



EQUIPPED *to* DECIDE

Are we looking at
what people need
to know?



INTRODUCTION



Tracey Brown OBE,
Director of Sense
about Science

Sense about Science

From football fans seeking the return of standing space at matches to Somerset beekeepers monitoring invasive hornets, people in different walks of life use evidence, independent analysis and statistics to make decisions. Contrary to the narrative of a post-truth world, they have many questions about what is true and what is a reliable source of information.

On our behalf, governments analyse, report and decide; and parliaments are charged with scrutinising many of those decisions, on issues as far apart as rented housing and off-shore fisheries. The public purse funds research to support this. Increasingly this means asking searching questions of new sources of data, complex interactions and trade-offs, amid an explosion of scholarly (and not so scholarly) claims.

The question we must therefore ask is: are we all really working to the best available picture of what is going on in the world?

The first ever Evidence Week held in the UK Parliament in June 2018 looked at how research evidence supports effective scrutiny and reasoned decisions. This matters to the public in many ways – as teachers, cyclists, housing officers, construction supervisors, gym instructors, helpline operators, conservationists, patients, parents – and as voters deciding where they stand. It is why Evidence Week was opened by a delegation of community groups from all over the UK. And why it ended with addressing the question, 'Are we looking at what people want to know?'

We were joined in that discussion by

Ciara Keenan of Queen's University Belfast is a specialist in systematic review and meta-analysis.

Megan Lucero runs the Bureau Local at the Bureau of Investigative Journalism and was formerly data editor at *The Times*.

Jonathan Montgomery is the chair of the Health Research Authority and previously of the Nuffield Council on Bioethics.

Alison Park is the head of CLOSER – Cohort and Longitudinal Studies Enhancement Resources.

John Pullinger is the UK National Statistician, head of the Government Statistical Service and chief executive of the UK Statistics Authority.

Rachel Tuffin is the director of knowledge, research and education and What Works Centre lead at the College of Policing.

Penny Young is the House of Commons Librarian and managing director of Research and Information, responsible for providing impartial and confidential research services for MPs.

About Evidence Week in Parliament

Evidence Week was an initiative of Sense about Science with the House of Commons Science and Technology Committee, the House of Commons Library and the Parliamentary Office for Science and Technology, and held in partnership with SAGE Publishing. The first of its kind, it was a week of events and briefings for MPs, produced in collaboration with community organisations, research and regulatory bodies.



The issues we discussed are summarised here, under the following themes:

Do we know what's really going on in the world today?

- *Gaps in local knowledge* 4
- *Making more use of administrative data* 6
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- *Making what's measured more relatable* 9

Making better use of what we have

- *Working out what the data is really telling us* 10
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We have published this summary of our discussion to get other people thinking and talking about the same question and so that we can all start to look at whether the picture people are getting of the world is really becoming clearer.

“We are not living in a ‘post-truth’ society. We only need to look around at the many people and groups from all walks of life who are investigating claims and marshalling evidence to work out the nature of problems and how to tackle them. They expect parliament to be doing the same.”

Tracey Brown, director of Sense about Science

Read more at theguardian.com

Questions, queries, thoughts or comments? Get in touch at hello@senseaboutscience.org

Digital copy available here: www.sagepub.co.uk/Equippedtodecide

1 DO WE KNOW WHAT'S REALLY GOING ON IN THE WORLD TODAY?

Gaps in local knowledge

It would be a mistake to think that data only provides valuable insights when it exists at a large scale. Certainly some of the value of data exists in its scale and breadth, for instance by enabling the production of statistics that paint a picture of the world – which today includes almost 8 billion of us.

But smaller scale local data, gathered through a variety of small channels, provides insights into specific issues that shape the experience of particular communities. This is essential for accountability and scrutiny: what of a general observation that infrastructure spending is increasing if there have been no planned works in your community for five years? There are also some important national issues about which we do not have comprehensive information, such as homelessness, which will rely on local data collection and reporting to solve.

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There is no centralised record currently of how many people die homeless in the UK.

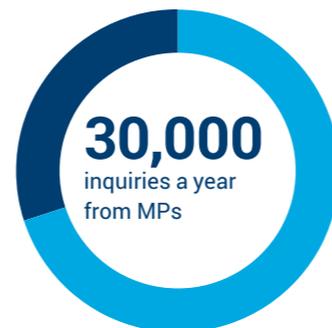
Megan Lucero,
Director, the Bureau Local

An important contribution, to both this type of data collection and flagging local issues that might not show up in larger data sets, comes through local investigative journalism, by reporters motivated to investigate issues affecting the communities on their beat. However, local journalism has been declining – 40 local newspapers closed in 2017, contributing to a total of 228 closures since 2005¹ – and with it, people's access to local news and scrutiny of facts and information.



In response to this, the Bureau Local has been formed, to build a collaborative network across the UK of journalists, technologists, statisticians and members of the public, to work together on investigations. It uses technology to access, analyse and find stories in data and then combine it with local knowledge, research and reporting to tell the stories of the people the data represents. For example, the Bureau is collecting data on homeless deaths via local news clippings, coroners' reports and local charities.

MPs are also a source of local data – their casework tells them about issues affecting their area, and what is of concern to their constituents. Many problems are resolved at the local level by caseworkers. But when problems are particularly difficult, or new, MPs often seek information from the House of Commons Library, which deals with 30,000 inquiries a year from MPs.



Penny Young, the House of Commons Librarian, said that these requests can act as an early warning system of things going wrong or having unforeseen consequences. The 2018 outcry about the Windrush generation – people from the Caribbean who settled in the UK – being unexpectedly caught up in new immigration measures was one example. The Library has also seen early signs of emerging issues with housing and Universal Credit.

Requests to the Library are a source of intelligence that could be used better while maintaining the Library's duty of confidentiality to MPs. Ideally, the information could be triangulated with quantitative and qualitative knowledge from a range of sources – including official statistics, social research and surveys – to help yield a more comprehensive picture of issues across the country and the different ways they play out in different communities.

If we could achieve better information gathering about the case loads of MPs, combined with information about requests to the House of Commons Library, this could reduce some significant information blind spots in the public sector.

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It can be hard to quantify the nature of constituency problems encountered by MPs. The signs aren't always precise, but through this partial lens, often the House of Commons Library's researchers will start to see patterns.

Penny Young,
House of Commons Librarian



¹Press Gazette, 2018, <https://www.pressgazette.co.uk/some-40-uk-local-newspapers-closed-in-2017-with-net-loss-of-45-jobs-new-research-shows/>

Making more use of administrative data

Every second, data is collected by government and other organisations for the purposes of record and account keeping. This information is not commonly used for research, but such administrative data could be a valuable resource.

This matters particularly because our mechanisms for collecting and analysing data interact with the way we organise our lives, which is changing. For example, we find out a lot in the UK through people's employment status, and then in turn we use this information to administer systems. They are protected against workplace abuses such as working hour restrictions, they are taxed and people on low incomes are given payments to support their childcare, and the information from these systems is used to work out trends and the likely future needs of society. But there are many people working in unconventional ways, such as multiple employment contracts or zero hours contracts, which challenges this.

There is potentially a lot more data available than the data collected just from talking to people or measuring them. According to Alison Park it remains very hard to access administrative records about people and link them to survey data. This can rightly reflect important issues such as ethics and privacy, but can also apply

even when full permission for such linkage has been given by survey participants.

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It's still incredibly hard to access administrative records about people and link them to survey data.

Alison Park,
Director of CLOSER

At present administrative data is rarely collated or analysed, or is even in the right chunks to do so. The way that it is accumulated and stored is based largely on what makes administrative sense rather than on what is useful for research. It isn't designed to answer questions that in our society we are likely to have. To get it to this point will itself take some research.

Researchers inside and outside government have ambitions to enhance the census and other big information sources with administrative records. The Office for National Statistics (ONS), which runs the census, is aiming to move towards an administrative data-centred census by 2021 (the planned date of the next census). Administrative data records already supplement the current census, using deaths and births figures and patient registrations from the NHS.

The aim however is to move to using data combined with current surveys, such as the Labour Force Survey. For example, a picture of commuter flows taken from mobile phone data could help provide much better estimates of the ways that people work and how many people do that (ONS, 2017).

These sorts of uses of data will not fully replace the traditional census, but will aim to supplement it, giving greater accuracy for less cost. It's very expensive to run and process a survey: the 2011 census cost an estimated £482 million. A data-driven census could also reduce the hassle for the public and could find more people not currently recorded on the census, leading to a fuller picture of the population. If we can overcome the challenge that collating different sources of personal information may lead to a loss of privacy, this would remove a significant hurdle in implementing a data-driven census, or other uses of administrative data.

There is a need for more work to understand how best to use administrative records, and how to build confidence in the public that this is a positive step.

Context gaps

Evidence needs to be gathered, used and presented in context. It does not exist in a vacuum; we need to understand what information or beliefs, about the context in which action will be taken or its consequences, are influencing the information we have about people's views or behaviour. For example, in 2008 the Organ Donation Taskforce undertook citizens' jury-type work to look at whether or not a system of presumed consent (also known as an 'opt-out' system) should be used more widely. Most people surveyed on this question supported a move to presumed consent. However, the qualitative results of talking to people more in-depth showed that people supported presumed consent because they thought that this system increased the number of transplants. In fact an expert review of data commissioned by the taskforce suggested that might not hold true: Spain had introduced a presumed consent system but did not initially see transplant rates rise; the USA didn't but had quite high transplant rates. The main factor affecting the number of transplants was not the legislative framework (the consent system), but how well organised this part of the health system was.

In relation to surveys, researchers and authorities should also make sure that people are well equipped with the context of what they are being asked, so that we are sure they are answering the same question, or at least understand the different ways that a question is understood. As Jonathan Montgomery said, you respect people by putting your expertise at their service.

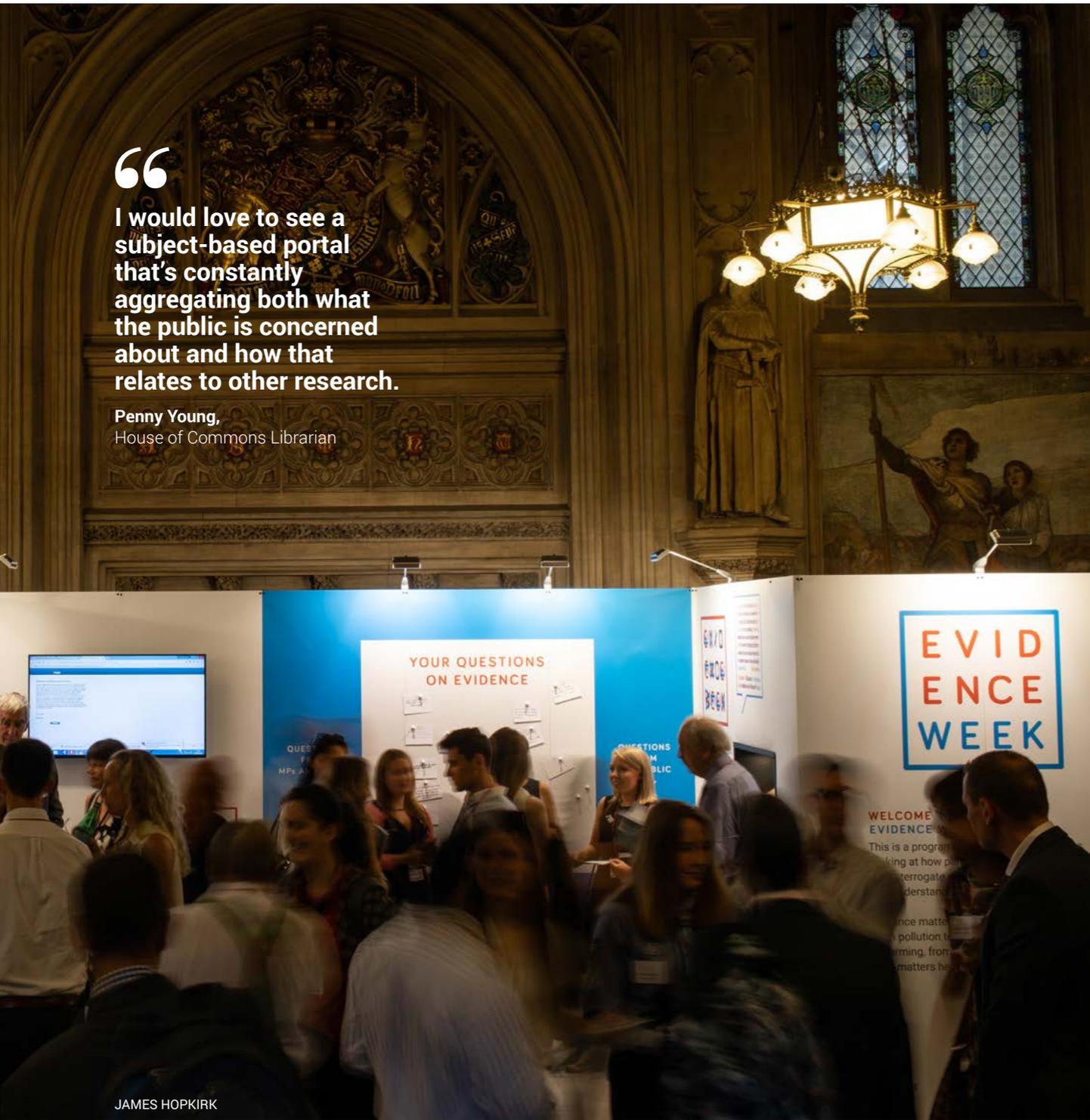
Trust in data is also context-specific – the context the data was gathered in and the context of its proposed use. Trust in data is about understanding why it is that it's appropriate to trust this person or this data set or this source for a particular purpose – whether it stands up to the weight we want to put on it.

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You don't respect people by allowing them to misinterpret a question you're asking them. You respect them by putting your expertise at their service.

Jonathan Montgomery,
Health Research Authority



JAMES HOPKIRK



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I would love to see a subject-based portal that’s constantly aggregating both what the public is concerned about and how that relates to other research.

Penny Young,
House of Commons Librarian

JAMES HOPKIRK

Making what’s measured more relatable

How society is measured does not always align with what concerns the public. The ONS is the body responsible for ensuring suitable information is gathered to answer the questions that politicians and government departments have. But it also looks at what different communities need to know, ranging from the whole population to different kinds of farmers or employers. The national statistician, who heads the ONS, has increasingly urged analysts to think about statistics in terms of their value in helping people make decisions, not as something produced as an end in itself. Connecting the things that people are bothered about with the data is a much more helpful service than producing reams more data. This kind of relevance is what we should be looking for.

Evidence must be made relatable and be of direct use to the public. That includes measuring the impact of research on the people it concerns. For instance, in a consultation with patients of rheumatism, it was found that ‘measures that researchers were using to show improvement meant nothing to these people’s lives’ (Jonathan Montgomery, 2018). This then meant that the results of these trials were unhelpful in advising patients on the best management of their disease.

Designing metrics for the things people care most about

When the Sustainable Development Goals began to be developed the focus was on economic, social and environmental questions. Following an effort to get views from people in diverse situations across the globe, it transpired that what people really care about are questions surrounding peace and security in addition to those three traditional aspects of development – so new goals and targets were developed to address these questions. The United Nations Statistical Commission worked out that there were 232 indicators that could measure the things that the people around the world thought were important. The UK is one of the furthest advanced on this kind of measuring, and we can only do 60% of them. Having decided at the global level on what matters for sustainable development, each country needs now to invest in mobilising the data that will help us make good decisions and chart progress towards the goals.

We think we will be able to do all of them. But we haven’t worked out how to do it yet. Particularly on peace and security: what is a good measure of different countries’ peace and security or their good government? So these questions root ourselves in what people are worried about. And then we’ll come up with answers that will actually help people feel they can use the numbers to improve their own lives and demand the kinds of changes that will make them better.

John Pullinger, UK National Statistician

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We are not in the business of just producing statistics. We are in the business of helping people make decisions.

John Pullinger,
UK National Statistician

② MAKING BETTER USE OF WHAT WE HAVE

Working out what the data is really telling us

Generating evidence is not only about conducting new research, it is about asking the right questions of existing data. Collectively we hold a lot of information that is not being used to its full potential.

Rather than conducting more primary research studies, delving further into existing data using systematic reviews and meta-analysis can reveal new insights. Systematic reviews identify and synthesise all of the relevant studies on a particular topic, and often use statistical meta-analysis techniques to derive a single quantitative estimate or summary effect size for multiple, distinct interventions. They are very useful but they can make it seem like ‘everything works’ and sometimes the ‘headline figure’ from aggregated data tells exactly the wrong story.

Ciara Keenan of the Campbell Collaboration – which promotes positive social and economic change through the production and use of systematic reviews and other evidence synthesis for evidence-based policy and practice – pointed to the value of collating larger data sets through systematic review, but explained how these data sets yield greater value when the data within them can be disaggregated. This allows researchers to look at the question

of what works for whom and in what circumstances – when enough data exists, it can be split into categories and those can be analysed to yield information about the efficacy of specific interventions, or discover where inequalities really lie.

Data visualisation tools can be used to help people understand complex problems. Researchers from the universities of Durham and Northumbria have designed an interface that clearly shows differences between groups when the data can be disaggregated to show those groups separately. During Evidence Week they walked people through pulling apart and disaggregating multivariate data on educational attainment – in just three minutes. What made

the most difference to attainment between groups of children was not sex, ethnicity, region or having English as a first language, but eligibility for free school meals.

Despite the value of techniques such as systematic review and data disaggregation, the response we have to lack of clarity in the picture is often to call for more research to be done. ‘What do you do when there’s no evidence?’ is a very common question in policy circles. Sometimes more research is necessary, where the nature and extent of an issue are unknown. But often that’s not the case, and more research is commissioned on something already known, or on a genuinely new problem where existing research could still help.

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A common area for commissioning yet more research in policing is the lack of career progression of people from black and minority ethnic backgrounds or women in policing. We know what a lot of the issues are. We’ve described them many, many times. What we need to do is: try out some things and test whether they have an impact. Not do some more research about why it’s so difficult.

Rachel Tuffin,
College of Policing

The call for more research can sometimes become a stalling tactic. Commissioning more research might put off a decision long enough that the people who commissioned the research won’t have to make the decision at all.

The rise in child sexual exploitation has prompted a call for research into ways of stopping it. Yet there are shared structural factors, issues to do with crime and policing that are the same as for other types of crime, such as street robbery.

It’s not just within fields such as policing that knowledge could be shared, but between them too. The What Works centres are a good example. There is one for crime reduction, one for education. There is NICE for health, and now one for ageing better. These all look at their own evidence bases, but these could be drawn together around particular social groups or communities or issues where these issues interact with one another.

Answering what people want to know is often more an organisational than a data issue: the challenge is to think about where we could draw existing evidence together to answer questions.

Longitudinal studies (and Generation Z)

Longitudinal studies are run over long periods to uncover patterns of change over time. As they need to look at the answer to a particular question over a long time, such as how households are structured or the way that people buy and consume food, it is quite a challenge to think of how to ask those questions in a way that will be relevant to both the conditions and the available data now and many years from now.

Birth cohort studies are particularly susceptible to the rapid changes our society is experiencing. These studies aim to explore questions such as how early life impacts educational outcomes at age 18. Alison Park, who runs the programme to bring together and enhance longitudinal studies in the UK, said that when considering a young person who is born today and what their life is going to be like in 10 years’ time compared to someone born just 18 years ago, the change has been enormous and profound. The cohort born in 2000–2001 is different to the previous cohort. There is a need to design new studies to take into account how much conditions have changed since the turn of the twenty-first century.

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Alison Park,
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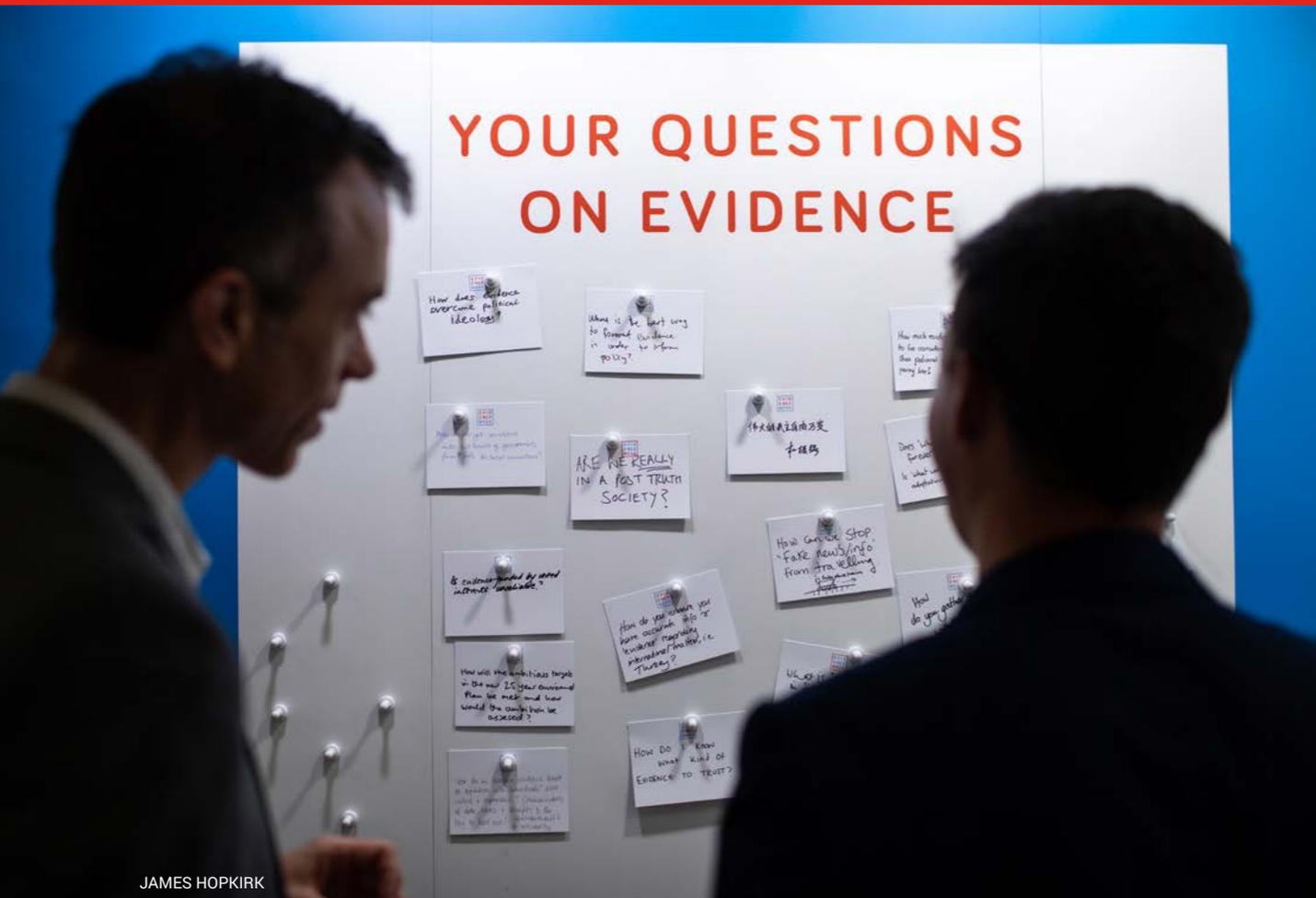
We already have good vehicles, in the longitudinal studies, for asking questions about what people need to know about the changing patterns of family life, work life, opportunities and challenges. To answer these, we need to look over the long term.

To find out what people want to know about patterns of life and what is changing, we should focus more on ensuring the longitudinal studies are able to ask the right questions.

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With different analytical skills and techniques we could get more value from the physical activity data generated by step counters, by incorporating their richness and detail.

Alison Park,
Director of CLOSER



JAMES HOPKIRK

Are we equipped to find out what we want to know?

The UK ranks as one of the lowest countries in terms of data literacy compared to competitors. There is little point in arguing for more research into what people need to know to be able to interpret the world, if we don't also look at building up both the public's and specialists' capacity to make good sense of it. The public's level of comfort with data is central to the aim of improving data literacy in the UK. People not only need access to evidence, but also help translating and interpreting it. Information needs to be translated into something meaningful to be classed as truly accessible for public scrutiny.

Megan Lucero pointed out that there are real disciplinary differences in what people can access and how, so we should be looking for technologies that allow us to get around that. But at the moment, these don't exist.

Our current capacity in both accessing and analysing data may be preventing us from discovering the bigger picture because we aren't looking at every facet of a set of data. We are often missing richness and nuances in data by cutting it into chunks that don't lend themselves to analysis. For example, in some longitudinal studies, physical activity is

measured using devices called accelerometers. The data produced, which includes step counts, can then be reduced to summary statistics and analysed to show how activity varies across the day or between different groups. According to Alison Park, this approach gives a good sense of general patterns, but with different analytical skills and techniques we could get more value from these data by incorporating their richness and detail.

The skills to collect, analyse, understand and challenge information are often neglected in the rush for new sources of information.

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This starts with teaching basic mastery of research data at a primary school level, which, over time would improve confidence across society.

Rachel Tuffin, College of Policing

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Most people can't read an SQL database, so even if the information is readily available it is often far removed from its actual value.

Megan Lucero, Director, the Bureau Local

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We do not yet as individuals or as a society have the skill either to use evidence and data or to call out those who don't use it or don't use it well. Now is the time to turn data literacy from a national liability into a national asset.

John Pullinger, UK National Statistician

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We have a terrible tendency to chase the new rather than the important.

Jonathan Montgomery, Health Research Authority

Using innovation

As the use of algorithms and artificial intelligence (AI) becomes commonplace, there is a need to adapt society's skills to ensure proper scrutiny of the information produced by these innovations. The rules must surely be changing about what is a good use and what is an unacceptable use of data, not just from a privacy point of view but in relation to quality and the weight we put on resulting analysis. It will not be sufficient simply to carry on using the same methods of evaluating information in these new conditions.

Better use could already be made of artificial intelligence to analyse the data we have. In the discussions the UK is having about AI we seem to be missing the fact that we do now have the power in this technology to help us root and connect the data we have.

As the House of Commons Science and Technology Select Committee, among others, has recently urged², we will need closer scrutiny as AI develops so that we as a public can hold it to account.

As Megan Lucero pointed out, 'We need to have at least the capability to scrutinise any institution, any sort of fabrication of information. Maybe not every person needs to understand the complexities of AI or machine learning. But we need to create a system that can scrutinise it. Because as it develops, we're going to start getting a smaller and smaller number of experts who are doing that, and therefore controlling all of it.'

We should use AI better on what we have, and make sure we can scrutinise that use as a society, not simply be caught up in the rush to fund the next kind of AI to understand something else.

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Megan Lucero,
Director, the Bureau Local

Our discussion on 'Are we looking at what people need to know?' was frank and challenged some long standing ways of building up a picture of life in the UK today.

We know there are many organisations and individuals thinking about this, beyond those who took part in Evidence Week, so we have published this account of the themes we discussed for their further debate and action.

In summary:

- The scope for better information gathering about the case loads of MPs to reduce significant information blind spots in the public sector.
- Use of administrative records from both the public and private sectors, and how to build public support for that.
- Drawing existing evidence together to answer questions that cut across separations such as policing and homelessness.
- The development of longitudinal studies to explore emerging patterns of life.
- Expanding interest in new data sources to the skills needed to collect and analyse information, and also to understand and challenge it.
- Better use of AI on the data we have, rather than simply using it to generate more.



JAMES HOPKIRK

² House of Commons Science and Technology Select Committee, 'Algorithms in decision-making' inquiry report, 2018, <https://publications.parliament.uk/pa/cm201719/cmselect/cmsctech/351/351.pdf>

MORE ABOUT THE PANELISTS:



Tracey Brown OBE is the director of Sense about Science. Under her leadership, the charity has turned the case for sound science and evidence into popular campaigns such as Evidence Week, AllTrials and Ask for Evidence. She has written and edited popular public guides to scientific research and led research on reliability of evidence. Tracey is chair of the board of trustees of Jurassica, a project to bring the story of prehistoric discovery to life on Dorset's Jurassic Coast.



Dr Ciara Keenan is a research fellow at Queen's University Belfast in the Centre for Evidence and Social Innovation. Ciara has specialist skills in systematic review and meta-analysis and conducts research through Campbell UK and Ireland – an organisation that promotes positive social and economic change through the production and use of systematic reviews and other evidence-based policy and practice. Ciara is the founder and editor of the meta-evidence blog and advocates the use of robust and rigorous evidence in decision making.



Megan Lucero joined the Bureau of Investigative Journalism in 2017 to run the Bureau Local – a collaborative, investigative network which aims to hold power to account at both the national and local level. Prior to joining the Bureau, Megan was the data editor at *the Times* and *the Sunday Times* where her team's data mining and analysis techniques brought many issues into public discourse including the widespread use of blood doping in athletics and the participation of high profile figures in tax avoidance schemes.



Professor Jonathan Montgomery is the chair of the Heath Research Authority and was chair of the Nuffield Council on Bioethics until March 2017. He is also professor of healthcare law at UCL. Recently, he has been involved in the preparation of ethical guidance around medical issues and has chaired a group for the General Medical Council on the production of its new guidance on confidentiality.



Professor Alison Park is a fellow of the Academy of Social Sciences and the director of CLOSER (Cohort and Longitudinal Studies Enhancement Resources) at UCL which aims to maximise the use, value and impact of the UK's longitudinal studies in the context of policy development in health, economics and society. Her wider research and teaching focuses on social and political attitudes and behaviour and how these change over time.



John Pullinger CB is the UK National Statistician, head of the Government Statistical Service and chief executive of the UK Statistics Authority. John is a Chartered Statistician and was President of the Royal Statistical Society (2013–2014). He has represented the UK internationally in EU, UN, OECD and other forums, and he was Chair (2015) and Vice-Chair (2016) of the United Nations Statistical Commission (UNSC) and is a member of the Board of the Global Partnership for Sustainable Development Data. John is married with three adult children. He was appointed as a Companion of the Order of the Bath (CB) in 2014 for services to parliament and to the community, is a fellow of the Academy of Social Sciences and holds honorary degrees from the universities of Exeter, Essex and



the West of England. **Rachel Tuffin OBE** is the director of knowledge, research and education and What Works Centre lead at the College of Policing. She is executive lead for the What Works Centre for Crime Reduction and has previously led research teams in the National Policing Improvement Agency and the Home Office. She has published studies on issues ranging from neighbourhood policing to the handling of racist incidents and race hate on the internet, and the recruitment and career progression of ethnic minority police officers. Rachel was awarded her OBE in 2013 for services to policing, specifically championing evidence-based policing.



Penny Young is the House of Commons Librarian and managing director of research and information. Her team is responsible for the House of Commons Library, which provides impartial and confidential research services for MPs in connection with their parliamentary duties, and publishes a wide range of briefings for all to read; and the Parliamentary Office of Science and Technology, which brings academic knowledge into parliament through briefings, events and knowledge exchange.

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SAGE Publishing defines its mission as ‘building bridges to knowledge’. Taking an idea from its development through the research process to a knowledge claim which becomes certified, engaged with, critically understood and ultimately applied. The difficulty and importance of this work have only grown at a time where evidence-based claims are drowned out, or misunderstood.

SAGE has always been committed to advocacy and engagement, championing the value and importance of research. Accordingly we feel a responsibility to get directly involved to champion the integral importance of evidence and its role in public policy. Evidence Week was, and continues to be, a key vehicle to galvanise this global conversation. This report is an influential output of those discussions, illustrating the value and critical need of using sound evidence to ensure a topic is richly rather than narrowly construed. We hope you continue to be a part of the debate.

SAGE Publishing 2018



Evidence Week

An initiative of Sense about Science, the House of Commons Library, Parliamentary Office of Science and Technology and House of Commons Science and Technology Committee, held in partnership with SAGE Publishing. Bringing together MPs, peers, parliamentary services and people from all walks of life across the UK, the week provided a platform to talk about why evidence matters.

senseaboutscience.org/activities/evidence-week-programme/

Sense about Science

Sense about Science is an independent campaigning charity that challenges the misrepresentation of science and evidence in public life. We advocate openness and honesty about research findings and work to ensure the public interest in sound science and evidence is recognised in public debate and policymaking.

SAGE

Sara Miller McCune founded SAGE Publishing in 1965 to support the dissemination of usable knowledge and educate a global community. SAGE publishes journals, books and library products spanning a range of subject areas. SAGE remains majority-owned by our founder, who has ensured that the company will remain permanently independent. www.sagepublishing.com



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