Office for Statistics Regulation

State of the Statistical System 2021/22

July 2022

Executive Summary

This report, the third in our annual series of State of the Statistical System reports, draws together the findings from our regulatory work in financial year 21/22 to provide a deeper insight into the state of the UK's statistical system.

We want to celebrate areas where the system consistently performs well and has improved over the past year as well as highlighting both continued and emergent areas for improvement.

1. The statistical system has continued to deliver more timely, even real time, data and has shown it can respond quickly to the need for statistics on a range of topics.

We would like to see:

- Continued timely data on the topics that matter most
- Proactive horizon scanning for potential data gaps

2. The system has widened its use of dashboards, portals and data tools to make statistics accessible. Producers must ensure that these provide insight through answering society's key questions.

We would like to see:

- Producers continuing to use innovative ways to make statistics more accessible to deliver insight to a wider range of users.
- When developing dashboards and other data tools, producers to consider the questions they seek to answer, and the audience, to ensure that they provide insight.

3. Innovation and collaboration to share and link data has continued, building on the success of the statistical system's response to the pandemic, and will help the system to be more responsive and provide better insights into the key questions for society. However significant barriers remain to maximising the benefits of linked data.

We would like to see:

- A continued move to a culture within government of a willingness to share data and overcome barriers
- Collaboration throughout the whole process to ensure definitions and methodology are consistent
- Expansion of the Integrated Data Service to provide value for a range of stakeholders

4. The system has improved collaboration between statistical producers and wider stakeholders including in areas beyond data linkage. This needs to continue and be expanded further.

We would like to see:

- Greater collaboration between statistics producers and wider stakeholders to enable statistics to better meet user needs.
- Improvements in the inclusivity of statistics through collaboration both within the system and more broadly.

5. There have been innovations in how statistics are collected and produced, with new data sources and data collection methods being used and greater embedding of Reproducible Analytical Pipeline (RAP) principles.

We would like to see:

- Producers being proactive in identifying new and innovative data sources that can improve the quality of statistics and better meet user needs.
- Producers automating more of their statistical productions using RAP, in order to enhance the trustworthiness, quality and value of statistics.

6. There has been greater use of technology and additional data sources, and statisticians working with others, both inside and outside the statistical system, to enhance the quality of statistics.

We would like to see:

- Wider use of technology, such as computer aided classification, to enhance the quality of statistics
- Greater use of other data sources, and linked data, to improve data accuracy and add extra value to outputs.
- Statisticians working with others who can help ensure the quality of statistics.

7. To bring effective insight, it is important to communicate uncertainty around the estimates. Improvements are needed in this area.

We would like to see:

- Improved communication of the uncertainty within statistics
- Consideration of how uncertainty is communicated, using language that matches the complexity of the statistics presented in order to make products as accessible as possible

8. The statistical system has demonstrated that it has a greater understanding of the need for transparency around statistics and data, and that this message is reaching beyond statistical teams. However, lack of transparency continued to be an issue on occasion.

We would like to see:

- Intelligent transparency being the default for all statistics and data
- Statisticians feeling confident and supported to ensure statistics are equally accessible to all
- Any limitations of the statistics and data are clearly and prominently explained to users to aid understanding and prevent misinterpretation.
- Data are published where a user can easily find them

9. Greater transparency is needed around development plans for statistics to enable users to understand upcoming changes and help prioritise developments.

We would like to see:

- Development plans published as standard to enable all users to understand upcoming changes to statistics and help drive priorities for development.

10. There has been an increase in government statisticians challenging the inappropriate use of statistics and engaging directly with users to support understanding of statistics.

We would like to see:

- Producers being proactive in considering how their statistics might be misquoted or misused and including relevant information alongside the statistics to mitigate this risk.
- Departments empowering statisticians to communicate with users, challenge the inappropriate use of statistics and support understanding of statistics.

11. Pressure on resource is increasing strain on the statistical system and threatens the embedding of the positive developments we have seen.

We would like to see:

- Departments ensuring that Heads of Profession have the skilled and resourced teams that they need to deliver statistics in line with the Code of Practice for Statistics.
- Conversations with a wide range of users to identify where statistics can be ceased or reduced in frequency or detail to save resource if appropriate.
- Use of better infrastructure, processes and systems to ensure the efficient and sustainable delivery of statistics.

Introduction

This report draws together the findings from our regulatory work in financial year 2021/22 to provide a deeper insight into the state of the UK's statistical system. We have supplemented our insights with reflections from government statistics producers, others within government and external stakeholders. We want to celebrate areas where the system consistently performs well and has improved over the past year as well as highlighting both continued and emergent areas for improvement. Where relevant, we have reflected back on the issues that we raised in last year's report and the progress that has been made.

This report is aimed at producers of official statistics and is structured using the pillars of the Code of Practice for Statistics, Trustworthiness, Quality and Value. We set out our findings and highlight what we would like to see from producers in the future.

What is the statistical system?

In the first of our State of the Statistical System reports we set out that official statistics are produced by a wide range of public sector bodies, including government departments, the devolved administrations, arm's length bodies and the Office for National Statistics (ONS). When statistics produced by these public bodies (called official statistics producers) meet the standards set out in the Code, as judged during an OSR Assessment, they are designated as National Statistics. A database of National Statistics, which we update regularly, is available on our website. Our latest published figure for the total number of National Statistics is 821, 7 of which were designated in the year 2021/22. We also estimated in our first report that there were more than 900 additional official statistics. This figure is more difficult to determine as statistics producers do not need to inform OSR of every new or discontinued publication. Together, National Statistics and other official statistics are a rich source of evidence that can be used to explain and understand life in the UK. We define the statistical system as the community of producers who publish these statistics.

During the pandemic we have seen a widening of the sources of evidence used to explain and understand life in the UK. Many official statistics producers set out collections and publications at speed and there has been an increased use of management information. Users do not see a distinction between these different types of statistical information produced by government. This has led to a widening of the statistical landscape to include these sorts of data.

In addition to official statistics producers, there is a wider ecosystem of statistics and data. Many of these other sources of statistics and data inform policy and public debate and it is important that they are used for the public good. We encourage producers outside of the official statistics producer community to apply the Code of Practice for Statistics on a voluntary basis. Our annual award for Statistical Excellence in Trustworthiness, Quality and Value recognises those who voluntarily apply the core pillars of the Code of Practice for Statistics.

There are also a variety of organisations and individuals commenting on the use of statistics by government. As we set out in a May 2020 blog, the pandemic has been associated with an increase in the role of citizens as 'armchair epidemiologists'. Since the pandemic there has been an increased interest in and scrutiny of statistics. This is a positive for the statistics system but also brings risk. Much discussion of statistics takes place on social media with increased risks around misuse and misinterpretation and 'echo chambers'. Official statistics producers need to be aware of these changes in the use of statistics.

Despite this changing landscape trust in official statistics remains high. A 2021 study of public confidence in official statistics found high confidence in the statistical system with 87% of respondents trusting ONS statistics and 79% of respondents agreeing that COVID-19 statistics are accurate. The public value of statistics has also been shown through 92% of respondents who used COVID-19 data reporting them being useful. Similarly, an ESCOE paper on the value of economic statistics found the benefit of economic statistics most likely far outweighed the cost of providing them.

Key Messages

Over the last year the statistical system has continued to deliver more timely, even real time, data and has shown it can respond quickly to the need for statistics on a range of topics. The system has widened its use of dashboards, portals and data tools to make statistics accessible. Producers must ensure that these provide insight through answering society's key questions. Innovation and collaboration to share and link data has continued, building on the success of the statistical system's response to the pandemic, helping the system to be more responsive and provide better insights into the key questions for society. However significant barriers remain to maximising the benefits of linked data. The system has improved collaboration between statistical producers and wider stakeholders including in areas beyond data linkage. This needs to continue and be expanded further.

During this year there have been innovations in how statistics are collected and produced, with new data sources and data collection methods being used and greater embedding of Reproducible Analytical Pipeline (RAP) principles. There has been greater use of technology and additional data sources, and statisticians have worked with others, both inside and outside the statistical system, to enhance the quality of statistics. Yet to bring effective insight, it is important to communicate uncertainty around the estimates. Improvements are needed in this area.

Over the last year the statistical system has demonstrated that it has a greater understanding of the need for intelligent transparency around statistics and data, and that this message is reaching beyond statistical teams. However, lack of transparency continued to be an issue on occasion. Greater transparency is needed around development plans for statistics to enable users to understand upcoming changes and help prioritise developments.

There has been an increase in government statisticians challenging the inappropriate use of statistics and engaging directly with users to support understanding of statistics. Pressure on resource is increasing strain on the statistical system and threatens the embedding of the positive developments we have seen.

Trustworthiness

The Code of Practice for Statistics sets out that Trustworthiness is about confidence in the people and organisations that produce statistics and data. It is a product of the people, systems and processes within organisations that enable and support the production of statistics and data. Trustworthiness comes from the organisation that produces statistics and data being well led, well managed and open, and the people who work there being impartial and skilled in what they do.

Over the last year the system has demonstrated that it has a greater understanding of the need for intelligent transparency around statistics and data, and that this message is reaching beyond statistical teams. However, lack of transparency continued to be an issue on occasion.

Over the last year we in OSR have continued to champion transparency and equal access to data and statistics. We have published a blog, statement on transparency and the role of Heads of Profession and regulatory guidance. The former chair of the UK Statistics Authority attended the Civil Service board to talk about the need to ensure equality of access to data. We currently have a page on our website dedicated to transparency.

In order for statistics to serve the public good they need to be available in the first place, but this in itself isn't enough and this is why we talk about intelligent transparency. At its heart intelligent transparency is about supporting a transparent and accessible approach to communicating not just statistics, but also other types of data and research like management information or evaluations. There are three core principles which combine to support intelligent transparency: equality of access, enhancing understanding and analytical leadership. Intelligent transparency is at the core of many of the practices outlined in the Code of Practice for Statistics.

In last year's report we stated that producers should make transparency the default across all statistics and data. Over the last year we have seen good examples of improvements to the transparency and equality of access to statistics. Statistics producers have set up specific pages for the publication of statistics and data used in the public domain, such as the Scottish Government Coronavirus additional data in information page. Blogs have been published to aid understanding of the statistics that are of high public interest, such as the Welsh Government Chief Statistician's blog. Departments have made an effort to make granular data available to help understanding of topical questions such as different Russian entities, individuals and ships subject to sanctions published by HM Treasury.

However, we have continued to have to intervene on occasions where unpublished statistics are used in the public domain or not sufficiently well explained.

A challenge we have observed is balancing the need to make data available with the need to be clear about limitations which impact the interpretation and appropriate use of statistics. In late 2021, analyses published by the UK Health Security Agency (UKHSA) of COVID-19 case rates by vaccination status were misinterpreted or misused – for example, the figures were used to support anti-vaccine misinformation in podcasts and online. In November 2021, we welcomed the changes which UKHSA made to the presentation of its analysis, but noted that there was further room for improvement to minimise the potential for misuse. UKHSA continued to develop its publication to support appropriate use and published a blog explaining how analytical choices and underlying biases impacted interpretation of the statistics. This example highlighted the need for producers to make it easy for people to find and understand objective information and help to minimise the spread of misinformation. This can be achieved if producers consider any risks associated with the publication of statistics, explain any caveats prominently and are agile in responding to public debates. We continue to work with producers, including UKHSA, to understand the lessons learned from examples such as this during the pandemic.

A further challenge that we have heard is keeping up with the range of ways data are being published. Data are being published in a range of places on government websites, with a range of labels including management information, transparency data as well as statistics. This can make the data difficult for users to find. There are also varying levels of information accompanying the data to ensure users can draw robust conclusions from them.

We will continue to champion and encourage improvements to making data and statistic easier to find, access and understand for users.

What we would like to see

- Intelligent transparency being the default for all statistics and data
- Statisticians feeling confident and supported to ensure statistics are equally accessible to all
- Any limitations of the statistics and data are clearly and prominently explained to users to aid understanding and prevent misinterpretation.
- Data are published where a user can easily find them

Greater transparency is needed around development plans for statistics to enable users to understand upcoming changes and help prioritise developments

The transparency of development plans for statistics continues to be an issue. Some statistics producers are not making their future plans for their statistics publicly available. Of those plans that are published, some are out of date or lack detail about the developments, making it difficult for users to know what future value to expect from

the statistics of interest. These plans should also be transparent about what is not currently possible.

ONS Population statistics are undergoing transformation with a move to greater use of administrative data and development of higher frequency estimates, for example more timely model-based estimates, which will draw on various survey, administrative, and possibly commercial data. In January 2021 ONS published a blog setting out the range of population statistics that it planned to publish in 2022 and it continued to provide updates through its population statistics and sources guide. These types of outputs enable users to better understand upcoming changes, and what new statistics to expect and when.

What we would like to see

- Development plans published as standard to enable all users to understand upcoming changes to statistics and help drive priorities for development.

There has been an increase in government statisticians challenging the inappropriate use of statistics and engaging directly with users to support understanding of statistics

Over the last year, statisticians have been willing to step in and respond to ensure the statistics can be used appropriately. For example, in January 2022, when deaths data were used to claim that the number of deaths from covid was a lot lower than official statistics showed, ONS statisticians rapidly put out a blog explaining the deaths statistics and how correct conclusions can be drawn from them. In last year's report we argued that statisticians should have greater freedom to engage openly about data and statistics and their limitations, both within and outside government. There continues to be to be an increased presence of statisticians on social media in a professional capacity, helping make them more accessible and their responses quicker. ONS have also launched a podcast to enable statisticians to discuss further the statistics that they produce. This comes against a back drop of increased discussion and challenge of statistics, particularly on social media. It is important that the voices of government statisticians are heard in these debates.

This year has seen the successful roll out of the Data Masterclass for Senior Leaders created by the Data Science Team at 10 Downing Street. It is designed to improve data and analytical literacy in senior public-sector leaders and help them create and champion a data culture in their organisation. It has seen over 3,000 learners enrol on the course. These sorts of initiatives may not only help increase the awareness of the value of data in organisations; they may also help them understand the factors that support appropriate use of statistics by public sector organisations.

What we would like to see

- Producers being proactive in considering how their statistics might be misquoted or misused and including relevant information alongside the statistics to mitigate this risk.

- Departments empowering statisticians to communicate with users, challenge the inappropriate use of statistics and support understanding of statistics.

Pressure on resource is increasing strain on the statistical system and threatens the embedding of positive developments

Continued pressure on the system, coupled with issues with recruitment and retention, are leading to strain on analysts and statisticians and may inhibit innovation and collaboration in the future.

This report highlights the enormous breadth of work being delivered by the statistics system. In speaking to statistics producers, an issue that was flagged multiple times with us is that of resources. The demands on the statistics system have increased, but at the same time there have been difficulties recruiting and retaining staff. The pandemic provided opportunities for statisticians to expand and demonstrate their skills in delivering new analysis at pace. Many of these statisticians got promotions or moved into other roles or sectors. A competitive labour market has made it more difficult to recruit into the Government Statistical Service and organisations are reporting high vacancy rates. Recent announcements from the Government about reducing the number of civil servants are likely to increase the pressure on resources within the statistical system through potentially not being able to replace statisticians when they leave.

We are hearing of Heads of Profession having to make decisions about which statistical releases to continue to publish, or publishing data-only releases to meet demand. These decisions will need to be taken in collaboration with users to identify where changes in user need can facilitate the cessation, or reducing the frequency or detail of outputs. In addition, the use of technology, such as that set out in our Reproducible Analytical Pipeline review, may support the more efficient delivery of some sets of the statistics. In last year's report we set out the need for producers to consider how best to use better infrastructure, processes and systems to improve the efficiency and sustainability of its processes and that need continues this year.

What we would like to see

- Departments ensuring that Heads of Profession have the skilled and resourced teams that they need to deliver statistics in line with the Code of Practice for Statistics.
- Conversations with a wide range of users to identify where statistics can be ceased or reduced in frequency or detail to save resource if appropriate.
- Use of better infrastructure, processes and systems to ensure the efficient and sustainable delivery of statistics.

Quality

Quality means that statistics fit their intended uses, are based on appropriate data and methods, and are not materially misleading. Quality requires skilled professional judgement about collecting, preparing, analysing and publishing statistics and data in ways that meet the needs of people who want to use the statistics.

During this year there have been innovations in how statistics are collected and produced, with new data sources and data collection methods being used and greater embedding of Reproducible Analytical Pipeline (RAP) principles

As we highlighted in last year's report, in response to the pandemic and the requirements for more up to date information, new high frequency data collections were set up to understand the rapid developments and what was happening. Over the last year these have evolved and led to other innovations in how data are collected. For example, during the pandemic the Department for Education collected daily data from schools about attendance. Schools, and other education establishments, had to manually input the data into a form each day. The Department are now trialling extracting attendance data direct from schools' management information systems on a daily basis to provide more timely insights into attendance. Prior to the pandemic attendance data was collected on a termly basis. The Department are providing attendance data reports via a dashboard for participating schools. Although the collection is voluntary, there has been a high take up amongst schools and academy trusts.

Another instance of innovation in data collection has been seen with the Census 2021, where a 'digital first' approach was undertaken encouraging households to fill out the census online. For England and Wales, the Census was designed, built and delivered in-house by ONS teams reflecting the efficacy and maturity of their technical capabilities. This approach has been considered a success with over 22 million census responses submitted online from February to June 2021 in England and Wales and a total response rate of 97% of households. Northern Ireland was also successful in its 'digital first' programme with 80.6% of addresses completing online and an overall return rate of 97.2%. Scotland saw almost 9 out of 10 returns submitted online with an overall household return rate of just under 90% (89.1 %). National Records of Scotland (NRS) had been looking for a higher return rate. NRS have drawn on independent expert advice. On the basis of this advice and their own judgement, NRS concluded that the combination of the national return rate (89.1%) with 30 Local Authorities (out of 32) achieving over 85% return rates (19 of which were over 90%), meant that it could close the "collect" aspect of Scotland's Census and can move on to subsequent phases: the census coverage survey, the use of administrative data and the statistical methods phase. We will be working with National Records Scotland over the next year as it progresses work, including with key partners across the UK statistical system, to deliver high quality census outputs which meet the needs of users across Scotland and the rest of the UK. Our role will be to reach a judgement on compliance with the Code of Practice for Statistics.

An important aspect of innovation is being open to alternative sources of evidence, and challenges from external users. Our review of population estimates and projections found that improvements were needed in methods, communication and embracing challenge. ONS has published updates on completed, ongoing and future work to address our recommendations. Our review specifically noted that '…we found that in some smaller cities that had a large student population, the population estimates did appear to be inconsistent with, and potentially higher than local evidence suggests'. Comparisons between Local Authority (LA) Census estimates and previous population estimates created using admin data or from mid-year population estimates indicated that there did appear to be an issue with some population estimates for smaller cities. ONS has committed to publishing regular progress updates against our findings.

In last year's report we recommended that Reproducible Analytical Pipelines (RAP) should be the default across the statistical system. We are encouraged to see progress by some statistic producers in developing this approach. In 2021 the Northern Ireland Statistics and Research Agency set up a 'Tech Lab' designed to harness new technologies by bringing together skilled personnel to provide a centralised dedicated technical resource to the agency. Amongst the work undertaken by this 'Tech Team' is the automation of production processes using RAP principles.

The Analysis Function in ONS has recently published its RAP Strategy which aims to embed RAP as the default approach to analysis in government. It focuses on three goals (tools, capability and culture) and sets out how the vision will be achieved, including practical advice for producers, and how progress will be monitored.

What would we like to see

- Producers being proactive in identifying new and innovative data sources that can improve the quality of statistics and better meet user needs
- Producers automating more of their statistical productions using Reproducible Analytical Pipelines, in order to enhance the trustworthiness, quality and value of statistics.

There has been greater use of technology and additional data sources, and statisticians working with others, both inside and outside the statistical system, to enhance the quality of statistics.

Statistics producers have been actively looking at, and using, technology to improve the quality of the data underpinning statistics. An example of this is the National Data Quality Improvement Service (NDQIS) set up by the Home Office. To improve data quality for 'flagged offences' like knife crime, they used computer aided classification to determine if a knife was used, reducing the need for manual checking and also standardising what counts as a knife crime. This development has reduced the burden on police officers and information analysts and improved the accuracy of the statistics. We have published a blog championing this innovation.

In last year's report we also highlighted how producers were using innovative data sets. We have seen this trend continue, with statistics producers working with each other linking new data sets to provide more accurate and robust estimates. A good example of this is the development of ONS's international migration statistics. ONS has used administrative data from the Department for Work and Pensions Registration and Population Interaction Database (RAPID), alongside Home Office border data, to produce migration estimates. Obtaining and linking these datasets has required extensive collaboration enabling ONS to provide a richer source of information and improve the accuracy of the migration estimates.

There has also been a greater willingness to work with others outside of the statistical system. To ensure robust estimates from the 2021 Census in England and Wales, ONS is working with Local Authorities to quality assure the data, drawing on their local intelligence and comparators, such as council tax data in order to corroborate figures at the small and local area level.

What would we like to see

- Wider use of technology, such as computer aided classification, to enhance the quality of statistics
- Greater use of other data sources, and linked data, to improve data accuracy and add extra value to outputs.
- Statisticians working with others who can help ensure the quality of statistics.

To bring effective insight, it is important to communicate uncertainty around the estimates. Improvements are needed in this area.

Communicating uncertainty is an important part of ensuring the appropriate use of statistics. This information can help ensure that users do not draw inappropriate inferences from the statistics. There is guidance on communicating quality, uncertainty and change to support producers to ensure uncertainty and sources of potential bias are clear. There are examples of where statistical producers have communicated uncertainty in a way that is clear and understandable to non-expert users. The Coronavirus Infection Survey produced by ONS is a good example of this, as it continues to use a variety of mechanisms to communicate the uncertainty around the estimates. This includes quoting confidence intervals and inclusion of them on charts, providing smoothed modelled estimates, and using language such as 'that the trend is unclear'.

Not all statistical releases have been so clear about the level of uncertainty in the estimates and the sources of potential bias. We are planning to publish a report on communicating uncertainty later this year and will work with others in this area, such as the Winton Centre and the ONS Data Quality Hub, to provide further support and guidance to producers.

What would we like to see

- Improved communication of the uncertainty within statistics.
- Consideration of how uncertainty is communicated, using language that matches the complexity of the statistics presented in order to make products as accessible as possible

Value

To provide public value, statistics must support society's needs for information. This means that the statistics and data are useful, easy to access, remain relevant, and support understanding of important issues. Value includes improving existing statistics and creating new ones through discussion and collaboration with stakeholders, and being responsible and efficient in the collection, sharing and use of statistical information.

Over the last year the statistical system has continued to deliver more timely, even real time, data and has shown it can respond quickly to the need for statistics on a range of topics

Whilst there remain important questions around vaccination rates and potential new variants of Covid 19, the focus of analysis has moved beyond the immediate pandemic to topics such as climate change, the cost of living and the war in Ukraine.

New statistics have been published on a variety of topics, either as official statistics or management information, and there continued to be good examples of voluntary application of the Code of Practice for Statistics.

During the pandemic there was a huge push to more timely, even real time, data. The system is continuing to work responsively and delivering established and new statistics on daily or weekly basis to meet users' needs. For example, at the start of the fuel crisis in September 2021, the Department for Business, Energy and Industrial Strategy started publishing weekly experimental statistics on regional fuel stock levels. The Department for Transport has also developed a faster indicators of transport activity page to monitor transport activity on a timelier basis for topical issues relating to transport.

Following Russia's invasion of Ukraine in February 2022, there was user demand for a range of statistics to understand the social and economic impact. The system responded quickly producing the number of Ukrainians living in the UK, number of applications and approvals to come or stay in the UK and the latest trade and investment statistics. Surveys were rapidly set up to understand the experiences, characteristics and needs of Ukrainians who were now living in the UK.

During the COVID-19 pandemic it was important to understand the population and its characteristics. To meet this need, early data from the 2021 Census was used to understand more about vaccine uptake by occupation.

A key current Government policy is 'levelling up'. As the government highlights in the White Paper, many of the metrics that will be used to measure the success of Levelling

Up are either not yet available or of insufficient quality. The clarity of what is being measured is important if people want to track progress through data. As the statistics regulator, reviewing the statistics used in Levelling Up, we will be tracking the implementation of the GSS Sub National Data strategy and new tools such as the ONS Sub National Indicators Explorer, ensuring statistics are the best quality they can be and clearly focussed on measuring the outlined Levelling Up missions.

To be responsive and proactive, the system needs to be able to identify the topics of interest quickly. In last year's report we highlighted the need to horizon-scan to identify and fill future and existing data gaps. This continues to be important in order to be responsive.

What we want to see:

- Continued timely data on the topics that matter most
- Proactive horizon scanning for potential data gaps

The system has widened its use of dashboards, portals and data tools to make statistics accessible to a wider audience. Producers must ensure that these provide insight through answering society's key questions

During the pandemic there was a need for statistics to be made more accessible and insightful to the public and to find ways to communicate them directly. Over the past year the system has built on this to find ways to bring insights to a wider range of audiences on other topics. The development of interactive dashboards, data tools and maps as means of disseminating statistics has enhanced understanding, use and reuse of the statistics. These types of tools are helping make the statistics more accessible to a wider range of users, including non-specialists.

In last year's report we recommended that the system continues to improve its communication and presentation of statistics and data, with a focus on adding insight. Over the last year dashboards and interactive reports are being increasingly used to help answer key questions. The COVID-19 dashboard has remained a source of good practice. In particular, the ability for others to easily download the data from the Covid-19 dashboard to produce visualisations and bring further insight has been a key strength. Whilst the use of new ways to communicate statistics and bring insight is to be commended, we would also caution that producers fully consider the question that a dashboard or data tool is seeking to answer, the intended audience and how quality information will be communicated. Whilst we have seen good examples of dashboards, we have also seen examples that serve more as 'data dumps' and may not be the best ways of communicating these messages and bringing insight.

In the lead up to the UN Climate Change Conference (COP26) held in October 2021, there was a lot of interest in climate change statistics. The UK climate change statistics, data and analysis landscape is broad, complex and changeable. With many new official statistics developed over the last decade about climate change, the development and launch by ONS of the Climate change portal has delivered insights in a clear and accessible way, by pulling together a range of data on this topic.

A number of interactive products have been developed by ONS to support Census 2021 data for England and Wales. These include a tool to allow users to generate bespoke tables from Census 2021 data to meet specific requirements. This tool uses innovative methods to ensure data is subject to disclosure control by running three disclosure checks on the bespoke tables before releasing the data. The development of this tool should significantly improve the flexibility and timely outputs offering from ONS for Census 2021.

ONS is also planning to use data visualisation of Census data to allow users to aggregate data to different geographies and to produce a view format that users can scroll to zoom into different levels of geographies and see how the data and narrative differ at each level.

Northern Ireland Statistics Research Agency (NISRA) has also worked collaboratively with ONS and the Central Statistics Office (CSO) in the Republic of Ireland to utilise new tools which will increase the accessibility and flexibility of Census data and official statistics more widely.

The NISRA 'Tech lab' has rolled out a number of innovative solutions across a range of topics such as a Baby Names interactive tool and a 'scrollytelling' article on Employee Earnings. They have also developed an accessible HTML exemplar for use by production teams.

Statisticians continue to be involved in developing content for the dissemination of statistics in the media. This is bringing insights to new and wider audiences, for example through Ofcom's development of content for social media, and the functionality for ONS interactive elements to be embedded in third party sites including those of media organisations such as the BBC.

What we want to see:

- Producers continuing to use innovative ways to make statistics more accessible to deliver insight to a wider range of users.
- When developing dashboards and other data tools, producers to consider the questions they seek to answer, and the audience, to ensure that they provide insight.

Innovation and collaboration to share and link data continued, building on the successes of the pandemic, helping the system to be more responsive and provide better insights into the key questions for society. However, significant barriers remain to maximising the benefits of linked data.

In last year's report we highlighted improvements to collaboration, particularly in data sharing and linkage. Whilst this has not become the norm, further progress in this area has continued in 2021/22. However, greater external collaboration across a wider range of stakeholders is still needed to drive the maximum benefits.

A major innovation during the past year has been the launch of the first stage of the Integrated Data Service, a cloud-based platform giving analysts and researchers greater access to data from a range of sources. The private beta version allowed a selection of government analysts to compare and combine data held by the ONS and other departments. The aim is to unlock the full potential of data, inform policy decisions and encourage collaboration across government. Three projects were selected for the private beta: wage growth, energy efficiency and regional issues. Within the next year, we hope to see the planned launch of a version that can facilitate a larger number of users, especially those outside Government, in order for greater value to be realised from the Integrated Data Service.

Whilst we have seen greater collaboration to share and link data, significant barriers still exist. In particular, we have seen differences in risk appetite around the sharing and linkage of data and delays to projects due to issues with getting data sharing agreements signed. Producers have reported the need for a cultural shift that understands the possibilities and public benefits of data linkage.

There continues to be strong collaboration between the statistical system and the Administrative Data Research UK (ADR UK). This has supported linkage and sharing of datasets within and across departments through projects such as the Data First project, and also provided funding to enable independent research to be carried out on key areas of strategic and policy interest.

Data sharing and linkage between Ofsted, the Department for Education, UCAS and ONS has allowed for data on qualifications, UCAS applications, pupil characteristics and prior educational attainment to be linked. This GRading and Admissions Data for England (GRADE) project has shared data with accredited researchers via the Secure Research Service and provides a wealth of potential insight into the achievements of young people and has huge potential to form the backbone for research analysis for many years to come. Ofqual also collaborated with ADR UK to make funding available via ADR UK fellowships to enable independent research to be carried out.

In the coming months, OSR will be engaging with key stakeholders involved in data to gather examples of good practice, and better understand the current barriers to sharing and linking. This will be used to champion successes, support positive change and provide opportunities for learning to be shared. Promoting data sharing and linkage, in a secure way, is a priority in our 2022/23 business plan.

What we want to see:

- A continued move to a culture within government of a willingness to share data and overcome barriers
- Collaboration throughout the whole process to ensure definitions and methodology are consistent
- Expansion of the Integrated Data Service to provide value for a range of stakeholders

The system has improved collaboration between statistics producers and wider stakeholders including in areas beyond data linkage. This needs to continue and be expanded further.

We have seen greater collaboration in areas beyond data linkage. For example, in responding to the war in Ukraine, official statistics producers across the UK and topic areas got together to identify the data needs and work together to meet them. This enabled the system to be more responsive and deliver outputs in a more coherent way. This has been seen in the collaboration between the Home Office, the Department for Levelling Up, Housing and Communities and devolved administrations in publishing information on the Ukraine sponsorship scheme by country and region.

There has also been extensive collaboration across the system in responding to the recommendations of the Inclusive Data Taskforce. One of the recommendations of the report was the need to take a whole system approach, working in partnership with others to improve the inclusiveness of UK data and evidence. Producers have collaborated with each other to provide a response to the findings and an implementation plan. Achieving the aims set out in the report will require substantially more collaboration, both within the system and more broadly, over the long term.

ONS have also collaborated with individuals who have raised concerns about how well inflation statistics reflect changes in the cost of living for different groups of the population. This led to an article on how prices of low cost grocery items have changed using experimental and innovative data.

What we want to see:

- Greater collaboration between statistics producers and wider stakeholders to enable statistics to better meet user needs.
- Improvements in the inclusivity of statistics through collaboration both within the system and more broadly.

Summary of what we would like to see

Trustworthiness

- Intelligent transparency being the default for all statistics and data
- Statisticians feeling confident and supported to ensure statistics are equally accessible to all and explained to aid understanding and prevent misinterpretation.
- Data, and explanations of them, published where a user can easily find them
- Development plans published as standard to enable all users to understand upcoming changes to statistics and help drive priorities for development.
- Departments empowering statisticians to communicate with users, challenge the inappropriate use of statistics and support understanding of statistics.
- Producers being proactive in considering how their statistics might be misquoted or misused and including relevant information alongside the statistics to mitigate this risk.
- Departments ensuring that Heads of Profession have the skilled and resourced teams that they need to deliver statistics in line with the Code of Practice for Statistics.
- Conversations with a wide range of users to identify where statistics can be ceased or reduced in frequency or detail to save resource if appropriate.
- Use of better infrastructure, processes and systems to ensure the efficient and sustainable delivery of statistics.

Quality

- Producers being proactive in identifying new and innovative data sources that can improve the quality of statistics and better meet user needs.
- Producers automating more of their statistical productions using Reproducible Analytical Pipelines, in order to enhance the trustworthiness, quality and value of statistics.
- Wider use of technology, such as computer aided classification, to enhance the quality of statistics
- Greater use of other data sources, and linked data, to improve data accuracy and add extra value to outputs.
- Statisticians working with others who can help ensure the quality of statistics.
- Improved communication of the uncertainty within statistics.
- Consideration of how uncertainty is communicated, using language that matches the complexity of the statistics presented in order to make products as accessible as possible

Value

- Continued timely data on the topics that matter most
- Proactive horizon scanning for potential data gaps
- Producers continuing to use innovative ways to make statistics more accessible to deliver insight to a wider range of users.

- When developing dashboards and other data tools, producers to consider the questions they seek to answer, and the audience, to ensure that they provide insight.
- A continued move to a culture within government of a willingness to share data and overcome barriers
- Collaboration throughout the whole process to ensure definitions and methodology are consistent
- Expansion of the Integrated Data Service to provide value for a range of stakeholders
- Greater collaboration between statistics producers and wider stakeholders to enable statistics to better meet user needs.
- Improvements in the inclusivity of statistics through collaboration both within the system and more broadly.

How OSR will be supporting the statistics system

We recognise that it continues to be a challenging time for statistics producers and the system is responding well. We want to support producers to continue to ensure, and improve, the trustworthiness, quality and value of statistics for the public good. As set out in our business plan our focus over the next year will be to prioritise projects which improve public understanding of matters of greatest public interest, promote data sharing and linkage in a secure manner and widen our reach and influence. These priorities will help us support the system to make the improvements set out in this report. Specific areas of work include:

Transparency: We will continue to champion improvements to the intelligent transparency of statistics and data. As part of widening our reach we will consolidate our position to support any public use of data and analysis by UK governments with a focus on system-wide change.

Data linkage: Data sharing and data linkage is a priority for us. We plan to engage with key stakeholders involved in data sharing and linkage to gather examples of good practice as well as understand the barriers. This will be used to champion successes, support positive change and provide opportunities for learning to be shared.

Communicating uncertainty: We are planning to publish a report on communicating uncertainty later this year and will work with others in this area, such as the Winton Centre and ONS Data Quality Hub, to provide further support and guidance to producers.

Analytical leadership: We believe that effective analytical leadership ensures that the right data and analyses are available, and that analysts are skilled and resourced to answer society's most important questions. Our planned work on Analytical leadership will show how the TQV (Trustworthiness, Quality and Value) framework can be relevant and helpful to everyone working with data and analysis in government. The

framework supports confidence in analysis and decisions informed by analysis. By drawing on TQV, government analysis can more fully serve the wider public good.

In addition, we will identify, and champion, examples of where innovation and collaboration have enabled statisticians to be responsive to the public's needs and produce clear and insightful statistics through our regulatory work programme of assessments, compliance checks and systemic reviews. We will also encourage improvements in these areas where they are needed.