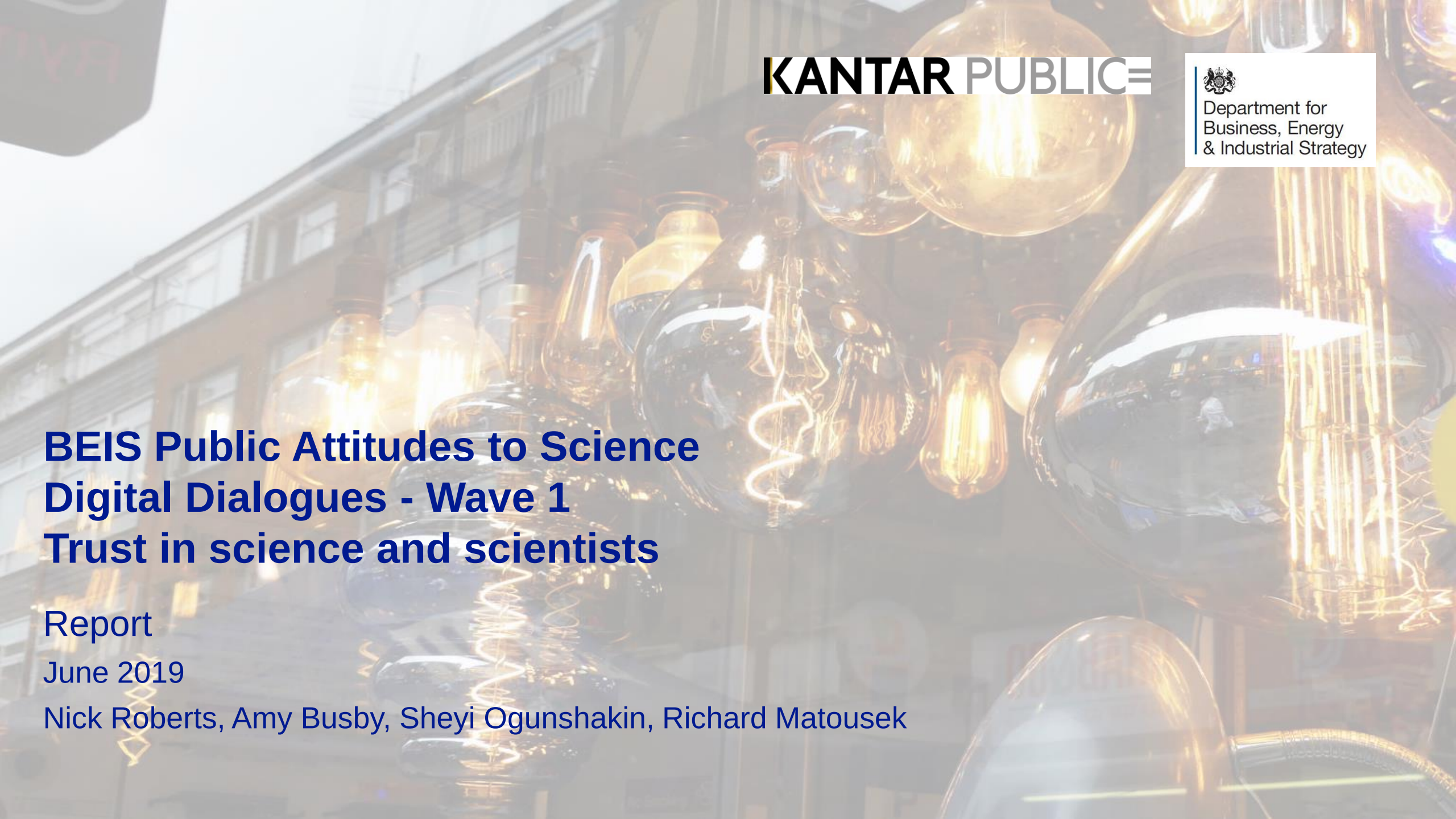

KANTAR PUBLIC

Department for Business, Energy & Industrial Strategy

BEIS Public Attitudes to Science
Digital Dialogues - Wave 1
Trust in science and scientists

Report

June 2019

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1.
Executive summary

Wave 1: Trust in science and scientists

Public dialogue brings together members of the public, policy makers, and expert stakeholders on a subject to deliberate, reflect and come to conclusions about a policy issue; e.g. on new technologies and complex, sensitive, political or difficult issues. This dialogue explored public trust in science and scientists.

The aims of the dialogue were to:

- Gain a greater understanding of what the public think of the term 'science'
- Understand participants' relationship, involvement, and engagement with science and its role in their lives
- Understand perceptions of the role of science in society; and aspirations and concerns about science
- Learn what shapes trust in science, scientists, scientific institutions (and experts more widely)
- Understand perceptions of the scientific method
- Understand how trust in scientific information is determined (e.g. medical advice)
- Explore understanding of and confidence in science regulation and policy making – and aspirations for this.

One week digital dialogue

- 28 participants reflecting a range of demographics, 4 stakeholders, and 3 policy makers who observed the dialogue process
- 7 day dialogue - 3 waves of materials were released and 2 homework tasks were completed between waves
- 9th – 15th October 2018

Four focus groups

- 4 focus groups with 30 digitally excluded participants in London, Manchester and Leeds
- 90 minutes - a reduced version of the dialogue guide and materials were used
- 18th October, 25th October, 1st November

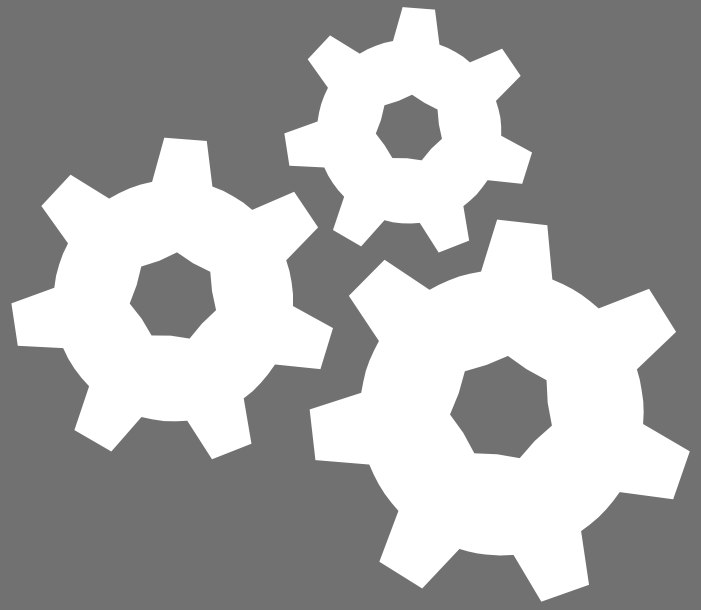
Key Insights Trust in science

Perceptions of science	Engagement with science	Attitudes to science
Science was seen as a broad and ambiguous topic and was synonymous with technological advancement. Participants held one of two main conceptions of science. A narrow conceptualisation focused on experimentation and discovery in laboratories while a broader vision acknowledged the involvement of science in everything in the world and society. Whilst there was little room between these discreet categories, participants could quickly move from a narrow to a broader approach when prompted to actively consider the role of science in society and their own lives.	**Personalisation was key to engagement with science and could help move people to a broader conceptualisation of science.** There was broad agreement that science plays an important role in peoples' lives – particularly in the highly personal area of healthcare. Participants also liked to engage with science as an interest for their own pleasure and at a time and place of their choosing – with TV programmes about nature and space being popular as well as listening to podcasts and attending museums with families and children.	**There was wide agreement that science plays an important and foundational role in our society.** There was excitement about science when it was seen to improve society and benefit people widely. Concerns were raised when wider social influences were seen to impact on and influence the 'pure' work of scientists to better society. There was particular concern about historic and potential future negative impacts of science for the public; about the profit and power oriented motivations of business and government with regards to science; and about fast paced technological developments that were seen to be for their own sake rather than the betterment of society (notably social media).

Key Insights: Trust in scientists

Trust in scientists	Trust in scientific information	Regulation of science
Scientists and engineers were amongst the most highly trusted professions in the country when they were considered in isolation and seen to be working for the betterment of society. However, there were varying levels of trust in the different types of organisations scientists work for. There were high levels of trust in academics but trust decreased when scientists worked for organisations seen to be using science for their own purposes (notably business, government, and some large charities) – particularly among digitally excluded participants.	**Trust in the source and the perceived motivations of authors were key to levels of trust in scientific information.** There were high levels of trust in academic publications, despite participants finding them incomprehensible (so it could be considered 'blind trust'). There was a desire for information to be presented clearly and simply, but participants distrusted information they saw to be sensationalist and/or patronising. Participants said they trusted information that was rigorous, factual, and clearly sourced. However, they tended to rely on the reputation of the source and the extent to which this aligned with their values, along with what they perceived its motivations to be, to determine trust in the information itself.	**There was low awareness of the current role of government in regulating science.** There was a somewhat positive response to the role government was seen to play in protecting people and animals from physical harm. Participants wanted to see regulation of the scientific process to ensure it is safe and ethical; of funding decisions to ensure they benefit society widely; and of the presentation of scientific information to the public to ensure this is accurate. However, distrust in the government in this area meant it was unclear who the public wanted to see playing this oversight role.

2.
Research design



The purpose of dialogue is to inform government decision making, better facilitate two-way discussions about science, and contribute to open policy making

Digital deliberative dialogue

1

Public dialogue brings together members of the public, policy makers, and expert stakeholders on a subject to deliberate, reflect and come to conclusions about a certain policy issue; e.g. on emerging technologies and complex, sensitive, political or difficult issues.

2

Deliberative dialogue goes beyond exploring people's top of mind views about complex issues, to uncover how they form these views, and to debate issues in more depth using different information sources.
They have more time and space to develop more informed and considered views.

3

Committed stakeholders who can communicate with non-technical participants and invest time in the research are crucial to the success of a dialogue. Their involvement allows participants to ask questions and witness stakeholder interest in the two-way dialogue process.

4

Digital deliberative dialogue brings participants and stakeholders together in an online community for a week rather than in a traditional workshop. The forum brings people together from across the UK and allows us to conduct the dialogue at a faster pace.

This dialogue explored public trust in science, scientists, scientific institutions, and scientific information and what shapes this

This dialogue forms part of the qualitative work to support BEIS's 2018-19 Public Attitudes to Science Survey

In total, we will conduct four waves of qualitative research, each focused on a specific topic of interest and consisting of:

- 1 week digital dialogue with 30-33 individuals
- Four focus groups with digitally excluded individuals
- Supporting social media analysis for each wave

The focus of Wave 1 is on trust in science and scientists

- *Perceptions of the role of science in society*
- *Aspirations and concerns about science*
- *Trust in science, scientists, scientific institutions*
- *Trust in sources of scientific information*

The aims of this digital dialogue were to:

- Gain a greater understanding of what the public think of the term 'science'
- Understand participants' relationship, involvement, and engagement with science and its role in their lives
- Understand perceptions of the role of science in society; and aspirations and concerns about science
- Learn what shapes trust in science, scientists, scientific institutions (and experts more widely)
- Understand perceptions of the scientific method
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- Explore understanding of and confidence in science regulation and policy making – and aspirations for this.

We conducted a one week digital dialogue with 28 participants and four focus groups with 30 digitally excluded participants

One week digital dialogue

- 28 participants took part reflecting a range of demographics*
- 4 stakeholders participated**
- 3 policy makers observed
- 7 day dialogue (with a minimum of 3 hours participation)
- 3 waves of materials were released and 2 homework tasks were completed between waves
- Use of Recollective platform
- 9th – 15th October 2018
- £75 incentive

Four focus groups

- 4 digitally excluded focus groups were conducted with those who lacked access to or confidence using the internet
- 30 participants took part reflecting a range of demographics*
- 90 minutes
- A reduced version of the dialogue guide and materials were used
- London, Manchester and Leeds
- 18th October, 25th October, 1st November
- £40 incentive

Conversation flow

- Types of people and information they trust
- Understanding of science
- Subjects seen as science
- Relationship, involvement, and engagement with science
- Role of science in their lives and in our society; aspirations and concerns
- Trust in science, scientists, scientific information and experts more widely
- Views about the scientific method
- Trust in sources of scientific information – and drivers of this
- Views about and aspirations for the regulation of science

*Full details of the achieved sample can be found in the appendix

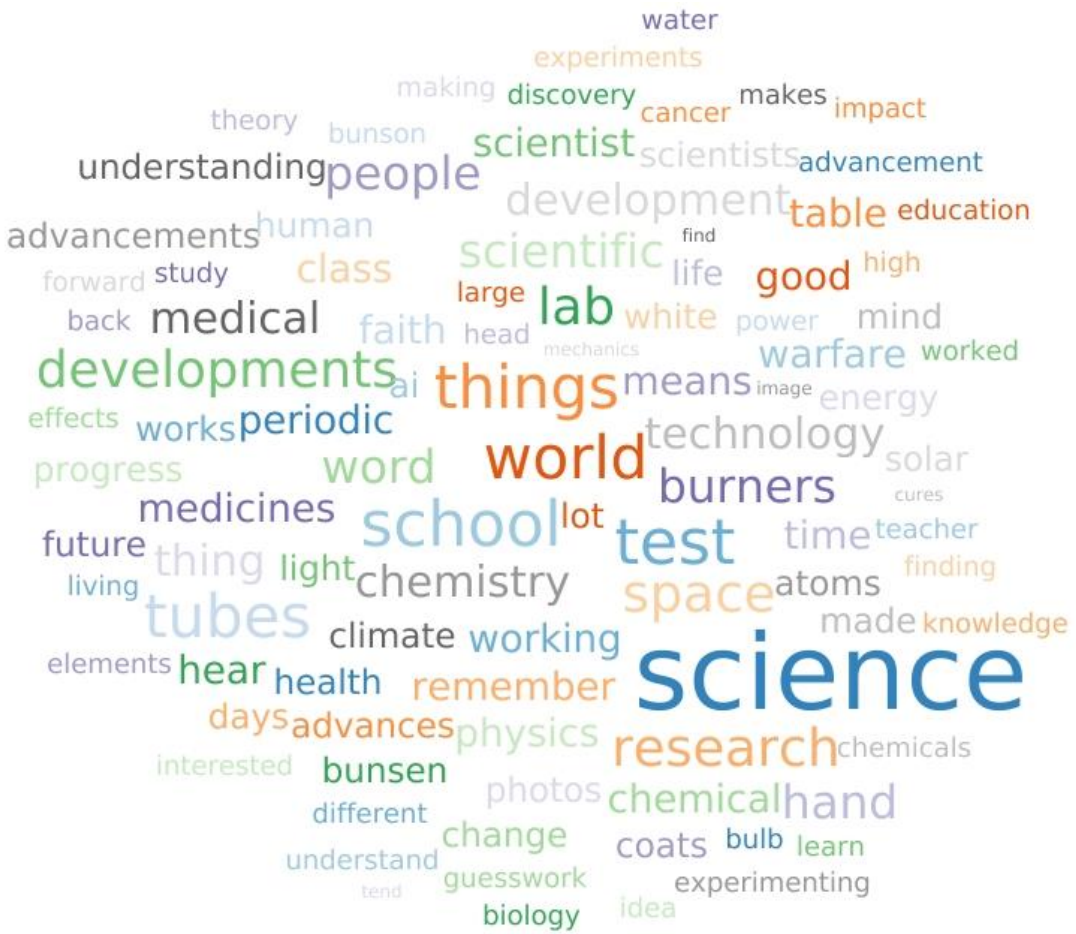
**Their names are listed in the appendix

3.
Understandings of science and scientists

Science was seen as a broad and ambiguous term – and spontaneous associations tended to be quite positive

Common associations:

- **School** – bunsen burners, litmus paper tests, teachers, chemicals, safety goggles, laboratories
- **Technology** – mobile phones, computers, cars, development, space travel
- **Medicine** – drugs, improving life, finding cures
- **New discoveries and advancing society**



Science and scientists were generally seen positively due to their role in healthcare, making discoveries, and advancing society

Two main conceptions of science emerged - a narrow conceptualisation focused on experimentation and discovery in labs and a broader vision acknowledging the involvement of science in everything in the world around them

Narrow conceptualisation

- Involved stereotypical ideas of scientists as people who work in labs, wear white coats, develop medicines and carry out tests
- Often associated with school, Bunsen burners and chemicals

Wider conceptualisation

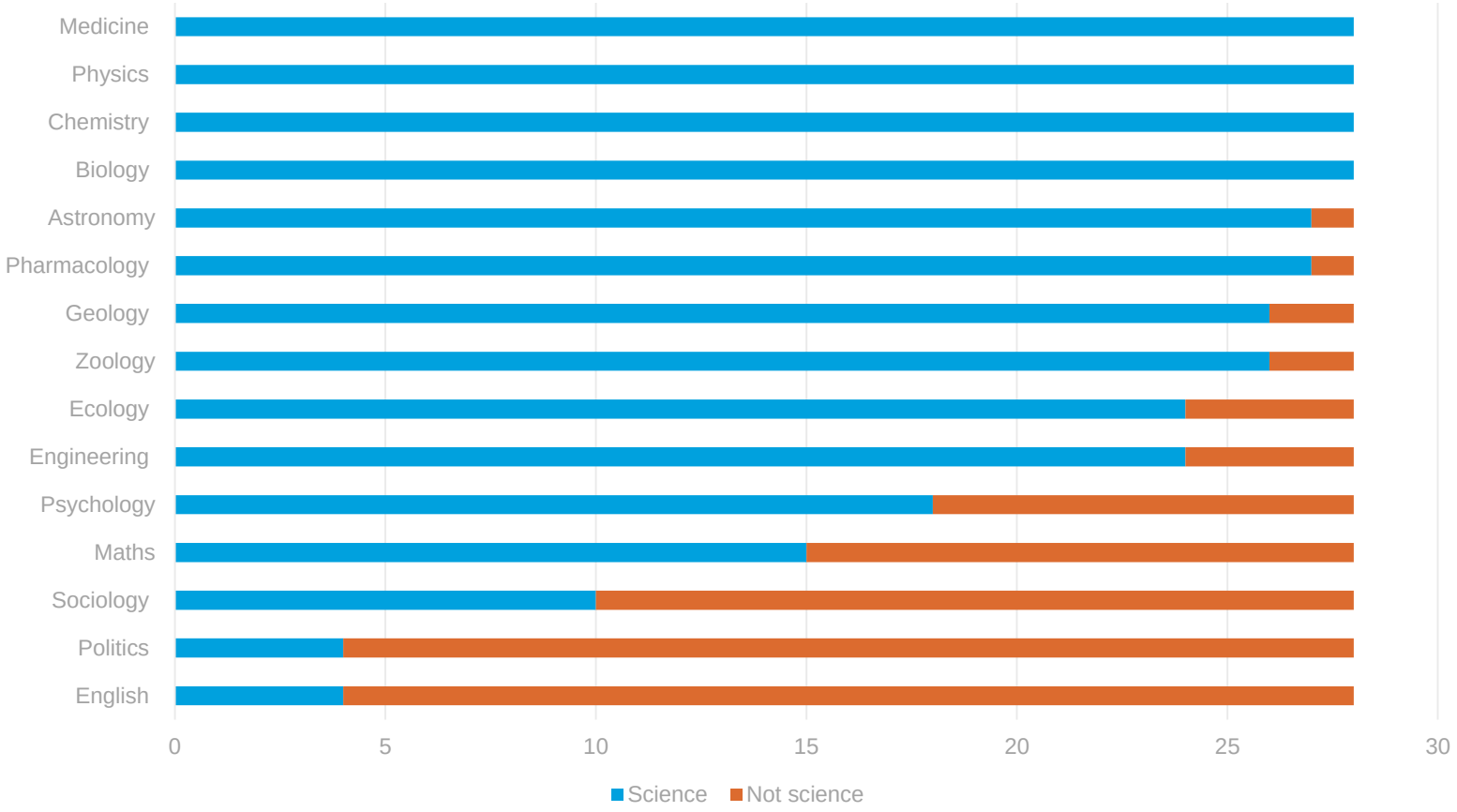
- Those with a wider conceptualisation recognised science as important to activities they engage in every day such as using mobile phones, driving cars and the development of computer technology

Other key associations

- Science as a search for truth or ‘facts’
- Science as key to understanding the world and making discoveries about people, animals, and the planet
- Science as paving the way for the advancement of society as a whole – and synonymous with technological advancement

Traditional school science subjects and Medicine were universally considered to be ‘science’ - fewer thought engineering was a science subject

Sort and rank the subjects into Science and Not Science



- **Biology, Chemistry, Physics, and Medicine** were universally seen to be science
- **Pharmacology and Engineering** were widely seen as science
- **Maths** was less commonly associated with Science, as it has traditionally been presented as separate from science in schools
- **English and Social Sciences** (sociology and politics) were widely seen not to be science, driven by a perception that they do not use characteristics of the scientific method such as creating and testing hypotheses or dealing with ‘facts’. Some described their sense as a ‘gut feeling’

Science
Not science

Q: Which of the following subjects would you classify as ‘science’? Base: All digital dialogue participants 28

Understanding of science and scientists

Science to me is people working in a lab finding new medicines to help fight off illness or creating cures. I also think of science from when I was at school and doing test with the Bunsen burners and test tubes *(Digital Dialogue, Female, Peterborough)*

[Science] can be at a level that I can explain or have my kids get involved in; or be things which directly impact my professional life *(Digital Dialogue, Male, Scotland)*

Science is about a law that someone has proof of that's not set in stone because later on it can be disproved" (*Female, London, Digitally excluded)*

I know very little about science, to me it is something that is done in order to keep us advancing and finding out new ways of going forward *(Digital Dialogue, Female, Exeter)*

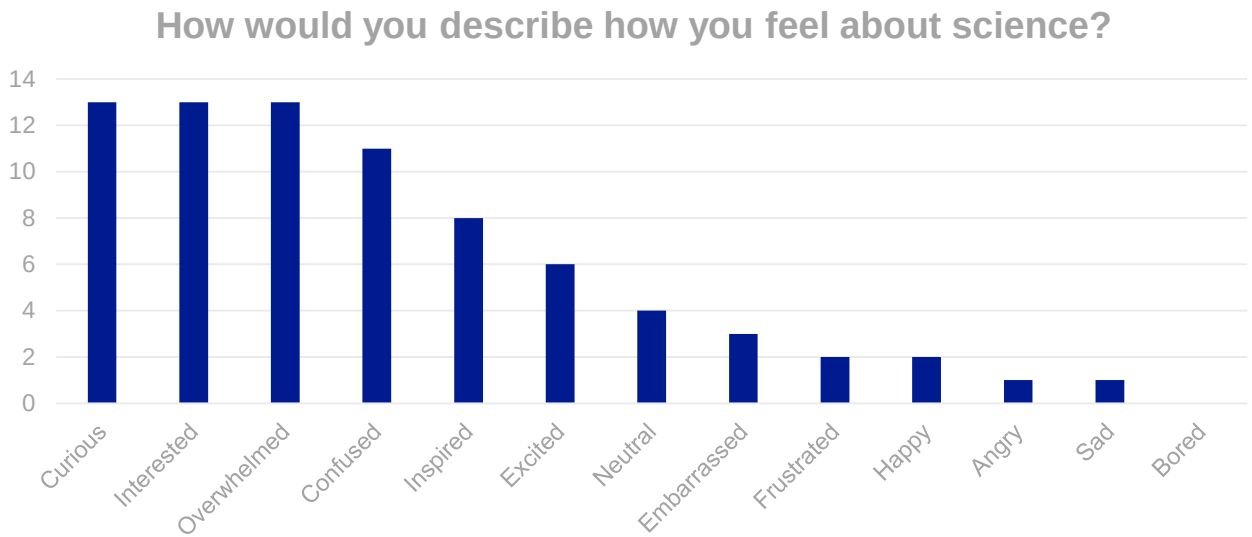
Scientists find a conclusion *(Digitally excluded, Female, Leeds)*

I suppose my almost childlike image of a scientist is the typical elderly man in a white coat surrounded by lots of test tubes emitting steam while surrounded by assorted books and assistants *(Digital Dialogue, Male, Peterborough)*

4.
Relationship, involvement, and engagement with science

There was wide interest in and curiosity about science - but participants were also commonly confused and overwhelmed by it

Participants used emojis to describe their feelings about science



- There was greatest interest in science when it was entertaining or about new discoveries.
- Contradictory scientific information, complex language and diagrams were confusing and could contribute to participants feeling overwhelmed. These findings were also seen in the Wave 1 Social Media Analysis.
- Feelings about science were mixed across the social grades, but those from lower SEGs more commonly felt embarrassed, overwhelmed, and confused by science. Older participants more commonly said they were inspired by science than younger participants.

Interested

I'm curious and interested about new findings/discoveries.*(Digital Dialogue, Male, Peterborough)*

Curious

Curious - I think science affects all of us, especially the development of new treatments available to improve our health care and quality of life *(Digital Dialogue, Male, Belfast)*

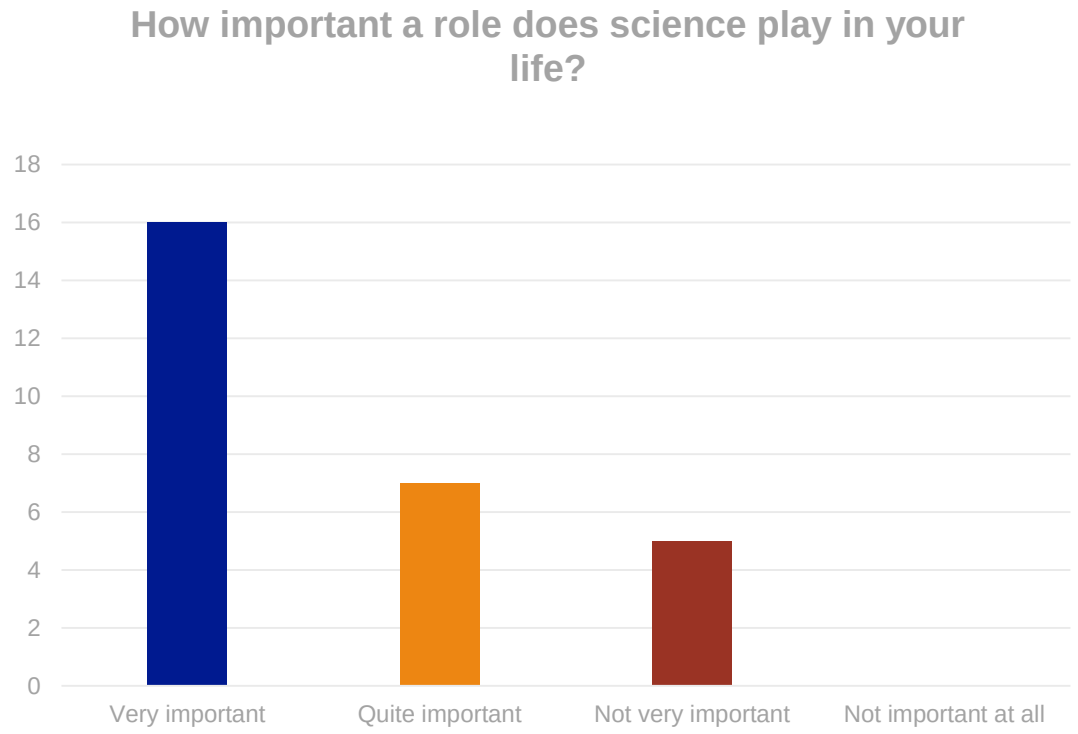
Overwhelmed

Its full of terminology I don't understand. I also think it requires a capacity of thinking in abstract ways and I'm just not very good at that *(Digital Dialogue, Female, Belfast)*

Confused

So much conflicting information and advice. And despite a supposed greater understanding of processes we seem not be listening *(Digital Dialogue, Female, Scotland)*

Most felt that science plays an important role in people's lives - those who had been involved in a medical incident were particularly positive about its role



- Science was considered more important by those who could relate it to everyday experiences, health and medical incidents, particularly related to family and friends
- Those who said science was quite important noted its significance but felt they did not always think about the relevance of science in their daily lives, while those who thought science very important emphasised this
- Those who did not think science was very important tended to be from lower SEGs and said they rarely thought about science or took it for granted

> Yes when my father was taken Ill with cancer. Without the untold research analysis etc done he may have died. This allowed me to have a father in my life which I'm truly thankful for! *(Digital Dialogue, Male, Peterborough)*

> I never really think about science much. Unless it's a science fiction programme on the TV *(Digital Dialogue, Male, Belfast)*

Healthcare and medicine could be helpful hooks to engage the public in science and scientific research because these examples are accessible and relatable for them

Conceptions of last involvement with science tended to depend on participants' conceptualisation of science itself

While many could not remember being involved with science since school, involvement for others included engagement through family (e.g. helping children with homework or attending museums); their work; and health and medical incidents

Narrower view
Those with a narrower / more stereotypical vision tended to see their involvement as limited and associated it with school, their children's schooling, and if and when science was associated with their job

[Last time I was involved with science was] helping my daughter revise pH levels for school *(Digitally excluded, Female, Leeds).*

Broader vision
Those with a broader vision of science tended to see science as everywhere and therefore their last involvement was part of their daily lives. They associated science with a range of areas including transport, technology, the environment, and weather forecasting

I cannot think of any one specific time in my life where science has played an important roll. It is more of a constantly important thing that I constantly refer to when trying to solve problems *(Digital Dialogue, Male, Cardiff)*

Increasing involvement

- There was uncertainty about the extent to which the public can be involved with science due to its complexity and the responsibility they perceived it to carry.
- There was an assumption involvement would consist of dialogue with scientists - because of this some were unsure how to become more involved.
- Suggestions on how to be more involved included:
  - Answering polls
  - Inviting the public to 'briefings'
  - Public to have a voice in moral or ethical considerations

Prompted active consideration of their last involvement with science opened up some participants' conception of their involvement in science

Television programmes about nature, animals and space were popular and the most common way in which participants had recently engaged with science

- Those who had engaged with science recently had attended fairs with children, watched medical documentaries, read articles about scientific discoveries, listened to podcasts about forensic science, and engaged with science for work - and were largely positive about these forms of engagement
- Meanwhile, others had engaged with science more passively, hearing about science through the news or radio.
- Those who claimed to have little to no engagement with science recalled their last engagement as at school.

The futuristic 'The Blue Planet' is a fascinating, captivating and totally enthralling series which makes me feel in total awe of the wonders of our fabulous planet and sheds light in areas we would never have imagined could be captured on camera *(Digital Dialogue, Female, Belfast)*

I may have caught something on the TV but would not be able to recall anything *(Digital Dialogue, Male, Leeds)*

I would probably say back at school whilst mixing chemicals or adding metals to the different environments and seeing the outcome of how they react *(Digital Dialogue, Male, Peterborough)*

I tend to hear about science primarily through what is reported in the news. Sometimes it's amazing such as developing medicine to counteract disease such as Ebola *(Digital Dialogue, Female, Yorkshire and the Humber)*

Visual and audio information about science was engaging because it was more accessible than complex text that often uses jargon

The most common types of science events attended were museums - in some cases these had been visited internationally

Science events attended included:
- **Museums**
- **Science fairs**
- **Exhibitions**
- School activities
- And less commonly - science centres and a robot fair

Who attended science events:
- Families
- Those on holiday
- Professionals for work

Why do people not attend:
- Lack of time
- Lack of interest

Responses to science events:
- Positive for those who visited museums, fairs and exhibitions – seen as a good way to spend time with loved ones and learn about new things in a fun way
- General sense of enthusiasm about attending again – but it was unclear what was stopping them doing so

In truth the last science "talk" I witnessed was watching my step daughter becoming involved in a science activity in a holiday club! It sparked her interest and gave us great ideas to test out at home *(Digital Dialogue, Female, Cardiff)*

Never attended any such event. Not really interested in such subjects *(Digital Dialogue, Female, Cardiff)*

My [visit to the Science Museum in London] did change my views from boring 'geeky' science to 'I can understand' view! *(Digital Dialogue, Female, Exeter)*

Engagement for pleasure at their own leisure - e.g. watching TV, reading, or listening to podcasts about science - was preferred over more formal involvement such as attending science events. However, interactive events or activities were popular and events that included familial participation were popular among parents

Overall, participants were more engaged by science when it more closely related to their personal experiences

Key personalised moments included:

- **Health and medical incidents** – their own or a family member's
- **Technology** – connectivity, entertainment, discovery
- **Attending an event with their family** – school events, museums, exhibitions
- **Helping their children with science homework** – learning something new or recalling information
- **Personal intrigue** – when it related to an existing hobby or area of interest

I was diagnosed with late stage throat cancer in 2012. I underwent a demanding regime of chemotherapy and radiotherapy, and it was the most physically and psychologically challenging experience of my life. Medics don't use the word 'cure' in the context of cancer, but I've been in remission for six years now. I'd say that's pretty important to me! *(Digital Dialogue, Male, Exeter)*

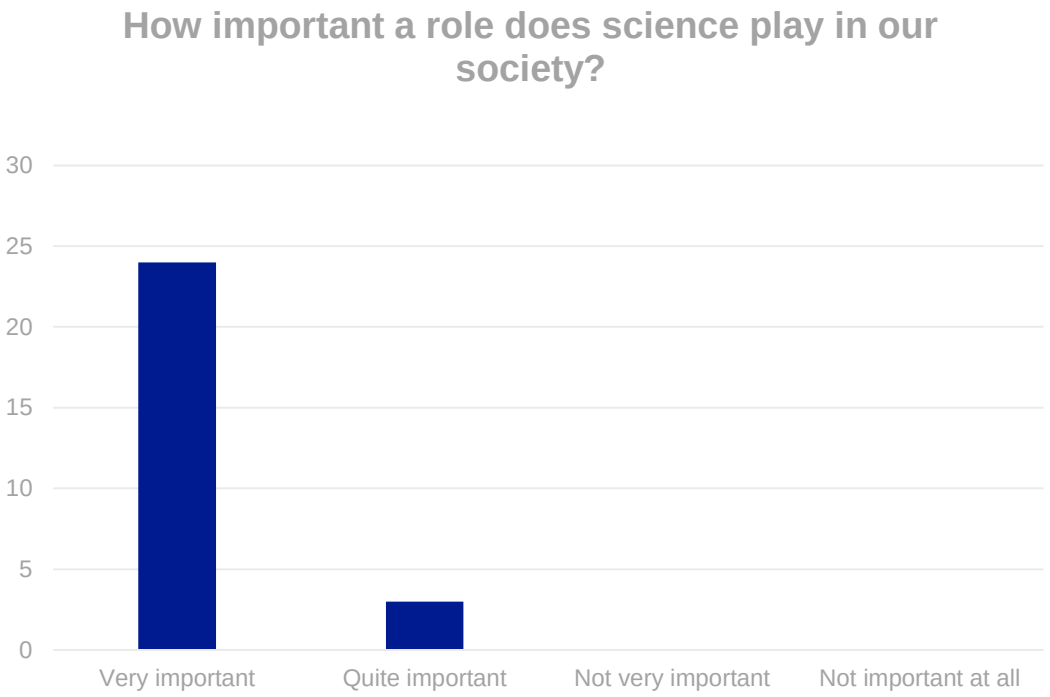
Unfortunately I am somewhat addicted to my iPhone and I use numerous elements of the technology on this on a daily basis. For a recent business trip to London, I used an app to check-in for my flight, used an app to purchase my train tickets, used Apple Pay for the underground, used my google maps to find the office I was to visit & brought up my emails for my hotel accommodation *(Digital Dialogue, Male, Scotland)*

I'm not sure of this is a medical science or not but with my second child I had to have a caesarean, so I would imagine there would be science involved with delivering my baby as to getting the timing right and knowing what amount of the injection to give me to where to cut and how deep *(Digital Dialogue, Female, Peterborough)*

Participants were more likely to engage with science when it directly related to their lives as this meant it was more tangible

5.
Role of science in society: aspirations and concerns

There was wide agreement that science plays a very important role in our society



All digital dialogue participants

Science was seen as integral to and a foundation of our society. Key areas where science plays an important role were identified as:

- **Medical advances** – developing cures to diseases, testing products, CT scans, X Rays, MRI scans, endoscopic tests
- **Transport** – energy sources, fuels, aeroplanes, traffic management
- **Computing** – mobile phones, improvements to computer technology
- **Environment** – providing evidence of global warming, fighting climate change, informing air and water quality
- **Space** - pushing boundaries in exploring possibilities in outer space

> Science underpins most of what we do in society. It's not so much "in your face" but if we stop and think about it science is involved in every aspect of our lives. It's there but we don't really acknowledge it. The electricity we use, the gas we use, the petrol we use, the food we eat - all of it would not be possible without science. Clean water from our taps would not be possible without science. It's actually an incredible subject to have! *(Digital Dialogue, Male, Cardiff)*

Some (digitally excluded) participants noted that whereas science is heavily relied upon in Western societies, other forms of knowledge are drawn upon in other cultures (e.g. ancestors and tradition)

When viewed in isolation, participants could think of few groups or types of people that are disadvantaged by science

Most considered science to be beneficial to everybody because it:

- Facilitates medical breakthroughs – to save lives
- Improves health – helping people to live longer, healthier, higher quality lives
- Identifies and helps solve environmental problems – e.g. global warming
- Encourages human advancement – technology, exploration, knowledge

Many participants struggled to think about who science might disadvantage, but examples included:

- Those who suffer long term side effects from medication
- Religious fundamentalists
- The environment – associated with global warming, pollution of waters and destruction of rainforests

Everyone - in many different ways science touches someone's life. Everything - the way things work *(Digital Dialogue, Female, Exeter)*

I don't think anyone can say science doesn't benefit them. Even though we may not directly understand why almost every aspect of our life is affected in some way by science *(Digital Dialogue, Female, Scotland)*

Science benefits everyone without a doubt. We would know absolutely nothing about the planet and be living in the stone ages still without it *(Digital Dialogue, Male, Scotland)*

Science has the capacity to be used for ill, to the same extent it can be used for good. It can be used to clear rainforests, pollute our waters, to create weapons and extend control over others *(Digital Dialogue, Male, Scotland)*

I would have thought no one. I can see no reason why science would disadvantage anyone? Other than people with strong religious beliefs (*Digital Dialogue, Female, Peterborough)*

Society. Global warming is the obvious one here to me (*Digital Dialogue, Female, Cardiff)*

There was greatest excitement about science when it was seen to make life better for people most widely – notably in the fields of medicine and the environment

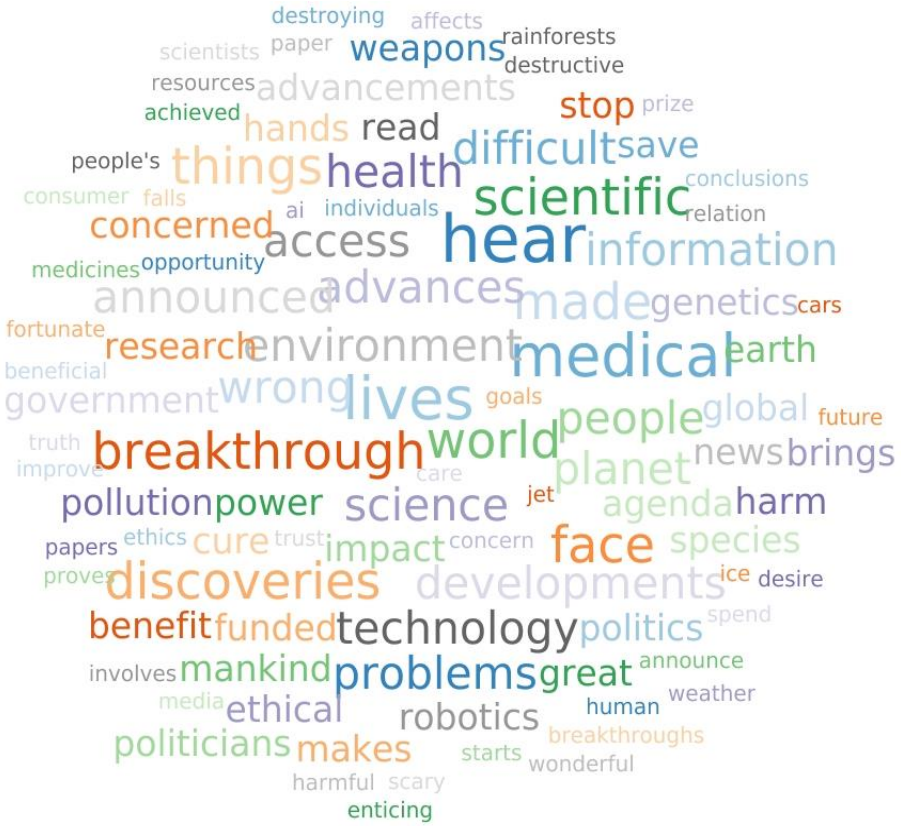
Aspirations for science

- Extend life and improve healthcare
- Improve people's quality of life
- Tackle climate change and improve the environment
- Help animals
- Provide comfort / convenience to people in society
- Understand the world and make new discoveries
- Further human progress through new technologies

I am excited about science in our society when scientists announce a breakthrough in resolving the most pressing of the problems we face in this century, e.g. global warming, destruction of the rainforests and coral reefs, pollution of the oceans, and extinction of other species *(Digital Dialogue, Male, Exeter)*

I am excited about science in our society when I see or hear of advancements which will better our society & help both ourselves in the developed world but also those less fortunate *(Digital Dialogue, Male, Scotland)*

Associations with science



Participants were excited and engaged by science where it was seen to benefit people like them

When asked what they wanted to see from science over the next 10 years, participants prioritised medical cures

For the next 10 years:

- There was an overwhelming desire to see advancement made in curing and combatting cancer
- One participant wanted to see more scientific research into the role and impact of family and social relationships specifically related to:
  - the impact of removing a child from their familial home
  - Looked After Child / children in public care outcomes

I would love to see a cure for cancer (Digital Dialogue, Female, Cardiff)

I would like to see more advances in the medical field especially combatting cancers *(Digital Dialogue, Male, Dumbarton)*

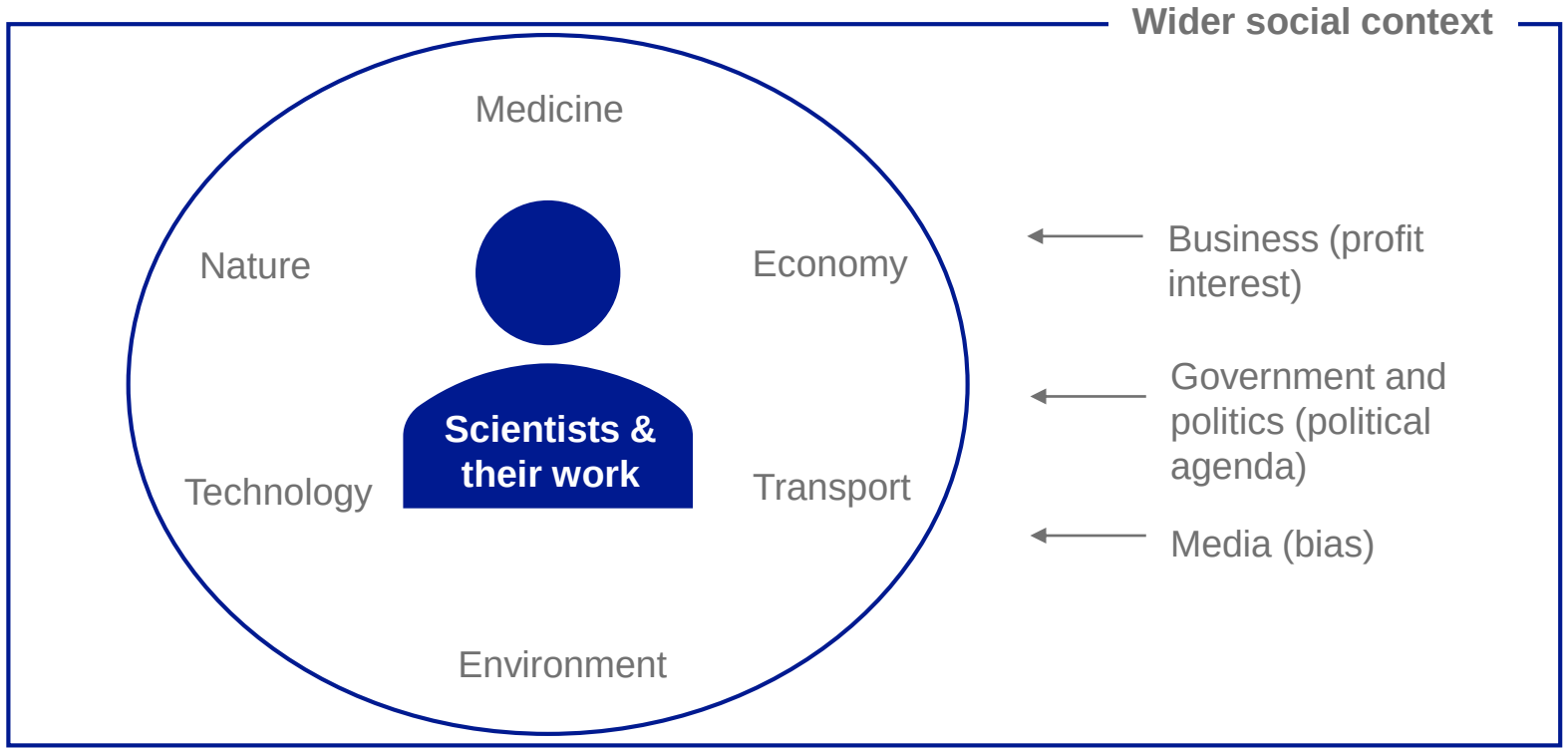
I would like to see more disease cures, especially cancer *(Digital Dialogue, Female, Cardiff)*

I am excited about science in our society when I see mankind benefit from the science *(Digital Dialogue, Male, Exeter)*

Straightaway my thoughts turned to cures for cancer. It's a horrible illness and thanks to scientific research survival rates for cancer are much higher than they used to be *(Digital Dialogue, Male, Cardiff)*

Cancer was seen to be an issue which touches everyone's lives and participants were keen to see science tackling this issue which affects society widely

When scientists and their work were considered in isolation, scientists were seen to be driven by passion and working to better society – but trust decreased when their work intersected with other interests in the wider social context – whose motivations raised concern



Key concerns:

- Agenda – motivations for scientific developments / usage
- Funding – what organisations fund research
- Profit – who receives profit / benefits from advancement
- Accessibility – the public's ability to access data, research, and the benefits of scientific developments

Distrust of business creates an engagement issue for scientists who work in these organisations and require funding to progress ideas

Concern was expressed about past and future negative impacts and unintended consequences of scientific developments for the general public

While participants generally believed that science and scientists were motivated by good intentions and working for the common good, they were concerned about the unintended consequences science can have on society, animals, and the planet

Concerns included:

- **Climate change –** pollution, global warming, species extinction
- **Impact of technology on mental health and society –** the increasing use of screens and negative influence on interactions between people, particularly children
- **Weapons** – development and use of advanced weaponry
- Threats to the workforce – automation, robots, and AI replacing people / jobs
- Animal testing – and the suffering caused to animals
- Medical errors – with particular reference made to the Thalidomide scandal of 1962

I am concerned about science in our society when I hear about the impacts that we are having on our environment *(Digital Dialogue, Male, Belfast)*

I am concerned about science in our society when it moves towards AI. I think we need to be careful we remain in charge of our scientific creations (*Digital Dialogue, Make, Belfast*)

I am concerned about science in our society when I see it being used for negative or harmful purposes (advancements in weapons for example) *(Digital Dialogue, Male, Scotland)*

There types of concerns raised were consistent across the sample

There was also some discomfort with the pace of change and participants were concerned about scientific and technological advances where they were seen to be happening too quickly and for their own sake

Most concerning advancements:

- **AI / robotics technology** – when this is linked to loss of jobs
- **Genetic engineering** – where this is not for a medical purpose; e.g. gender selection
- **Social media technology** - when this is associated with addiction, mental health issues, societal issues, increased isolation, and data breaches
- **Weapons** – concerns about who controls weapons and who makes weapons

There was concern about the pace of development when participants feared loss of control of technology and when they thought people were becoming too reliant on technology

"We're losing our sense of humanity" *(Digitally excluded, Female, London)*

I am concerned about science in our society when it affects social interaction, face to face *(Digital Dialogue, Male, Scotland)*

I am concerned about science in our society when it is employed simply to create more destructive weapons or consumer goods. Bigger bombs, stealthier jet fighters, faster cars and 3D TVs are not going to solve the world's problems *(Digital Dialogue, Male, Exeter)*

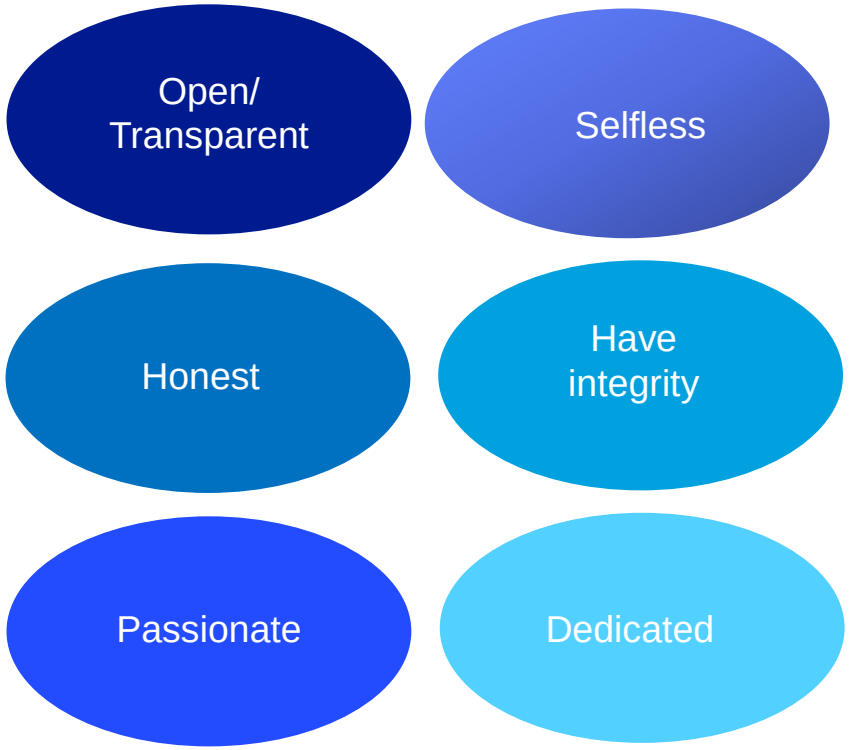
I am concerned about science in our society when it starts with messing with genetics to satisfy a desire, like gender selection for babies *(Digital Dialogue, Male, Cardiff)*

Government is controlling the science industry at the moment. They're going too far forward now, they're not doing the old school, what we did" *(Digitally excluded, Female, London)*

6.
Trust in science and scientists

Openness, honesty, transparency, and integrity were key drivers of trust in people in our society

What types of people in our society do you trust and why? I trust people who are…



- Across social grades participants trusted those who are open, honest and transparent about the motivations of their actions
- They trusted those they believed to have selfless motivations and act with integrity – which was conflated with passion, interest and dedication to a subject or area of expertise
- There were also high levels of trust in those people knew well and personally (e.g. friends and family members) particularly among those from lower social grades

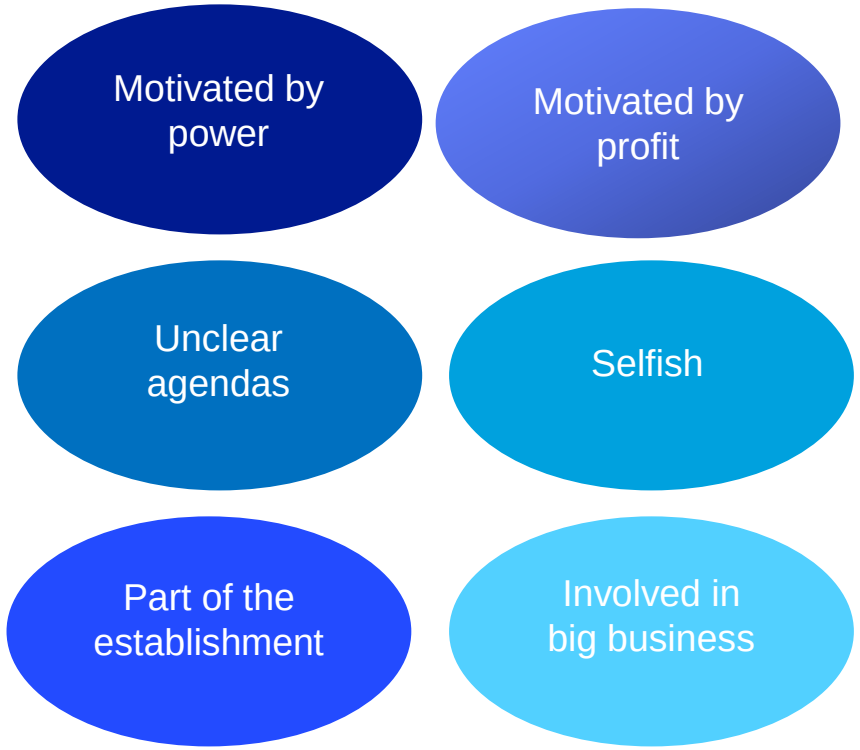
> Experts that are forthcoming about their own limitations are far more trustworthy to me. The surgeon that operated on my wrist was an expert that I gave my explicit trust, after seeing the work they had performed on a family member *(Digital Dialogue, Male, Wales)*

> I also trust experts who do not have an agenda and again have reached their positions through, usually years of experience in a particular field (humanitarian aid, nursing, medical supply chains, etc). To have reached those types of agency, they must be qualified, reputable, etc. *(Digital Dialogue, Male, Scotland)*

Those from higher social grades more commonly trusted experts that have proven themselves to be trustworthy in the past and had dedicated themselves to their area of expertise

Key drivers of distrust of people in our society were self interested motivations, self serving agendas, and being profit and power driven

What types of people in our society do you distrust and why? I trust people who are…



Participants spontaneously mentioned politicians as the least trusted types of experts because they were perceived to have self serving agendas, break commitments, to try to manipulate the public and be dishonest. Participants also distrusted those who they perceived to be:

- Fake / not genuine
- Arrogant
- Deceitful

> I distrust people who are involved in politics because it all seems so corrupt, fake and like they are out to insult one another rather than actually running the country *(Digital Dialogue, Male, Exeter)*

> Big business pharmaceutical companies, where money/profit is paramount to development rather than benefitting society. Whilst I appreciate these companies need to make a profit there have been situations when individuals have been put at risk *(Digital Dialogue, Female, Cardiff)*

> Corporations, they're all about money, money, money so I don't trust them *(Digitally excluded Male, London)*

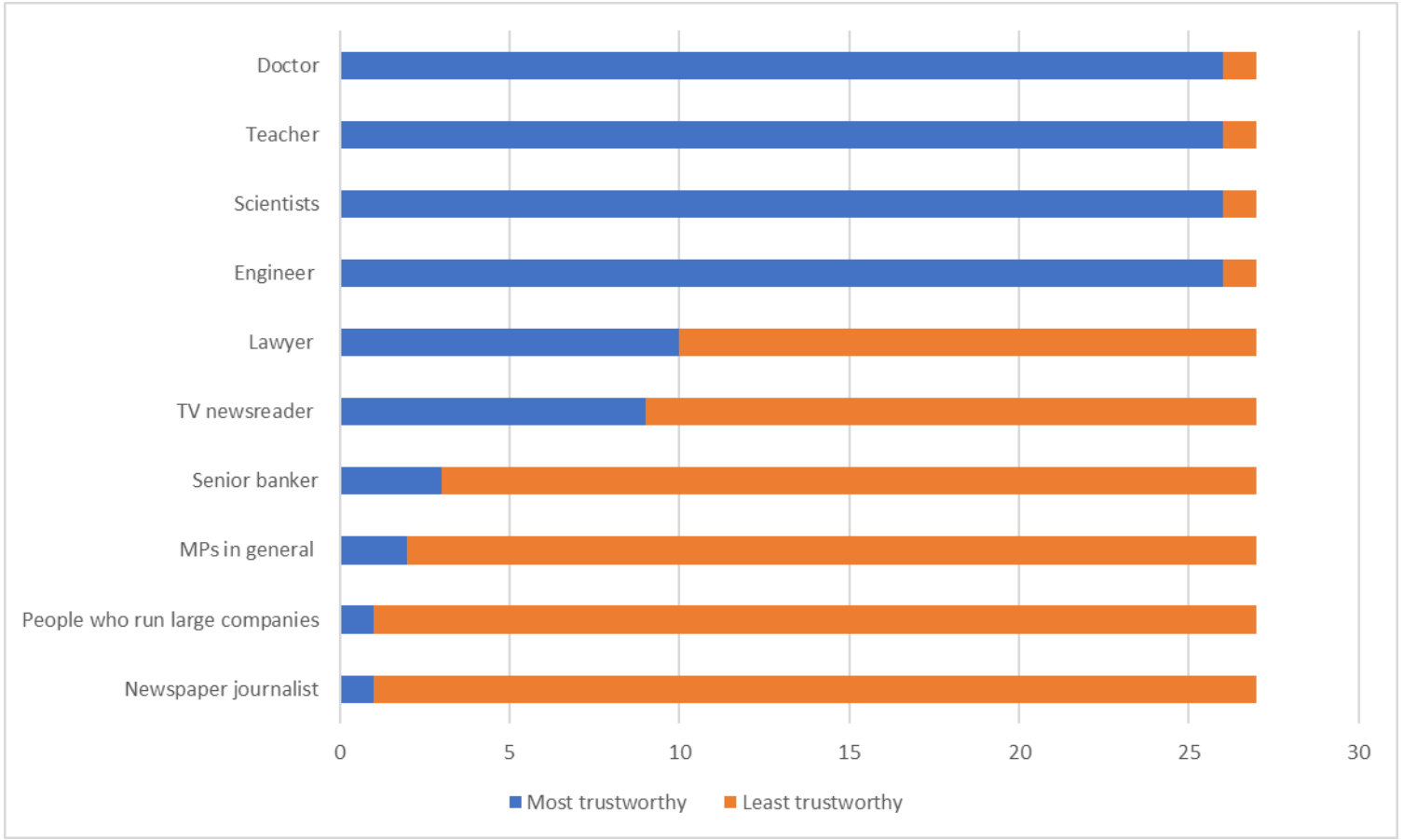
There were high levels of distrust in politicians, government, and business across the sample – those seen as 'the establishment'

Scientists and engineers were amongst the most highly trusted professionals in the country – alongside doctors and teachers

- Scientists were highly trusted – and seen to exhibit the values participants said inspired their trust in people in society more widely
- Participants valued passion, a quest for knowledge and truth, and the sharing of expertise – reinforcing the idea of the scientist as a pursuer of knowledge with good intentions
- This high level of implicit trust means that scientists and engineers have a long way to fall when they are seen to let the public down

[Scientists] train cos they want too. They have a passion for what they do *(Digital Dialogue, Female, Exeter)*

Most and least trusted professionals

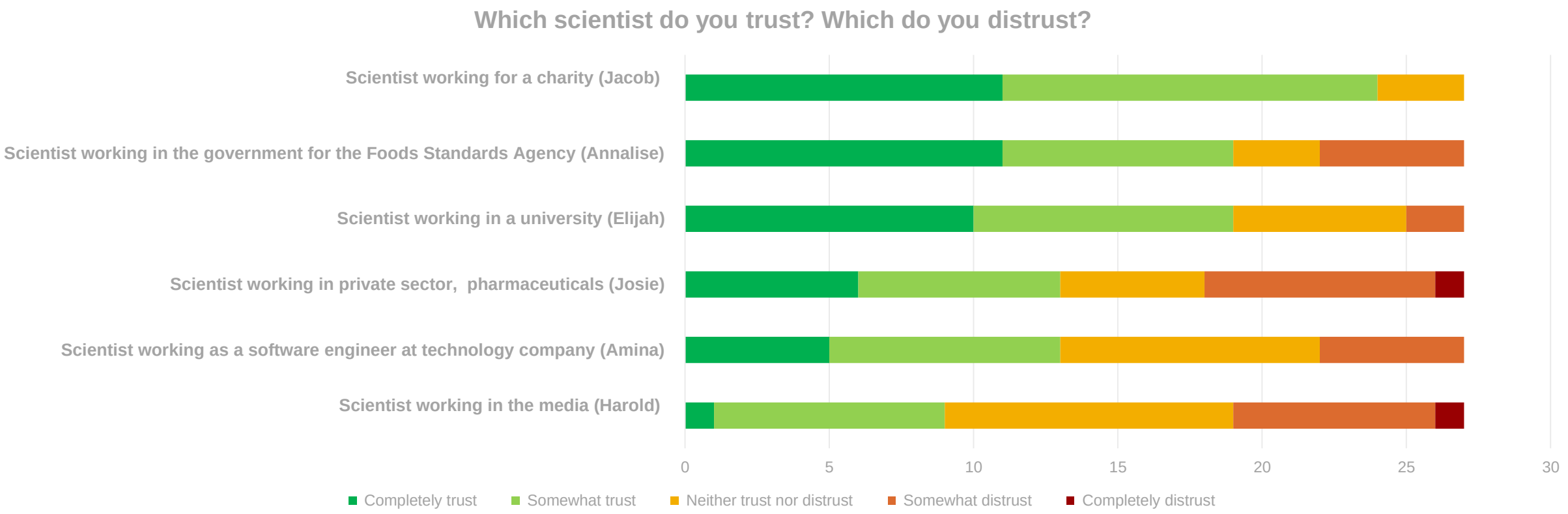


All digital dialogue participants

Q: Sort these professions in to the order of which you trust them, from most to least trustworthy. Base: All digital dialogue participants 27

There were varying levels of trust in the different types of organisations that scientists work for

There were higher levels of trust in scientists working for charities, universities, and a government regulator than those working in the private sector and for the media



Q:Scientists work in a variety of different types of organisations. Read the profiles of these 6 scientists working in different places. Use the **thumbs up** tool to tell us anything you like and which inspires you to trust this scientist. Base: All digital dialogue participants 27

Participants were introduced to six scientists working in different organisations – and marked up what made them trust and/or distrust each scientist

Harold, 50

Wildlife Documentaries

- Travels around the world with his team observing animals in their natural habitat and researching their behaviour
- Contributes to documentaries for TV channel Discovery Science from who he receives a budget

Jacob, 34

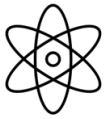
Researcher at a large cancer charity

- Part of a team on a project about the circulation of blood platelets in relation to cancer patients
- Large UK wide charity is funded by fundraising, donations and grants

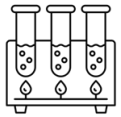
Elijah, 44

Experimental physicist

- University of Bristol
- Develops instruments for control and measurement of molecules and cells
- Laboratory is funded by the government and university



Annalise, 56



Food hygiene scientist

- Biologist working for the Food Standards Agency – working on their 'Advisory Science Reports' for the government
- Presents the latest evidence on food allergies and intolerances to the government to help inform policies which are made to help people make food choices (e.g. what should be on food labels)

Josie, 25

Lab assistant

- Works at a medium sized pharmaceutical company that focuses on discovering, developing and commercialising new medicines
- Responsible for safely preparing materials, equipment, and machines in the labs

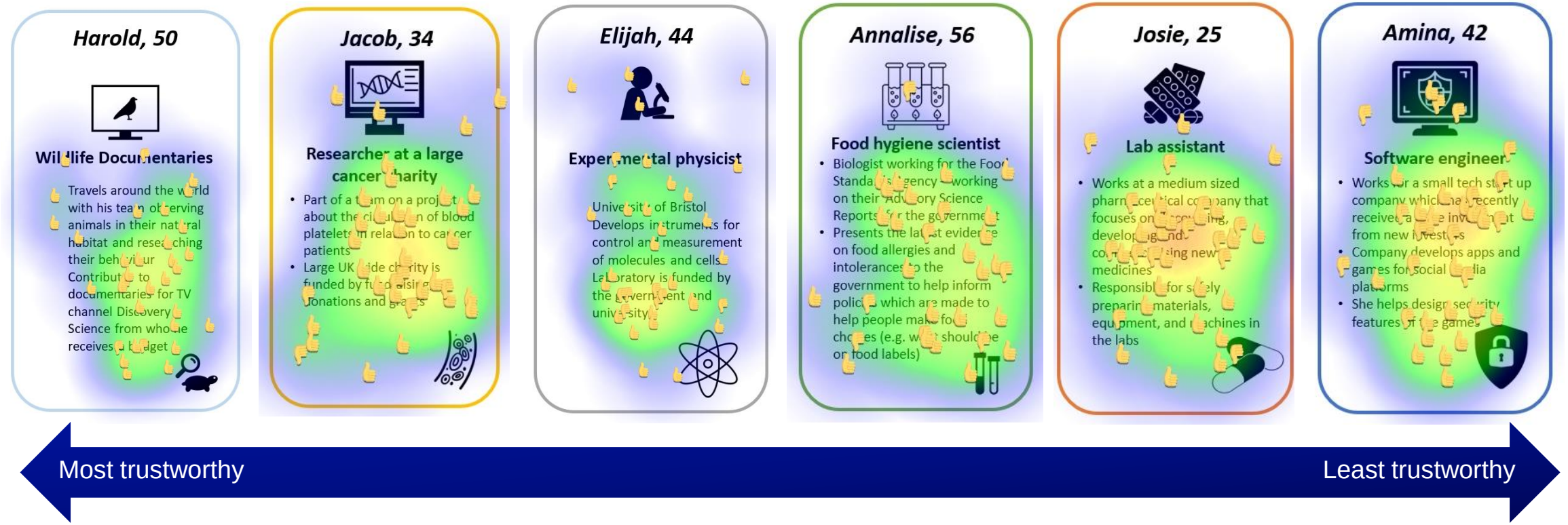
Amina, 42

Software engineer

- Works for a small tech start up company which has recently received a large investment from new investors
- Company develops apps and games for social media platforms
- She helps design security features of the games

Most trustworthy ← → Least trustworthy

Participants trusted scientists who they perceived to be working selflessly, passionately, and to make a positive change and benefit society most widely



Those digitally excluded tended to have lower levels of trust in charities due to a belief that they were reluctant to find or were hiding a cure for cancer for their own survival and interests – and questions were raised about how money is used and within distributed in large charities

Participants trusted scientists who they perceived to be working selflessly, passionately, and to make a positive change and benefit society most widely

Harold, 50

Wildlife Documentaries

- Travels around the world with his team observing animals in their natural habitat and researching their behaviour
- Contributes to documentaries for TV channel Discovery Science from who he receives a budget

Liked

- Considered a passionate expert providing insight into an area which is otherwise inaccessible to the public
- Valued exploratory learning and the scientist sharing findings

Disliked

- Concerns about exaggerating content for entertainment

Jacob, 34

Researcher at a large cancer charity

- Part of a team on a project about the circulation of blood platelets in relation to cancer patients
- Large UK wide charity is funded by fundraising, donations and grants

Liked

- Researching cancer – affects the lives of many and an area that deserves funding and research

Disliked

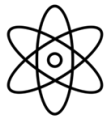
- How large charities spend funding – perception that funding is spent on publicity rather than research (particularly among digitally excluded)

They trusted scientists they thought were working for the public's benefit and were experienced in their field

Elijah, 44

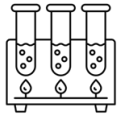
Experimental physicist

- University of Bristol
- Develops instruments for control and measurement of molecules and cells
- Laboratory is funded by the government and university



Liked	Disliked
• Felt the scientist was neutral and not causing harm • From a reputable university • Respected scientists' curiosity and passion	• Felt they did not understand the role • Some disliked that the work was government funded because of their distrust for government

Annalise, 56



Food hygiene scientist

- Biologist working for the Food Standards Agency – working on their 'Advisory Science Reports' for the government
- Presents the latest evidence on food allergies and intolerances to the government to help inform policies which are made to help people make food choices (e.g. what should be on food labels)

Liked	Disliked
• Considered important to public health particularly allergen information • Thought scientist's age indicated being highly experienced	• When food advice changes frequently or believe public is being presented contradictory information • Some found food labels confusing • Extent to which the government can be trusted

Participants became less trustworthy of scientists working for private companies / organisations they believed to be operating only for profit

Josie, 25

Lab assistant

- Works at a medium sized pharmaceutical company that focuses on discovering, developing and commercialising new medicines
- Responsible for safely preparing materials, equipment, and machines in the labs

Liked	Disliked
• Link to curing diseases and medical discoveries • Ensuring standards and safety	• The idea that pharmaceutical companies profit from medicine and ill health • Age of the scientist – seen to be too young to take on such large responsibility

Amina, 42

Software engineer

- Works for a small tech start up company which has recently received a large investment from new investors
- Company develops apps and games for social media platforms
- She helps design security features of the games

Liked	Disliked
• Focus on data security – felt this is an area that is rapidly advancing and security needs to develop in tandem - particularly in relation to children and social media	• Some concern about the degree to which ethics are considered in start up companies as they are not established • Some distrust of new investors and motivation for financial investing

Trust in scientists decreased when their work was seen to intersect with other interests in the wider social context – when participants thought the organisation was using scientific or technological developments for their own profit or agenda

- **There was wide trust among the digital dialogue participants in academics and charities** who were seen to be honest and to have integrity.
  - Digitally excluded participants distrusted large charities because of the large amounts of funding they were seen to receive and were suspicious that they may be hiding cures they had discovered in order to serve their own organisational interests
- **There was wide distrust of politicians** – who were seen to use science for their own agendas
- **There was wide distrust of large businesses -** who were seen to be profit driven and suspected to act at the expense of the public interest – particularly tech and pharmaceutical companies
- **There was distrust of the media's** use and presentation of scientific information – with belief that sensationalism is used to make money rather than inform the public

[Large charities] don't intend to cure nothing" *(Digitally excluded, Male, London)*

The government only seem to care about themselves. Or do something so it makes themselves look good *(Digital Dialogue, Female, Peterborough)*

Trust in science drops when these figures are seen to be involved with science and potentially manipulating or using it in their interest

Participants were distrustful of the role of large business in science and technology – which creates an engagement issue for scientists who work in and with these organisations and require funding from the private sector to progress their ideas

Review of the types of scientists showed that perceived passion and transparency were key drivers of trust in scientists – reflecting wider views about who people trust in our society

Key drivers of trust included:

- **Honesty** – about intentions and implications of findings and innovations
- **Transparency** - about motivations and funders
- **Independence** – from self interested funders
- **Passion** – for the pursuit of knowledge, exploring nature, uncovering the unknown, sharing findings
- **Safety –** of the activities they were involved with
- **Reputation** – an organisation or individual's reputation with regard to these points

Key drivers of distrust included:

- **Ambiguity** - where motivations were unclear
- **Profit driven** – those driven by profit were seen to be working for selfish gains and greed
- **Contradiction** – when sources presented conflicting arguments and information
- **Reputation -** an organisation or individual's reputation

> [A wildlife scientist is] not doing the job for money, not at all. A tiger's not giving him 50 quid a day *(Digitally excluded, Male, Leeds)*

> I don't trust, large investment that is private. Social media has made us sceptical of the way data is handled and security protection (Digital Dialogue, Male, Exeter)

> This research has profit as its end objective rather than healing (*Digital Dialogue, Female, Belfast)*

> Pharmaceutical companies are distrustful due to the profits they earn *(Digital Dialogue, Male, Belfast)*

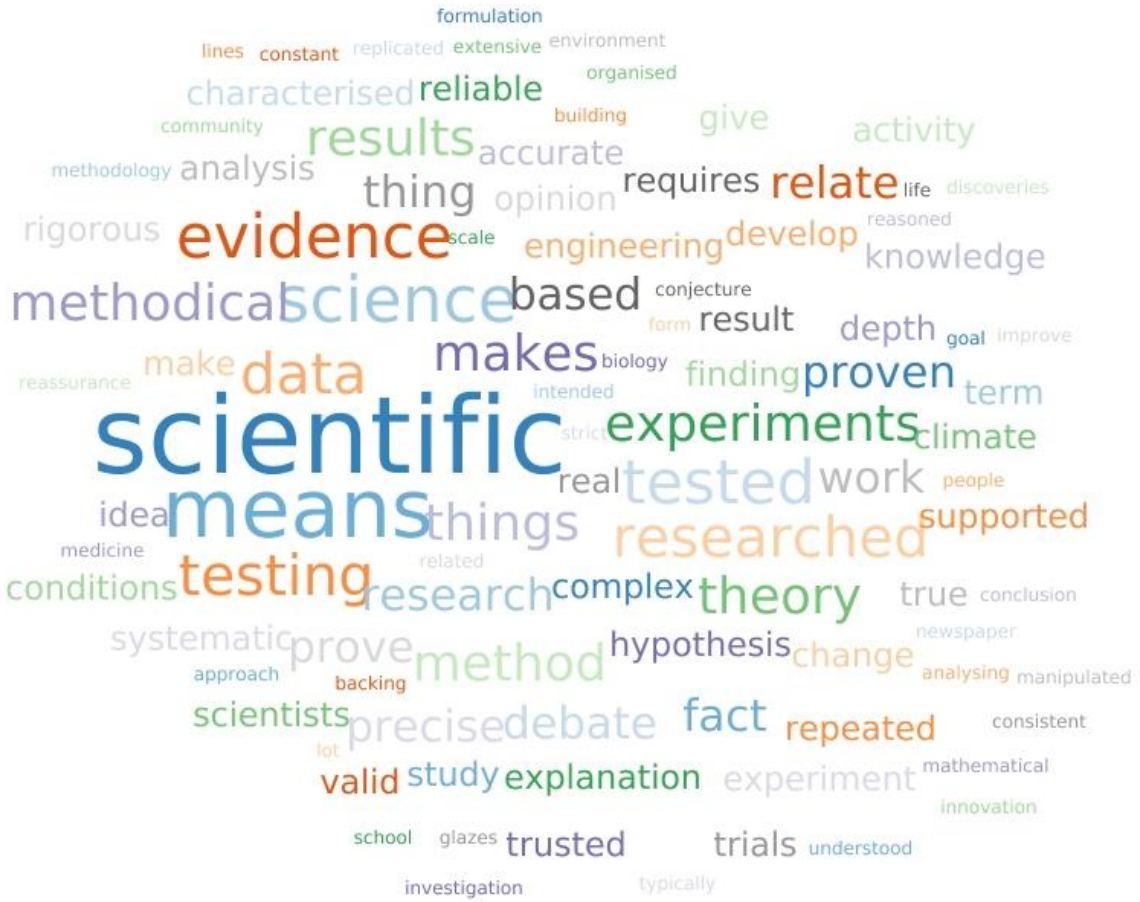
7.
Trust in scientific information

The term ‘scientific’ was associated with facts, truth, testing, and experiments

Key associations with the term ‘scientific’:

- Methodical – systematic and organised
- Rigorous - research and testing
- Intellectual
- Factual – evidence based
- Innovation and development – improving quality of life

These associations link with key drivers of trust in that they highlight the value participants have for honesty, transparency and safety



Something would be scientific if it is intended to prove or evidence a fact of some sort. Turning a supposition or theory into a concrete truth would be scientific, to me *(Digital Dialogue, Female, Belfast)*

Accurate, precise, supported by evidence and not conjecture, scrutinised by others (*Digital Dialogue, Male, Belfast)*

The term scientific often prompted to associations with the narrower conception of science

When asked about information in general, key drivers of trust were the source and the perceived motivations of the author

For some, information shared on the internet was considered trustworthy because sources present information from different points of view. However, digitally excluded participants tended to distrust information shared via the internet and social media because it was perceived to be contradictory – and this finding also emerged from the social media analysis which included digitally savvy people.

I trust information that is…

- From a recognisable source
- Fact based
- Unbiased
- Clear
- Provides evidence

I trust information that Is clear and concise because It's transparent and I can find out more if I need to *(Digital Dialogue, Female, Yorkshire and the Humber)*

I trust information that has a genuine source because you know it's true *(Digital Dialogue, Female, Peterborough)*

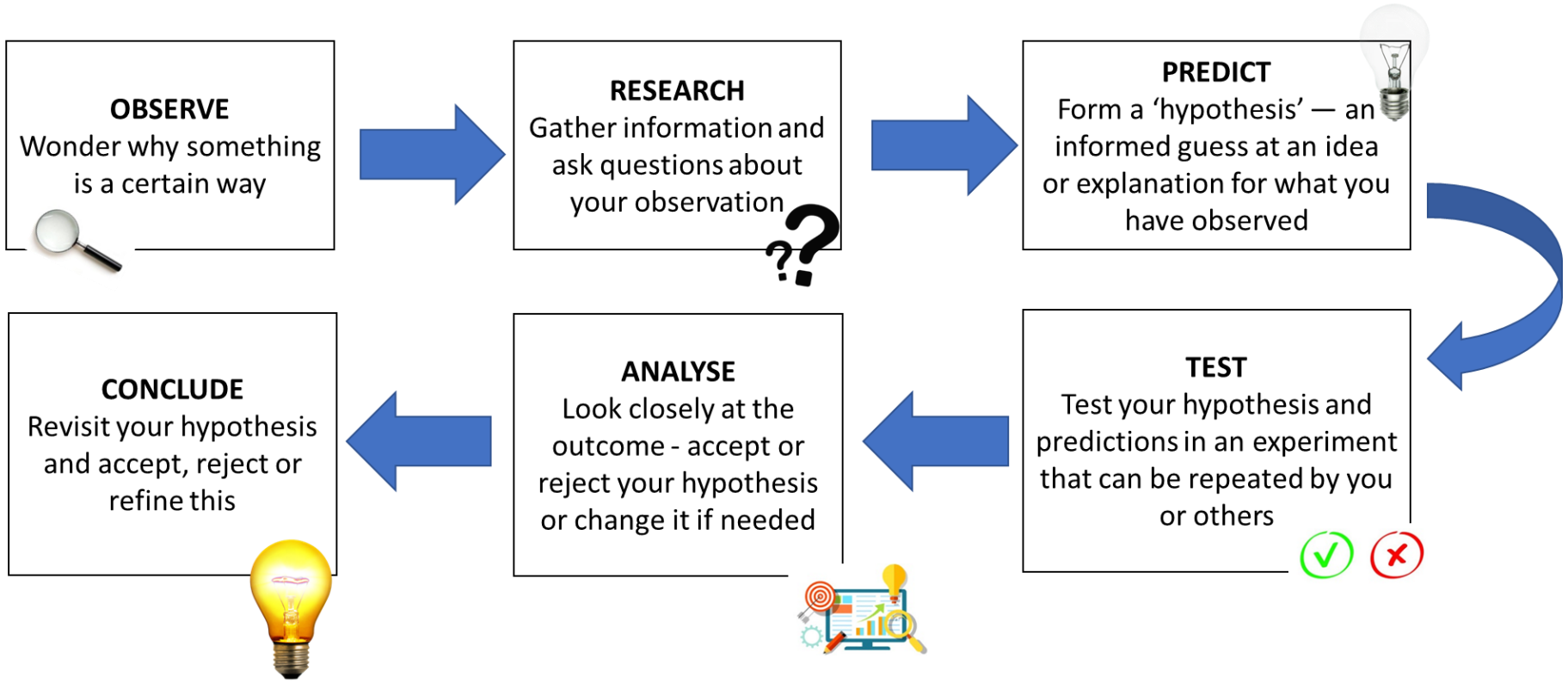
I distrust information that is…

- From social media or tabloid news
- From an unrecognisable source
- Overly complex or unclear
- Biased
- Comes from politicians

Information shared via a recognisable source with a good reputation was most trusted

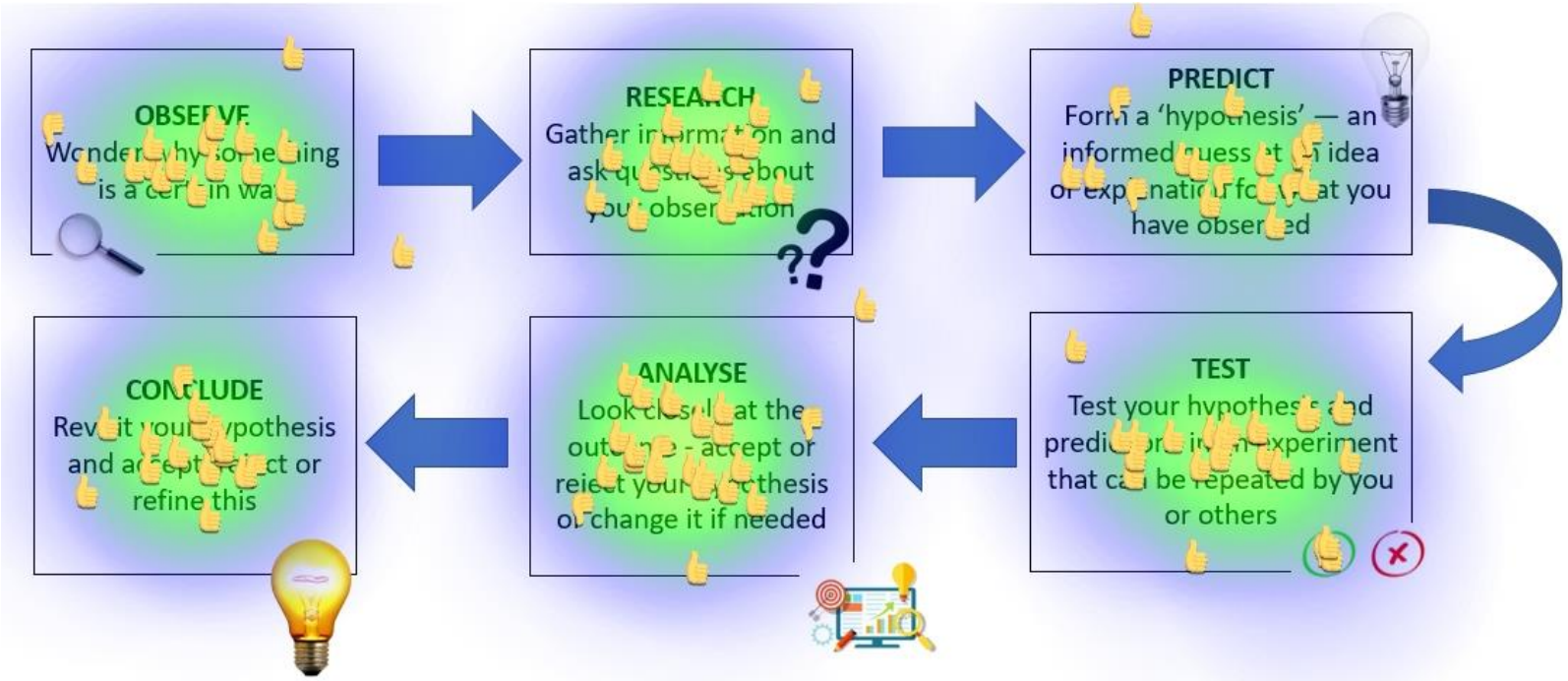
Whilst responses to the Scientific Method were generally positive, it did not shift participants' views and feelings about science and scientific information

The Scientific Method : a systematic and logical way for scientists to study and learn things



Whilst responses to the Scientific Method were generally positive, it did not shift participants' views and feelings about science and scientific information

Participants were generally familiar with the basic steps of the Scientific Method across the socio-economic grades



Some misunderstandings emerged about the relevance of making a prediction as some found the step too vague while others did not know this was part of the methodology

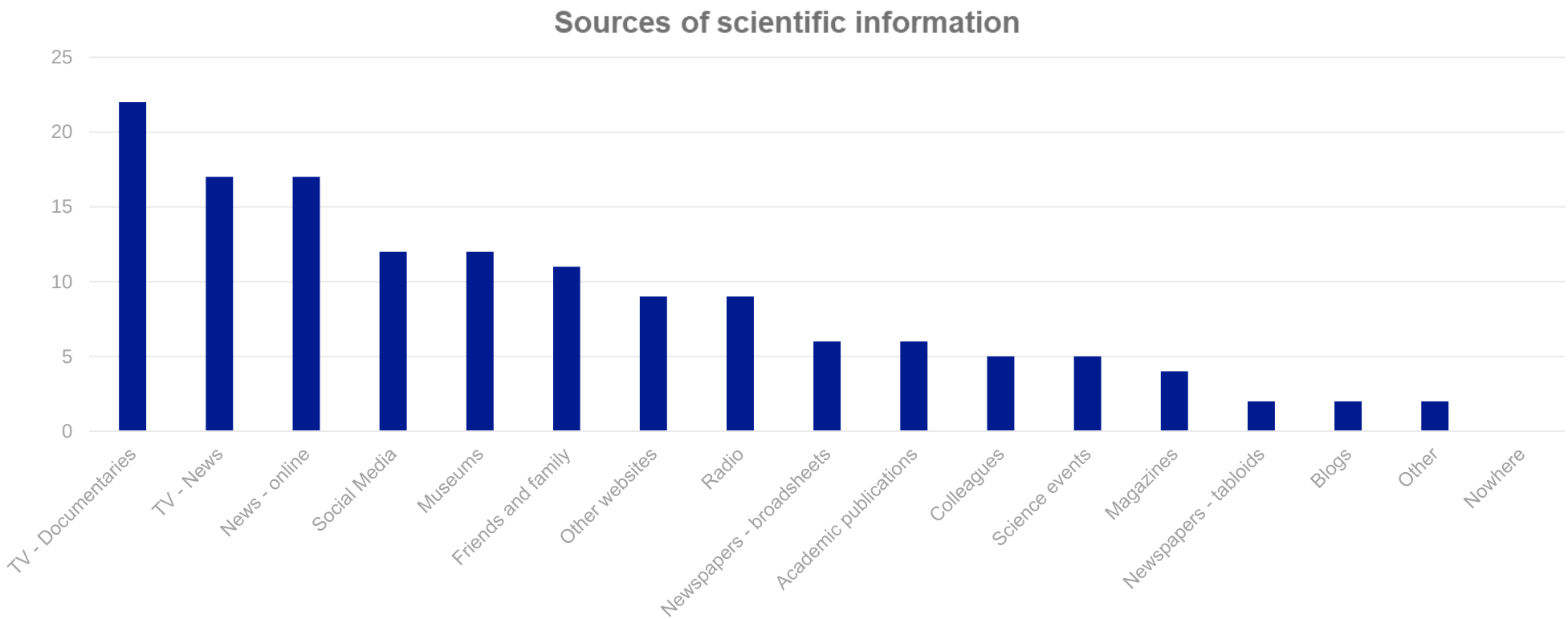
> I think [making a prediction] is often why scientists are potentially wrong.. as their hypotheses can be flawed based on their experiences of life *(Digital Dialogue, Female, Belfast)*

> I'm not good with predictions, I like facts *(Digital Dialogue, Female, Exeter)*

Views and perceptions of science and scientists are deeply held and difficult to shift. There is faith in the scientific method to seek truth and advance society – but this does not shift distrust in the wider social influences on science

Documentaries, TV news, and online news were the most popular sources of scientific information across the sample

The least popular sources for scientific information were tabloid newspapers, blogs, and magazines

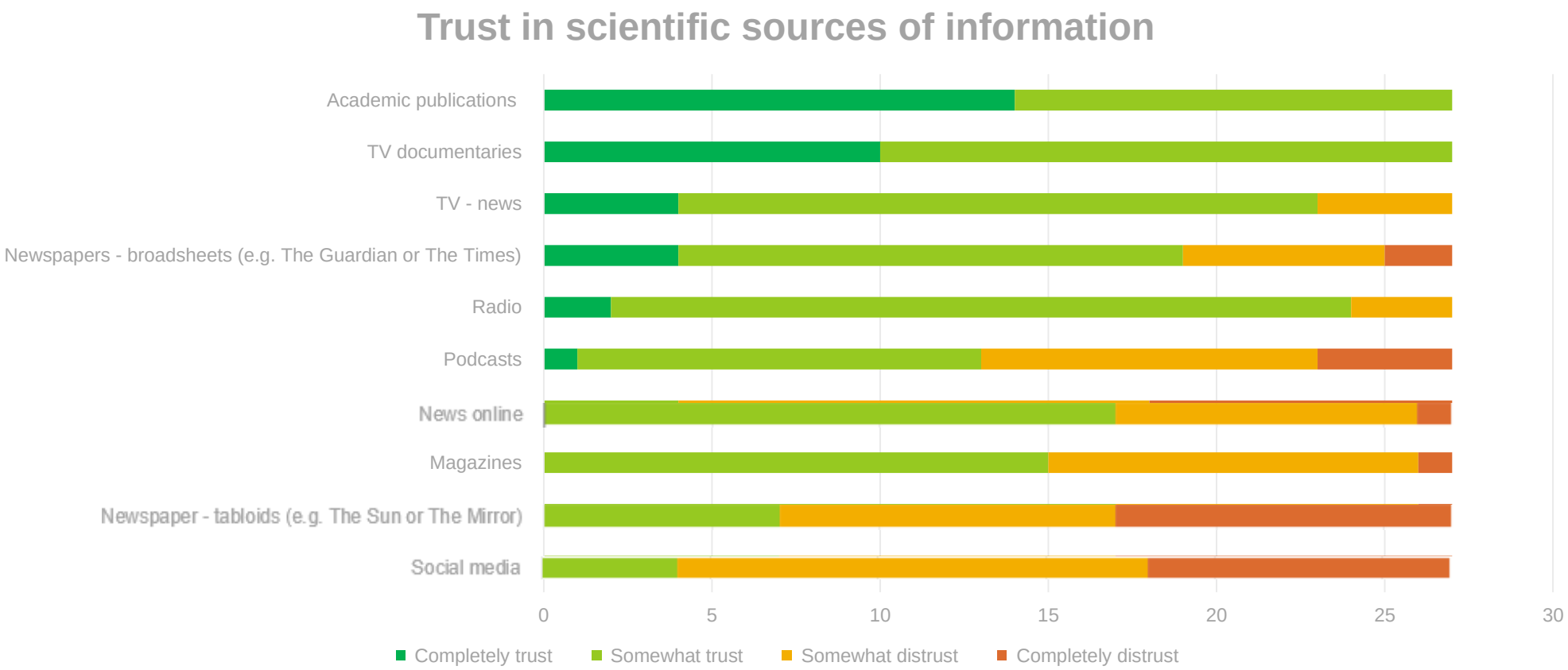


Other sources of scientific information included: journals, university web pages and blogs, books and science exhibitions

Q: Where, if anywhere, do you usually get your scientific information from? Base: All digital dialogue participants 27

Q:Is there anywhere else you get information about science and scientific developments from? Base: All digital dialogue participants 27

Despite being a less common source of scientific information, academic publications were ranked as the most trusted source



Some of the most trusted sources were: academic publications and TV Documentaries,

Some of the least trusted sources were: magazines and social media

Those from higher SEGs more commonly got information from a wider range of sources, suggesting a more diverse approach to gathering information

Q: To what extent would you trust information about science and scientific developments from the following sources? Base: All digital dialogue participants 27

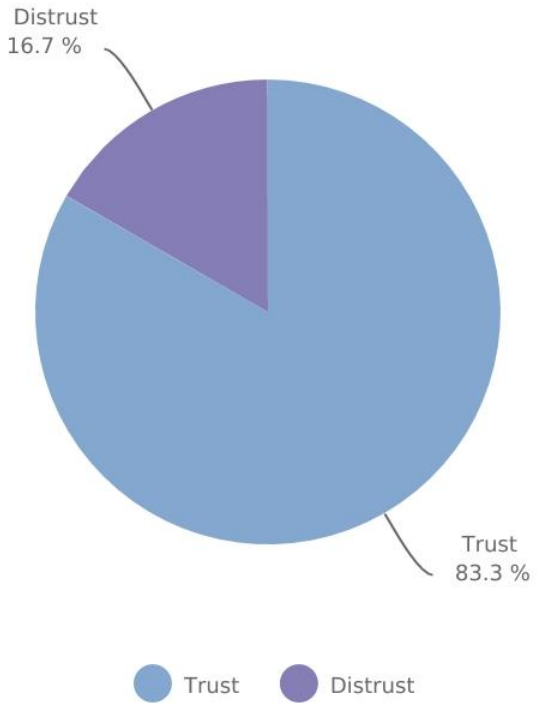
Participants were shown articles about acrylamides from four different sources; an academic article, an advisory body article, a broadsheet and a tabloid

The academic article was the most trusted source because of its reputation for rigour – even where participants found the language inaccessible

Academic Article

Risk Assessment of Acrylamide in Foods

This article was thought to demonstrate that rigorous research had been carried out. While comprehension of the content varied, participants trusted the article because the source was recognised as reputable



I guess big words and technical jargon should be believed…I'd not read this type of article as all as it's double dutch to me *(Digital Dialogue, Female, Belfast)*

Very factual and giving precise information *(Digital Dialogue, Male, Peterborough)*

The technical language and level of jargon made the article incomprehensible for some across socio-economic groups, however they assumed the information was robust and that it was written by someone with a high level of expertise – and therefore 'blindly' trusted the information

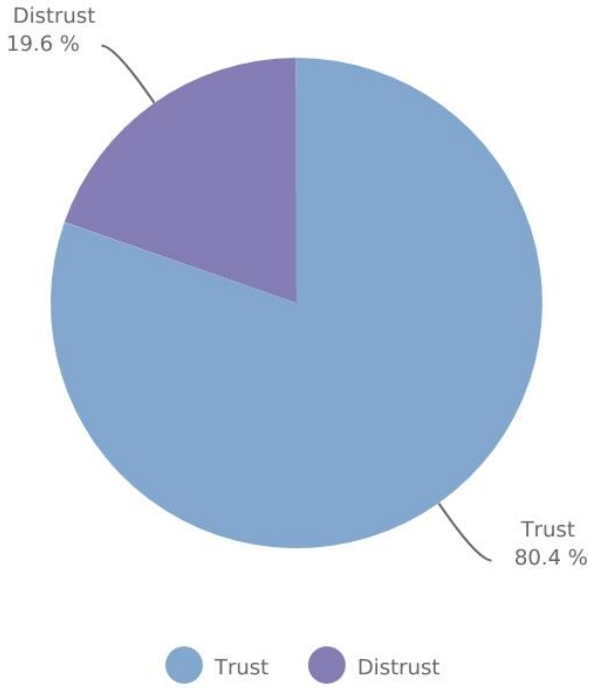
Q: Please use the thumbs up and down tools to tell us whether you trust the information in this article or not and why. What is it about the articles that makes you trust or distrust them? Base: All digital dialogue participants 27

There was a high degree of trust in the advisory body article - because it appeared unbiased and honest by taking into account the ambiguity and complexity of the topic

Advisory Board Article

Does Burnt Toast Give You Cancer?

Participants recognised the source as a trustworthy organisation. They tended to think that the information was presented concisely and in a balanced and proportionate way. Those who distrusted elements of the article disapproved of its ambiguity.



"Some research" indicating other research is required *(Digital Dialogue, Female, Cardiff)*

It should not be [this] confusing. Its bad for you or it its not *(Digital Dialogue, Male, Exeter)*

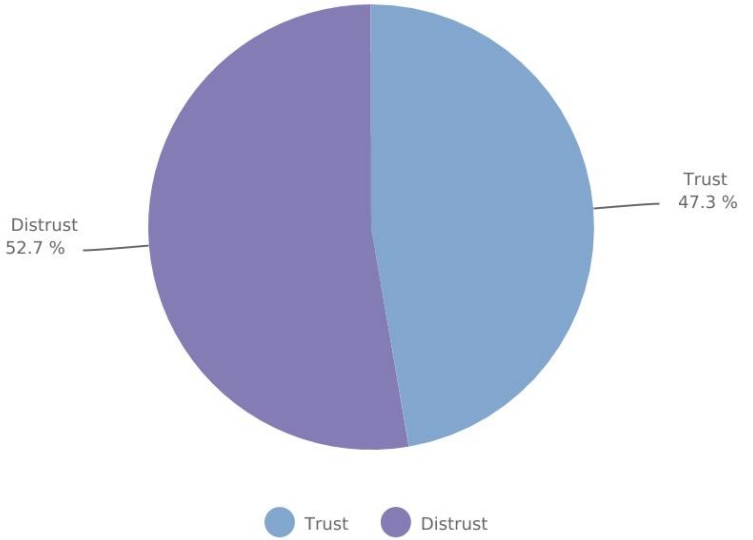
However there was some frustration that the article lacked a clear conclusion and direction for participants.

There was a more mixed response to the broadsheet article – whilst the accessible language was appreciated, some were put off by the uncertainty conveyed

Broadsheet Article

What is the real cancer risk from eating roast potatoes or toast?

With no significant differences in socio-economic group, trust in this article varied. While some trusted the source to present reliable information, others were concerned the language was too simple and that the tone was skewed towards scaremongering.



Too many uncertainties amongst the detail *(Digital Dialogue, Male, Peterborough)*

Problem laid out in simple terms with no jargon *(Digital Dialogue, Male, Scotland)*

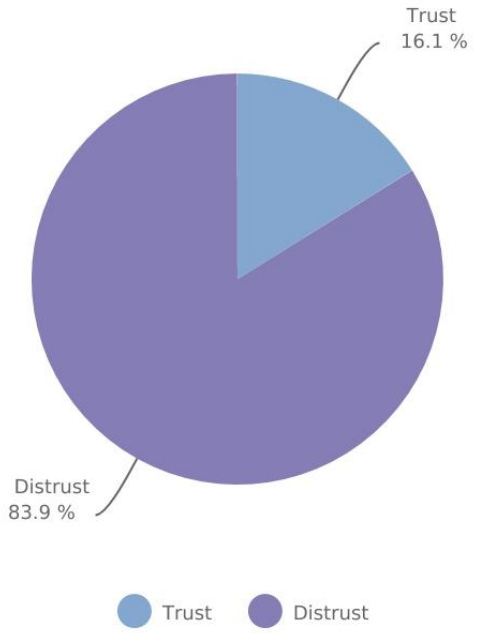
Some participants trusted the reputation of The Guardian and believed it presented balanced information – but others wanted a clearer and more definitive position to be presented

The tabloid was considered to be the least trustworthy source – and this distrust was driven by the sensationalist nature of tabloid reporting on science and health

Tabloid Article

YOU'VE HAD YOUR CHIPS
Brits officially warned off chips as boffins link fries and other starchy foods like pizza and toast to killer cancers

Participants were uninterested in reading the content of the article because they recognised the source as untrustworthy, sensationalist and dramatic. The hyperbolic language made some distrust the article further. Elements of the article that were trusted were links to references of reputable sources.



I very rarely trust anything this tabloid has to say as I have read a lot of rubbish in the past, I would not even really read this article, just skim though some bits *(Digital Dialogue, Male, Yorkshire and the Humber)*

The reputation of the source drove distrust in this information - many participants drew on negative past experiences about information they had read in The Sun and were cautious about taking the content as fact

The key factors that determined trust in scientific information included the source, tone, and language used

Participants distrusted information shared on social media and articles they believed were sensationalist

Tone and language were important

Trusted information provides:

- Complex information in an accessible way
- Does not patronise
- Does not sensationalise

This enables engagement and involvement. There was a desire to feel able to be involved in the conversation by being able to understand key debates. These findings also emerged from the social media analysis.

Facts, evidence, and clear sources

Participants said they wanted research, statistics, facts, evidence, rigour, and clear sources.

However, they tended to rely on the reputation of the source and people they knew to assess trustworthiness. These habits had formed as a shortcut to avoid the confusion caused by information overload, inability to engage with complex scientific language and contradictory information

High levels of trust in academic articles and information

There were high levels of trust in academic articles and information, despite the fact participants commonly found it incomprehensible due to complex language and jargon.

In this sense, their trust was blind and they felt they had no choice or alternative but to trust the information.

Overall, there was a general lack of trust in the media to present scientific information in a balanced and accurate way, driven by the belief that the media misconstrue and exaggerate information to encourage sales, at the expense of the wider public interest

8.
Views on government regulation of science

Overall there was low awareness of the role of government in regulating the science industry

There was a lack of awareness of where and how to find out about more information about this

Participants were unsure what the role of government was but tended to assume it had a role in regulating:

- Ethics
- Safety
- Reliability / accuracy
- Animal testing
- Licensing of new drugs
- Audits and inspections
- Funding

While there was generally a low understanding of the government's role in regulating science, those from higher socio-economic groups tended to have a slightly higher level of knowledge

> I have absolutely no idea but I assume making sure all research is done in the same way so data is reliable *(Digital Dialogue, Female, Peterborough)*

> I genuinely am unsure about this, sorry *(Digital Dialogue, Male, Scotland)*

> I genuinely do not have a clue! I know the UK government invests heavily in science and the UK is seen as a world leader in terms of scientific development and innovation but I absolutely do not know how it is regulated (*Digital Dialogue, Male, Belfast)*

There was some interest in knowing more about the role of government in regulating science

When provided with information, participants were generally positive about the current role the government plays in regulating science

Some of the bodies* currently involved in policy for and regulation of science and scientists in the UK are…

The FSA

Food Standards Agency
food.gov.uk

The Food Standards Agency (FSA) is an independent government department responsible for protecting public health and consumer's wider interests in relation to food

UK Research and Innovation

UK Research and Innovation

UK Research and Innovation is a new body which works in partnership with universities, research organisations, businesses, charities, and government to create the best possible environment for research and innovation to flourish.

GOV.UK

Animals in Science Regulatory Unit

Provides guidance on how to carry out scientific research and testing using animals and how to apply for specific licenses for this

Department for Business, Energy and Industry Strategy

Aims to build links between industry, energy and climate change, and enable a united focus on markets, investors and consumers.

Department for Business, Energy & Industrial Strategy

Government Office for Science (GO-Science)

Ensures that government policies and decisions are informed by the best scientific evidence available and strategic long-term thinking

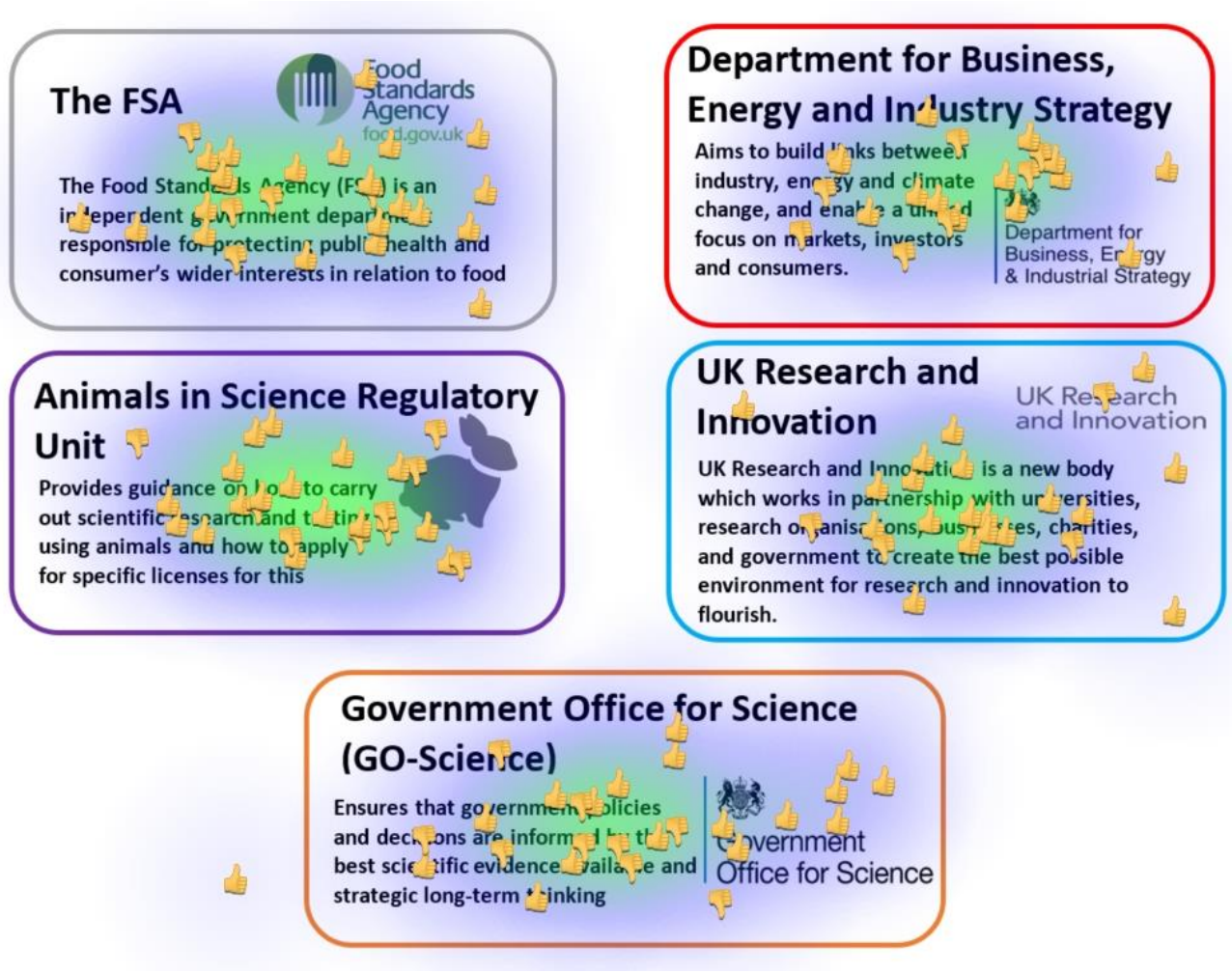
Government Office for Science

*Please note that this is not a complete list and only represents some of the bodies that make policy for and regulate science and scientists in the UK

STIM 4

When provided with information, participants were generally positive about the current role the government plays in regulating science

- **BEIS** – positive response to the focus on climate change and departmental collaboration. However, some were unsure about BEIS' independence and others questioned its effectiveness considering its breadth of scope
- **FSA** – considered 'essential', necessary to ensure safety and ethics, reputable and well known
- **Animals in Science Regulatory Unit** – trusted in principle but concern about the high levels of animal testing still happening, questioned effectiveness
- **GO – Science** – considered important to ensuring relevance by some, but described as an irrelevant body by others, thought to be merged into other departments
- **UKRI** – thought of as collaborative and positively promoting science and innovation



Aspirations for the oversight of science focused on ensuring science and technology are funded and regulated to ensure developments benefit society as widely as possible

The scientific process – safety and ethics

They would like to see more focus placed on the safety of humans, animals and the environment. They felt that science and scientists should be held accountable for ethical breaches to ensure that science is working in the best interests of the many and not only the elite and business communities

Funding decisions

It was important that funding is allocated to ensure areas they think are important are be prioritised e.g. environment, health and medicine

The presentation of scientific data in the media

They would like to see regulation of those who share false information. This fed into feelings of frustration with industries they perceived to largely benefit business and thought this negatively impacts funding and raises questions around ethics

Participants wanted to see active regulation to ensure science benefits people like them rather than creating profit for businesses – but low levels of trust in the government in this area meant it was not clear who the public wanted and trusted to play this regulatory role

9.
Implications

Implications

Area	Implications
Encouraging engagement with science	• **Personalisation is key** - participants were engaged by personal moments with science that had impacted their lives; such as receiving medical care and attending events with their children. • There are **key life moments when the public is more receptive** to science and more likely to actively pursue and appreciate information; such as when they are ill, pregnant, or have children • There is a high level enthusiasm for hearing more about **discoveries and break throughs** that benefit society widely
Science and business	• There was wide distrust in large business' use of and role in the development of science and technology. It is important for science to **be open and transparent about its relationship with and the important role of business** in funding discoveries and developments and how decisions around this are made.
Relationship with the media	• There was wide distrust in the media's reporting of scientific information, particularly in tabloid and social media information. There could be an important role for trusted scientists to play in taking **a more visible point of view on contradictory scientific information presented in the media** (notably health information) and 'calling out' and fact checking poor reporting of scientific information.
Communicating scientific information	• Participants wanted to see scientific information communicated in **clear and simple language in ways which are accessible and relatable** to them and their lives. However, they rejected sensationalist reporting which was seen to be over-simplified and patronising - they wanted to see acknowledgement of complexity, whilst simultaneously a clear argument and advice being provided where relevant.
A role for academia	• The public has high levels of trust in academics who they see as having integrity and working selflessly. There was an assumption academics consider the ethical and societal implications of their work. It may help for **academics to be more involved and visible in these conversations with the public about ethical implications of advancements**.

10.
Appendices

Stakeholder list

The Kantar Public team would like to extend our thanks to the stakeholders who participated in this wave of the dialogues. They helped with the development and review of the materials for the digital dialogue and focus groups and took part in the online forum to provide accurate, and up-to-date information and ensure that the dialogue was a two-way process.

- Marie Hobson – Natural History Museum
- Ethan Greenwood – Wellcome Trust
- Jo Trigg – Royal Academy of Engineering
- Natasha Neill – Science Media Centre

Sample – digital dialogue

	Target	Achieved	Scotland	NI	Wales	Yorkshire and the Humber	East of England	South West
TOTAL	30	28	5	6	5	2	5	5
GENDER								
Male	MIN 12	14	2	4	2	1	2	3
Female	MIN 12	14	3	2	3	1	3	2
AGE								
18-34	MIN 8	8	2	1	2	0	2	1
35-54	MIN 8	12	2	4	1	2	2	1
55+	MIN 8	8	1	1	2	0	1	3
SEG								
ABC1	MIN 12	15	3	2	3	2	3	2
C2DE	MIN 12	13	2	4	2	0	2	3
INTEREST IN SCIENCE								
Low interest (2-5 on scale)	MIN 12	14	2	4	2	2	2	2
High interest (6-9 on scale)	MIN 12	14	3	2	3	0	3	3
ACTIVITIES								
Visited a science and/or technology museum	MAX 5	1	0	1	0	0	0	0
Visited a science and/ or technology exhibition								
Attended a science or technology conference								

Sample – digitally excluded focus groups

	TARGET	London 1	London 2	Manchester	Leeds
TOTAL	8	7	8	8	7
GENDER					
Male	MIN 3	5	5	3	2
Female	MIN 3	2	3	5	5
AGE					
18-34	MIN 2	3	3	1	1
35-54	MIN 2	2	1	2	3
55+	MIN 2	2	4	5	3
SEG					
ABC1	MIN 3	2	3	5	4
C2DE	MIN 3	5	5	3	3
INTEREST IN SCIENCE					
Low interest (2-5 on scale)	MIN 3	3	3	5	4
High interest (6-9 on scale)	MIN 3	4	5	3	3
ACTIVITIES (PER GROUP)					
Visited a science and/or technology museum	MAX 2	0	0	0	0
Visited a science and/ or technology exhibition					
Attended a science or technology conference					