

**Impact
Workshop**

**University of
Hull, July 2018**

Laura Fogg-Rogers
Senior Research
Fellow in Science
Communication

@laurafoggrogers

Laura.foggrogers@uwe.ac.uk

Pathways to impact from outreach

Session outline

- Why evaluate outreach?
- What to measure?
- How to do it?
- Pathways to impact from outreach

My experience: engineering our future

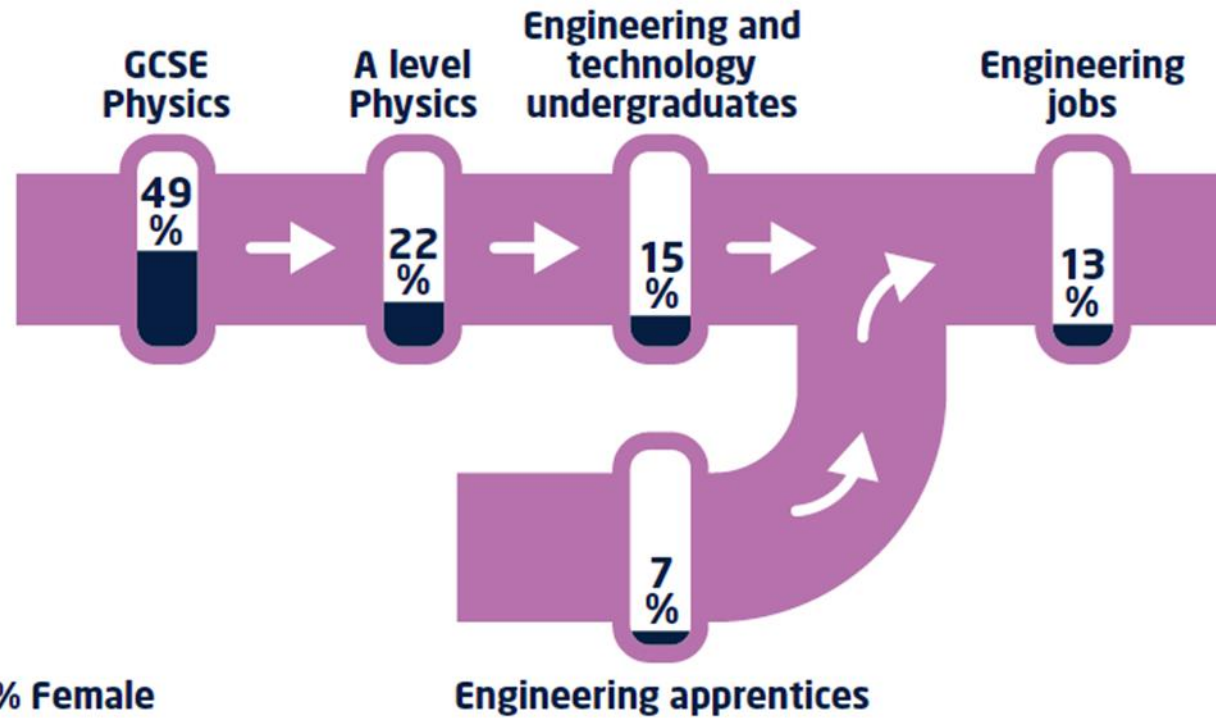


Education outreach is varied



What is outreach?!

Gender gap in the engineering pipeline

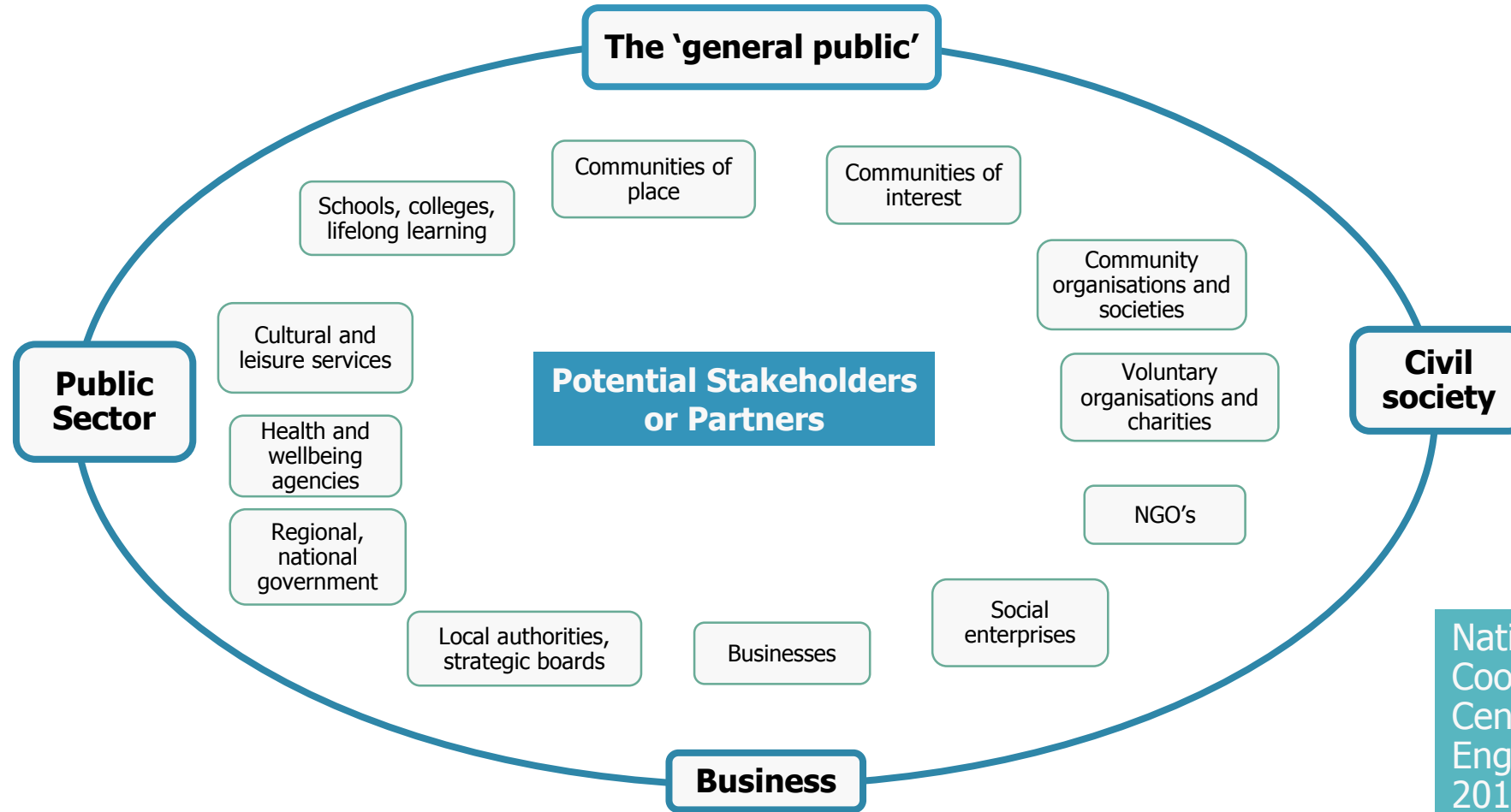


ASPIRES

Young people's science
and career aspirations,
age 10–14



Outreach as public engagement



National
Coordinating
Centre for Public
Engagement,
2018

“By ‘public engagement’ we mean interaction with people outside academia, in their capacity as citizens and members of communities of place or interest. We differentiate public engagement from engagement with policy making, business and the professions, but recognise that in practice they often overlap.”

Education outreach landscape



Education outreach


Education outreach is one form of public engagement whereby non-teaching professionals engage with young people in informal or formal learning environments.

(Fogg-Rogers, Edmonds, & Lewis, 2016)

Engaging with scientists and engineers in person has been shown to improve children's learning and attitudes towards STEM subjects and professionals (Callahan & Nadelson, 2011)

Undertaking education outreach also benefits scientists and engineers themselves, enabling the mastery of generic skills such as communication and teamwork (Direito, Pereira, & Duarte, 2012; Pickering, Ryan, Conroy, Gravel, & Portsmouth, 2004)

Why evaluate outreach?



Who is coming to
our events?

Which activities
are popular with
which ages and
schools?

What are the
children learning?

Are the events we
put on
popular/enjoyable/
educational?

**Reflective
practice - are we
achieving our
aims?**

Why evaluate?

Formative

- Are the levels of explanations right?
- Are the children understanding the terms or activities?

Process

- Is our approach working for this age group?
- Is the learning environment right for this subject?

Reflective practice – reflection **IN** action
(Schon 1983 onwards)



Why evaluate?

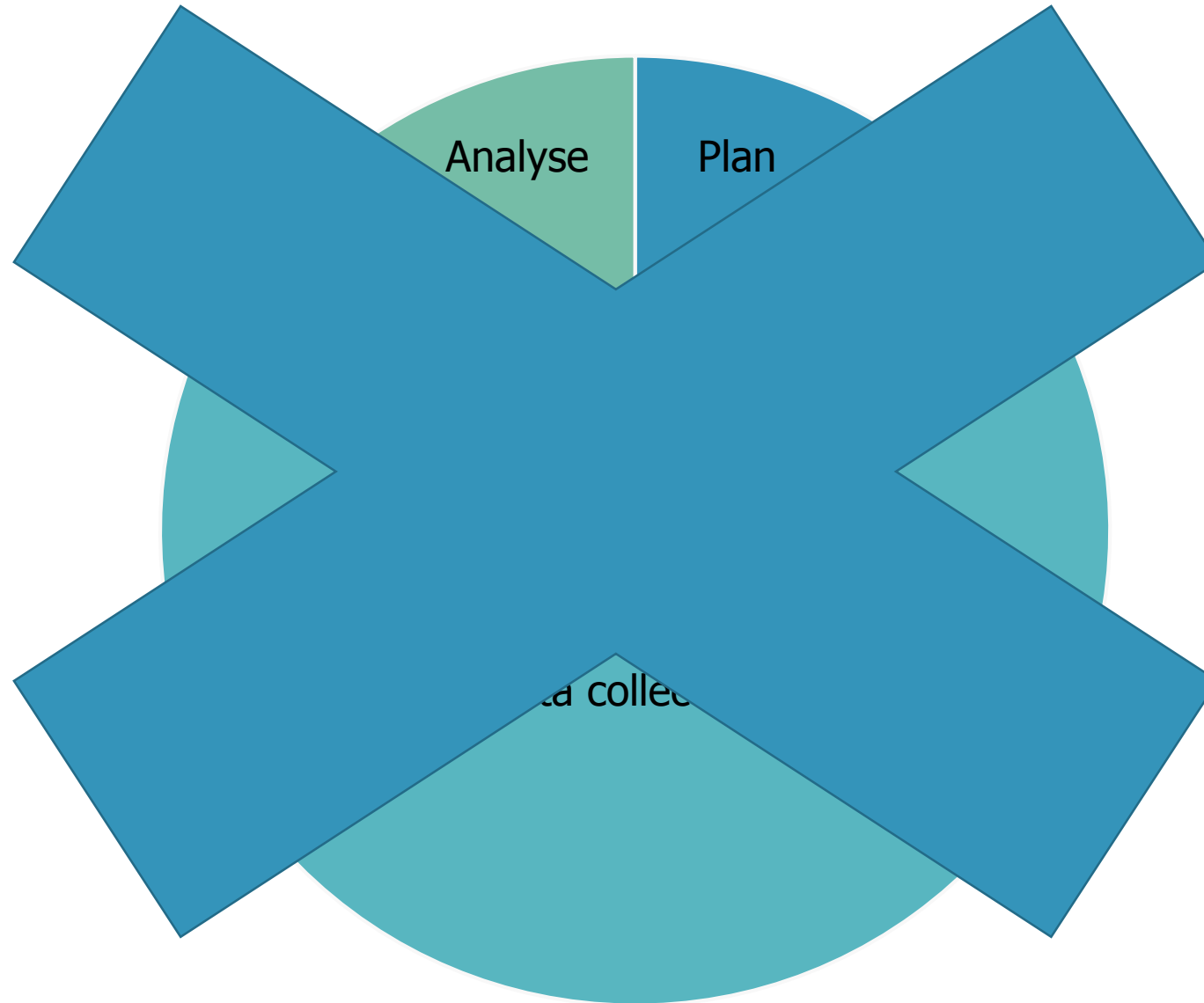
Summative

- Who took part in the activities?
- Did they find the activities enjoyable?
- Did they learn anything?
- Did they learn what we wanted them to learn?
- Are they planning to do anything with this information after the session?
- Did they do anything with this information after the session?

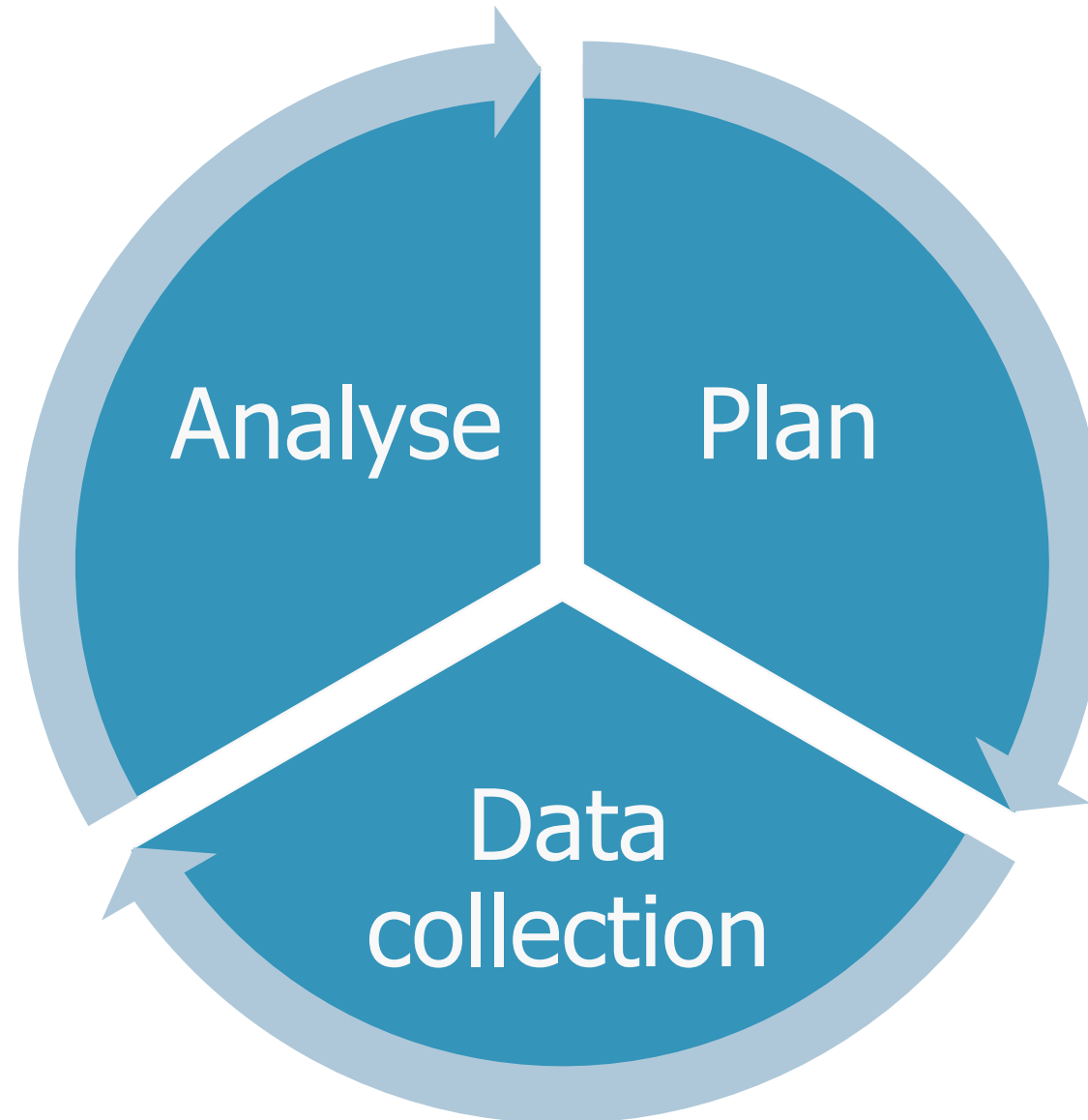
Reflective practice – reflection **ON** action
(Schon 1983 onwards)



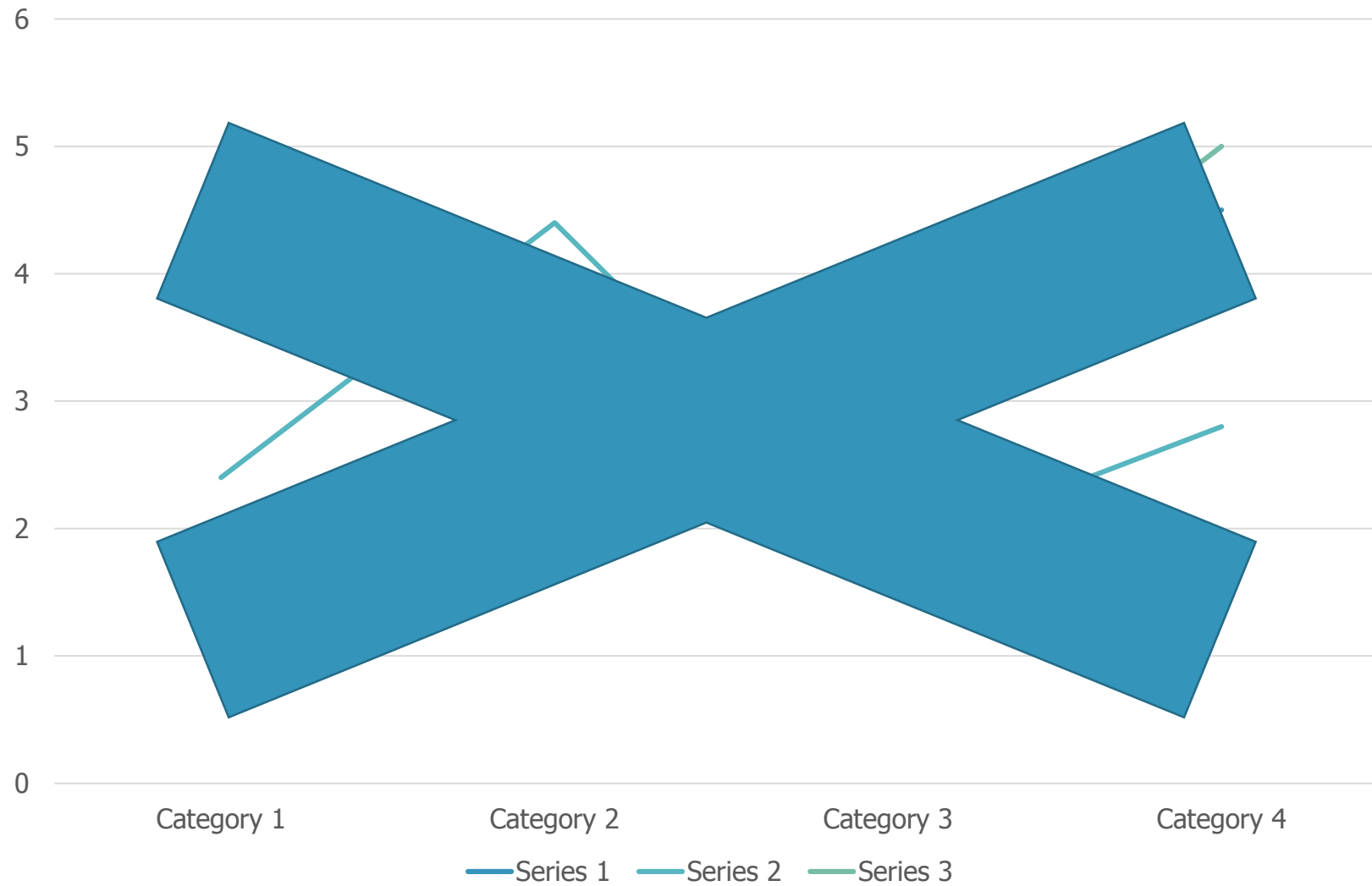
Evaluation cycles



Reflective practitioners



Data lovers collect data for data's sake...

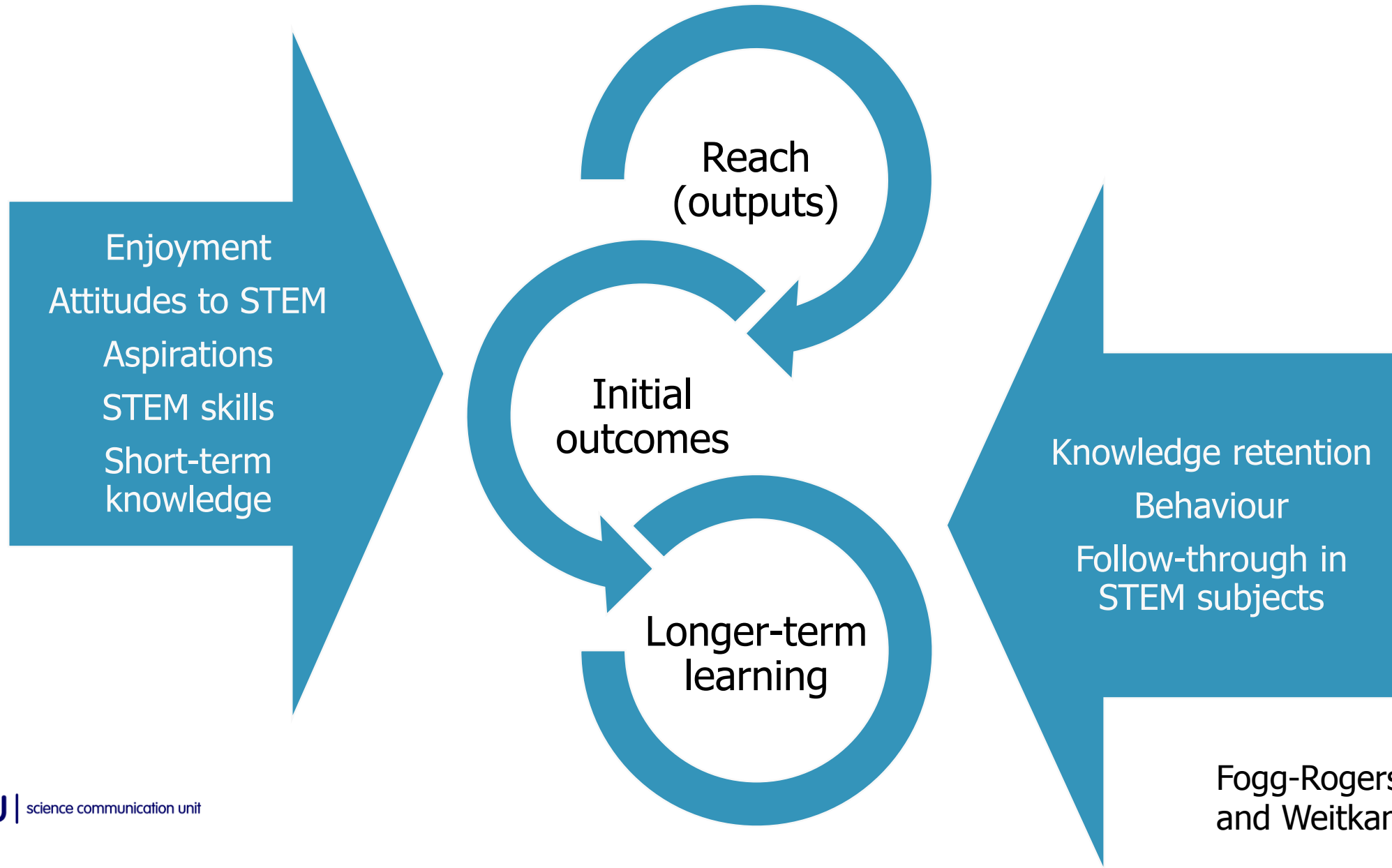


How to evaluate – know your aims!

Transmit	Collaborate	Receive
Inspiration	Collaboration	Insight
Raise awareness	Partnership	Information gathering
Engender support	Co-design	Extractive research
Outreach	Conflict resolution	Market research
Education	Meditation	Social research
Capacity building	Multi-party agreement	Consultation
Understanding communication	Negotiated agreement	Influencing decision making
Behaviour change	Consensus	Democratic
Campaign	Co-inquiry	Accountability
Marketing	Co-governance	Giving a voice to...
Promotion	Sharing decision making	Understanding strength of feeling
Opinion forming		
Dissemination		

British Science Association, 2010

How to evaluate – know your aims!



What to measure?

Evaluation data collection

Quantitative

- Demographic data
 - Gender
 - Ages/years
 - School SES data (postcodes)
- School results
- Perceptions
 - Likert scales
 - Rank list
 - Closed yes/no

Qualitative

- Perceptions
 - Opinions
 - Attitudes
 - Current behaviour
 - Intentions for behaviour
- Things you hadn't even thought of!

Evaluation data analysis

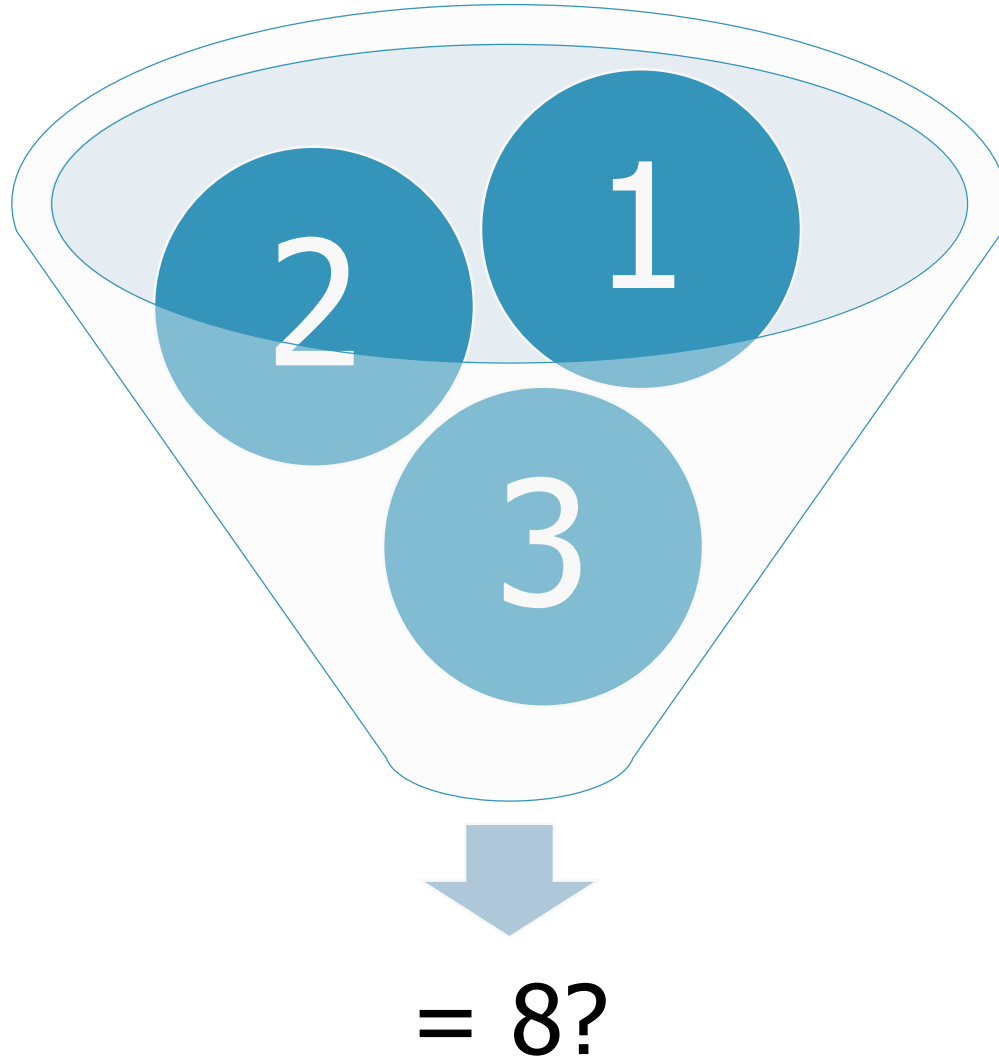
Quantitative

- Descriptive statistics
 - Mean
 - Percentages
 - Standard deviation/confidence intervals
- Analytical statistics
 - Comparisons

Qualitative

- Descriptive quotes
- Content analysis (numbers/percentages)
- Thematic analysis
- Comparisons between groups

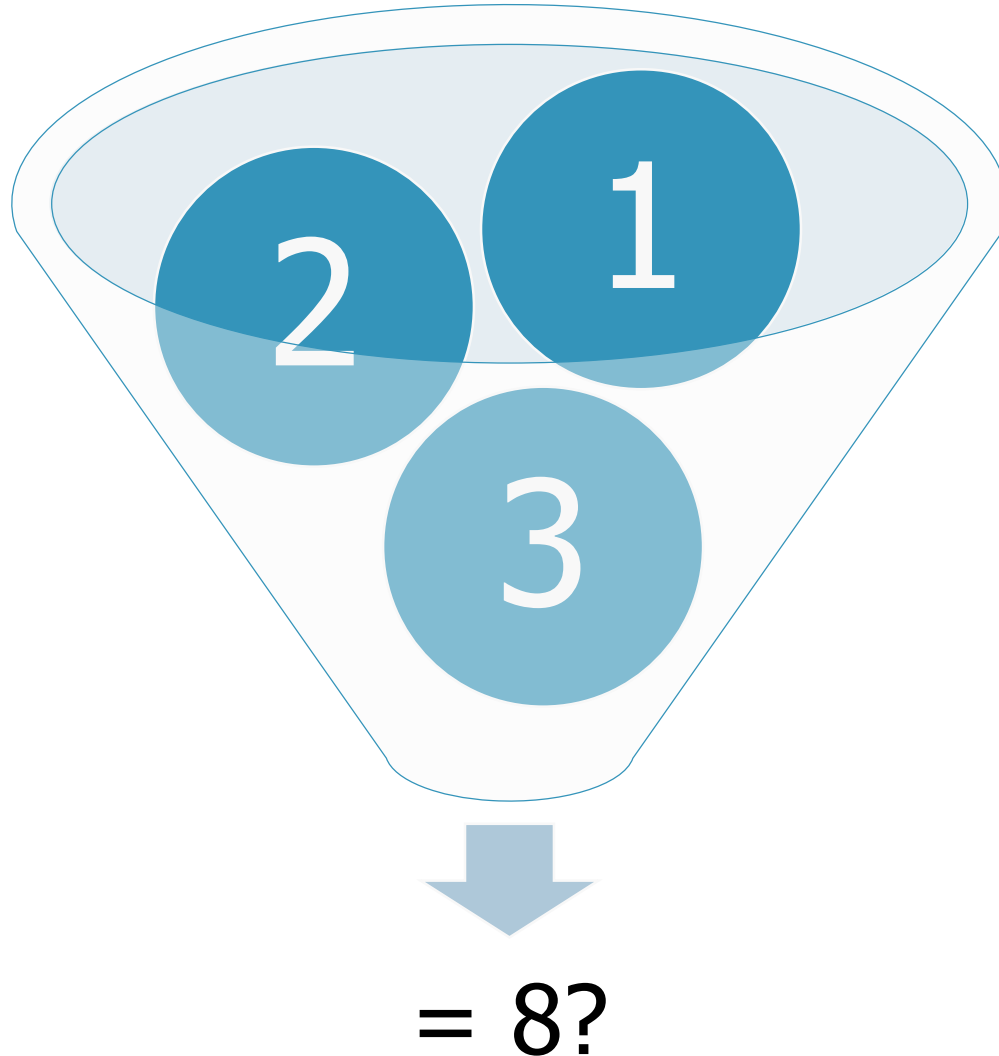
Don't write off qualitative data...



“Not everything that counts can be counted; not everything that can be counted, counts”

Einstein's favourite maxim

Don't write off qualitative data...

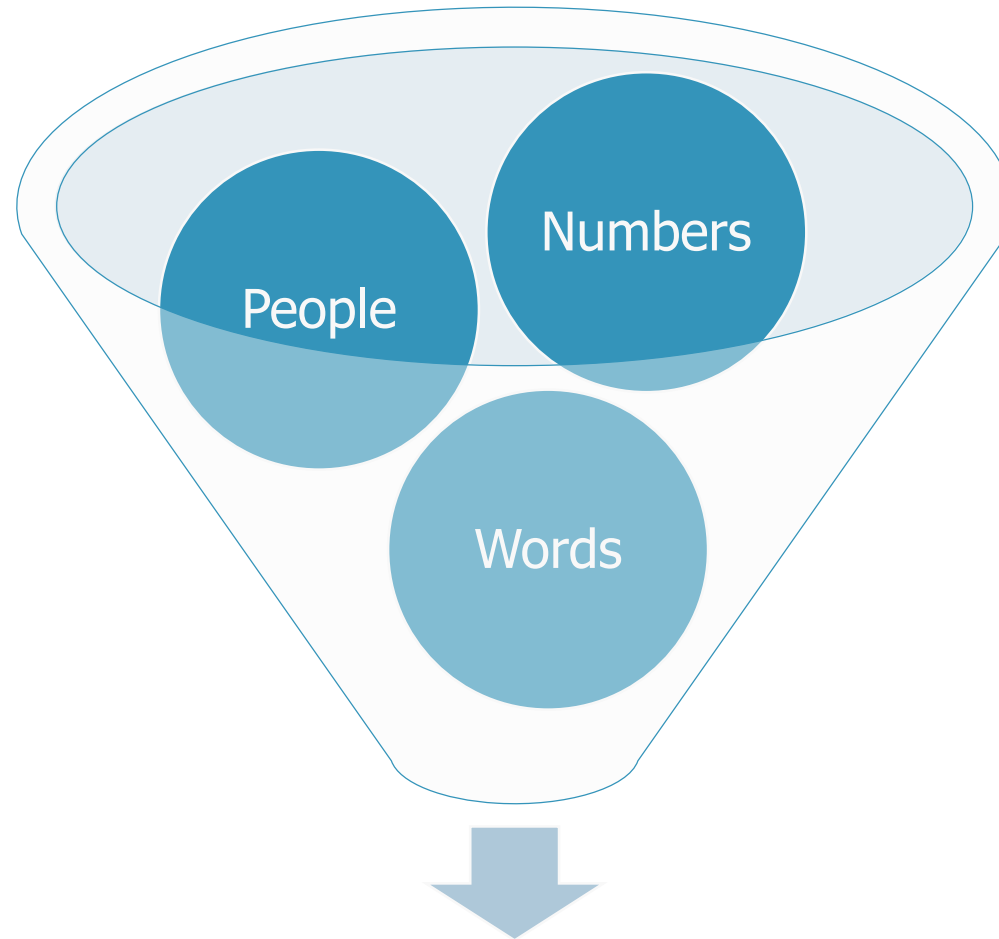


Quantitative data only tells you what is, it doesn't tell you why...

Qualitative research allows you to speak to the people you want to hear from directly (purposive sampling)...

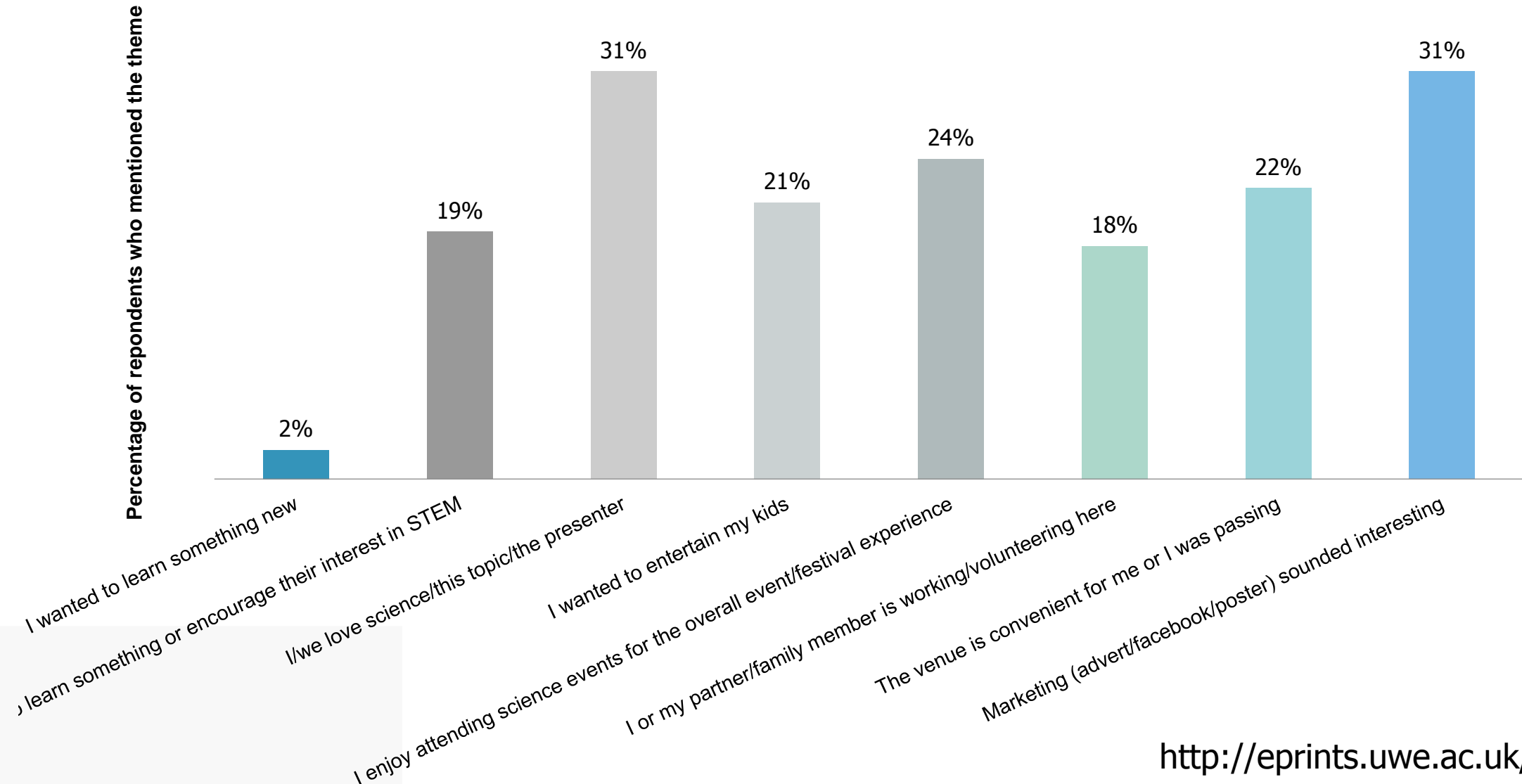
And hear the answers in their own words, not your pre-determined boxes.

Mixed methods

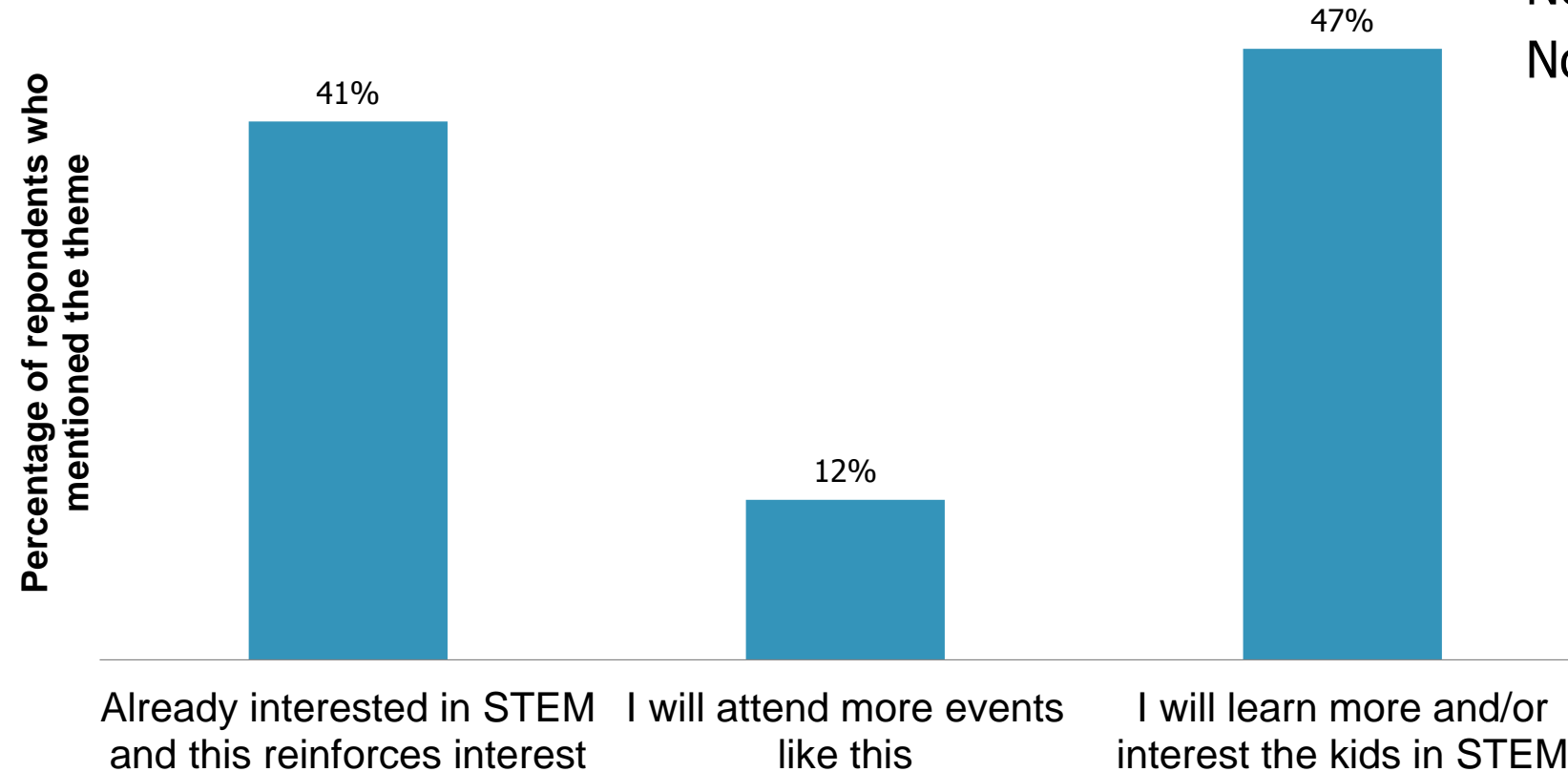


A richer picture

Mixed methods: audience reasons for attending science festivals



Mixed methods: intentions following the event



Connections to science

Bath 88%
Northern Ireland 45%
Nottingham 64%

Evidencing outreach



Outreach vs Recruitment

If you *only* look for evidence of success,
everything will look like it has succeeded...

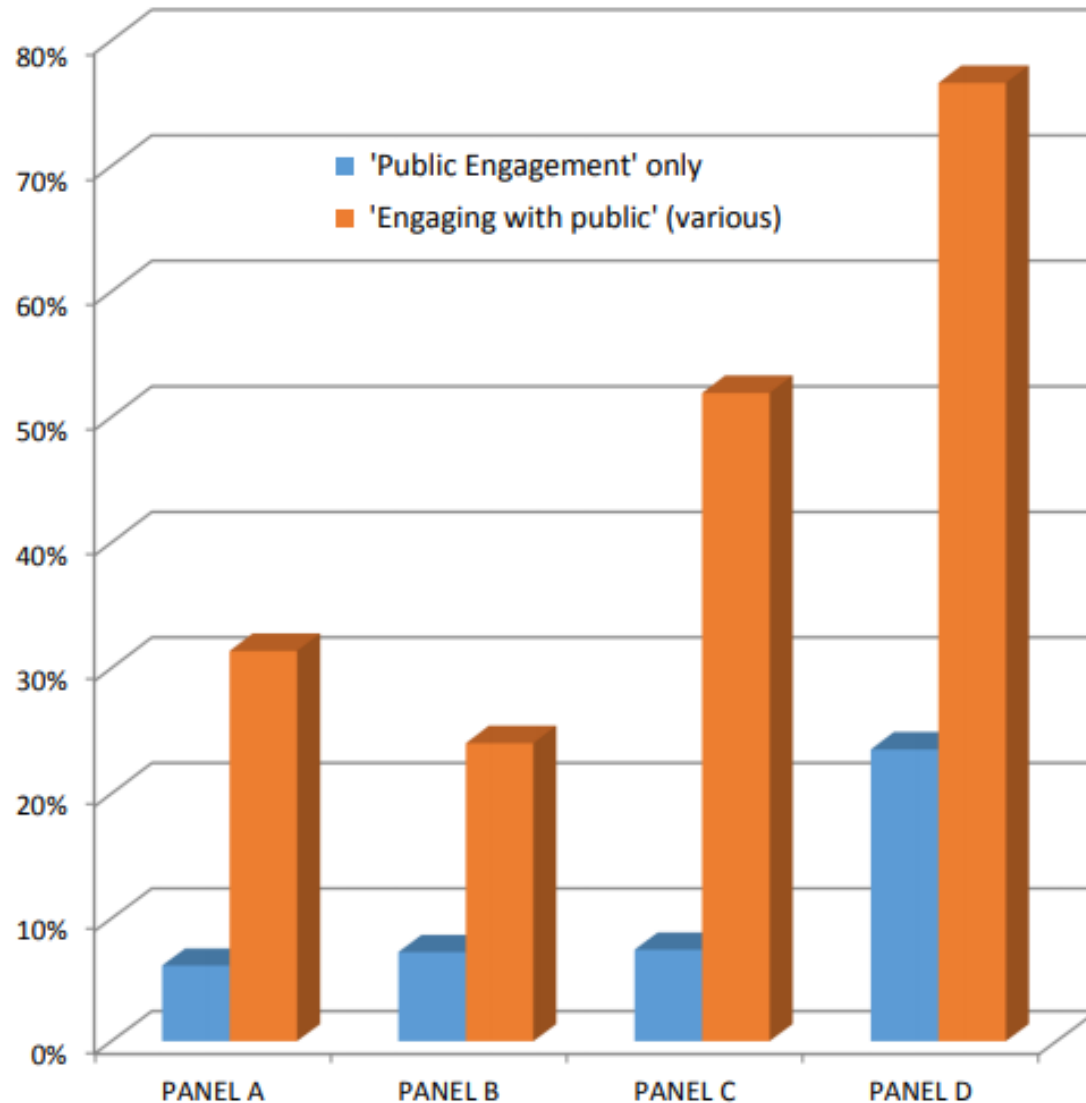
Secret of success

Answer these questions, in this order:

1. What do I need to find out?
2. From whom do we need to collect data?
3. What challenges will we encounter doing that?
4. How much time, money, staff do we have?
5. Which methods should we use?
6. How will we make use of the data?

What is impact?

REF 2014 – Impact case studies



Impact: A convincing account of the significance of the research and why it matters beyond academia.

NCCPE: Nearly half of the submitted case studies made some mention of public engagement as a route to the claimed impacts. (3108 of the 6640 case studies - 47%)

https://www.publicengagement.ac.uk/sites/default/files/publication/reviewing_pe_in_ref_2014_final.pdf

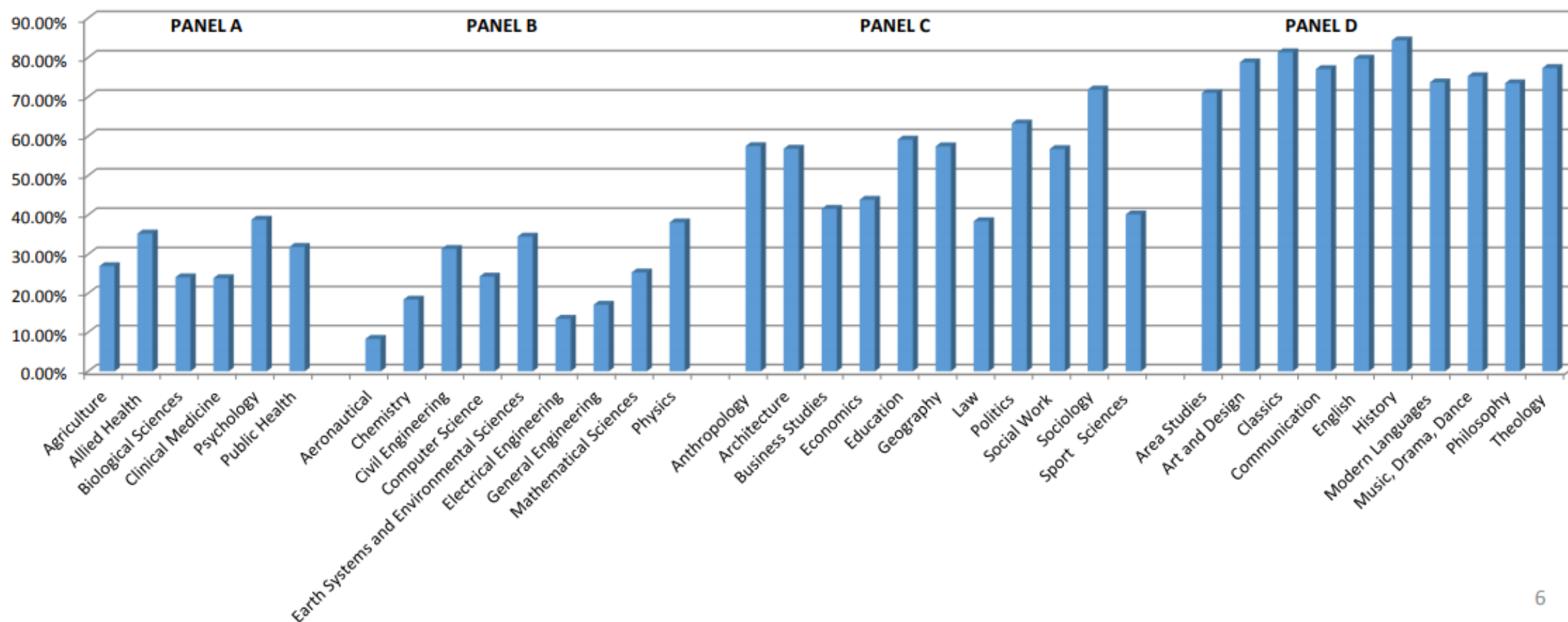
Disciplinary differences

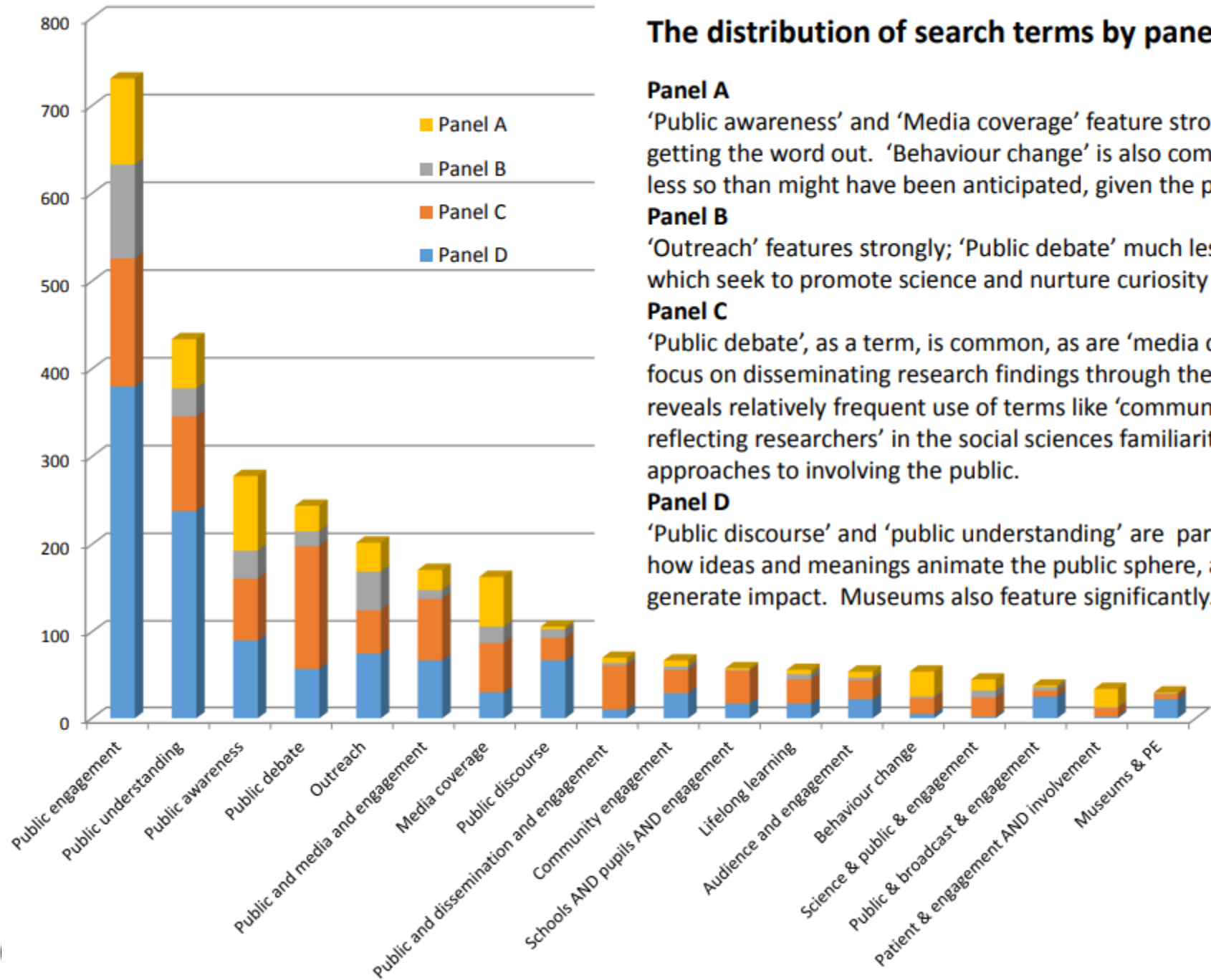
The extent and nature of engagement with the public differs significantly between the four main panels, and within them:

- Panel D dominates the overall sample of 3108 engagement case studies
- There is significant variety of engagement with the public reported in the other panels
- The Units of Assessment in Panel B show the greatest variation in the extent to which they featured PE

Public engagement appears to be more prevalent in the arts and humanities. However there was surprisingly little public engagement reported in areas like medicine and public health, where there has been a long standing expectation that researchers should engage patients. This merits deeper analysis but may be related to REF 2014 encouraging a linear model of impact, which is not consistent with patient and public involvement.

'Engaging the public' case studies as a proportion of total submitted case studies %





Different 'flavours' of public engagement feature in different discipline areas. As such, guidance should take into account these varied forms, and articulation, of impact.

Clarifying the kinds of impact that arise from public engagement

In many of the 2014 case studies, the evidence of impact provided was often weak, usually limited to a list of the outlets they used and the numbers of people engaged. By adapting the ESRC's categorisation of impacts (conceptual, instrumental and capacity building¹), we identified six broad outcome areas and various indicators of impact which help to capture why engaging the public with research matters, and to describe the types of impact that are typically generated.

Type of impact	Typical outcomes arising from public engagement	What kinds of impact can be realised?
Conceptual <i>Ensuring research insights circulate freely and animate the public sphere</i>	Enlightenment: inspiring wonder, curiosity and learning; affecting meaning- & sense-making; challenging conventional wisdom Criticism: provoking challenge, scrutiny & debate; holding to account	<ul style="list-style-type: none"> • Changed understandings • Enhanced learning and reflection • Increased empathy
Instrumental <i>Influencing policy and practice to better reflect public interests</i>	Innovation: prompting new ways of thinking & acting; creating new products and knowledge; galvanising change Reflexivity: prompting dialogue & deliberation; exploring risk; informing decision making	<ul style="list-style-type: none"> • Changed standards / regulation • Changed accountability regimes • Products and services are influenced and changed • Changed policies • Changed planning processes • Changed / enhanced public realm and environment
Capacity building <i>Changing individual & collective behaviour to realise public benefit & building stronger, better networked professional and public communities</i>	Connectivity: building networks; encouraging participation & involvement Capability: building skills; influencing behaviours and practices; empowering; well-being	<ul style="list-style-type: none"> • Increased participation and progression • New skills • Changed behaviours • New or strengthened networks • Enhanced collaboration • Enhanced well-being

For the next REF, it is important that a more coherent and robust framework is developed for articulating the outcomes and longer term impacts of engaging the public with research. The ESRC's guidance provides an excellent place to start. Significant resource also needs to be invested to support researchers to plan and evaluate their engagement activities using such a framework, to allow more evidence to be provided.

1. <http://www.esrc.ac.uk/research/impact-toolkit/what-is-impact/>

NCCPE - Impact from outreach

- What? A convincing account of the significance of the research and why it matters beyond academia.
- Where? The potential contribution of the research to influence thinking, practice and people's capabilities beyond academia
- Who with? Explain the key publics and partners involved and a rationale for their involvement
- When? Explain the timing to maximise potential impact, with activities differentiated by the phase of the research
- How? Drawing on appropriate methods, tailored to purpose, context and the publics they are seeking to engage
- With what impact? A convincing account of the difference it has helped to generate, and credible claims for the contribution made by the research to that impact

Impact evidence

Reach

- Record the number of activities and who was present
- Outputs are important BUT not the only evidence

Outcomes/Experiences

- What happened or changed as a result of your outreach?
- Quantitative statistics
- Qualitative testimonials

Impact

- Narrative for aims
- Conceptual/Instrumental/Capacity building



Thank you!

