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# Public Attitudes to Science in Wales

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Public Attitudes to Science in Wales

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**Glossary**

| Acronym/Key word | Definition |
|---|---|
| BIS | Business Innovation and Skills |
| SFI | Science Foundation Ireland |
| LLSOA | Lower Level Super Output Areas. These were North Wales, Mid/West Wales, West South Wales, The Valleys, Cardiff and South East Wales. |

# 1. Introduction

1.1 Understanding the public's perceptions and attitudes regarding the purpose and value of science has become a growing topic for researchers, policymakers and Governments. Public engagement on the value and relevance of science provides policy-making officials and Governments an effective evidence-based way to connect with citizens, permitting their voice to be heard when shaping policy and planning Government initiatives.

1.2 The aim of this research was to capture data on the perceptions of the Welsh public regarding the value of science. This includes their understanding of, and engagement with science and science-related matters. The findings should inform Welsh Government's future policy relating to scientific research and education, as well as science engagement.

## 2. Methodology

2.1 The data collection was completed by the Beaufort Omnibus Survey team. The Omnibus sample is designed to be a representative quota sample consisting of 1000 adults aged 16 and over who are resident in Wales. The primary sample unit is Lower Level Super Output Areas (LLSOA)[1] and 68 separate locations are selected as interviewing points throughout Wales based on probability proportionate to resident adult population after stratification by region.

2.2 Within each sampling location, there are interlocking quota controls on age and social status within sex and working status. Quotas are set to reflect the known demographic profile of Welsh residents according to the 2011 Census. No more than one person per household is interviewed.

2.3 All interviews are conducted face-to-face in the homes of respondents using computer aided personal interviewing technology on tablet computers. Beaufort's experienced fieldworkers are used with telephone and postal back-checking in accordance with ISO20252 – the international quality standard for market research services. At the analysis stage, the data is weighted by age group within gender within Local Authority grouping to make the achieved sample representative of the Wales population derived from the results of the 2011 Census.

2.4 Fieldwork took place between 24th February and 15th March 2020. The target response rate was 1,000. However, only 713 interviews were completed and analysed because fieldwork was suspended in March 2020 due to the coronavirus outbreak and the social distancing measures that were put in place. This led to the suspension of all face-face fieldwork. For details on how this has impacted the findings and analysis of this research see section 2.9

2.5 Demographic questions were included as standard and the questionnaire was available in English or Welsh at the participant's choice. The list of questions included can be sound in Annex A.

[1] These were North Wales, Mid/West Wales, West South Wales, The Valleys, Cardiff and South East Wales.

**Questionnaire**

2.6 Many of the questions used replicated those used in surveys on public attitudes to science done in other small English speaking countries. These include the Science Foundations Ireland surveys in 2015 (SFI, 2015), New Zealand, (Nielson, 2014), Australia (CPAS, 2014) and Department for Business Innovation and Skills (BIS, 2014). This was done with the intention of being able to compare internationally between Wales and other nations. However, caution must be taken when making these comparisons due to the differences in data collection methods, sample size and sample recruitment, see section 2.12 for more details.

2.7 The remainder of the questions used were devised by Welsh Government with input from the Beaufort Omnibus team.

**Caveats**

2.8 When survey data are tested for statistical significance, an assumption is made that the achieved sample represents a random sample of the relevant population. However, as the Wales Omnibus Survey uses proportional quota sampling (not random sampling), genuine statistical significance cannot, strictly speaking, be established[2]. Therefore any findings in this survey should be deemed indicative of a difference in the population rather than definitive.

2.9 As mentioned in section 2.4 the number of interviews completed for this research were lower than anticipated due to the outbreak of COVID-19. This effects the reliability of the findings as the data cannot be considered to be representative of the Welsh population. This makes any comparison between subgroups, such as comparing age or socio-economic status difficult.

2.10 For details of the final numbers of respondents interviewed and the breakdown of age, gender, location and socio-economic status, please see Annex B

2.11 As referenced in section 2.6 there are some issues with making direct comparisons between the international surveys and the current survey. This is due to a number of factors. Firstly, sample sizes are different between the surveys. This may cause variation in the reliability of the findings across different surveys. Secondly, temporal differences could have created variances in responses. Some of the survey

questions used for comparison were conducted in 2014 and 2015. It is likely that public attitudes and awareness to science has changed in the intervening years as technological advancements occur. Finally, differences in data collection methods can lead to a different subset of respondents in different surveys, meaning comparisons should be drawn cautiously.

# 3. Findings

### Attitudes towards Science and Technology

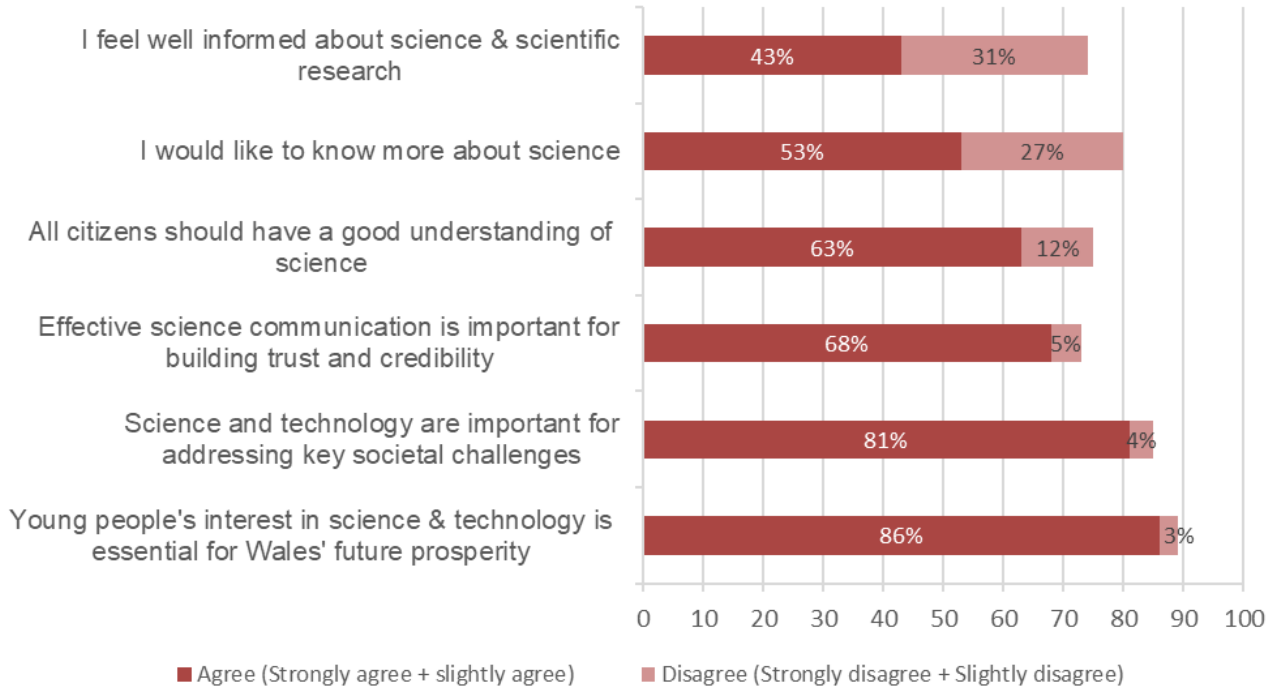
3.1 Generally, public attitudes to science and technology were very positive. Most of the statements relating to attitudes to science and technology were endorsed by at least half of Welsh adults interviewed. The one exception to this was the statement "*I feel well informed about science and scientific research"*, where only 43% of respondents agreed (see Figure 3.1).

3.2 Over 86% of those interviewed agreed that "*Young people's interest in science and technology is essential for Wales' future prosperity".* This is similar to the 92% of respondents in the Science Foundation Ireland (2015) survey, who agreed with the same statement. A similar question was asked in the Department for Business Innovation and Skills (2014). Respondents were asked whether they agreed with the statement "*Young people's interest in science is important for our future prosperity"*. 91% of respondents agreed with this statement.

3.3 Eighty-one percent of respondents agreed that "*Science and technology are important for addressing key societal challenges".* This was similar to number of respondents who agreed to the same statement in a survey conducted in Ireland (83%)(SFI, 2015), New Zealand (82%) (Nielsen, 2014) and Australia (80%) (CPAS, 2014).

3.4 The statements with the lowest number of respondents stating they agreed were *"I would like to know more about science"* (53%) and "*I feel well informed about science and scientific research" (43%).*

**Figure 3.1: Please tell me the extent to which you agree or disagree with the following statements: (%)**



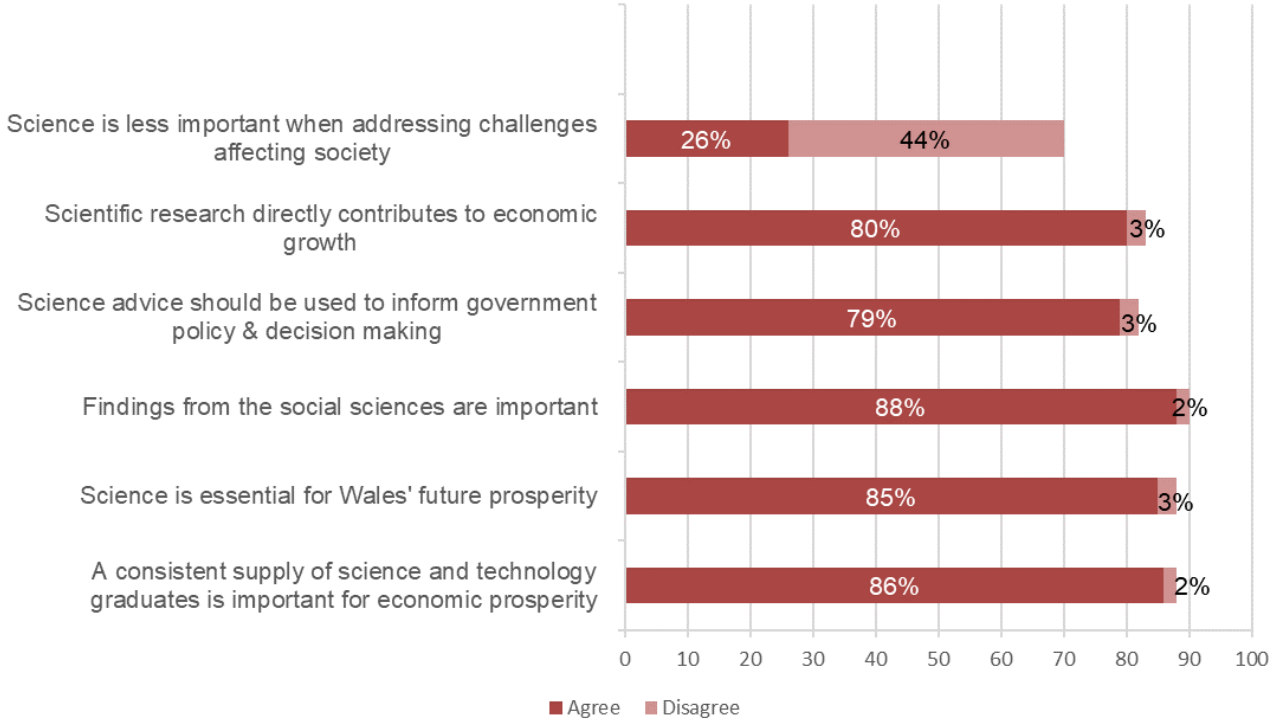

3.5 Higher levels of agreement were evident with the second set of statements (see Figure 3.2). Around eight in ten survey participants agreed with each statement. 86% agreed that *"A consistent supply of science and technology graduates is important for economic prosperity"*. This is very similar to results from Ireland where 88% agreed or strongly agreed with this statement (SFI, 2015).

3.6 When asked whether they agreed or disagreed with the statement *"Scientific research directly contributes to economic growth"* 80% of respondents agreed. When asked the same question in the Department for Business Innovation and Skills (2014) survey 76% agreed with this statement.

3.7 Eighty-eight percent of respondents agreed that "*Findings from the social sciences are important."*

3.8 Disagreement was very low on the whole (at around 2-3%) but was high for the statement "*Science is less important when addressing challenges affecting society"*. Over four in ten Welsh adults (44%) disagreed with this statement, compared with just over one in four (26%) agreeing.

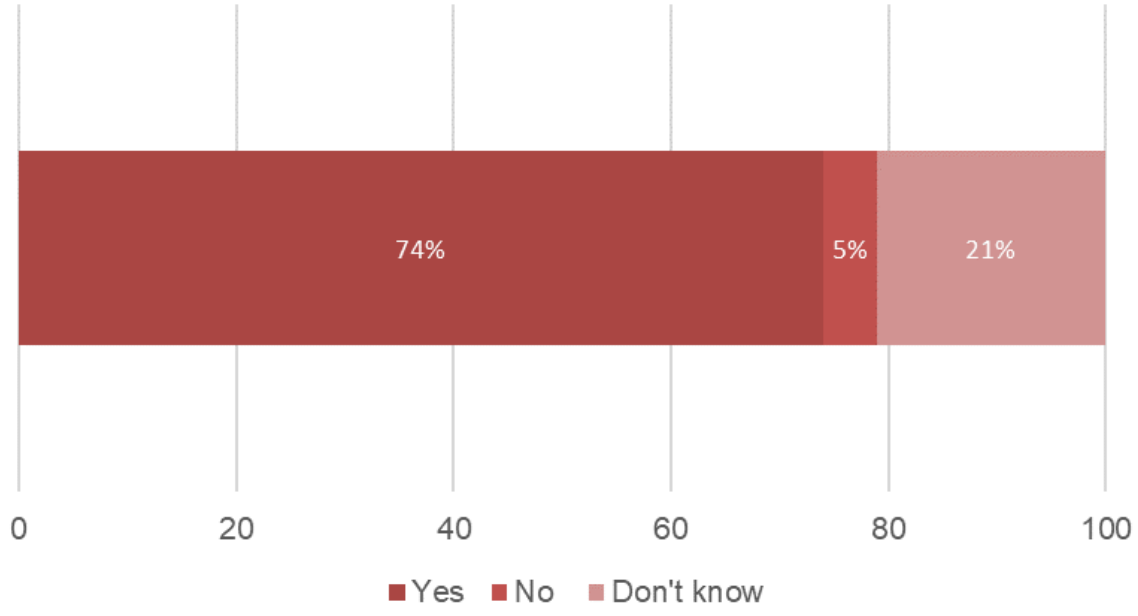
**Figure 3.2: Please tell me the extent to which you agree or disagree with the following statements: (%)**




**Whether the Welsh Government should invest more in science.**

3.9 Almost three-quarters of respondents (74%) thought the Welsh Government should invest more in scientific research, innovation and education (see figure 3.3).

**Figure 3.3: Do you think Welsh Government should invest in more in scientific research, innovation and education? (% saying yes)**

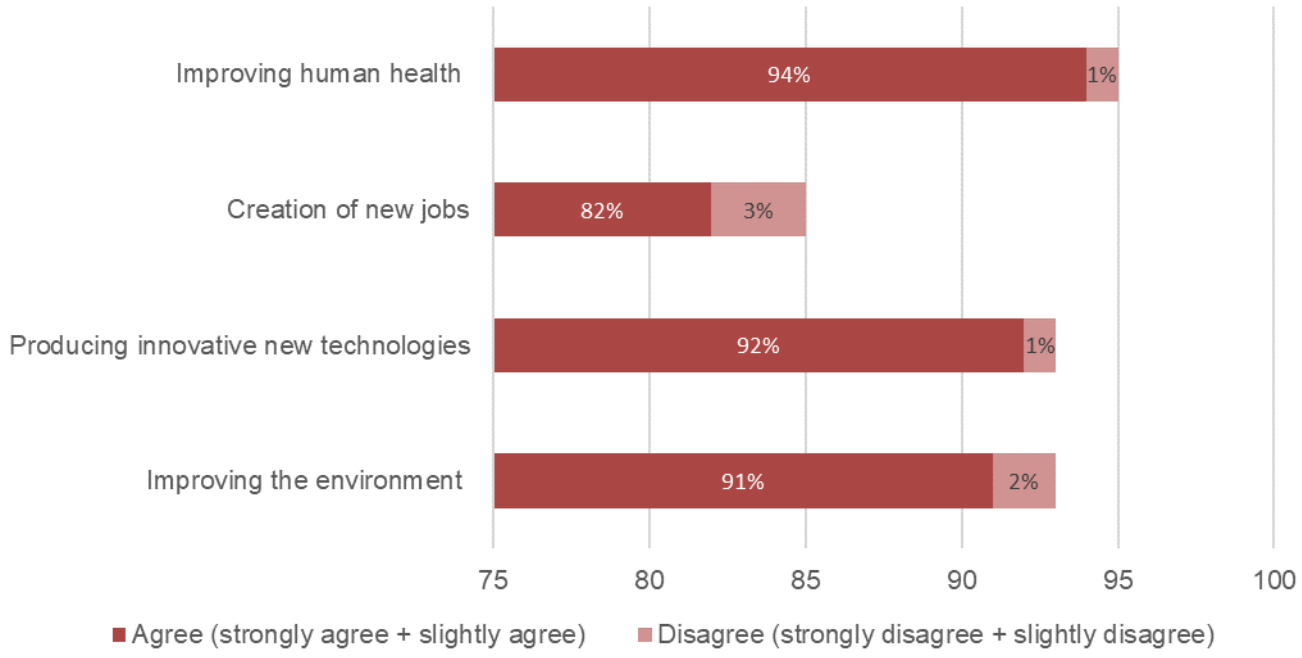


**Perceived importance of science**

3.10 Science was considered important by the great majority of Welsh adults in each of the areas they were asked about. The statement with this highest level of agreement was "*Science is important for improving human health" (*94%). The statement with the lowest level of agreement was "*Science is important for the creation of new jobs."* (82%).

3.11 Respondents to the survey in New Zealand (2014) and the survey in Ireland (2015) also viewed science as important for human health (91% and 89% respectively). Moreover, 86% saw science as important for preserving the environment in New Zealand but only 69% saw science as having a positive impact on preserving the environment in the next 15 years in Ireland (Nielsen, 2014; SFI, 2015).

**Figure 3.4: To what extent do you agree that science is important for…? (%)**



## 4. Conclusions

4.1 In summary, this survey demonstrates that public attitudes in Wales towards science are generally positive. Statements which positively associated science with the future economy and employment tended to have high levels of agreement. Respondents particularly agreed that young people's interest in science and technology is essential for Wales' future propensity and key societal challenges could be addressed through science and technology.

4.2 Although many respondents felt informed about science (43%), almost a third (31%) of those interviewed did not. This is something which should be considered when Welsh Government is communicating scientific findings and scientific advancements in future.

4.3 Additionally, over half of respondents (53%) felt that they would like to know more about science. This appetite for learning about science should be considered when providing scientific education and resources.

4.4 The majority of respondents (74%) felt that the Welsh Government should invest more in scientific research, innovation and education. This implies there is public support for further scientific investment from Welsh Government.

4.5 The high level of agreement (79%) with the statement that the *"Science advice should be used to inform Government policy and decision-making"* implies that the majority of the public value government decisions made on scientific evidence and advice.

4.6 Generally the questions in this research which were the same as those asked in the surveys in other countries had similar levels of agreement and disagreement.

## 5. References

Business Innovation and Skills (2014). Public Attitudes to Science. (Accessed 28/08/2020)

Science Foundation Ireland (2015). Science in Ireland Barometer.(Accessed 29/08/2020)

National Centre for the Public Awareness of Science (CPAS) (2014). How do Australians engage with science? (Accessed 01/09/2020)

Nielson (2014). Report on Public Attitudes Towards Science and Technology. (Accessed 27/08/2020)

## Annex A: Survey Questions

1) **Here are some statements about science and technology. Please indicate how much you agree or disagree with them.** For these statements there is no right or wrong answer, we are just interested in your opinion. (Randomised)

| | | | | | |
|---|---|---|---|---|---|
| **Science and technology are important for addressing key societal challenges** | Strongly Agree | Agree | Neither Agree nor Disagree | Disagree | Strongly disagree |
| **All citizens should have a good understanding of science** | Strongly Agree | Agree | Neither Agree nor Disagree | Disagree | Strongly disagree |
| **I would like to know more about science** | Strongly Agree | Agree | Neither Agree nor Disagree | Disagree | Strongly disagree |
| **I feel well informed about science and scientific research** | Strongly Agree | Agree | Neither Agree nor Disagree | Disagree | Strongly disagree |
| **Young people's interest in science and technology is essential for Wales' future prosperity** | Strongly Agree | Agree | Neither Agree nor Disagree | Disagree | Strongly disagree |
| **Effective science communication is important for building trust and credibility** | Strongly Agree | Agree | Neither Agree nor Disagree | Disagree | Strongly disagree |

2) **Here are some statements about science and technology. Please indicate how much you agree or disagree with them.** For these statements there is no right or wrong answer, we are just interested in your opinion. (Randomised)

| | | | | | |
|---|---|---|---|---|---|
| **A consistent supply of science and technology graduates is important for economic prosperity** | Strongly Agree | Agree | Neither Agree nor Disagree | Disagree | Strongly disagree |
| **Scientific research directly contributes to economic growth** | Strongly Agree | Agree | Neither Agree nor Disagree | Disagree | Strongly disagree |
| **Findings from the social sciences are important** | Strongly Agree | Agree | Neither Agree nor Disagree | Disagree | Strongly disagree |
| **Science is essential for Wales' future prosperity** | Strongly Agree | Agree | Neither Agree nor Disagree | Disagree | Strongly disagree |
| **Science is less important when addressing challenges affecting society** | Strongly Agree | Agree | Neither Agree nor Disagree | Disagree | Strongly disagree |
| **Science advice should be used to inform government policy and decision making** | Strongly Agree | Agree | Neither Agree nor Disagree | Disagree | Strongly disagree |

3) **Do you think the Welsh Government should invest more in scientific research, innovation and education?**
   i) Yes
   ii) Don't Know/Neutral
   iii) No

4) **Do you think that providing future generations with a good scientific education is:**
   (invert)
   i) Very important,
   ii) Somewhat important
   iii) Neither important nor unimportant
   iv) Somewhat unimportant
   v) Very unimportant

5) **To what extent do you agree or disagree with the following statements:**

**Science is important for…**(Randomised)

| | | | | | |
|---|---|---|---|---|---|
| **Improving human health** | Strongly Agree | Agree | Neither Agree nor Disagree | Disagree | Strongly Disagree |
| **Improving the environment** | Strongly Agree | Agree | Neither Agree nor Disagree | Disagree | Strongly Disagree |
| **Creation of new jobs** | Strongly Agree | Agree | Neither Agree nor Disagree | Disagree | Strongly Disagree |
| **Producing innovative new technologies** | Strongly Agree | Agree | Neither Agree nor Disagree | Disagree | Strongly Disagree |

## Annex B: Demographics

| | Target Sample | Achieved sample |
|---|---|---|
| **Number of Participants** | 1000 | 713 |

**Regions**

| | N (Weighted) | N (Unweighted) | Percentage (Weighted) | Percentage (Unweighted) |
|---|---|---|---|---|
| **North Wales** | 161 | 125 | 22.5% | 18% |
| **Mid & South West Wales** | 242 | 298 | 34% | 42% |
| **Valleys & South East Wales** | 310 | 290 | 43.5% | 41% |

**Gender**

| | N (Weighted) | N (Unweighted) | Percentage (Weighted) | Percentage (Unweighted) |
|---|---|---|---|---|
| **Male** | 347 | 327 | 48.6% | 46% |
| **Female** | 366 | 366 | 51.4% | 54% |

**Age:**

| | N (Weighted) | N (Unweighted) | Percentage (Weighted) | Percentage (Unweighted) |
|---|---|---|---|---|
| **16-34** | 209 | 200 | 29.3% | 28% |
| **35-54** | 233 | 191 | 32.6% | 27% |
| **55+** | 271 | 322 | 38.1% | 45% |

**Social Grade:**

| | N (Weighted) | Percentage (Weighted) | N (Unweighted) | Percentage (Unweighted) |
|---|---|---|---|---|
| **AB** | 145 | 20.3% | N/A | N/A |
| **C1** | 222 | 31.1% | N/A | N/A |
| **C2** | 710 | 22.8% | N/A | N/A |
| **DE** | 180 | 25.3% | N/A | N/A |
| **ABC1** | 367 | 51.5% | 374 | 52% |
| **C2DE** | 343 | 48.1% | 366 | 47% |
| | | | | |