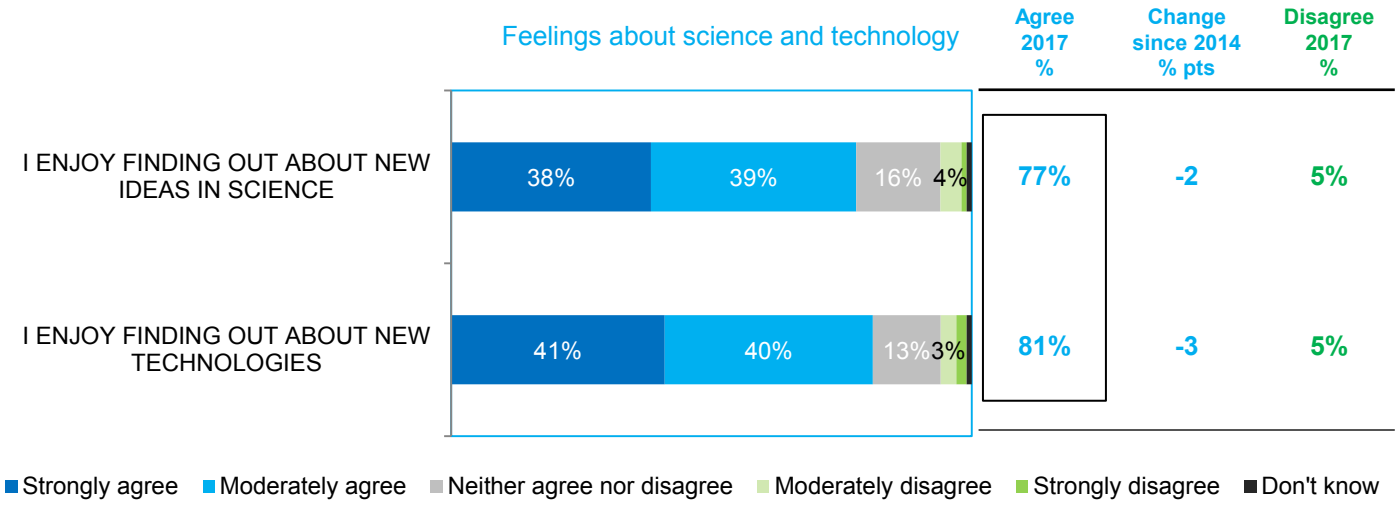
71%
2005

77%
2017

3.2 PEOPLES' FEELINGS ABOUT SCIENCE AND TECHNOLOGY

The public has strong positive feelings about science & technology with little change since 2014.

Levels of agreement with two statements about how much people enjoy finding out about science and technology were assessed using a 5-point agreement scale from Strongly Disagree to Strongly Agree. The results are shown in the chart below:



Next are some statements some people have made about science and technology. Please indicate how much you agree or disagree with them…

Base Total sample (people aged 15 plus): 2017 n= 3,003, 2014 n=3,004.

In general, the public has strong positive feelings about science & technology with 77% agreeing that they *enjoy finding out about new ideas in science* (only 5% disagree). An even greater proportion (81%) agree that they *enjoy finding out about new ideas in technology* (again only 5% disagree).

These results show little change from 2014.

77%

ENJOY FINDING OUT ABOUT NEW SCIENCE IDEAS

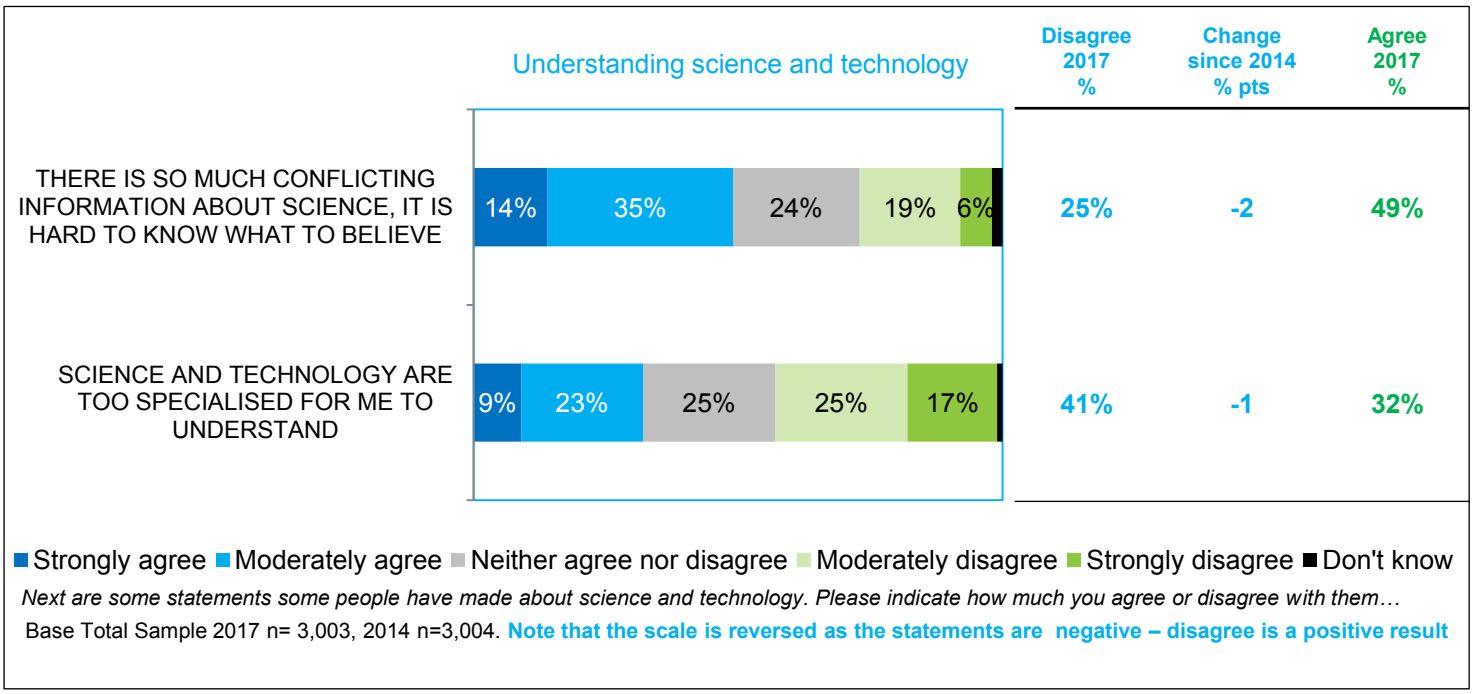
81%

ENJOY FINDING OUT ABOUT NEW TECHNOLOGIES

3.3 PUBLIC UNDERSTANDING OF SCIENCE AND TECHNOLOGY

A significant group finds science and technology difficult to understand.

Levels of agreement with two statements about how much people understand science and technology were assessed. Note that compared with the previous questions, the statements were reversed i.e. disagree is a positive result. Therefore the scale in the chart below has been flipped compared with the previous chart:



Science can be difficult to grasp with 32% agreeing that *science and technology is too specialised to understand* and 49% feeling there is *so much conflicting information, it is hard to know what to believe*.

Again these results are much the same as in 2014.

49%

ARE CONFUSED BY CONFLICTING INFORMATION ABOUT SCIENCE

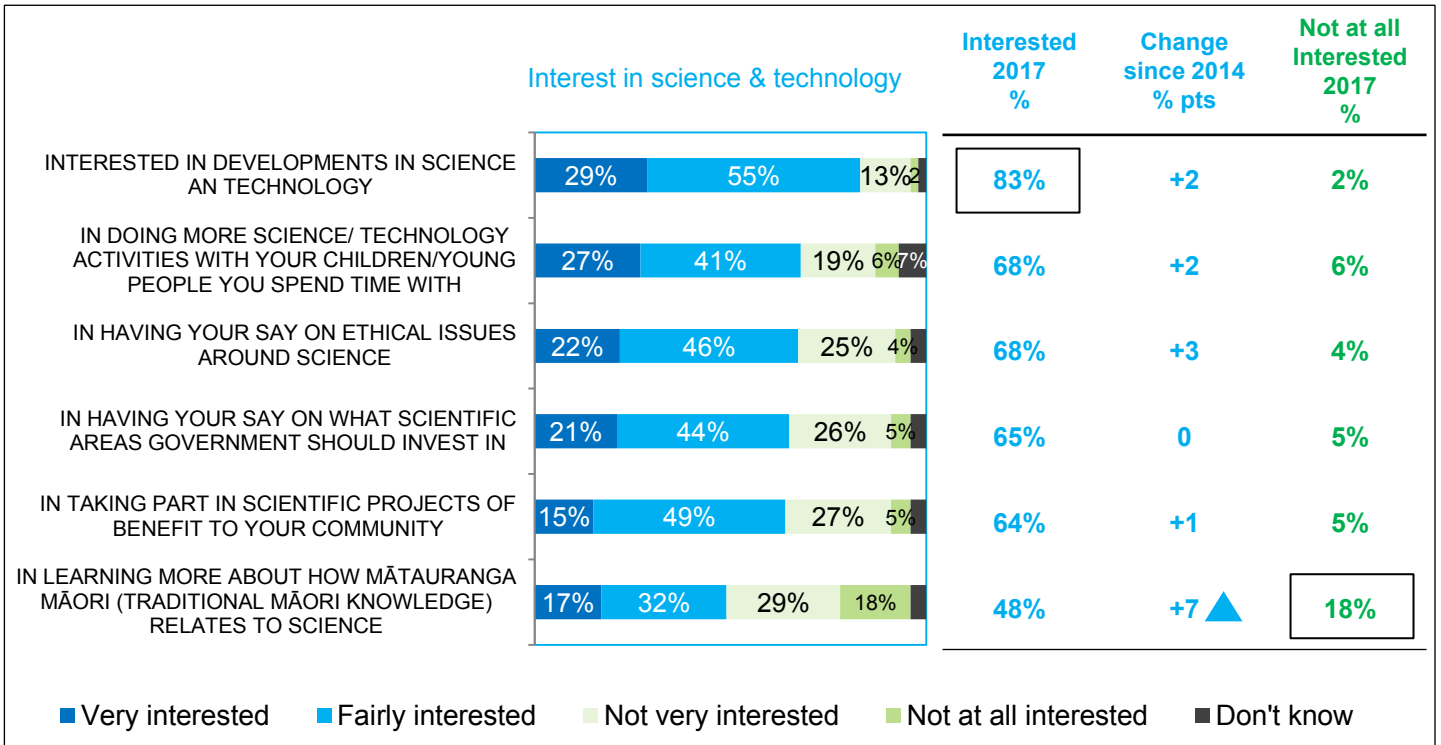
32%

FIND SCIENCE & TECHNOLOGY TOO SPECIALISED TO UNDERSTAND

3.4 PERSONAL INTEREST IN SCIENCE AND TECHNOLOGY

Over eight out of ten (83%) are interested in developments in science and technology.

Those interviewed indicated their level of interest in six aspects of science and technology using a four-point scale from not at all interested to very interested. The results are shown in the chart below:



Next are some statements some people have made about science and technology. Please indicate how much you agree or disagree with them…

Base Total sample (people aged 15 plus): 2017 n= 3,003, 2014 n=3,004.

The proportion who are interested (either very interested or fairly interested) in the above areas ranges from 83% who are interested in *developments in science and technology* to 48% who are interested in *learning more about how Mātauranga Māori (traditional Māori knowledge) relates to science.*

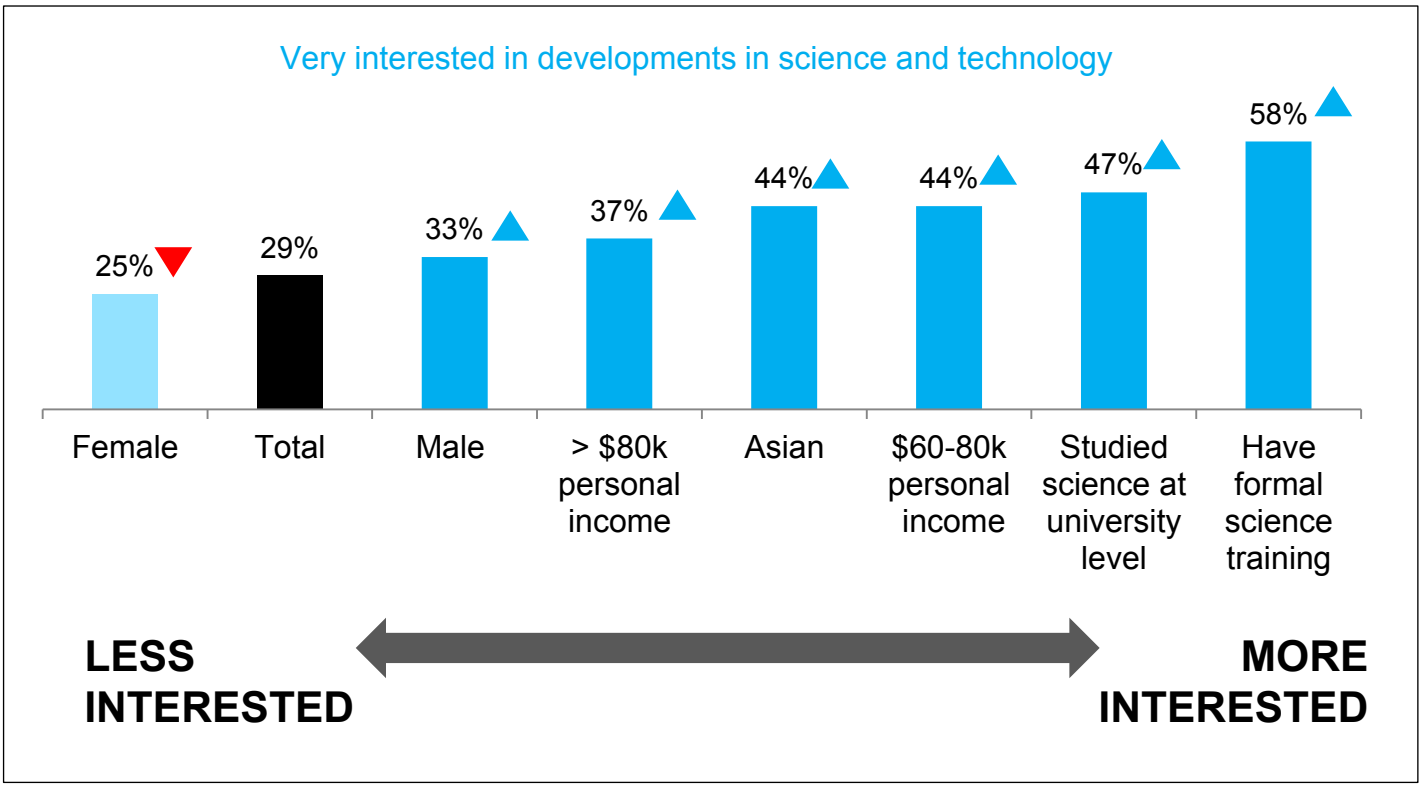
Around half (48%) are interested in learning more *about how Mātauranga Māori relates to science* and this has increased by seven percentage points since 2014.

For five out of the six areas above, levels of not being at all interested are very low (from 4% to 6%) however 18% are not at all interested in *learning more about how Mātauranga Māori relates to science.*

INTEREST IN SCIENCE AND TECHNOLOGY BY DEMOGRAPHICS

People who are most interested in developments in science and technology have formal training in science.

The chart below shows significant differences in being very interested in developments in science and technology These differences are at least 4 percentage points from the total:

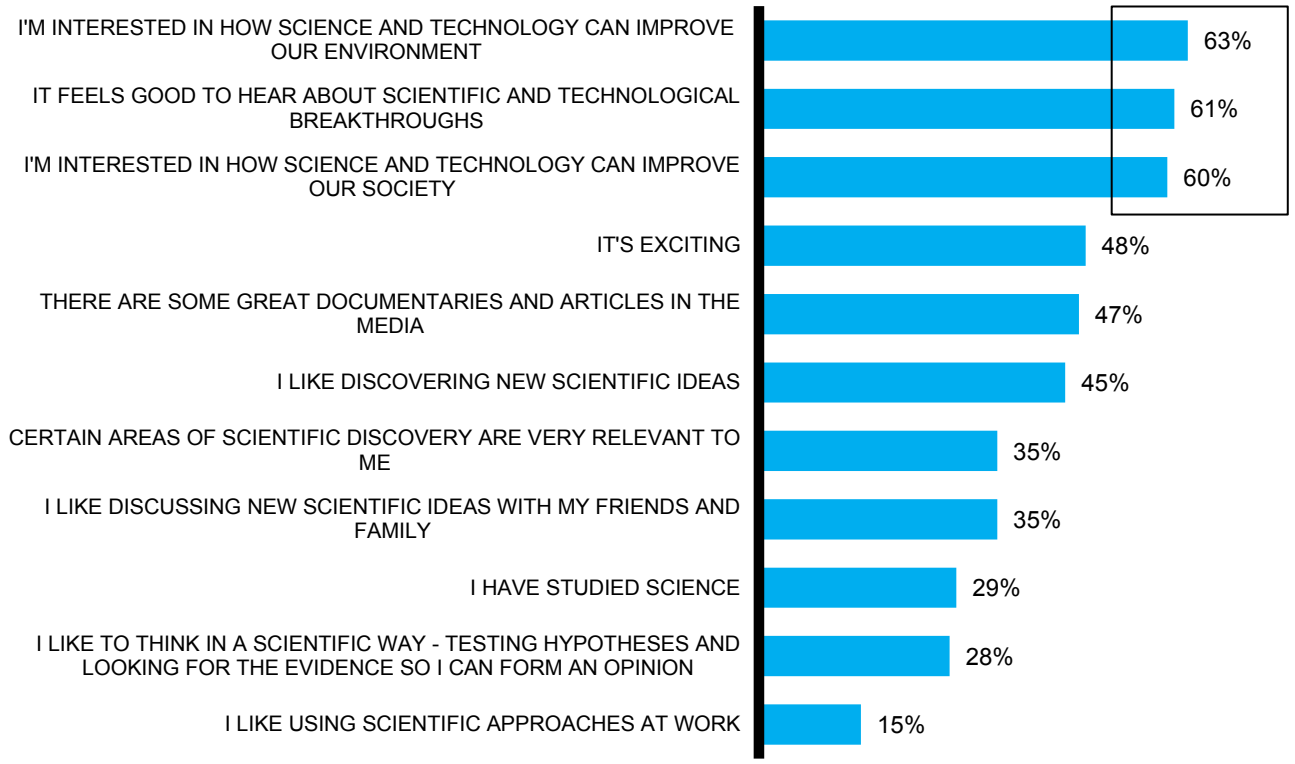


Groups that are more interested than average in developments in science and technology include males, those with personal incomes of $60,000 or more, Asian people, those with formal training in science and people who have studied science at university level.

3.5 REASONS FOR BEING INTERESTED IN SCIENCE AND TECHNOLOGY

Key reasons for peoples' positivity include being interested in how science and technology can improve our environment and society and feeling good hearing about scientific and technological breakthroughs.

Main reasons for being interested in science and technology are shown below:



Following are some reasons that people have given for being interested in science and technology. Which, if any, of these reasons apply for you?

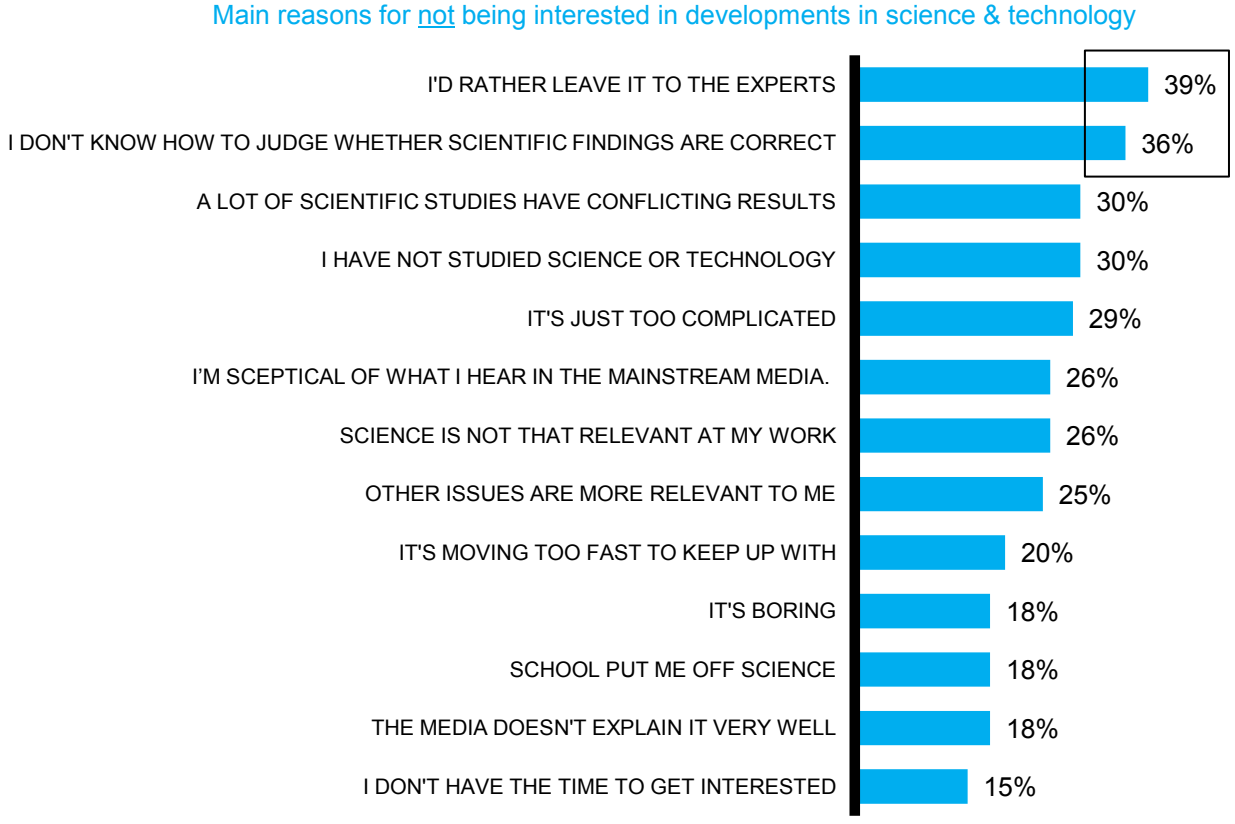
Base Very or fairly interested in developments in science and technology n= 2,068 (Asked in the online survey only)

The most common reasons for being interested in science and technology include being interested in how science and technology can improve the environment and society and feeling good hearing about scientific & technological breakthroughs. From the above responses, some other common themes include finding this area exciting, liking to discuss new scientific ideas with friends and family and reacting to great documentaries and articles in the media.

3.6 REASONS FOR NOT BEING INTERESTED IN SCIENCE AND TECHNOLOGY

Those who are not interested in science say this is mainly because they'd prefer to leave it to the experts and they don't know how to judge whether scientific findings are correct.

Main reasons for not being interested in science and technology are as follows:



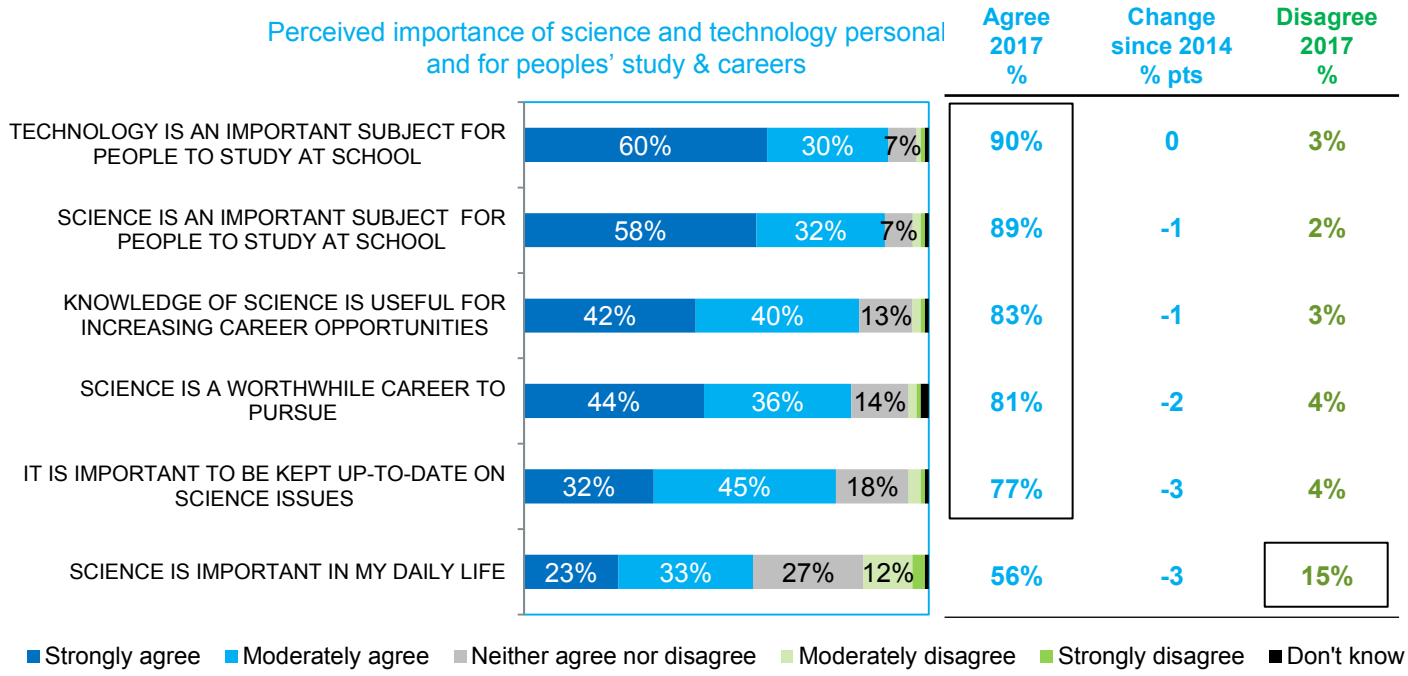
*Following are some reasons that other people have given for **being turned off or not interested in science and technology**. Which, if any, of these reasons apply for you?*

Base Not very or not at all interested in developments in science and technology n= 372. (Asked in online survey only)

The most common reasons for not being interested in or turned off science and technology include preferring to leave it to the experts, not knowing how to judge whether scientific findings are correct, many scientific studies having conflicting results and not having studied science or technology.

3.7 PERCEIVED IMPORTANCE OF SCIENCE & TECHNOLOGY

We asked the survey participants how important eleven aspects of science and technology are to them. These questions used a 5-point agreement scale from Strongly Disagree to Strongly Agree. The results are shown in two separate charts below; the first relating to the importance of science and technology in peoples' own lives and in their careers and education while the second chart focuses on its importance for society, the environment and for the economy:



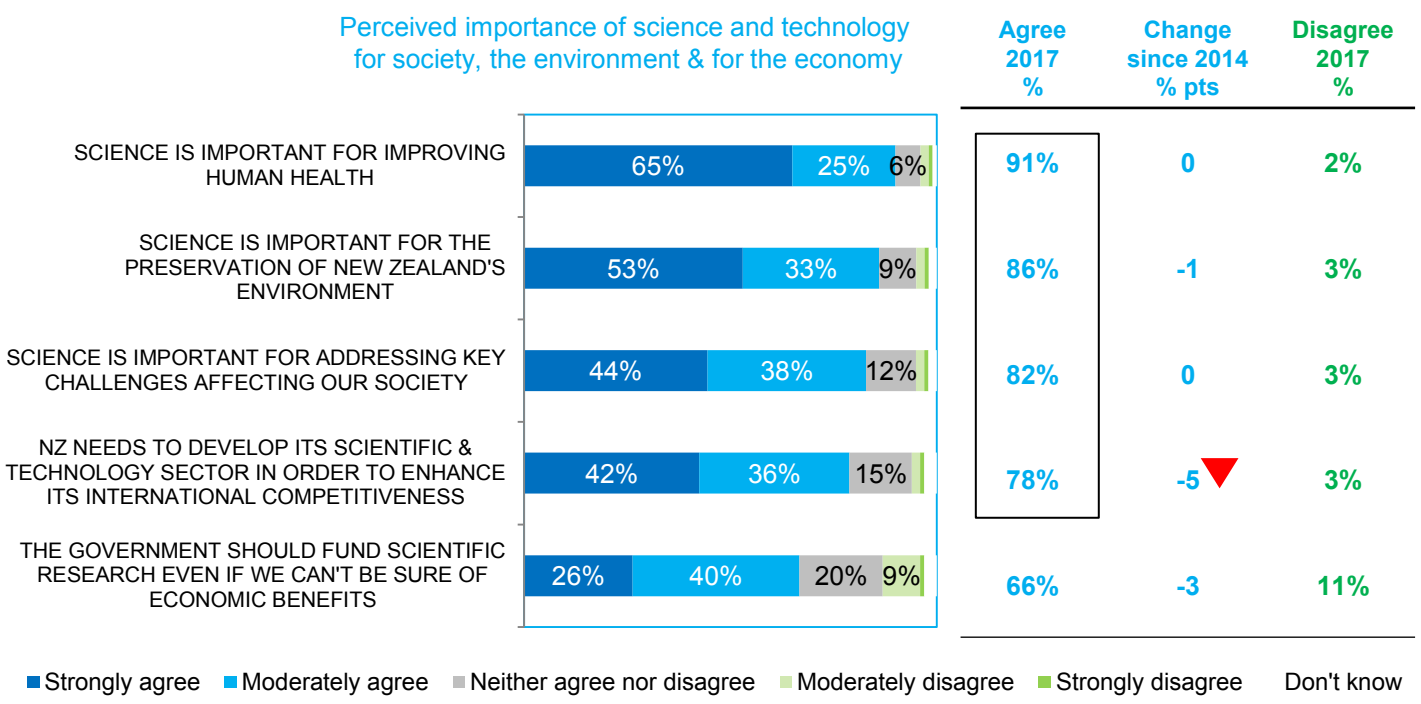
Next are some statements some people have made about science and technology. Please indicate how much you agree or disagree with them…

Base Total sample (people aged 15 plus): 2017 n= 3,003, 2014 n=3,004.

There is very strong agreement that both technology and science are *important subjects to study at school* (90% and 80% agree respectively). In addition, around eight out of ten agree that *knowledge of science is useful for increasing career opportunities* (83% agree), *science is a worthwhile career to pursue* (81% agree) and *it is important to be kept up-to-date on science issues* (77% agree).

However, there is lower agreement with one more personal statement - *science is important in my daily life* (56% agree) and in this area is there an appreciable number who disagree (15%).

The next chart shows how people rate the importance of science and technology for society, the environment and for the economy:



Next are some statements some people have made about science and technology. Please indicate how much you agree or disagree with them…

Base Total sample (people aged 15 plus): 2017 n= 3,003, 2014 n=3,004.

There is very strong recognition of the importance of four areas above with levels of agreement from 91% who agree that *science is important for improving human health* to 78% who agree that *New Zealand needs to develop its science and technology sector in order to enhance its international competitiveness.*

By contrast, there is slightly lower support for investing in pure scientific research, with 66% agreeing that *the government should fund scientific research even if we can't be sure of economic benefit.* However, only 11% disagree with this type of funding.

Compared with 2014, significantly fewer people feel that New Zealand needs to *develop its scientific & technology sector in order to enhance its international competitiveness* and 11% disagree that this type of development is important.

91%

IMPORTANT FOR IMPROVING HUMAN HEALTH

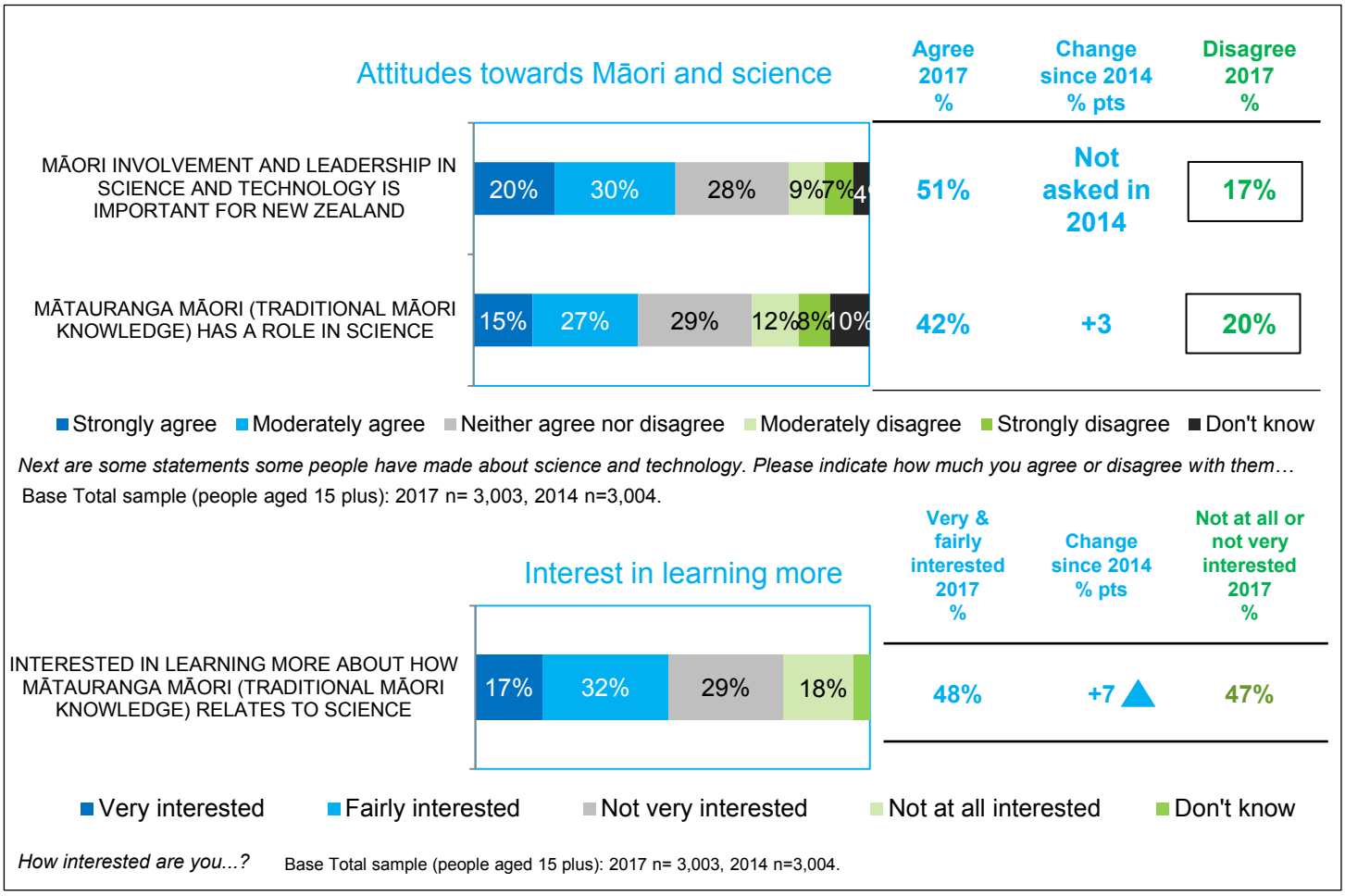
86%

IMPORTANT FOR PRESERVING THE ENVIRONMENT

3.8 ATTITUDES TOWARDS MĀORI AND SCIENCE

Interest in leaning more about Mātauranga Māori's role in science has grown since 2014.

We asked about the role of Mātauranga Māori (traditional Māori knowledge) in science and Māori involvement and leadership in science and technology and the results are shown below:



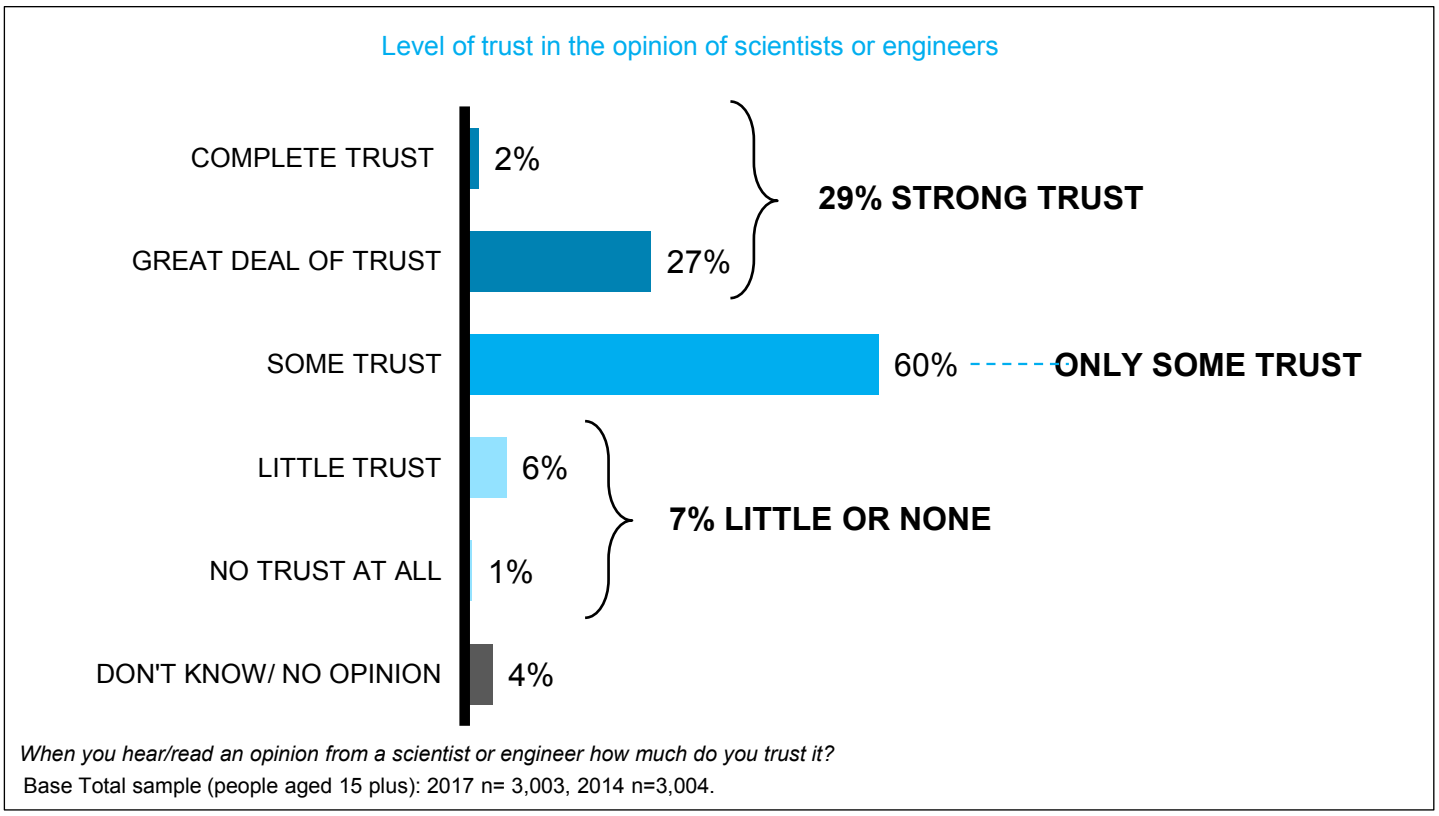
Around four out of ten (42%) agree that Mātauranga Māori has a role in science, a similar result to that recorded in 2014. And, as a new finding in 2017, roughly half (51%) agree that Māori involvement and leadership in science and technology is important for New Zealand. Both these questions have pockets of disagreement (17% and 20% disagree respectively)

Almost half (48%) are interested in learning more about how Mātauranga Māori relates to science and this result has lifted significantly since 2014 . However, a roughly similar proportion (47%) are not at all or not very interested in learning more.

3.9 TRUST IN SCIENTISTS & ENGINEERS

Six out of ten people only have some trust in the opinions of scientists and engineers

As a new question in 2017, we asked survey participants to rate their level of trust when they hear or read an opinion from a scientist or engineer. This question used a five-point scale from no trust at all to complete trust. The findings are shown below:

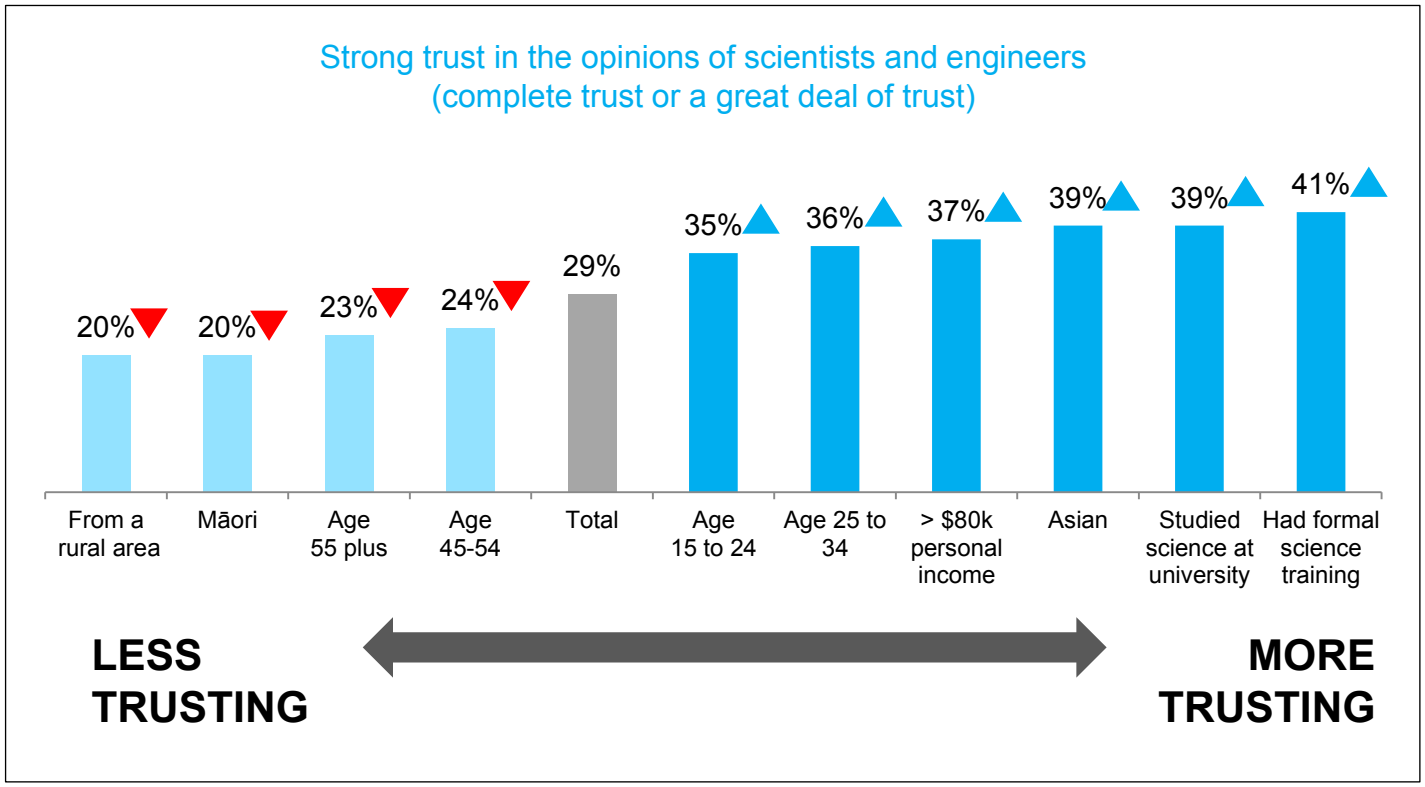


While 29% have strong trust in the opinions of scientists or engineers, 60% only have some trust and 7% have little or no trust.

TRUST IN THE OPINIONS OF SCIENTISTS AND ENGINEERS BY DEMOGRAPHICS

Again people with the most trust are those who have some formal training in science.

The chart below shows significant differences in being very interested in trusting the opinions of scientists and engineers of at least 4 percentage points from the total:

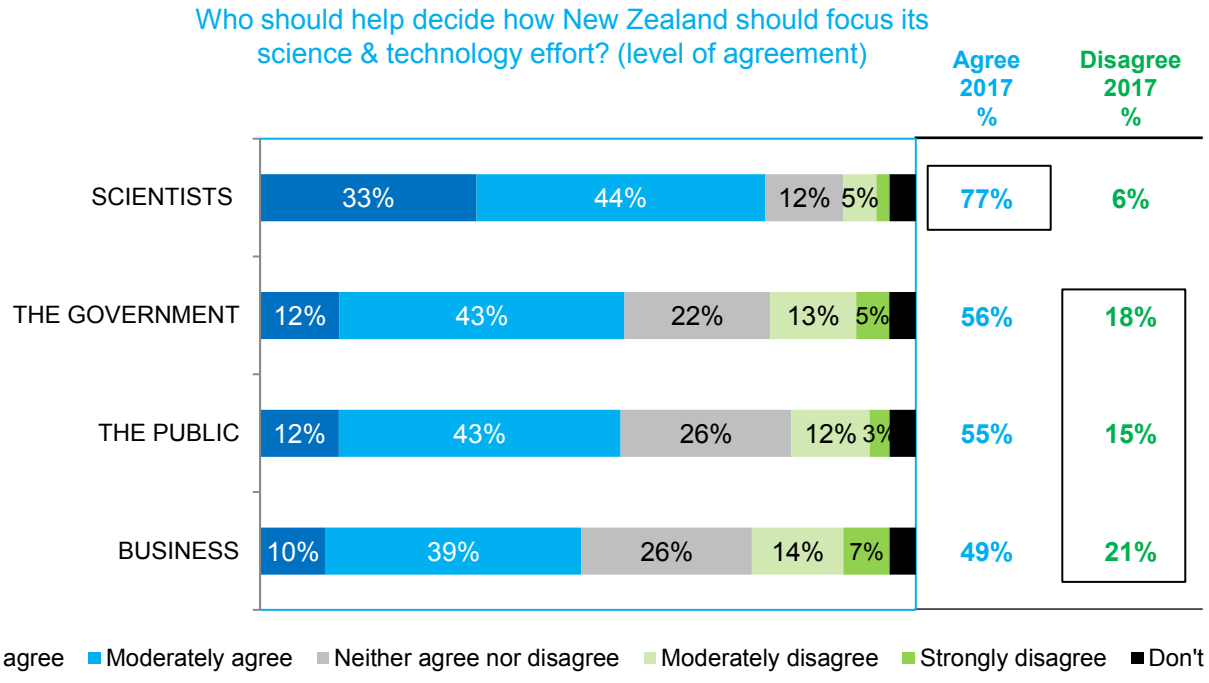


Groups with lower levels of strong trust in the opinions of scientists than the average include people aged 45 or more, Māori people and those living in rural areas including small towns of up to 300 people.

3.10 WHO SHOULD DECIDE ON THE DIRECTION OF SCIENCE & TECHNOLOGY

Almost eight out of ten (77%) feel scientists should help decide where New Zealand should focus.

A new question was asked in 2017 about who should help decide how New Zealand should focus its science & technology effort. Results are portrayed below:



Following are some statements about who should decide how New Zealand should focus its science and technology effort. Please indicate how much you agree or disagree with them?

Base Total sample (people aged 15 plus): 2017 n= 3,003, 2014 n=3,004.

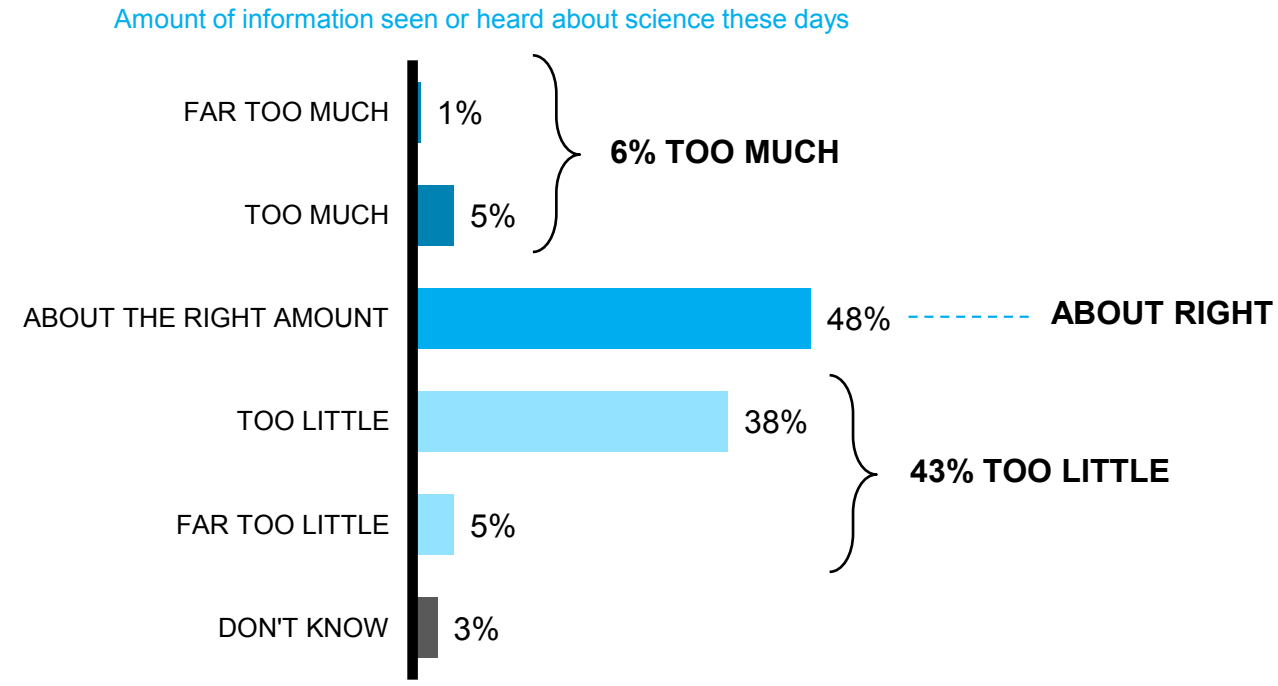
The public feels that various groups should have their say, with the scientists in the lead (scientists 77%, the government 56%, the public 55% and business 49%) Two out of ten (21%) feel that business should not help decide where scientific effort is focused.

4. LEVEL OF INFORMATION RELATING TO SCIENCE AND TECHNOLOGY

4.1 AMOUNT OF INFORMATION RECEIVED

Results are polarised - while around half (48%) are happy with the amount of information they get, over four out of ten (43%) feel they get too little information.

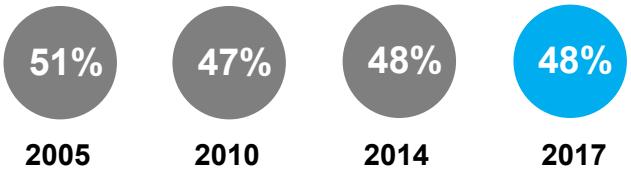
Views on the amount of information seen and heard about science these days were assessed using a 5-point scale from Far Too Much to Far Too Little. The results are shown in the chart below:



Thinking now about the amount of information you see and hear about science these days, would you say you see and hear …?
Base Total sample (people aged 15 plus): 2017 n= 3,003, 2014 n=3,004.

Almost half (48%) feel they get about the right amount of information about science these days, the same result as in 2014. A slightly smaller proportion (43%) feel they get too little information, while only 7% feel they get too much.

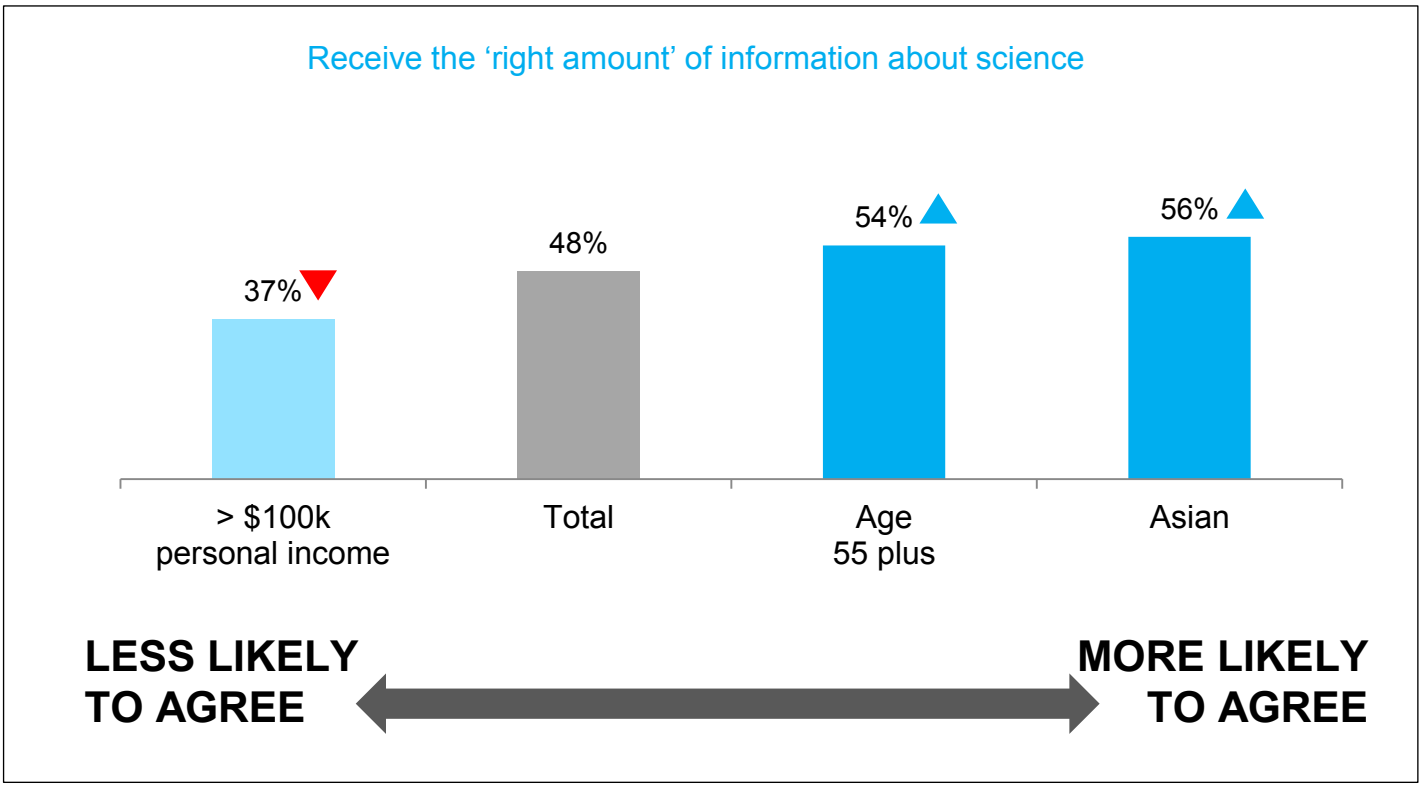
VERY LITTLE CHANGE IN 'ABOUT RIGHT' RESPONSES FROM 2005 TO 2017



RECEIVE THE RIGHT AMOUNT OF INFORMATION ABOUT SCIENCE BY DEMOGRAPHICS

Only 37% of the highest income group feel they get the right amount of information (50% of this group feel they get too little information).

The chart below shows significant differences in those saying they receive the right amount of information about science of more than 4 percentage points from the total:

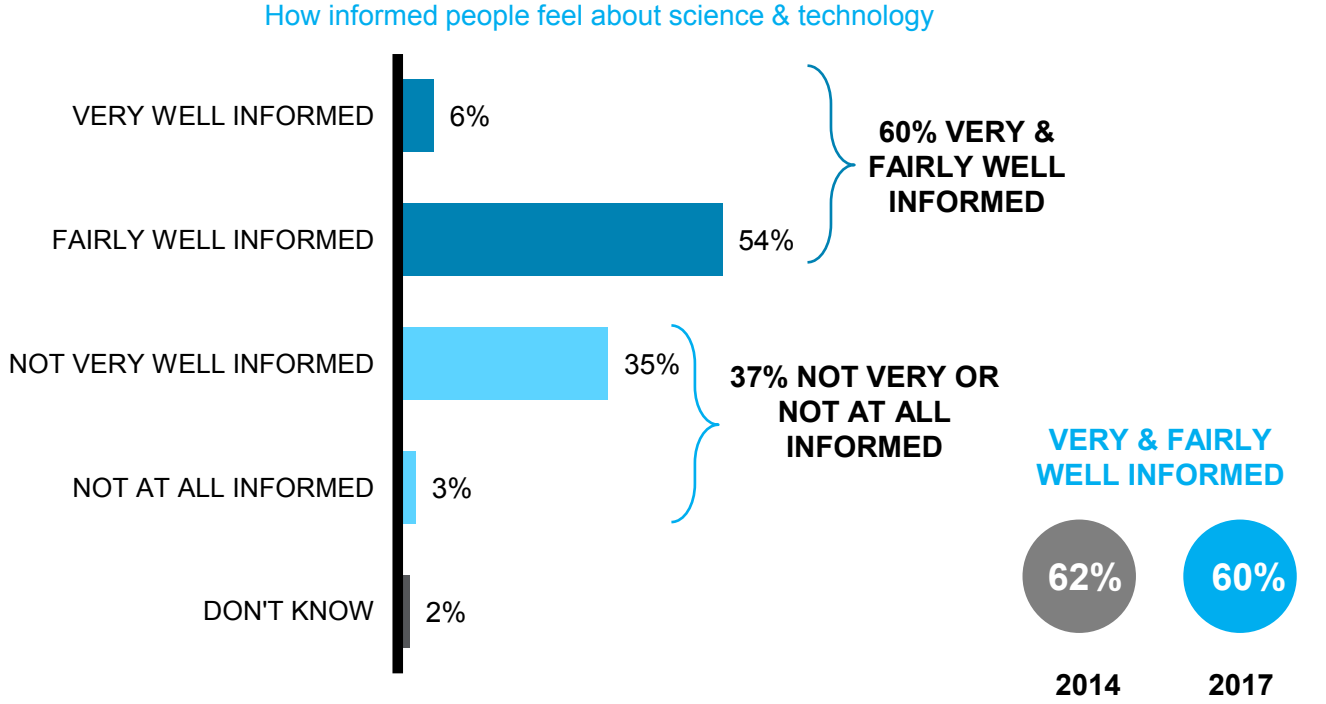


Older people and those with Asian ethnicity are most likely to say they get the right amount of information.

4.2 HOW INFORMED PEOPLE FEEL

Views are fairly polarised – while 60% feel well informed, 37% feel they are not well informed

Participants were asked how well informed they feel about developments in science and technology using a 4-point scale from Very Well Informed to Not At All Informed. The results are shown in the chart below:



How informed do you feel about developments in science and technology?

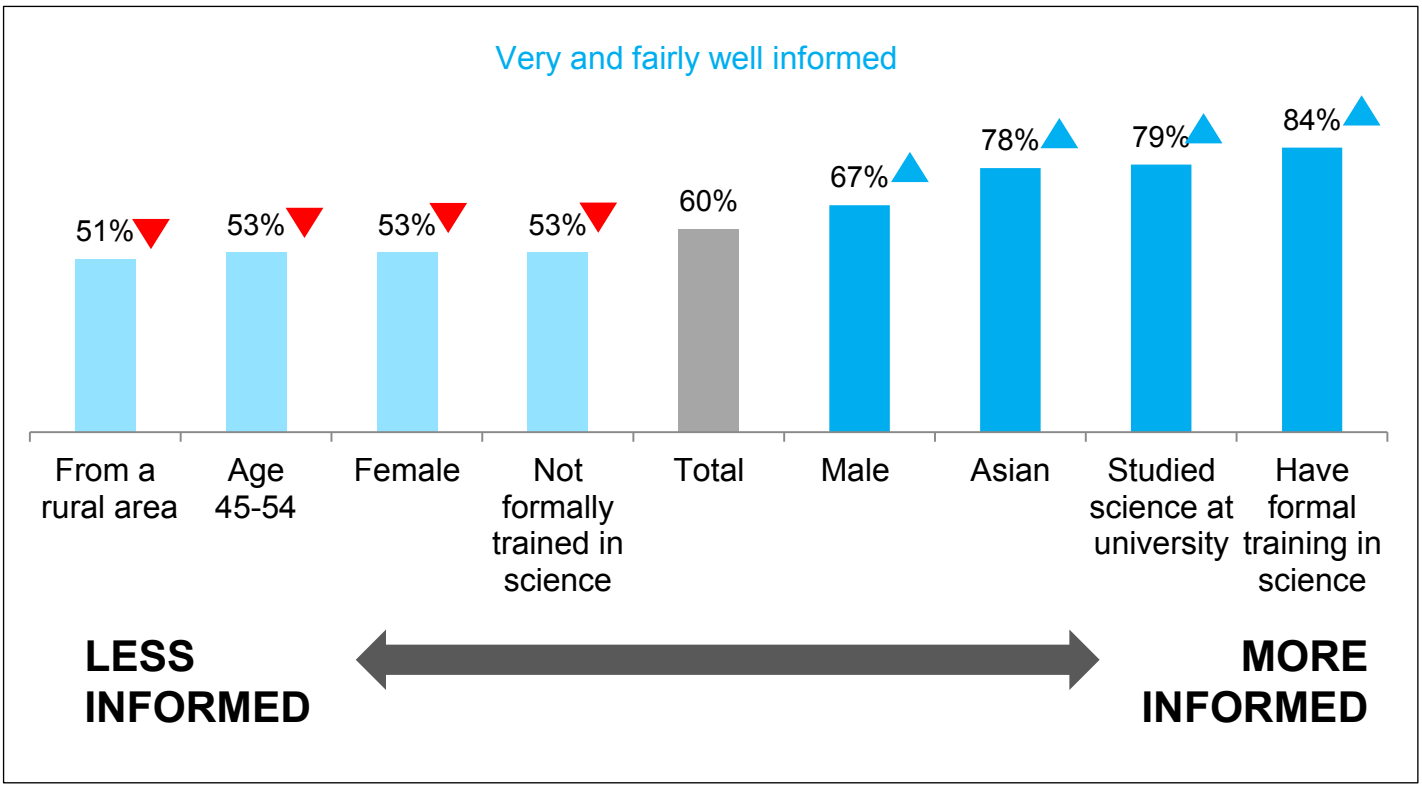
Base Total sample (people aged 15 plus): 2017 n= 3,003, 2014 n=3,004. NB. The total does not add to 100% due to rounding

Public views on how well they are informed about developments in science and technology are quite polarised – while 60% feel well informed, 37% feel they are not well informed. Results are fairly similar to the 2014 results with a very slight decline of two percentage points in those who feel well informed.

HOW INFORMED PEOPLE FEEL BY DEMOGRAPHICS

Over eight out of ten of those with formal training in science feel well informed about science and technology

The chart below shows significant differences in those saying they feel well informed about science and technology of more than 4 percentage points from the total:



Those who feel more informed include males, Asian people, those with formal training in science and people who have studied science at university level.

5. ACTIVITIES RELATING TO SCIENCE AND TECHNOLOGY

SUMMARY OF ACTIVITIES UNDERTAKEN

OVERALL LEVEL OF ACTIVITY IN THE LAST YEAR

Nine out of ten people (90%) had engaged in an activity relating to science and technology in the last year, This level of activity is a little lower than in 2014 when 92% had engaged in at least one activity. This explains why the Behavioural Index and the Overall Engagement Index declined a little from 2014 to 2017.

MOST COMMON TYPES OF ACTIVITIES

Most common activity types are engaging with the media (85%), attending or visiting events or attractions (59%) and academic engagement (52%). Somewhat less common activities include community-based and work-based engagement (42% and 19% respectively).

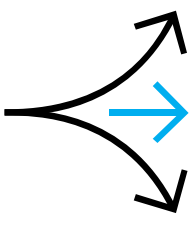
All areas dropped back in their level of activity compared with 2014 with the biggest declines for work-based engagement (with a drop of 5 percentage points) and community-based engagement (- 4 points).

SPECIFIC ACTIVITIES

Specific areas involving the most participation by the public in 2017 include:

- Watching programmes with scientific themes on TV (69%)
- Visiting a zoo or other attraction such as a museum, planetarium or science centre and checking out the science exhibits (50%)
- Viewing videos on a scientific topic online (45%)
- Reading scientific articles in newspapers or magazines (45%)
- Visiting online news sites such as stuff.co.nz and checking out breaking news about science (45%)
- Conducting personal research on the Internet regarding scientific topic/s (42%)

Five out of six of these top activities involve media engagement. Notably reading scientific articles in newspapers or magazines declined by11 percentage points compared with 2014.



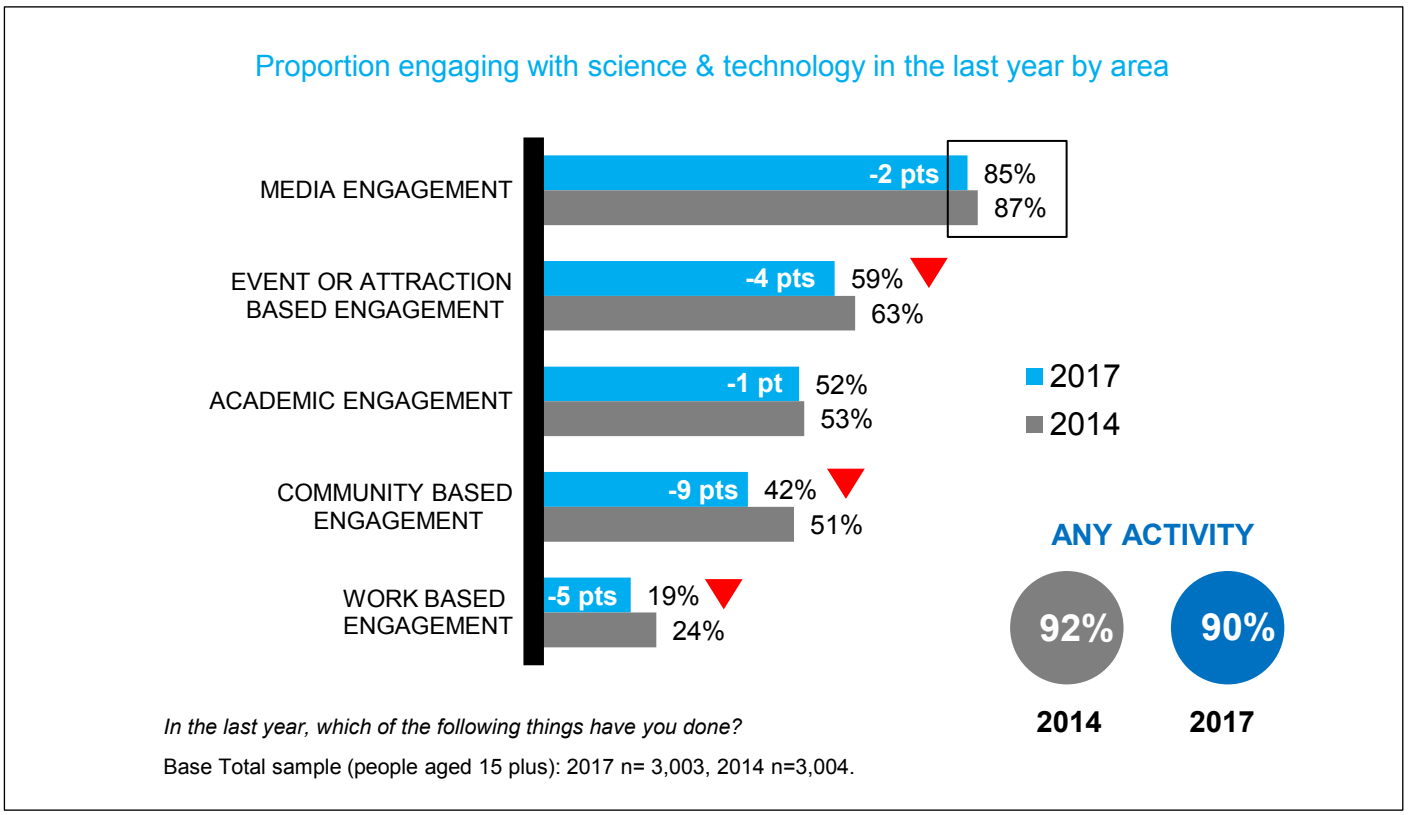
5.1 INTRODUCTION

We asked survey participants what science-related activities they had engaged in during the last year from a list of 22 activities in five broad areas (media engagement, event or attraction based engagement, academic engagement, community based engagement and work based engagement).

NB. The survey duration did not allow us to drill into these activities, so we don't know whether these were one-off or regular occurrences.

5.2 PROPORTION UNDERTAKING ACTIVITIES IN EACH AREA

The chart below shows participation by the public in the five activity areas in 2017 and 2014:

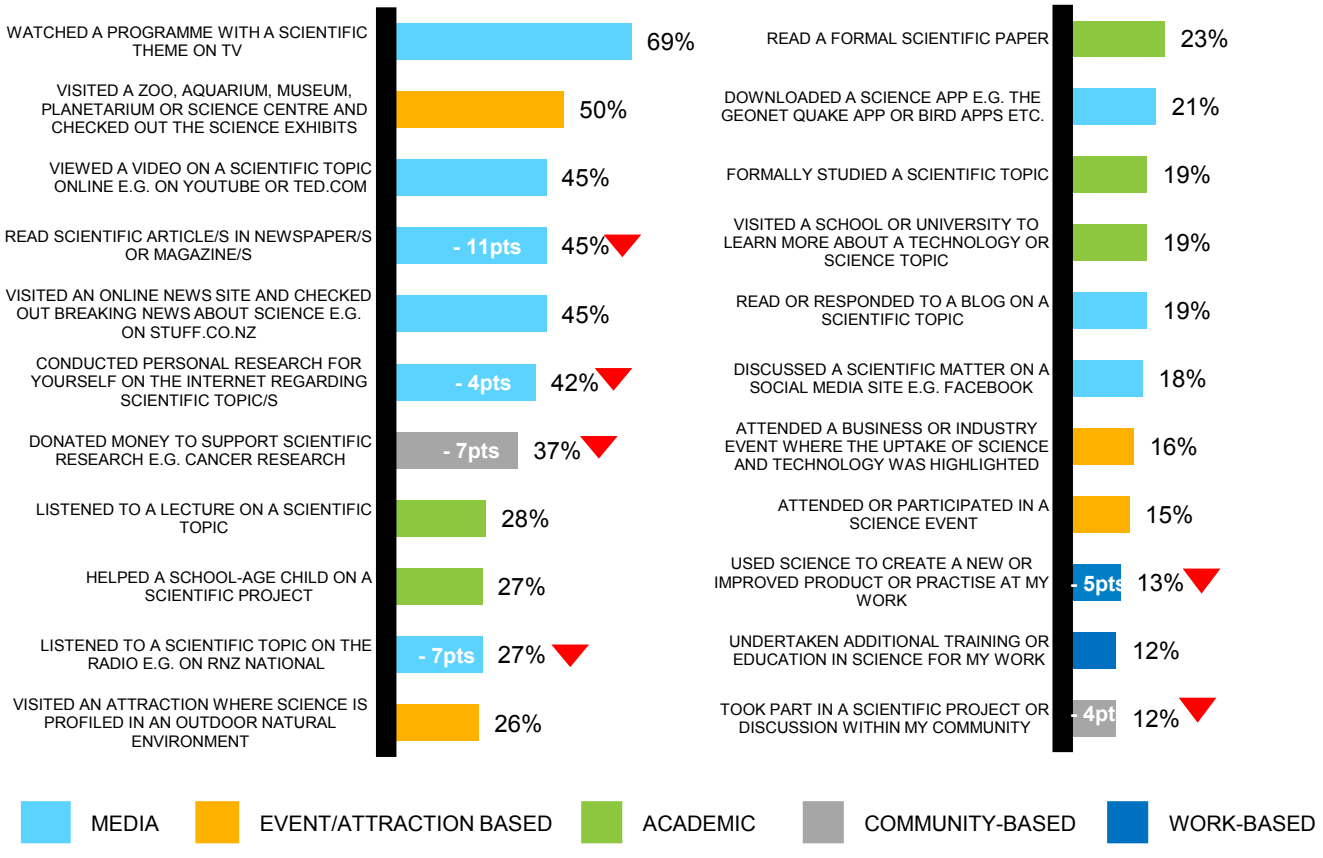


Nine out of ten people engaged in at least one science and technology-related activity in the last year, most commonly via the media. This is a little lower than in 2014 (92%).

Compared with 2014, all areas recorded fewer people engaged in at least one activity in the last year, with community-based and work-based engagement declining the most.

5.3 SPECIFIC ACTIVITIES UNDERTAKEN

Specific activities that people participated in over the last year are shown below:



In the last year, which of the following things have you done?

Base Total sample (people aged 15 plus): 2017 n= 3,003, 2014 n=3,004.

Most common activities include: Watching programmes with scientific themes on TV (69%); Visiting a zoo or other attraction such as a museum, planetarium or science centre and checking out the science exhibits (50%); Viewing videos on a scientific topic online (45%); Reading scientific articles in newspapers or magazines (45%).

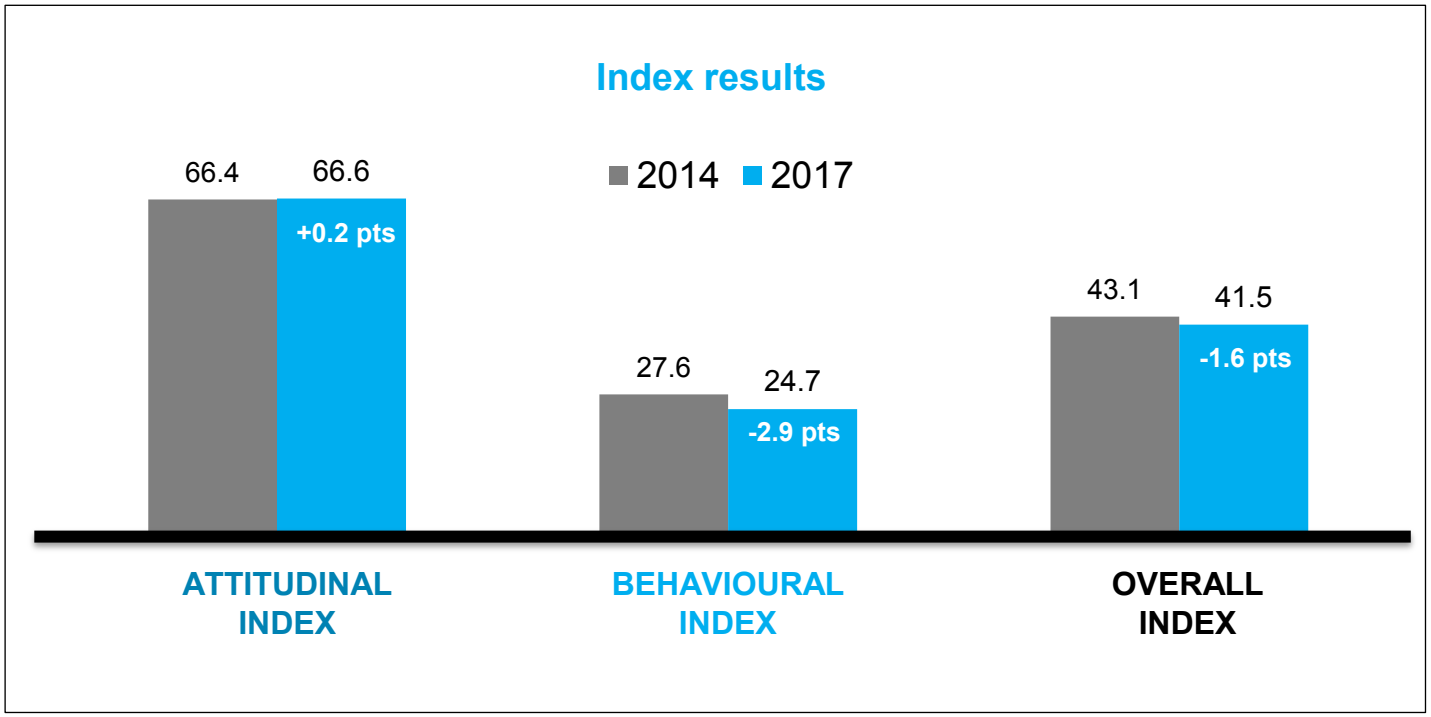
Five of the top six activities involve media engagement, while least common activities involve applying science at work and taking part in scientific projects or discussions in one's community.

Six areas have declined by four percentage points or more since 2014, with the biggest decreases involving reading scientific articles in newspapers or magazines (-11 points), donating money to support scientific research and listening to scientific topics on the radio (both -7 points).

6. INDEX RESULTS

6.1 INDEX RESULTS

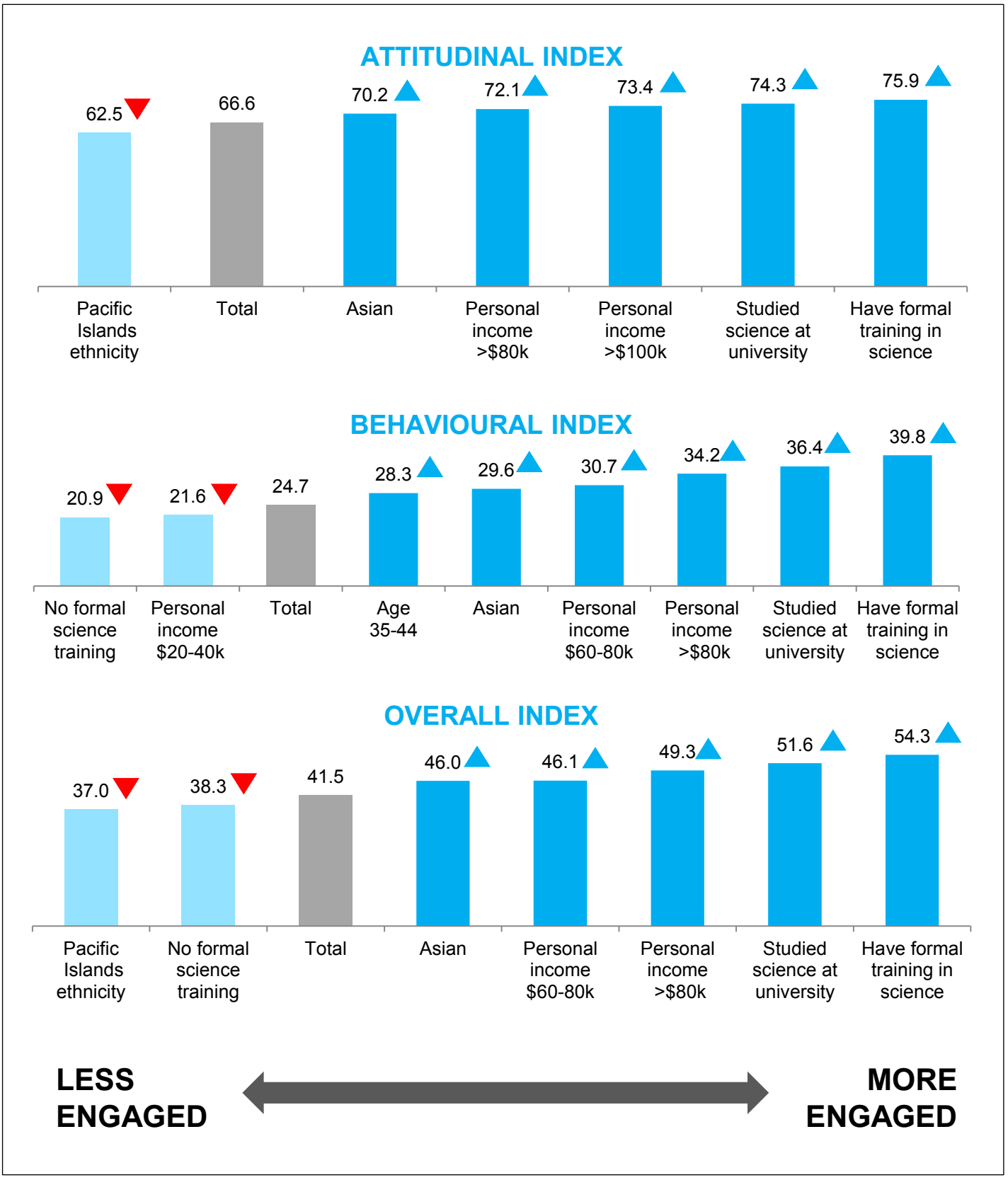
The next chart shows the Index results in 2014 and 2017:



The Overall Engagement Index has fallen slightly from 43.1 to 41.5 since 2014. This fall was caused by a 2.9 points drop in the Behavioural Index, with the Attitudinal Index improving only slightly by 0.2 points.

INDEX RESULTS BY DEMOGRAPHICS

Looking at the Overall Engagement Index which combines attitudes and behaviour, the most engaged demographic groups are those with formal training in science, who have studied science at university level, people with personal incomes of $60,000 per year or more and Asian people.



7. SEGMENTATION ANALYSIS

7.1 INTRODUCING THE SEGMENTATION

We segmented the population by their attitudes and behaviour

Segmenting the population by their attitudes to science and their science-related activities helps to better understand the different clusters of people in the population in terms of their engagement with science and technology; their relative size and their characteristics.

The segmentation used a latent class methodology to identify five distinct segments.

Exactly the same variables were also used to segment the 2014 survey results and this enables us to compare the current results with those recorded in 2014.

CHARACTERISTICS OF THE SEGMENTS

	DISENGAGED	NEUTRAL & INACTIVE	POSITIVE BUT PASSIVE	NEUTRAL BUT ACTIVE	HIGHLY ENGAGED
ATTITUDES	✗✗✗	✓	✓✓	✓	✓✓✓
BEHAVIOUR	✗✗✗	✗✗	✓	✓✓	✓✓✓

LESS ENGAGED ⟷ MORE ENGAGED

SEGMENTS BY INDEX RESULTS

	TOTAL	DISENGAGED	NEUTRAL & INACTIVE	POSITIVE BUT PASSIVE	NEUTRAL BUT ACTIVE	HIGHLY ENGAGED
ATTITUDINAL INDEX SCORE	67	53	60	74	58	80
BEHAVIOURAL INDEX SCORE	25	1	10	26	31	59
OVERALL INDEX SCORE	42	22	30	45	42	67
Base n=	3,003	483	1,067	779	285	389

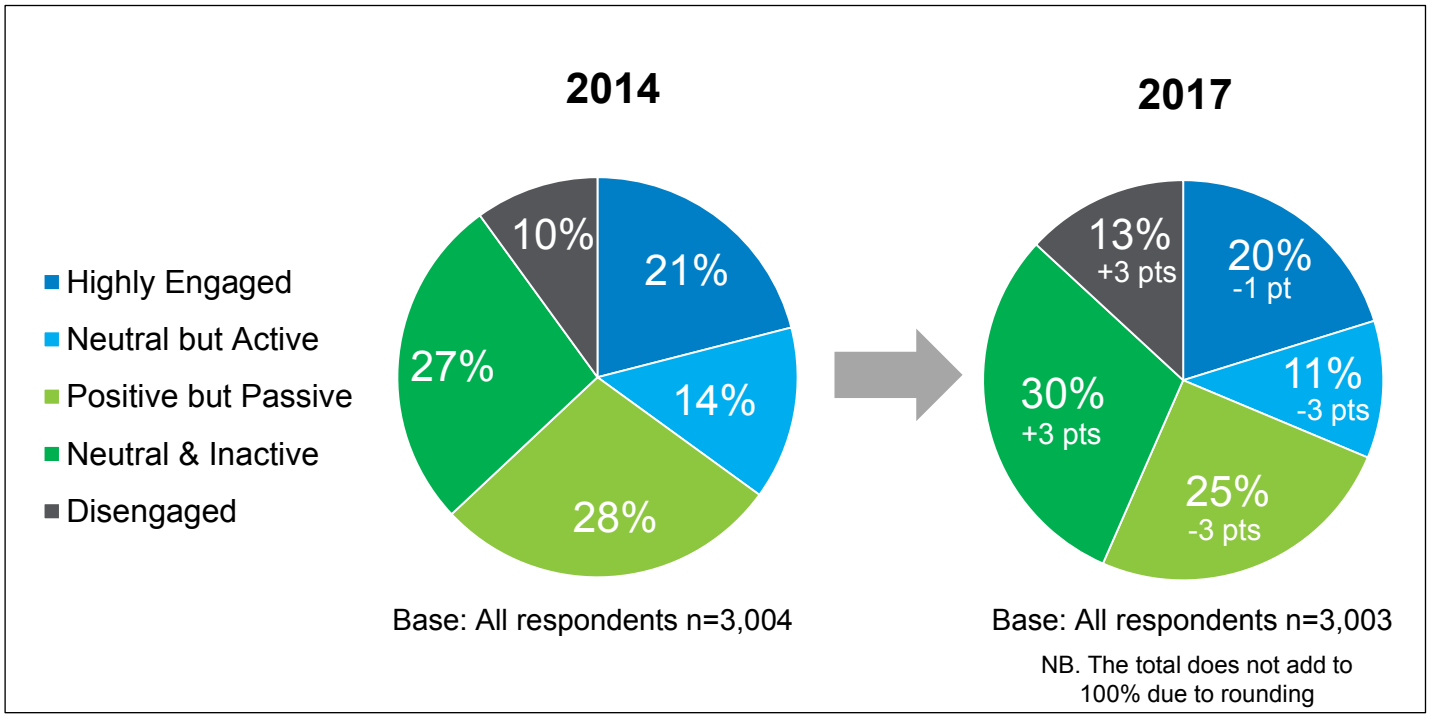
KEY: Compared with the total — Significantly less / Significantly more

7.2 THE SEGMENTS

Five distinct segments with varying degrees of engagement with science and technology were identified.

Three segments who are the most engaged with science and technology account for 56% of the population i.e. the Highly Engaged, Neutral but Active and Positive but Passive segments.

By contrast, 43% are in two less engaged segments ie. the Disengaged and Neutral & Inactive segments.

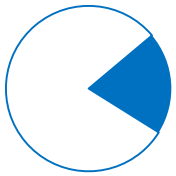


The two most positive segments (Highly Engaged and Neutral but Active) together make up 31% of the total in 2017. This represents a decrease of four percentage points since 2014.

The following pages show the characteristics of the five segments.

7.3 HIGHLY ENGAGED

Enthusiastic and very active



20%
of the total

INDEX RESULTS

	TOTAL	HIGHLY ENGAGED	
ATTITUDINAL INDEX	67	81	▲
BEHAVIOURAL INDEX	25	59	▲
OVERALL INDEX	42	67	▲

DEMOGRAPHICS

Even gender split. All age groups

From all regions and types of locations

More likely to be Asian (15% vs. 11% overall)

Higher personal incomes (20% earning more than $80,000 vs. 13% overall)

50% have studied science at university vs. 26% of the total

48% have some formal scientific training vs. 20% of the total.

ATTITUDES & BEHAVIOUR

Distinguishing characteristics:

Almost all of this segment enjoy finding out about discoveries in science (99%) and technology (98%)

Very interested in science and technology and likely to find all scientific areas are important

93% are interested In taking part in scientific projects of benefit to their community vs. 64% of the total

90% feel well informed about science vs. 60% overall

43% have strong trust in science compared with 29% of the total

In the last year:

- 66% have undertaken science activities at work
- 83% have engaged in some community based activity
- 96% have attended a science event or attraction
- 96% had some academic involvement with science
- 100% had some media engagement with science topics

7.4 NEUTRAL BUT ACTIVE

Fairly positive and quite active

11%
of the total

INDEX RESULTS

	TOTAL	NEUTRAL BUT ACTIVE
ATTITUDINAL INDEX	67	58 ▼
BEHAVIOURAL INDEX	25	31 ▲
OVERALL INDEX	42	42

DEMOGRAPHICS

Even gender split

More likely to be aged 15 to 24 (26% vs. 17% overall)

More likely to live in provincial cities (24% vs. 16% overall)

More likely to be business managers or executives (16% vs. 9%)

Less likely to have any formal training in science (11% vs. 20% in total).

ATTITUDES & BEHAVIOUR

Distinguishing characteristics:

More likely to feel *Science and technology is too specialised for me to understand* (45% vs. 32% overall) and *There is so much conflicting information about science, it is hard to know what to believe* (64% vs. 49%)

Don't feel well informed about science and technology (51% negative vs. 38% of the total)

More people in this segment distrust the opinions of scientists (12% vs. 6%)

They undertake more science-related activities than the general population; specifically:

- 33% have undertaken science activities at work vs.19%
- 54% engaged in some community based activity vs. 42%
- 77% attended a science event or attraction vs. 59%
- 76% had some academic involvement with science vs. 52%
- 92% had some media engagement with science vs. 85%

7.5 POSITIVE BUT PASSIVE

Positive attitudes but less active

25%
of the total

INDEX RESULTS

	TOTAL	POSITIVE BUT PASSIVE
ATTITUDINAL INDEX	67	74 ▲
BEHAVIOURAL INDEX	25	26
OVERALL INDEX	42	45

DEMOGRAPHICS

Even gender split and a broad spread of ages

More likely not to be working (41% vs. 36% overall)

More likely to be technical or skilled workers (25% vs. 9%)

34% have studied science at university level vs. 26% overall

Almost a quarter (23%) have some formal training in science.

ATTITUDES & BEHAVIOUR

Distinguishing characteristics:

Very likely to enjoy finding out about new ideas in science and technology (both 97%). In many areas they are more positive than the general population e.g. 92% feel *It is important to be kept up-to-date on science issues* vs. 77% overall and 72% say *Science is important in my daily life* cf. 56% in total

Three-quarters feel well informed about science and technology (73% vs. 38% of the total)

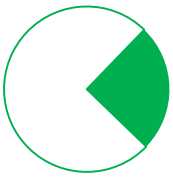
They have more trust in the opinions of scientists (34% vs. 29%)

This segment conducts a fair amount of science-related activities but, on balance, less than the Highly Engaged or Neutral but Active segments:

- 99% had some media engagement with science vs. 85% in total
- 77% had attended a science event or attraction vs. 59%
- 69% had some academic involvement with science vs. 52%
- 52% engaged in a community based activity vs. 42%
- 8% undertook science activities at work vs.19% overall

7.6 NEUTRAL & INACTIVE

Not very positive and not very active



30%
of the total

INDEX RESULTS

	TOTAL	NEUTRAL & INACTIVE
ATTITUDINAL INDEX	67	60 ▼
BEHAVIOURAL INDEX	25	10 ▼
OVERALL INDEX	42	30 ▼

DEMOGRAPHICS

Female skew (55% female vs. 45% male)

A slightly older age profile – 35% aged 55 or more cf. 33% overall

Lower education level on the whole (65% have a highest level of high school or polytechnic vs. 56% overall)

Less likely to have any formal training in science (9% vs. 20% in total).

ATTITUDES & BEHAVIOUR

Distinguishing characteristics:

More likely to feel *Science and technology is too specialised for me to understand* (42% vs. 32% overall) and *There is so much conflicting information about science, it is hard to know what to believe* (57% vs. 49%)

More likely to disagree that *Science is important in my daily life* (23% vs. 15%) and don't feel well informed about science and technology (51% negative vs. 38% of the total)

Fewer people have strong trust in the opinions of scientists and engineers (24% vs. 29%)

They undertake fewer science-related activities than the general population in four out of five areas:

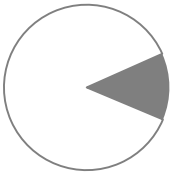
- 0% undertook science activities at work vs.19%
- 20% engaged in a community based activity vs. 42%
- 39% attended a science event or attraction vs. 59%
- 23% had some academic involvement with science vs. 52%

However, they are slightly more likely to have engaged via the media:

- 88% had some media engagement with science vs. 85% in total

7.7 DISENGAGED

Relatively negative with almost no activity



13%
of the total

INDEX RESULTS

	TOTAL	DISENGAGED
ATTITUDINAL INDEX	67	53 ▼
BEHAVIOURAL INDEX	25	1 ▼
OVERALL INDEX	42	22 ▼

DEMOGRAPHICS

Even gender split

A slightly older age profile – 37% aged 55 or more cf. 33% overall

Lower education level on the whole (59% have a highest level of high school or polytechnic vs. 56% overall)

Less likely to have any formal training in science (6% vs. 20% in total)

More likely to be Māori (18% cf. 12%).

ATTITUDES & BEHAVIOUR

Distinguishing characteristics:

More likely to feel *Science and technology is too specialised for me to understand* (45% vs. 32% overall)

More likely to disagree that *Science is important in my daily life* (30% vs. 15%)

Don't feel well informed about science and technology (62% negative vs. 38% of the total)

Less strong trust in the opinions of scientists and engineers (15% vs. 29%)

They undertake very few science-related activities with 47% reporting none at all in the last year.

Nobody in this segment reported any work-related, community based or academic activity and no one had attended a science event or attraction

Only 25% had some media engagement with science vs. 85% overall (here the main activity reported was watching a programme with a scientific theme on TV – 24%)

8.DEMOGRAPHIC ANALYSIS

1. BY GENDER
2. BY AGE
3. BY PERSONAL INCOME
4. BY HIGHEST LEVEL OF EDUCATION
5. BY TRAINING AND EDUCATION IN SCIENCE
5. BY BROAD REGION
6. BY TYPE OF LOCATION
7. BY ETHNICITY

8.1 OVERVIEW

Across many of the engagement questions in the survey, the following groups of people are relatively more and less engaged with science and technology:

LESS ENGAGED	MORE ENGAGED
Female	**Male**
Less educated e.g. with no qualification or a high school qualification only	**More highly educated** e.g. university graduates and those with postgraduate degrees
No formal scientific training	**Have some formal scientific training**
Have not studied science or only at high school level	**Have studied science at university level**
Lower personal income Less than $40,000 per year	**Higher personal income** More than $80,000 per annum
Pacific Islands or Maori ethnicity	**Asian**

8.2 MALES VS. FEMALES

In general males feel better informed, are more interested and are more likely to enjoy finding out about science than females while females show more support for Maori involvement and leadership in science

Overall, males are more engaged with science and technology than females in part because more males have formal training in science and have studied science to university level. Some key differences in their attitudes are featured below:

ATTITUDES	MALES	FEMALES
ATTITUDINAL INDEX	68 ▲	65
FEEL WELL INFORMED	67% ▲	53%
ENJOY FINDING OUT ABOUT NEW IDEAS IN SCIENCE	81% ▲	74%
INTERESTED IN DEVELOPMENTS IN SCIENCE AND TECHNOLOGY	87% ▲	80%
NEW ZEALAND NEEDS TO DEVELOP ITS SCIENTIFIC AND TECHNOLOGY SECTOR IN ORDER TO ENHANCE ITS INTERNATIONAL COMPETITIVENESS	82% ▲	74%
THE GOVERNMENT SHOULD FUND SCIENTIFIC RESEARCH EVEN IF WE CAN'T BE SURE OF ITS ECONOMIC BENEFITS	69% ▲	64%
MĀTAURANGA MĀORI (TRADITIONAL MĀORI KNOWLEDGE) HAS A ROLE IN SCIENCE	36%	48% ▲
MĀORI INVOLVEMENT AND LEADERSHIP IN SCIENCE AND TECHNOLOGY IS IMPORTANT FOR NEW ZEALAND	47%	55% ▲
THERE IS SO MUCH CONFLICTING INFORMATION ABOUT SCIENCE, IT IS HARD TO KNOW WHAT TO BELIEVE	45%	54% ▲

MALES VS. FEMALES

More males than females have engaged with science via a range of media channels and at work. By contrast, more females have discussed science matters on social media and more have helped school age children on science projects.

Science-related activities and education differ considerably by gender as shown in the following tables:

ACTIVITIES IN THE LAST YEAR

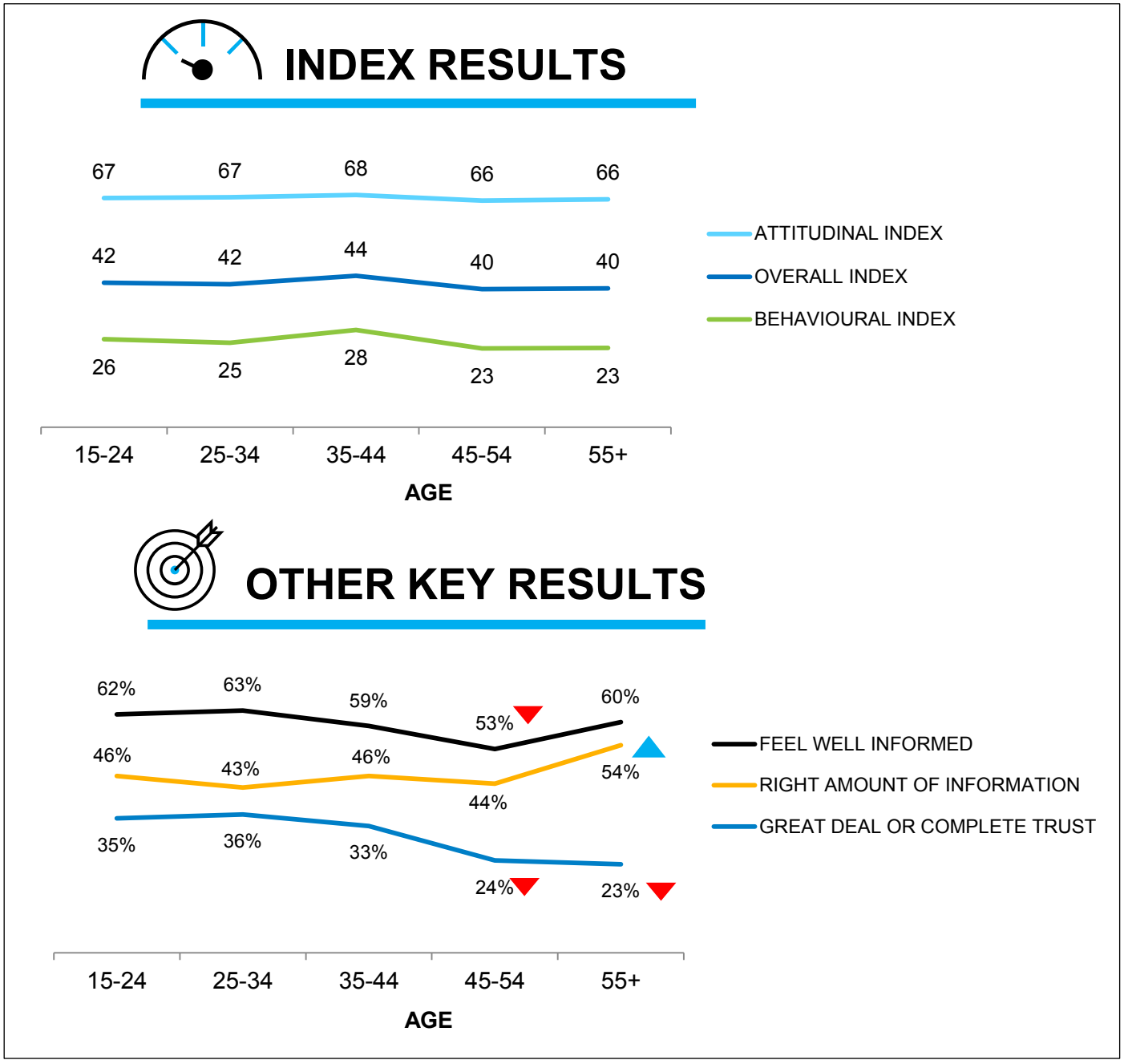
	MALES	FEMALES
VIEWED A VIDEO ON A SCIENTIFIC TOPIC ONLINE	49% ▲	41%
READ SCIENTIFIC ARTICLE/S IN NEWSPAPER/S OR MAGAZINE/S	49% ▲	41%
VISITED AN ONLINE NEWS SITE AND CHECKED OUT BREAKING NEWS ABOUT SCIENCE	47% ▲	43%
LISTENED TO A SCIENTIFIC TOPIC ON THE RADIO	30% ▲	24%
READ A FORMAL SCIENTIFIC PAPER	26% ▲	21%
ATTENDED A BUSINESS OR INDUSTRY EVENT WHERE THE UPTAKE OF SCIENCE AND TECHNOLOGY WAS HIGHLIGHTED	19% ▲	13%
USED SCIENCE TO CREATE A NEW OR IMPROVED PRODUCT OR PRACTISE AT MY WORK	16% ▲	11%
VISITED A ZOO, AQUARIUM, MUSEUM, PLANETARIUM OR SCIENCE CENTRE & CHECKED OUT THE SCIENCE EXHIBITS	46%	53% ▲
DONATED MONEY TO SUPPORT SCIENTIFIC RESEARCH	30%	40% ▲
HELPED A SCHOOL-AGE CHILD ON A SCIENTIFIC PROJECT	23%	31% ▲
DISCUSSED A SCIENTIFIC MATTER ON A SOCIAL MEDIA SITE	15%	21% ▲

EDUCATION

HAVE FORMAL TRAINING IN SCIENCE	23% ▲	18%
STUDIED SCIENCE TO UNIVERSITY LEVEL	31% ▲	22%

8.3 KEY MEASURES BY AGE

There are no significant differences in the Index results by age. However, people aged 45 or more have a lower level of strong trust in scientists. Older people aged 55 or more are more likely to feel they get the right amount of information about science and technology while those aged 45 to 54 are less likely to feel well informed



MEDIA ACTIVITIES BY AGE

A number of science-related media activities have differences by age as shown in the next table:

MEDIA ACTIVITIES IN THE LAST YEAR BY AGE

	TOTAL	15-24	25-34	35-44	45-54	55+
WATCHED A PROGRAMME WITH A SCIENTIFIC THEME ON TV	**69%**	58%	58%	69%	71%	78%
VIEWED A VIDEO ON A SCIENTIFIC TOPIC ONLINE	**45%**	55%	47%	50%	42%	37%
READ SCIENTIFIC ARTICLES IN NEWSPAPERS OR MAGAZINES	**45%**	38%	34%	46%	43%	54%
VISITED AN ONLINE NEWS SITE AND CHECKED OUT BREAKING NEWS ABOUT SCIENCE	**45%**	45%	46%	46%	45%	44%
CONDUCTED PERSONAL RESEARCH YOURSELF ON THE INTERNET REGARDING SCIENTIFIC TOPICS	**42%**	44%	40%	46%	41%	40%
LISTENED TO A SCIENTIFIC TOPIC ON THE RADIO	**27%**	19%	17%	25%	24%	37%
READ OR RESPONDED TO A BLOG ON A SCIENTIFIC TOPIC	**19%**	23%	23%	20%	15%	16%
DISCUSSED A SCIENTIFIC MATTER ON A SOCIAL MEDIA SITE	**18%**	26%	25%	20%	16%	12%

KEY: COMPARED WITH THE TOTAL Significantly less | Significantly more

YOUNGER PEOPLE

Younger people are relatively more likely to engage with science by:

- Viewing videos online
- Reading or responding to blogs
- Discussions on social media sites

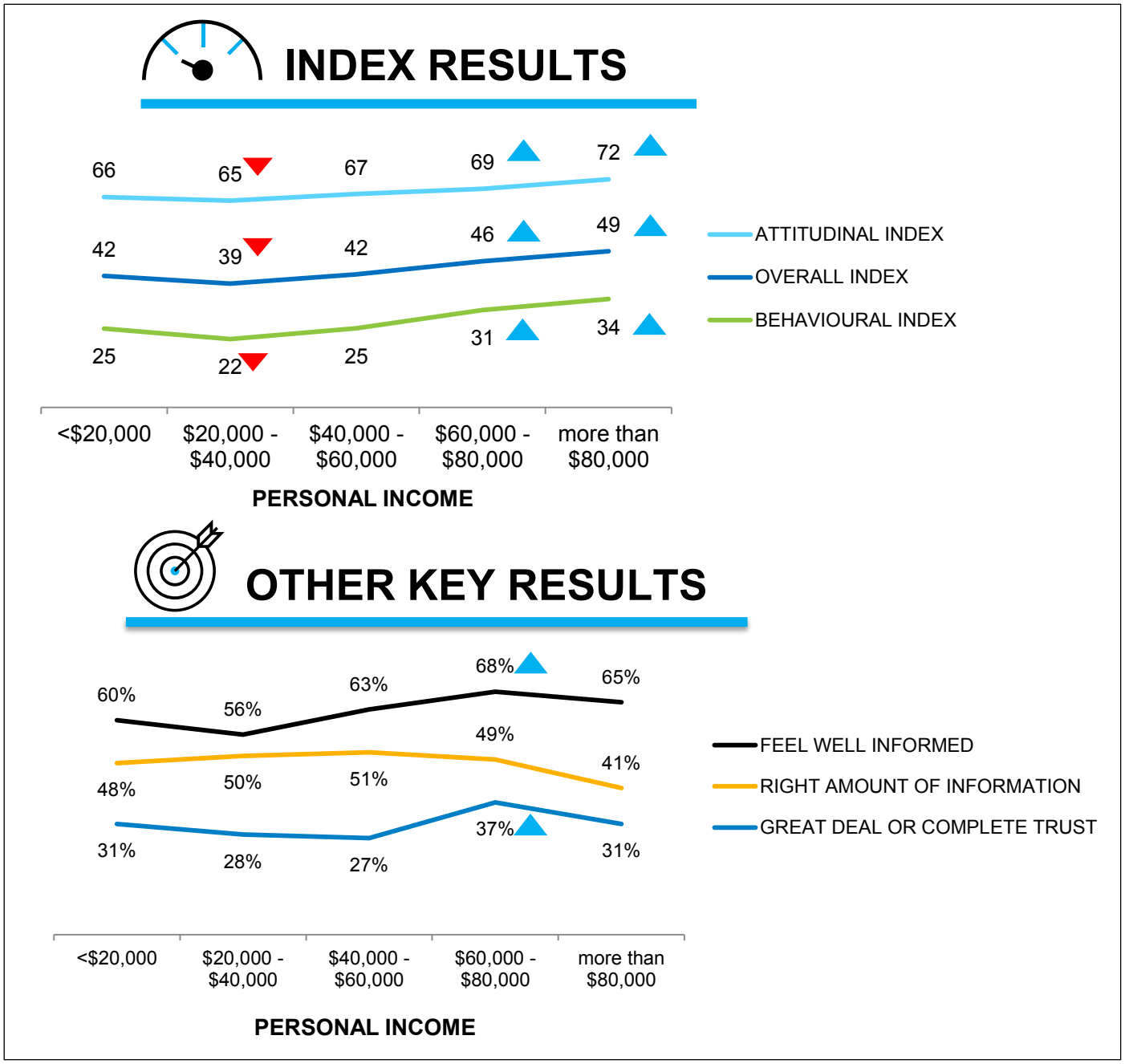
OLDER PEOPLE

Older people are relatively more likely to engage with science by:

- Watching TV
- Reading newspapers or magazines
- Listening to the radio

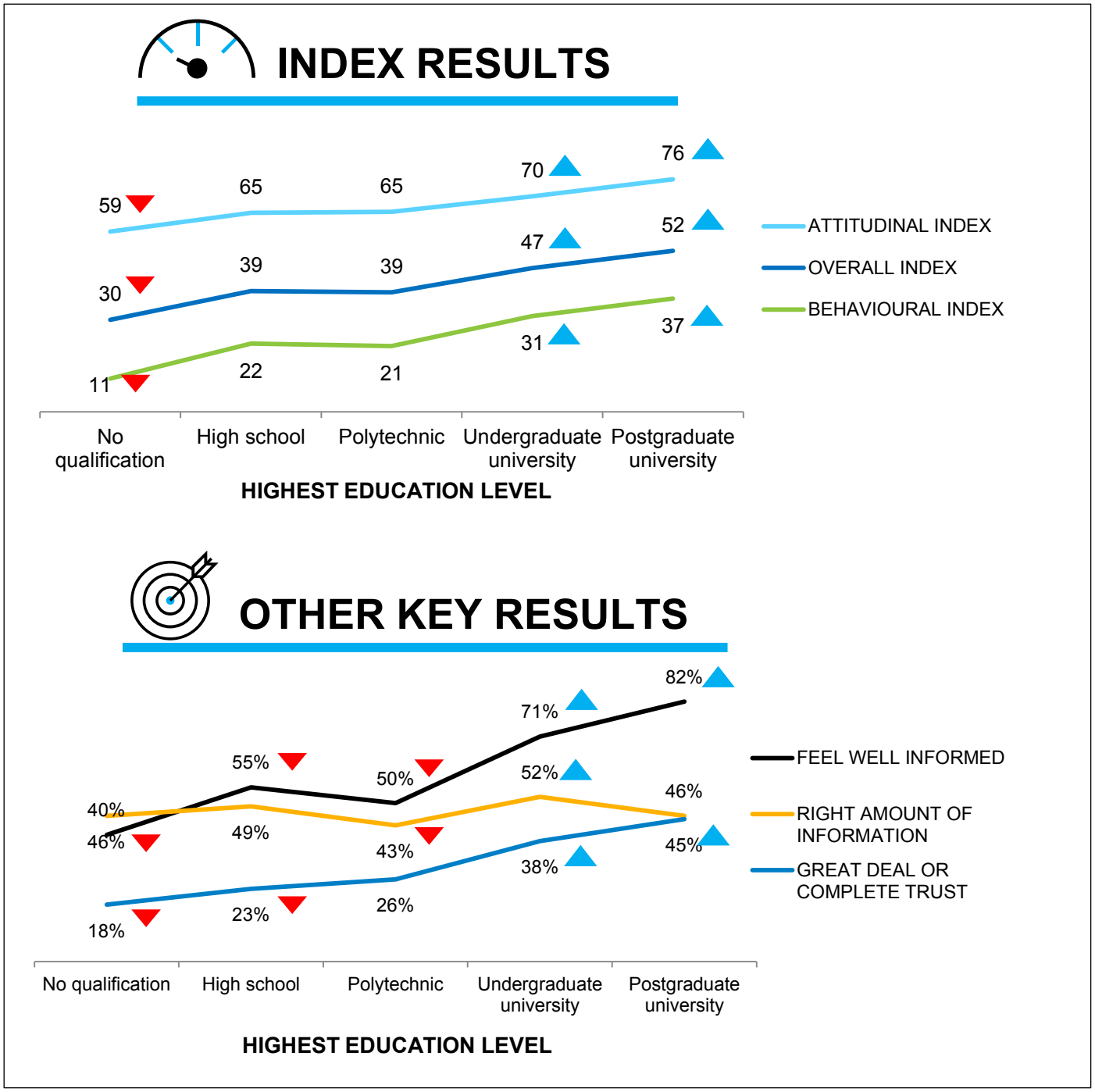
8.4 KEY MEASURES BY PERSONAL INCOME

The three Index measures all increase with personal income, especially for those earning more than $80,000 per year. Those earning $60,000 to $80,000 per year have the highest trust in science and feel the best informed



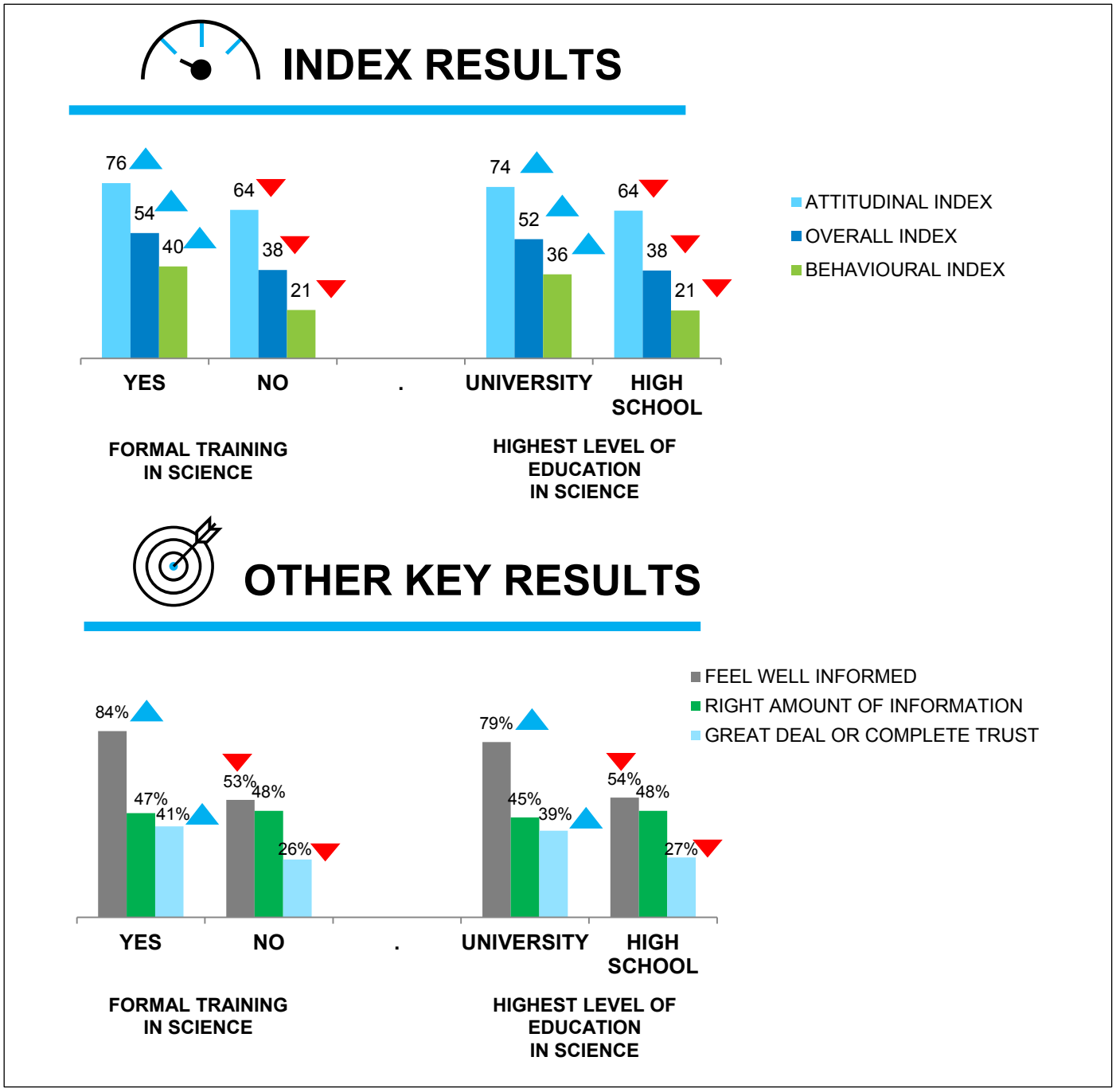
8.5 KEY MEASURES BY HIGHEST LEVEL OF EDUCATION

The three Index measures increase in a linear fashion with higher levels of education. Those with university education also have the highest trust in the opinions of scientists and engineers and feel the most well informed.



8.6 KEY MEASURES BY TRAINING & EDUCATION IN SCIENCE

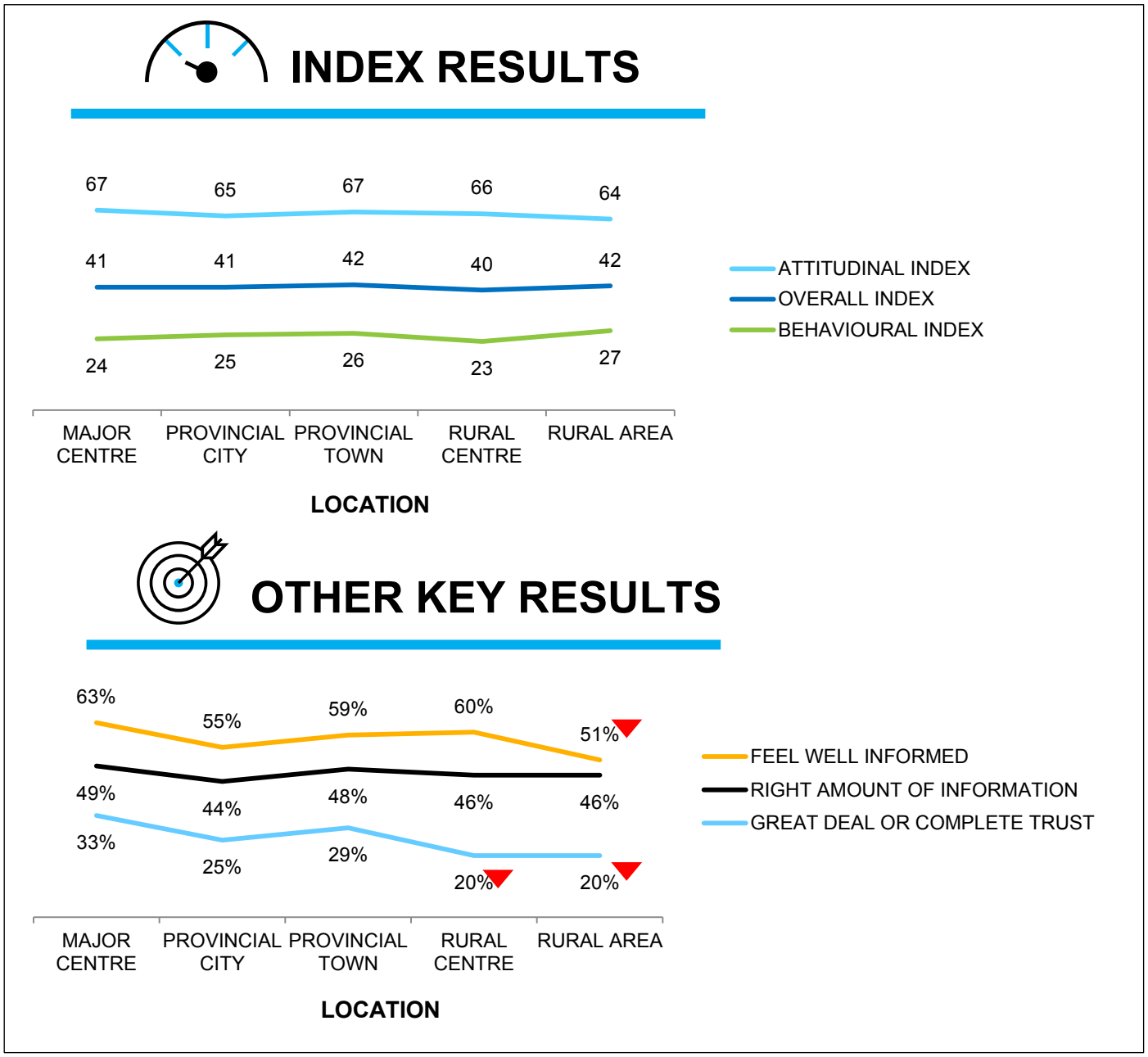
As in 2014, having university education or formal training in science makes a big difference to people's attitudes and behaviour…



8.7 KEY MEASURES BY TYPE OF LOCATION

Index measures are fairly consistent for the different types of locations where people live. Those from major centres feel better informed while those from rural areas feel less well informed about science and technology. People living in major centres have relatively more trust in science and technology than those living in rural areas

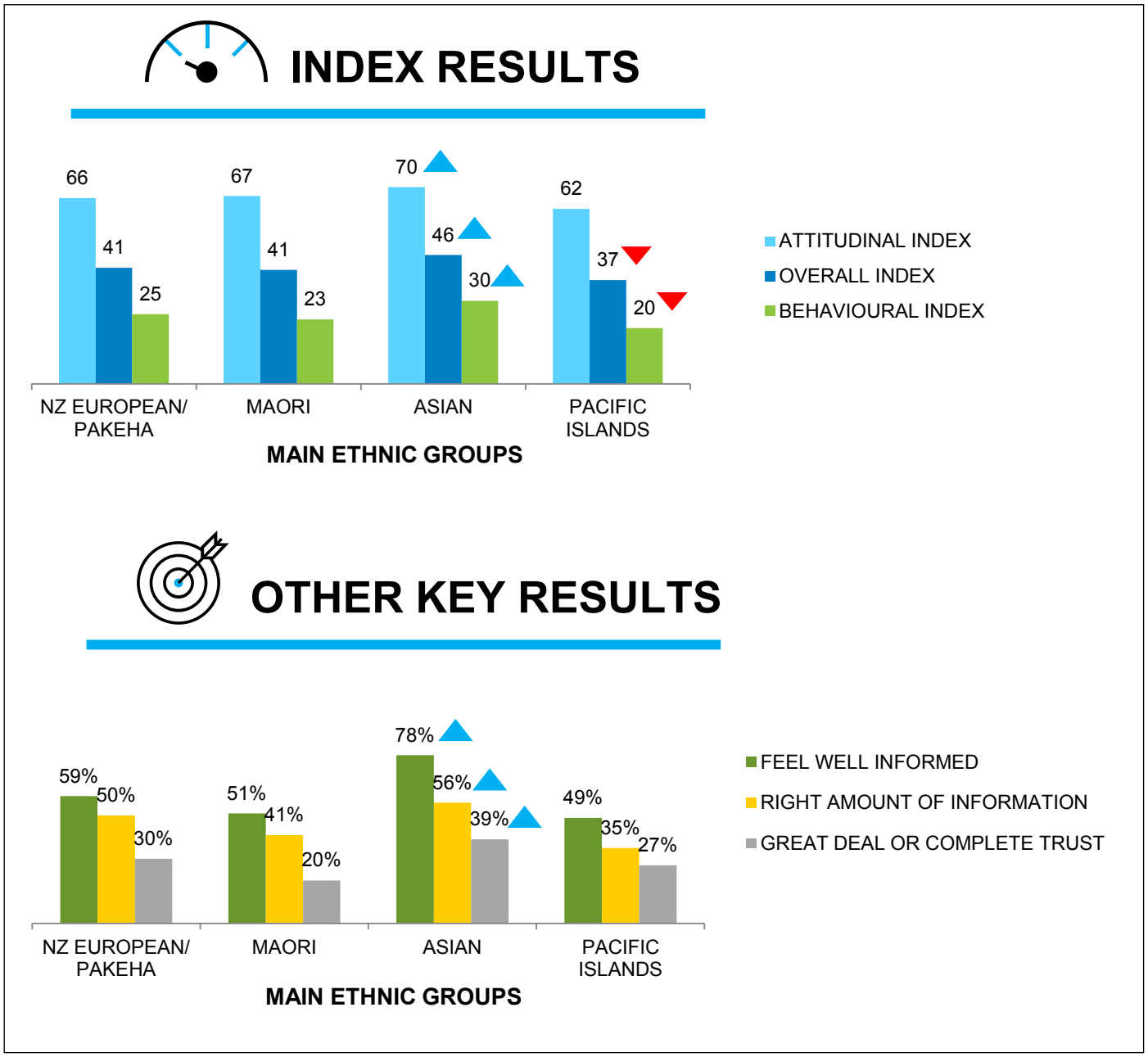
NB. There are no significant differences in these results by Broad Region of New Zealand.



8.8 KEY MEASURES BY ETHNICITY

Amongst various ethnic groups, people with Asian ethnicity recorded the highest Overall Index result signalling the strongest engagement with science and technology. Asian people also recorded significantly higher results for the other key measures shown below

Pacific Island people recorded significantly lower results for the Behavioural and Overall Indices.



9.INTERNATIONAL BENCHMARKING

9.1 BENCHMARKING INTRODUCTION

A variety of **recent international studies** relating to public attitudes to science and technology are used for benchmarking purposes:

An Irish study – *Science in Ireland Barometer 2015* conducted for Science Foundation Ireland. This study included 15 to 20 measures also included in our New Zealand surveys conducted in 2014 and 2017, so this is the main study where we have made comparisons with New Zealand results. The sample involved 1,008 interviews conducted amongst a nationally representative sample of adults aged 15 plus in the Republic of Ireland.

A Canadian study – *Science Culture: Where Canada Stands 2014*. In this case the nationally representative sample included 2,004 Canadian people aged 15 plus, interviewed both online and via telephone

An Australian study – *The Australian Beliefs and Attitudes towards Science Survey, 2017*. This study was conducted by the Australian National University and had a representative sample of 1,203 people aged 18 plus interviewed by telephone.

A UK study – *Public Attitudes to Science Survey 2014*. This study was conducted by Ipsos Mori and had a sample of 1,749 UK adults aged 16 plus.

The European Union Special Eurobarometer 340 – Responsible Research and Innovation, Science and Technology 2013. Base: 27,563 adults aged 15 plus interviewed face-to-face

9.2 BENCHMARKING RESULTS

DISCOVERING NEW TECHNOLOGIES & NEW SCIENTIFIC IDEAS NZ vs. IRELAND

New Zealanders are more likely than people from Ireland to enjoy finding out about new technologies & new scientific ideas

% Agree	NZ 2017	IR 2015	DIFFERENCE % PTS
I enjoy finding out about new technologies	81% ▲	68%	+13
I enjoy finding out about new ideas in science (NZ) and engineering (Ireland)	77% ▲	67%	+10
Base n=	3,003 age 15+	1,008 age 15 +	

BROAD ATTITUDES - NZ vs. IRELAND

The Irish public is more likely than New Zealanders to feel overwhelmed by conflicting scientific information and to feel that scientists should listen more to ordinary people

% Agree	NZ 2017	IR 2015	DIFFERENCE % PTS
It is important to be kept up-to-date on science issues	77%	79% ▲	-2
There is so much conflicting information about science, it is hard to know what to believe	49%	69% ▲	-20
Scientists should listen more to what ordinary people think	58%	71%	-13
Base n=	3,003 age 15+	1,008 age 15 +	

BENCHMARKING RESULTS

INTEREST IN SCIENCE - NZ vs. CANADA AND EUROPE

The Canadian study, *Science Culture: Where Canada Stands* says Canada is first out of 33 countries measured in terms of peoples' level of interest in science and technology, so it is not surprising that the New Zealand result is behind the Canadian result. However, interest in this area in New Zealand is well ahead of the European Union average

	NZ 2017	CA 2015	DIFFERENCE % PTS
Interested in developments in science and technology (% fairly interested and very interested – NZ) (% moderately and very interested – Canada)	83%	93% ▲	-10
Base n=	3,003 age 15+	n=2,004 age 15+	

	NZ 2017	EU 2013	DIFFERENCE % PTS
Interested in developments in science and technology (% fairly interested and very interested – NZ & EU)	83% ▲	53%	+30
Base n=	3,003 age 15+	Average of 27 countries. 27,563 age 15+	

TRUST IN SCIENTISTS AND ENGINEERS - NZ vs. IRELAND

New Zealanders are more inclined to strongly trust the opinion of scientists or engineers than the Irish

Complete trust or a great deal of trust %	NZ 2017	IR 2015	DIFFERENCE % PTS
When you hear/read an opinion from a scientist or engineer how much do you trust it?	29% ▲	22%	+7
Base n=	3,003 age 15+	1,008 age 15 +	

BENCHMARKING RESULTS

FUNDING 'PURE SCIENCE' - NZ vs. CANADA & UK

Two-thirds of New Zealanders support funding scientific research without being sure of its economic benefits – this is lower than in Canada and the UK where almost eight out of ten support this type of investment

	NZ 2017	CA 2015	DIFFERENCE % PTS
The Government should fund scientific research even if we can't be sure of its economic benefits	66%	76% ▲	-10
Base n=	3,003 age 15+	n=2,004 age 15+	

	NZ 2017	UK 2014	DIFFERENCE % PTS
The Government should fund scientific research even if we can't be sure of its economic benefits (NZ) Even if it brings no immediate benefits, scientific research which advances knowledge should be funded by the government (UK)	66%	78% ▲	-12
Base n=	3,003 age 15+	1,749 age 16+	

BENCHMARKING RESULTS

IMPORTANCE OF SCIENCE & TECHNOLOGY - NZ vs. IRELAND

Both Irish people and New Zealanders have a similar high appreciation of the importance of science in preserving the environment, improving human health and addressing key societal challenges

% Agree	NZ 2017	IR 2015	DIFFERENCE % PTS
Science is important for the preservation of New Zealand's / Ireland's environment	86%	83%	+3
Science is important for improving human health	91%	89%	+2
Science is important for addressing key challenges affecting our society	82%	83%	-1
Base n=	3,003 age 15+	1,008 age 15 +	

ECONOMIC IMPORTANCE OF SCIENCE & TECHNOLOGY - NZ vs. IRELAND AND THE UK

There is broad agreement from NZ, Ireland and the UK regarding the need to invest in the science and technology sector to enhance competitiveness, with Ireland recording the greatest support for this type of investment

% Agree	NZ 2017	IR 2015	DIFFERENCE % PTS
New Zealand/Ireland needs to develop its scientific & technology sector to enhance its international competitiveness	78%	85% ▲	-7
Base n=	3,003 age 15+	1,008 age 15 +	

% Agree	NZ 2017	UK 2014	DIFFERENCE % PTS
New Zealand/UK needs to develop its scientific & technology sector to enhance its international competitiveness	78%	81%	-3
Base n=	3,003 age 15+	1,749 age 16+	

BENCHMARKING RESULTS

SCIENCE EDUCATION & CAREERS - NZ vs. IRELAND

Both New Zealanders and Irish people are very positive about science and technology education and careers, with a slight lead to Ireland regarding knowledge of science increasing career opportunities

% Agree	NZ 2017	IR 2015	DIFFERENCE % PTS
Science is an important subject for people to study at school	89%	88%	+1
Technology is an important subject for people to study at school	90%	88%	+1
Science is a worthwhile career to pursue	81%	82%	-1
Knowledge of science is useful for increasing career opportunities	83%	87% ▲	-4
Base n=	3,003 age 15+	1,008 age 15 +	

LEVEL OF INFORMATION ABOUT SCIENCE - NZ vs. UK

New Zealanders are more likely than people from the UK to feel they receive the right level of information about science and technology

Level of information %	NZ 2017	UK 2014	DIFFERENCE % PTS
About right (NZ), The right amount (UK)	48% ▲	40%	+8
Too little	43%	51% ▲	-8
Too much	6%	6%	0
Base n=	3,003 age 15+	1,749 age 16+	

BENCHMARKING RESULTS

HOW WELL INFORMED PEOPLE FEEL ABOUT SCIENCE - NZ vs. AUSTRALIA & EUROPE

While New Zealanders lag behind Australians in feeling well informed about science and technology, New Zealand is well ahead of the European average.

% Very well and fairly well informed	NZ 2017	AU 2017	DIFFERENCE % PTS
How informed do you feel about developments in science and technology? (NZ) How well informed do you feel about science? (Australia)	60%	70% ▲	-10
Base n=	3,003 age 15+	1,203 age 18+	

% Very well and fairly well informed	NZ 2017	EU 2013	DIFFERENCE % PTS
How informed do you feel about developments in science and technology? (NZ) How informed do you feel about science? (EU)	60% ▲	40%	-20
Base n=	3,003 age 15+	(average of 27 countries) n=27,563 age 15+)	

APPENDICES

1. SAMPLE PROFILE
2. TECHNICAL DESCRIPTION OF THE WEIGHTING
3. QUESTIONNAIRE (PROVIDED AS A SEPARATE DOCUMENT)

APPENDIX ONE
SAMPLE PROFILE

The following tables provide a demographic breakdown of the total sample for the variables used to weight the sample i.e. age, gender, region and ethnicity. Note that some sub-totals do not add to 100% due to rounding or multiple responses e.g. for ethnicity

AGE	UNWEIGHTED n=	WEIGHTED n=	WEIGHTED %
15-19 years	176	185	6%
20-24 years	349	317	11%
25-29 years	216	199	7%
30-34 years	239	220	7%
35-39 years	260	296	10%
40-44 years	278	295	10%
45-49 years	259	232	8%
50-54 years	257	280	9%
55-59 years	207	224	7%
60-64 years	183	214	7%
65-69 years	224	217	7%
70-74 years	208	192	6%
75 plus	147	131	4%
Total	3,003	3,003	100

GENDER	UNWEIGHTED n=	WEIGHTED n=	WEIGHTED %
Male	1,482	1,442	48%
Female	1,521	1,561	52%
Total	3,003	3,003	100

REGION	UNWEIGHTED n=	WEIGHTED n=	WEIGHTED %
Northland	103	106	4%
Auckland - Rodney District	80	69	2%
Auckland - North Shore District	170	164	5%
Auckland - Waitakere City	167	172	6%
Auckland - Auckland City	306	297	10%
Auckland - Manukau City	205	213	7%
Auckland - Papakura or Franklin Districts	74	80	3%
Waikato	276	262	9%
Bay of Plenty	186	188	6%
Gisborne	27	47	2%
Hawke's Bay	104	105	4%
Taranaki	74	71	2%
Manawatu-Wanganui	161	169	6%
Wellington	344	332	11%
Tasman	29	29	1%
Nelson	34	44	1%
Marlborough	33	29	1%
West Coast	24	21	1%
Canterbury	392	386	13%
Otago	152	154	5%
Southland	62	64	2%
Total	3,003	3,003	100

SAMPLE PROFILE CONT'D

ETHNICITY (multiple responses allowed)	UNWEIGHTED n=	WEIGHTED n=	WEIGHTED %
NZ European / Pākehā	2,135	1,975	65%
Other European	257	220	7%
Net European	2,358	2,135	72%
Māori	310	354	12%
Samoan	45	71	2%
Cook Islands Māori	33	41	1%
Tongan	18	33	1%
Niuean	6	10	0%
Tokelauan	3	3	0%
Fijian	20	19	1%
Other Pacific Island people	13	12	0%
Net Pacific People	128	170	6%
Chinese	94	79	3%
Indian	132	149	5%
Korean	12	21	0%
South East Asian	52	46	1%
Other Asian	76	47	2%
Net Asian	359	334	11%
Middle Eastern	13	6	0%
Latin American	9	7	0%
African	17	9	0%
Other	44	33	1%
Total	3,003	3,003	104%

APPENDIX TWO
TECHNICAL DESCRIPTION OF THE WEIGHTING

INTRODUCTION

To ensure an accurate representation of the population, the survey data was weighted to reflect population figures for those aged 15 and over from the 2013 Census. This weighting was based on age, gender and region. Further rim weightings were applied to adjust the results by ethnicity.

Finally, the survey data from the online and CATI surveys was weighted according to the proportion of those aged 15 plus who accessed the Internet from any source compared with those having a landline in the household. The source data for this weighting was Q1 2017 results from Nielsen's Consumer and Media Insights survey which is also weighted by Census data.

WEIGHTING VARIABLES

AGE GROUPS	15 to 24 years, 25 to 39 years, 40 to 54 years and 55 plus years.
GENDER	Male and Female
REGION	Auckland, Upper North Island excluding Auckland, Lower North Island and South Island
ETHNICITY	European, Pacific, Māori and Asian

DEFINITION OF ETHNIC GROUPS

EUROPEAN	**European -** made up of NZ European/Pākehā, Other European plus Middle Eastern, Latin and South American (the latter three groups are very small) **Versus Non-European -** includes people who did not choose the above options
MĀORI	**Māori** **Versus Non-Māori**
PACIFIC PEOPLE	**Pacific People -** made up of Samoan, Cook Island Māori, Tongan, Niuean, Tokelauan, Fijian and Other Pacific People **Versus Non-Pacific -** includes people who did not choose the above options
ASIAN	**Asian -** made up of Chinese, Indian, Korean, Southeast Asian and Other Asian. **Versus Non-Asian -** made up of people who did not choose one of the above.

WEIGHTING MATRICES

RIM 1 - AGE, GENDER, REGION				
			POPULATION	
	GENDER	AGE	count	%
Auckland	Male	15-24	106,164	3%
		25-39	139,674	4%
		40-54	144,516	4%
		55+	145,308	4%
	Female	15-24	104,979	3%
		25-39	154,344	5%
		40-54	159,198	5%
		55+	165,018	5%
Upper North Island excluding Auckland	Male	15-24	55,320	2%
		25-39	66,429	2%
		40-54	84,927	3%
		55+	117,390	3%
	Female	15-24	53,862	2%
		25-39	74,799	2%
		40-54	95,067	3%
		55+	130,266	4%
Lower North Island	Male	15-24	64,983	2%
		25-39	81,924	2%
		40-54	97,116	3%
		55+	119,256	4%
	Female	15-24	65,487	2%
		25-39	90,351	3%
		40-54	106,554	3%
		55+	135,504	4%
South Island	Male	15-24	70,014	2%
		25-39	85,140	3%
		40-54	106,350	3%
		55+	137,103	4%
	Female	15-24	65,595	2%
		25-39	89,457	3%
		40-54	113,493	3%
		55+	150,396	4%
TOTAL			3,375,984	100%

WEIGHTING MATRICES

RIM 2 – ETHNICITY		
	POPULATION	
	Count	%
Māori	396,267	12%
Non-Māori	2,980,104	88%
	3,376,371	100%
Pacific	190,422	6%
Non-Pacific	3,185,949	94%
	3,376,371	100%
Asian	374,514	11%
Non-Asian	3,001,857	89%
	3,376,371	100%
European	2,476,230	73%
Non-European	900,141	27%
	3,376,371	100%
TOTAL RESPONSE	3,437,433	
TOTAL SAMPLE	3,376,371	

RIM 3 – RATIO OF THOSE WHO HAVE LANDLINES VS.USED THE INTERNET IN THE PAST FOUR WEEKS	
CATI (have landline)	37%
ONLINE (used Internet)	63%
TOTAL	100%

Rim 3 figures are based on the ratio of those who have landlines compared with those who used the Internet in the last four weeks.

WEIGHTING EFFICIENCY

The rim weighting efficiency gives an indication of how well balanced the sample is. If the data for many respondents needs to be heavily weighted up or down, the efficiency percentage will be low - the greater the percentage, the more well balanced the sample.

The weighting efficiency was 90% for the Online survey (excellent) and 60% for the CATI survey (very good), reflecting the respective sample size in each survey (501 CATI interviews vs. 2,502 online interviews).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