ROYAL STATISTICAL SOCIETY

DATA | EVIDENCE | DECISIONS

Response to BIS consultation on the UK National Innovation Plan

Q1. How best can our regulators drive innovation and make the UK the regulatory test bed capital of Europe?
Regulation can have a real impact on how businesses innovate. Badly designed regulation can hinder innovation, whilst well designed regulation and regulatory processes can support and promote innovation. There is an important role for government and regulators in providing support to help businesses overcome barriers. The government has set a target to cut costs to business from red tape by £10bn over this parliament.

In 2014 the Royal Statistical Society (RSS) released a *Data manifesto* which called for government policy on data to drive economic prosperity, with several key recommendations: [1] increased investment in research and innovation; [2] faster progress in publishing open data; [3] develop official statistics making them more accessible and usable for businesses, policymakers, and civil society; and [4] skill up the nation in basic data handing and quantitative skills.[1] The legal and regulatory environment plays an important role in facilitating data driven innovation and research, and we are glad to provide brief views on this.

Firstly, regulators need to clarify the implications of the law with regard to personal data. The Law Commission's scoping of data sharing by public bodies found significant problems with the extent to which bodies understand the current Data Protection Act, and other laws that govern how information may be shared.[2] In the new General Data Protection Regulation at European level, derogations have been maintained for scientific and statistical research. Maintenance of these provisions was supported by the scientific research community in a "data saves lives" campaign that made clear that data linkage across health and other domains takes place to support hugely valuable research for public benefit.[3] Updates and changes to legislation are now needed in the UK, it will be important to ensure that derogations for scientific and statistical research will be reflected appropriately. New and changing regulatory requirements are difficult for data controllers

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[1] RSS (2014) *Data Manifesto* (PDF), available from: http://www.rss.org.uk/Images/PDF/influencing-change/rss-data-manifesto-2014.pdf
[2] Law Commission (2014) *Data sharing between public bodies: a scoping report* (PDF), available from: http://www.lawcom.gov.uk/wp-content/uploads/2015/03/lc351_data-sharing.pdf
[3] EHDA (2015) *Data Protection Regulation and health research: The issues explained* (PDF). Available from: http://www.datasaveslives.eu/media/1178/data-saves-lives-position-paper-october-2015.pdf, and case studies at http://www.datasaveslives.eu/case-studies/

and data users to navigate, and updates to guidance from the ICO and other regulators will be essential.

Secondly, beyond regulation, there is a need for well-targeted guidance on how and why data should be used for research. It is important to recognise that specific research proposals are in the public interest only on a qualified basis, so we have called for greater guidance on how legislation and ethics should apply.[4] The House of Commons' Science and Technology Select Committee took up our recommendation that a new ethical council be established to address 'big data' dilemmas, and we are pleased that the government's response has given a green light to this.[5]

Thirdly, the Cabinet Office has developed legal and regulatory proposals for UK statistics and research (detailed at datasharing.org.uk), which should give the ONS a stronger right to access data from new sources. The case for change has been strongly supported by the *Independent Review of Economic Statistics* (Bean Review), its recommendations include that the ONS must make full use of the administrative data that government holds.[6] The UK Statistics Authority has also set out its case for legislative change.[7] As these recommendations are implemented, we expect that legal provisions for ONS to access data will be strengthened.[8] Issues postponed that still need to be addressed in our view include the role of non-public bodies (such as companies, the media and charities) in supplying data for statistics, and in using data for research in the public benefit.[9]

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[4] RSS (2016) *The Opportunities and Ethics of Big Data: Workshop report* (PDF), available from: http://www.rss.org.uk/Images/PDF/influencing-change/2016/rss-report-opps-and-ethics-of-big-data-feb-2016.pdf

[5] House of Commons Science and Technology Committee (2016) *The big data dilemma: Government Response to the Committee's Fourth Report of Session 2015-16* (PDF), available from: http://www.publications.parliament.uk/pa/cm201516/cmselect/cmsctech/992/992.pdf

[6] HM Treasury, Cabinet Office (2016) 'Independent review of economic statistics: government response' (webpage), available at: https://www.gov.uk/government/news/independent-review-of-uk-economic-statistics-government-response

[7] UK Statistics Authority (2016) *Delivering better statistics for better decisions: why we need new legislation* (PDF), available from: https://www.statisticsauthority.gov.uk/wp-content/uploads/2016/03/Delivering-better-statistics-for-better-decisions-data-access-legislation-March-2016.pdf

[8] RSS (2016) *Press Release* (PDF), 11 March 2016 http://www.statslife.org.uk/files/2016-03-11-RSS-CALLS-ON-CHANCELLOR-TO-COMMIT-TO-INVESTMENT-IN-DATA-INFRASTRUCTURE.pdf

[9] RSS (2016) *final response to the Cabinet Office consultation on better use of data in government* (PDF), available from: http://www.rss.org.uk/Images/PDF/influencing-change/2016/rss-response-cabinet-office-better-use-of-data-consultation-april-2016.pdf

Q3. How can we ensure that we put the UK at the forefront of open data opportunities?
The UK leads the world in open government and transparency, and we have already made over 20,000 government data sets available through our world-renowned data.gov.uk portal. We are now at the start of a data revolution in government with the potential to drive greater efficiency, support economic growth and deliver better public services for citizens. How can we ensure the momentum continues?

The UK is near the top of international rankings for open data, as large quantities of open data are being made available for wider use. [10] There is much scope for further improvement however. Important gaps have been identified, such as the openness and availability of ownership records and land boundaries. [11] To develop strong applications of open data, users also call for better communication between data experts within government, and data users outside of it.[12] We further note that the decision on whether data is open and publicly available remains within government, and that leadership, clear guidelines and mechanisms are required for continued growth in this area. [13] We have seen this for example in the ministerial commitment at the Department for Environment, Food and Rural Affairs to progressively open up environment data in the UK, including the commitment to release 8000 new open data sets within one year. There is a great opportunity for departments to use open data to support their own policymaking and this needs to be taken up. We believe shifts in civil service culture need to take place so departments work more proactively on opening and evaluating their own data, and link data to the evaluation of policies.

Q4. Where can we maximise the opportunities for innovation, as we deliver high-quality infrastructure that unlocks broad economic opportunities?

Budget 2016 announced radical reforms that will drive future prosperity, investing in the infrastructure that will deliver economic growth for the next generation. It drives forward the devolution revolution, giving local areas further control over the decisions that affect their

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[10] Global Open Data Index (2015) 'United Kingdom' (webpage), available at: http://2015.index.okfn.org/place/united-kingdom/
[11] Boswarva, O. (2015) 'Global Open Data Index 2015 – United Kingdom insight' (webpage), available at: http://blog.okfn.org/2015/12/09/Global-Open-Data-Index-2015-United-Kingdom-Insight/
[12] Solazzo, G. 'The Open Data Delusion' (webpage), 20 May 2016, available at: http://brokentoilets.org/article/open-data-delusion/
[13] RSS (2016) *Putting evidence at the heart of policy debate* (PDF), available from: http://www.rss.org.uk/Images/PDF/influencing-change/2016/data-manifesto1-putting-evidence-at-the-heart-of-the-policy-debate.pdf

communities, with headline measures including strengthening city regions, agreeing new mayoral devolution deals, building the Northern Powerhouse and the Midlands Engine.

High-quality infrastructure boosts productivity and competitiveness, allowing businesses to grow and enabling them to reach suppliers and customer, to collaborate, innovate and attract inward investment. Technological developments and advances will change both our infrastructure needs and the way in which those needs are met – through the development of new types of infrastructure, or the opportunity to deliver or use existing mechanisms in new ways.

Grow skills and capabilities to benefit from big data

Data is increasingly gathered routinely in the digital age and forms a relatively low cost asset in our global knowledge economy. The UK should be leading in data science, gathering knowledge and developing applications from data of all sorts. We see skills and capabilities as a major pinch point holding back UK-based development of this growing industry.[14] Numerical and statistical skills are a major sticking point, as nationally (compared to other OECD countries) we have a high proportion of adults with poor numeracy skills. [15] Education is a key part of addressing this for the future, so it is concerning that England, Wales and Northern Ireland lag behind other countries' level of participation in any kind of mathematics study post-16. [16] At present the use and analysis of numbers is too often seen as a specialist or expert skill. The UK should be addressing its outlier status by strengthening what it offers in terms of education and professional training.

At the professional level, recruiters say that there are not enough people with sufficient statistical and data skills to meet demand in universities and in industry.[17] UK research councils and other

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[14] See e.g. Bakhshi, H. Mateos-Garcia, J. & Whitby, A. (2014) *Model workers: how leading companies are recruiting and managing their data talent* (PDF), Nesta, UKCES, Royal Statistical Society, & Creative Skillset, available from: http://www.nesta.org.uk/sites/default/files/model_workers_web_2.pdf, and a survey of 1051 employers by E-skills UK / SAS (2013) *Big Data Analytics: Adoption and Employment Trends 2012-2017* (PDF), available from http://www.sas.com/offices/europe/uk/downloads/bigdata/eskills/eskills.pdf

[15] OECD's 2012 'PIAAC' study found that "particularly large proportions of adults have poor numeracy skills" in England and in Northern Ireland. The study aimed to assess adult competencies in literacy, numeracy, and 'problem solving in a technology-rich environment'. In the numeracy and problem-solving categories of the test, young adults were not found to be much better equipped than older adults (aged 55 to 65). OECD (2012) *England and Northern Ireland (UK) – Country Note – Survey of Adult Skills First Results* (PDF), available from: http://www.oecd.org/site/piaac/Country%20note%20-%20United%20Kingdom.pdf.

[16] Hodgen, J. & Pepper, D. (2010) *Is the UK an outlier? An international comparison of upper secondary mathematics education* (PDF), Available from: http://www.nuffieldfoundation.org/sites/default/files/files/Is%20the%20UK%20an%20Outlier_Nuffield%20Foundation_v_FINAL.pdf (Accessed: October 2015)

[17] Nesta & Universities UK (2015) *Analytic Britain: Securing the right skills for the data-driven economy* (PDF), available from: http://www.nesta.org.uk/sites/default/files/analytic_britain.pdf

funders should support advanced statistical training, such as the doctoral training partnerships offered by universities, as this will help to meet growing demand.

Opportunities can also be taken throughout school education for young people to gain experience of investigatory work making use of data. We support that this should be embedded in post-16 learning and assessment, across a wide range of curriculum subjects.[18] The scientific community has also widely argued for an increase in time and money invested in practical and problem solving work in schools, for example in the Royal Society's vision for mathematics and science up to 18.[19] Research should consider what a more authentic experience of learning with data in schools and colleges looks like, and the investments in teacher CPD and facilities that support this.

Submitted by RSS' Policy and Research Manager, 23 May 2016

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[18] Porkess, R. & Dudzic, S. (2013) *A world full of data: statistics opportunities across A level subjects* (PDF) and RSS & ACME (2015) *Embedding statistics at A level*, available from: http://www.rss.org.uk/Images/PDF/influencing-change/A-world-full-of-data.pdf and http://www.rss.org.uk/Images/PDF/publications/embedding-statistics-at-a-level.pdf
[19] The Royal Society (2015) 'Mathematics and science to 18' (webpage), Vision for science and mathematics education.' Available at: https://royalsociety.org/topics-policy/projects/vision/science-to-18/