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The Data Dividend in the United Kingdom

A comparative perspective on governments' usage of data to tackle key societal challenges

A WPI Economics Report for Splunk

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About Splunk:

Splunk Inc. is a technology company that provides solutions that analyze massive amounts of data from every digital interaction, connecting dots across organizations' complex environments, surfacing insights and accelerating action. Our platform helps organizations go from visibility to action, fast and at scale to solve a broad range of business challenges. Our unique approach empowers organizations to become more secure and resilient so they can innovate with speed and agility.

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WPI Economics is a consultancy that provides economics that people understand, policy consulting and data insight. We work with a range of organisations – from FTSE 100 companies, to SMEs and charities and Central and Local Government – to help them influence and deliver better outcomes through improved public policy design and delivery. Our focus is on important social and economic policy debates, such as net zero, levelling up and poverty, productivity and mental health. We are driven by a desire to make a difference, both through the work we undertake and by taking our responsibilities as a business seriously. We are an accredited Living Wage employer.

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Introduction to the project

This report focuses on the UK results from a wider research project on the importance of data analytics in solving some of the most pressing socio-economic challenges that society faces, from reducing education and health inequalities to tackling organised crime and enhancing the natural environment.

Governments face a data divide – the use of data for societal benefit has significantly lagged behind its use for commercial profits. But this also means there is a potential data dividend – the opportunity to close the divide and reap all the benefits of data and emerging technologies which the private sector is already accessing.

We have assessed four key European governments (France, the Netherlands, the UK and Germany) on their use of data, benchmarking their performance to identify best practice, and areas for development. We have also considered the wider context of data use at the heart of government, and what best practice looks like, pulling out key insights and policy recommendations.

Based on these principles of best practice, we defined a framework for benchmarking the four target countries in our study and placing them within country typologies. To do so we analysed them against two dimensions of what makes for effective use of data for policymaking:

- How much **strategic emphasis** do governments put on data use within policymaking, with a focus on the extent to which a government is "data driven" as well as on their level of data innovation.

- Whether governments have the right **data governance** foundations to enable a better use of data from an operational perspective, including the quality of data, security and the level of data integration within government.

This analysis found that governments are increasingly aware of the data divide and aim to embody a data-driven approach, although these ambitions are not always translated into the necessary actions and resource commitments. All the countries in our sample are looking at how to improve data use in their public sector, though some (specifically the UK and France) are much more ambitious in their aims to put data at the very heart of government. The governments in our sample are also taking their first steps towards data innovation, with a focus on artificial intelligence over other emerging technologies.

Most countries have made good progress in the area of data quality, albeit with varying degrees of policy commitments and implementation of open and accessible data. Data sharing on the other hand has seen less success, with ambitious plans often difficult to implement as a result of inconsistencies in the data produced by different departments, and a lack of organisational capabilities and skills.

The following report will consider the UK findings within this context, and the implications for the UK's data use for policymaking.

Snapshot on the UK

Data-driven government		Data Innovation		Data Quality		Data Sharing	
Government data use is a priority	✓	National strategy for data innovation	✓	Average in openness of data	–	Strong integration of data	✓
Mixed levels of data-driven skills	–	Actively working to integrate AI	✓	Average availability of data	–	eIDs needs improvement	✗
CDDO providing leadership in Cabinet	✓	Government tech innovation strategy	✓	Average transparency of data	–	Authentic sources need improvement	✗
Mixed performance in metrics	–	Mixed performance on metrics	–	Stronger security of data	✓	Developing skillsets for data sharing	✓
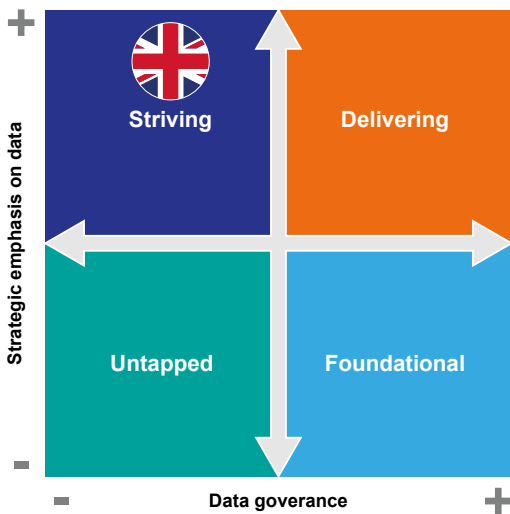
Our analysis of the UK government's performance leads to its classification as a **Striving Country** - those which are targeting their data dividend with strategic drive but without the necessary data governance in place.

Significant strategic emphasis is placed on data, particularly for government data innovation, however the UK is held back by challenges to data sharing due in part to legacy systems.

Coping with Covid19 – How did the UK leverage data to manage the Covid19 crisis?

The Covid-19 Dashboard developed by the UK government was one of the first and one of the most effective data responses to the pandemic seen globally. It was developed from March 2020, when it included only a map and a few charts reporting four metrics on cases and deaths. By March 2021, this had become nearly 200 metrics, provided daily, and one of the most important and reliable daily statistical publications in the UK. Trust in the numbers was high, and there was a sense that the public were getting the same information as the government. As the pandemic progressed, the dashboard was updated to meet new information requirements, shifting focus from testing availability to vaccination data, for example.

The Covid-19 dashboard is a shining example of the power of data in a crisis. It's success and insights have further embedded data use as a strategic priority in the UK government.

Results of benchmark analysis

Strategic emphasis on data

We assessed the benchmark countries on how much strategic emphasis they put on data use for policymaking, with a focus on the extent that the government is "data-driven" as well as on their level of data innovation. The UK has strong ambitions to be a data-driven government and have put strategies in place to encourage data innovation within government.

A strategic commitment to be data-driven

The UK government is increasingly aiming to take a data-driven approach, reflected in the strong performance in our quantitative assessment and confirmed by the relevant government strategies and documents.[1]

There is a strategic commitment to improving the way data is used by the UK government within policymaking. The UK's recently published National Data Strategy has committed to developing an "Integrated Data Platform", which aims to enable policymakers to use the most up to date evidence and analysis to support policy development by unlocking the potential of linked data and building up data standards.[2]

Crucially, structures implementing this strategic priority across departments are beginning to be set up. Since the National Data Strategy committed to establishing "a cross-departmental governance mechanism with the authority to enforce standards across government", the Central Digital Data Office (CDDO) has been established within the Cabinet Office. This has been widely interpreted as a move to provide clearer leadership and cross-departmental authority under the Minister for the Cabinet Office. A lack of cross-departmental leadership had been a shortcoming of previous attempts to improve government's digital capacities and use of data, such as the 2017 Government Transformation Strategy, which failed to build a national data infrastructure of registers by 2020 and was cancelled in 2021.[3] Establishing leadership in the Cabinet Office is therefore a very positive step to take.[4,5] Established at the beginning of 2021, the CDDO has already published a government digital strategy, which commits to embedding digital approaches and cross-functional teams into policy design and delivery for key government priorities.[6]

Case study – Health and wellbeing

Context: In 2015, Scotland published a cross-departmental strategy to increase survival rates for out-of-hospital cardiac arrests

Action: The strategy's impact is being evaluated based on linked data from eight different organisations. It is also informing decisions about the most effective locations for defibrillators

Benefit: Ex-ante evaluation of the strategy estimated it would lead to potentially saving 1,000 lives

The commitment to improving data use is increasingly reflected organically, both within and across departments. Some departments have started to appoint their own Chief Data Officers (e.g. the Ministry of Justice, Department for Work and Pensions). According to the National Audit Office (NAO), the biggest seven customer-facing departments have a data governance board providing direction and oversight of data projects and data decisions.[7] Importantly, the CDDO appointed a Chief Digital Officer in September 2022 to lead the charge on data at a national level, and to deliver the digital transformation of government.[8] However, the NAO report also highlighted that only the Department for Digital, Culture, Media and Sports (DCMS) recognised data as a strategic asset in its departmental plan. Only five out of seven departments analysed had data strategies. [9]

Even if this strategic emphasis is starting to be reflected organically at more senior levels, several analyses still report a lack of necessary skills among civil servants to implement a data-driven approach.

Our quantitative analysis supports the findings from the review of government strategy:

- Offering data literacy programs for its personnel (OECD OURdata Index) – 3rd in our benchmark, below France and the Netherlands[10]

- Promotion of data reuse in government (OECD OURdata Index) – below OECD average, though still above Netherlands and Germany

- Data-driven public sector (OECD Digital Government Index) – highest in benchmark

Planning for implementation of data innovation

The UK is well-positioned to lead on the adoption of emerging technologies, performing strongly in the global AI Readiness Index, due to strengths in the private technology sector, its data and infrastructure capabilities and government's own readiness to adopt these technologies.[11] Nevertheless the report calls for further adoption of AI and new technologies within government for the UK government to catch up with Singapore in 2nd place. [12]

Case study – Environmental

Context: The transition to an energy system compatible with UK decarbonisation targets "is being hindered by often poor quality, inaccurate, or missing data" (Energy Data Taskforce)

Action: The strategy for a modern digitalised energy system plans to produce new and better-quality data as well as embedding the presumption that data is open

Benefit: Implemented through the Modernising Energy Data Program, better data will "unlock the opportunities provided by a modern, decarbonised and decentralised Energy System"

The public sector has a large role to play in the UK's National AI Strategy, which lays out specific actions to identify where using AI can provide a catalytic contribution to strategic challenges.[13] There are several initiatives in place that evidence the UK government's efforts to integrate emerging technologies in its activities. In 2018, for instance, the "Technology innovation in government" survey was published with the aim of diagnosing the current level of usage of different emerging technologies in government.[14] This was followed by the "Government technology innovation strategy" which describes the foundations that each government organisation will need to best use emerging technologies.[15] This is complemented by more specific guidance in other documents, such as a guide to using AI in the public sector.[16] More recently, the government digital and data strategy committed to continue identifying and capturing opportunities arising from emerging technologies, such as artificial intelligence, blockchain and quantum computing".[17] This work has begun through the Centre for Data Ethics and Innovation's AI Barometer and the "AI for government review", jointly conducted by Government Digital Survey and Office for AI which is seeking to identify new opportunities for using AI in the public sector to drive public sector productivity. [18,19]

These initiatives have considered not only the current state of play and future opportunities for emerging technologies in the public sector, but also some of the challenges this might pose. These include

- flawed underlying data used in training algorithms

- accountability and transparency of decision-making algorithms

- liability of vendors selling AI algorithms used in government services

- fairness, bias and anonymity of personal data.[20]

Ethical questions associated with the integration of emerging technologies in the public sector feature in the UK's strategies and initiatives. For instance, the National AI strategy has the explicit long-term key action of working with the Alan Turing Institute to upgrade guidance on AI ethics and safety in the public sector.[21] The guide to using AI in the public sector contains specific advice about understanding artificial intelligence and safety. [22,23] The Central Digital and Data Office has also published one of the first algorithmic transparency standards for government departments and public sector bodies.[24]

Nevertheless, the Open Data Institute has pointed out that one of the weaknesses of these recent efforts in data innovation has been their almost exclusive focus on data and information from the public sector. By integrating data from the public sector with wider private and not-for-profit sectorial data the government would be able to design and implement more expansive and informative data innovations/infrastructure.[25] This is evidenced in our quantitative findings:

- 3rd in Oxford Insights AI Readiness Index and top of our benchmark[26]

- Score declined to below the OECD average, beating only Germany in our benchmark for both external stakeholder engagement" and "development of data promotion initiatives" variables in the OECD OURdata Index [27]

Data governance

The second element of our analysis focused on whether the governments had the right data governance foundations to enable a better use of data from an operational perspective. We looked at the quality of data, including its security, as well as the level of data integration within government. The UK has seen some backwards movement in data quality and has legacy challenges to overcome in terms of data sharing.

Declining data quality

Given there is little measurement of government data use in policymaking, we have used some metrics which apply to overall government data, citizen data and government website security as proxies.

- **Openness** – in both variables considered ("content of the open by default policy" and "implementation of the open by default policy" in the OECD OURdata Index the UK fell from being one of the top performers in 2017 to just above OECD average.[28] This decline is confirmed by alternative rankings, such as the Open Data Barometer (Leaders' edition), where the UK has recently descended from the first to the second position.[29]

- **Availability** – the UK performs better in terms of the OECD OURdata "content of the unrestricted access to data policy" variable (where it is above OECD average) than in the "implementation of the unrestricted access to data policy" (where it is in line with OECD average)

- **Transparency** – The UK government performs broadly in line with the rest of the countries in the sample. It scores in line with the EU-27 average (above Germany but below France) in the "transparency of personal data" variable of the European Commission's eGovernment benchmark.[30]

- **Security** – The UK is just above average in the security analysis European Commission's eGovernment benchmark. UK government websites passed just below 50% of the security tests performed, outperforming Germany and France.

The UK government's strategic emphasis on data may have diverted attention and resources from improving its data governance foundation. The OECD OURData Index report argues that the UK's deteriorating performance is a result of a change of policy priorities from open data to analytical capacity within the public sector (e.g. targeting the adoption of AI practices).[31] Notwithstanding evidence of recent decline, UK still performs above average in terms of data quality. [32]

Case study – Economic prosperity

Context: Fragmentation of support services for different groups of vulnerable people means not all of them can access the right services

Action: A cross-departmental program "to demonstrate how people with complex needs can be better supported by linking and improving the government data held on them"

Benefit: Running until 2024, the BOLD programme will consist of 4 pilots focusing on reducing homelessness, supporting victims of crime, reducing substance misuse and reoffending

According to the National Audit Office, the lack of a central body with cross-government accountability for identifying datasets that are critical for government as a whole represents a barrier for data accessibility. Previous attempts to map the data landscape have stalled because of its fragmented nature and the burden of detail, meaning there is not a complete catalogue of all the data held by government.[33]

Data appears at the core of the Government's new cybersecurity strategy. The government has committed to establishing a Government Cyber Coordination Centre (GCCC) which will work to better coordinate operational cyber security efforts, transforming how cyber security data and threat intelligence is shared, consumed and actioned across government.[34]

Legacy challenges in data sharing

Similarly to data quality, there are no direct measures of government data sharing for policymaking, however there are some useful proxies which we have used to consider the UK's performance in this arena. These include metrics designed to capture:

- How integrated government data use is (digital by design, government as a platform from the OECD Digital Government Index) [35]

- How extensively eIDs are used for citizen's data (EC eGovernment benchmark for eIDs) [36]

- The extent to which personal data is pre-filled by online services (Authentic sources from the EC eGovernment benchmark)

Despite strong performance in **data integration** variables, data sharing in the UK government is held back by inconsistent usage of metadata, a lack of standards and inconsistent identification of individuals across government datasets and the impact of heterogenous legacy systems.

The National Data Strategy reports that different standards for data are used at all stages of the data lifecycle and that inconsistent use of metadata is a key barrier to better integration of government data.[37] The Office for Statistics Regulation argues that government data is poorly documented, so the full potential lies untapped and quality assessment processes are hindered.[38] The National Audit Office reports more than 20 ways of identifying individuals and businesses across departments.[39] This is related to poor performance in **citizens data** – the eID metric is one of the lowest in Europe (and lower than all countries in our sample), and is significantly worse at local than central administration level.[40] The UK also has one the lowest scores in the "Authentic Sources" eGovernment benchmark.

This is further reinforced by the impact of heterogenous legacy systems, which not only cause inconsistencies in government data directly, but also indirectly by impeding the implementation of standards across and even within departments. For instance, when the NHS number was introduced many hospitals were unable to implement it as their systems were unable to accommodate the longer number of digits.[41] The recent discussions on pausing the Data Reform Bill are also causing uncertainty over future data sharing arrangements, both within government and for businesses. Pausing the bill is likely to slow progress in improving data quality and sharing.

However key public sector stakeholders argued that the limitations actually posed by the lack of unique identifiers and consistent standards across departments are sometimes overstated. The UK government is supporting the development of technical expertise around data linkage, aiming to overcome these barriers and building on lessons learned by successful initiatives. [42] [43] But these initiatives remain the exception, rather than the norm and the skills, knowledge and resources necessary for them pose challenges for their widespread adoption as systemic solution. This is underlined by the lack of capabilities, both from an organisation and a human resource perspective identified by the Office for Statistics Regulations.[44]

Conclusion and recommendations
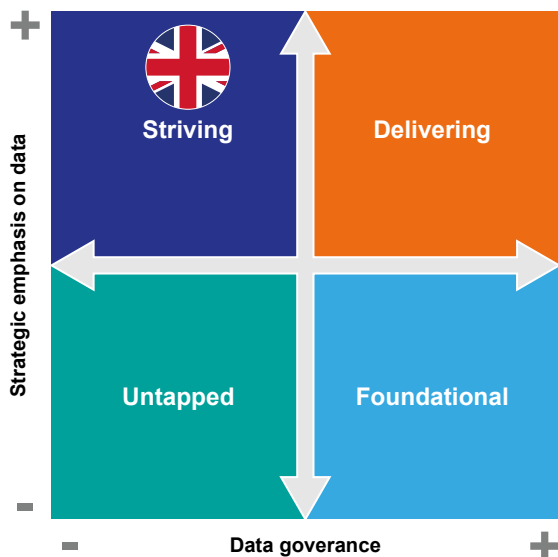
Our analysis of the UK government's performance leads to its classification as a **Striving Country** - those which are targeting their data dividend with strategic drive but without the necessary data governance in place.

The UK is one of the top performers in **strategic emphasis on data**. They have a strategic commitment to a data-driven approach to policymaking which is also reflected in its organic structures. Multiple strategies are also planning to boost data innovation.

The UK's performance in data governance is more mixed. Despite evidence of a recent decline, it still performs well in terms of data quality. However data sharing is held back by the impact of heterogenous legacy systems, including inconsistent use of metadata, a lack of standards and inconsistent identification of individuals.

Based on our assessment, we suggest that the UK government needs to focus its efforts on building the necessary **data governance** foundations that will enable the implementation of its strategic ambitions for the use of data. More specifically, the findings of our benchmark assessment led us to the following recommendations for the UK government to improve its use of data in policymaking:

- **Continue to strengthen public sector's data capabilities** to turn the government's strategic ambitions into an operational reality. This includes continuing existing work in improving data skills within the public sector, both in terms of specialist teams across departments and the general understanding of the importance of data among all civil servants. It also requires the development of its organisational capabilities, by consolidating recent progress providing strategic leadership to the integration of data in government activities and ensuring the treatment of data as an asset across governments.

- **Adopt and implement an "interoperable by default" policy** to ensure all public sector data, can be re-used and shared across governments. While the adoption of the policy is an important strategic step, its implementation will require significant technical, regulatory and organisational changes, needing to be complemented with a well-resourced action plan. These changes are expected to be particularly large in those public services dependent on legacy systems, where investment to update software and hardware infrastructure may be needed.

- **Launch a "Data-driven policy making challenge"**. In mission-oriented innovation policies the government identifies challenges that need cooperation from different sectors and organises competitions for innovators to secure funding. Departments could be called to collaborate to provide solutions for government-wide priorities (e.g. related to levelling up, climate change, etc.), based on innovative uses of data. In addition to the direct benefit of the policies suggested, this initiative would also help disseminate the importance of data-driven policy making, build capabilities within and collaboration links across departments and generate best practices and lessons future initiatives might learn from.

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