OVERCOMING DATA GRAVEYARDS IN OFFICIAL STATISTICS:
CATALYZING UPTAKE AND USE

OPEN DATA WATCH

TRENDS
Thematic Research Network
on Data and Statistics

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The world is awash in information. Every day, an estimated 1.1 billion gigabytes of data are produced, and this number will increase as mobile connections continue to expand and new ways of gathering data are incorporated by the private and public sectors to improve their products and services. The volume of statistics published by government agencies such as National Statistics Offices (NSOs) has also grown. New technologies offer new ways of gathering, storing, and disseminating data and producers of official statistics are releasing more information in more detailed ways through data portals and other mechanisms than ever before.

Once produced, data may live forever, but far too often, the data produced are not what data users are looking for or users lack the awareness or technical skill to use the data. As a result, data fall into data graveyards (Custer, 2017) where they go unutilized and prevent evidence-informed policies from being made. This is dangerous particularly at a time when intersecting crises like the COVID-19 pandemic, climate change, and energy and food insecurity put a premium on decision-making that incorporates the best data. In addition, public sector producers of data, who do so using public funds, need evidence of the use of their data to justify investments in data.

Data use remains a complex topic, with many policymakers and managers in national statistical system agencies unclear about this issue and how to improve their practices to ensure uptake and use. With conceptual clarity and best practices in hand, these actors can improve their practices and better address the needs of data users, while recognizing that a 'one size fits all' approach will not be suitable for countries at various stages of statistical capacity. In this report, SDSN TReNDS and Open Data Watch, with support from GIZ, set out to provide conceptual clarity about the challenges of improving data use and a way forward for research by sourcing best practices from countries through a survey and in-depth interviews.

What Is the Transformation Process?

SDSN TReNDS and Open Data Watch developed a framework to understand institutional barriers to effective data use, focusing on three core capacity challenges within the control of official statistics producers: i) the capacity to govern data; ii) the capacity to meet user needs; and iii) the capacity to use data. This conceptual framework aims to improve the use of official statistics and is based on information collected from producers of official statistics within national statistical systems (NSS) around the world, including the Global South. Within the conceptual framework, the transformation process entails moving from a general lack of trust and awareness of NSS data and the resulting lack of data use in decision-making to more effective and sustained data use. This is accomplished through a perpetual process of feedback and reflection to improve capacities in a way that meets user needs. The transformation process **(see Figure 1 below)** not only addresses the capacity challenges faced by producers of official statistics but aims to improve the use of official data for public good, increase evidence-informed

decision-making, improve services at all government levels, and create better results tracking to hold governments to account. This framework demystifies the barriers and opportunities that producers of official statistics face in ensuring their data are used by using a survey of practitioners and case study interviews to provide a way to measure and assess key challenges.

Recommendations for Future Work

This is only the beginning of the conversation about what steps NSS agencies can take to improve the use of their data for policy making. The framework proposed by this report stops short of assessing some necessary conditions for effective data use such as the political will of government leadership to develop a culture of evidence-based decision-making and the technical infrastructure necessary for national statistical producers to capture, store, and process data as well as disseminate their statistics. More work is needed to examine both to improve the context within which governance, user strategies, and data literacy efforts can take place. In addition, following the adage of "what gets measured gets managed," more work is needed to systematically explore how data use can be measured. On this latter point in particular, international organizations and the global community have a large role to play to aid countries in finding tools to measure data use that fit their capacity and needs.

INTRODUCTION

Motivation

Decision-makers across government and society require data that are relevant for policy making. These data must be easily accessible, show different sides of an issue (for example, undernourishment by sex and age), and are presented in ways that facilitate its use. With some 1.1 billion gigabytes of data now being generated globally every day, the volume of potentially useful information has ballooned (Bulao, 2022). Yet, much of these data continue to go unused. For instance, it has been estimated that over two-thirds of data available to enterprises in the private sector are unused, partly due to poor data management and a lack of focus on data use (Frontier Enterprise, 2020). Likewise, in the public sector, the value of administrative data is not being fully exploited (Jones et al, 2018), either through lack of use, underuse, or misuse.

Once produced, the lifespan of data can be endless, but too often, unused data pass into a "data graveyard" (Custer et al, 2017) and soon become inaccessible rather than used and reused. Valuable information for evidence-informed policymaking thus goes missing or is not used to its fullest potential. This amplifies a vicious cycle for resource-constrained national statistical system (NSS) agencies: If they don't provide the products and services their audience need, there is less incentive for their funding. To avoid this fate, agencies need to build more capacity to engage with users, improve data use and sharing, and build a culture of data use.

Recent research led by the global entities supporting improvements in data for development have led to a rethink around exclusively supporting data production. The World Bank's World Development Report (WDR) 2021 argues that gathering more data alone will not lead to better development outcomes (World Bank, 2021). Rather, the WDR shifts the focus to transforming data into useful information (i.e., *using* data) to improve livelihoods and lives. It recognizes the centrality of frameworks, such as the *Data Value Chain* (DVC) that adds *uptake* (where data are connected to users) and *impact* (where data are used to understand a problem or make a decision) as "higher-value" stages to the long-standing production components of *collection* and *publication* (Open Data Watch, 2018). Moreover, the DVC and related models, like the Statistical Performance Indicators (SPI) and the Global Data Barometer (GDB) demonstrate the need for more robust measures of data use and impact (World Bank, 2021; D4D.net and ILDA, 2022). Development Initiatives has also pointed out the need for better use of data and provide a framework for diagnosing information needs to avoid data graveyards within organizations (Naydenova, 2018). Previous attempts to highlight the conceptual issues surrounding data use were undertaken by the Global Partnership for Sustainable Development Data (GPSDD) and Athena Infonomics in their publication *Barriers to Data Use in Sustainable Development* (Viswanathan et al, 2021). These efforts contribute to an update of the Data Values Project aimed to integrate better data use practices into international development projects (GPSDD, 2022; Barbero, 2022). At the inter-governmental and UN levels too, the emphasis is increasingly on data use, as detailed in the UN Secretary General's Data Strategy (United Nations, 2020).

Obtaining more value from data is needed to reach the Sustainable Development Goals (SDG) and allow the public to track the performance of their governments, doubly so in light of the COVID-19 pandemic that continues to threaten the SDG promise of 'leaving no one behind.' For example, the pandemic has reversed progress in gender equality globally, but especially in the Global South, as demonstrated by emerging evidence of gender-based violence, unpaid work, care work, and job losses (UN Women, 2021). At the same time, the pandemic has exposed the gaps in data that capture the circumstances of the most vulnerable populations. Improvements are needed to address all aspects of the DVC, including uptake and impact to ensure that no one is left behind and to build resilience to critical global challenges.

Yet, our understanding of how data is transformed into usable information for decision-making remains weak relative to the efforts to produce data that adhere to internationally agreed-to standards. Even in light of the increased amount of attention data use receives, many producers of official statistics remain unclear about how to assess data uptake and impact. With conceptual clarity and best practices in hand, data managers could set about improving their practices to increase data use, while recognizing that a 'one size fits all' approach will not be suitable for countries at various stages of statistical capacity.

SDSN TReNDS and Open Data Watch, with support from GIZ, created a report to provide conceptual clarity for improving data use and a way forward for research. In this report, the project team proposes a transformation process that ensures data are used to improve development outcomes by helping NSS agencies engage with users to collect data in a way that works within country governance contexts, meets user needs, and conveys information to match users' skills. After defining the transformation process, each pillar of the process is explained and best practices described. A summary discussion and ideas for future research conclude the report.

Methodology

This report employs a mixed methods approach to identify best practices for improving the use of official statistics, building on survey results and individual country consultations with national statistical offices, and complemented by desk research. The NSO survey was co-led by SDSN TReNDS and Open Data Watch to understand the barriers to more effective use of data produced by government agencies within national statistical systems (NSS). The survey was fielded online from April 6, 2022, to April 20, 2022, soliciting input from 48 senior-level officials from across national statistical systems (NSS) at diverse geographic regions, including North America, South America, the Caribbean, Central America, Europe, North Africa and the Middle East, Sub-Saharan Africa, Asia, and the South Pacific (see Annex I for full details). Additionally, SDSN TReNDS and Open Data Watch conducted individual country consultations with current and former representatives from Colombia's National Administrative Department of Statistics (DANE), Mexico's National Institute of Statistics and Geography (INEGI), The United Kingdom's Office for National Statistics (ONS), and the Philippines Statistical Authority (PSA). This paper

reports key findings from the NSO survey, country case studies, and additional desk research to provide recommendations and examples of best practices for NSS entities to engage with users and derive more value from the data that they produce. Best practices were determined based on the experience of countries and their applicability to other contexts based on author assessments.

KEY TERMINOLOGY

Data Use	Data use entails instances where data are reviewed to inform a recommendation for action in strategic planning, policymaking, program planning and management, advocacy, or delivering services.
Data Graveyards	Data Graveyards are places where well-intentioned and meticulously collected information "goes to die" (Custer et al, 2017). They serve as large repositories of unused data.
National Statistical Office (NSO)	The leading statistical agency within a national statistical system (OECD, 2002). This agency works collaboratively with other data producers within the national statistical system to produce official statistics and maintains quality standards for data. The structures and laws that govern national statistical offices vary substantially based on the country context.
Users	The users of official statistics produced by countries' national statistical systems (NSS) are people with an interest in the data being published. "Data users" will refer to users who have a general understanding of statistical methodology and have an analytical purpose in using official statistics. These users often include government actors, research institutions, professional statisticians, civil society organizations, and educational institutions. They can be further thought of as previously underserved populations such as civil society organizations and traditional users, such as other government analysts.
National Statistical System (NSS)	The NSS is usually understood as a federation of data producing agencies within a country that may or may not be under the central direction of the NSO.

Structure

The report is structured as follows: The section 'A Transformation Process for Improved Data Use' presents the transformation process and explains its three dimensions of Governing Data, Meeting the Needs of Users, and Improving Use. The section 'Data Use Practices and Lessons Learned' then uses the survey of NSOs, interviews with producers of official statistics, and supplementary research to detail best practices for improving each dimension of the transformation process based on country experiences. This is followed by a summary 'Discussion' of key takeaways. The final section 'Frontier for Data Use' presents a way forward for research into data use of official statistics, focusing on measurement of data use and continued advocacy for improved data use within national statistical systems, with reflections on both country and global actors.

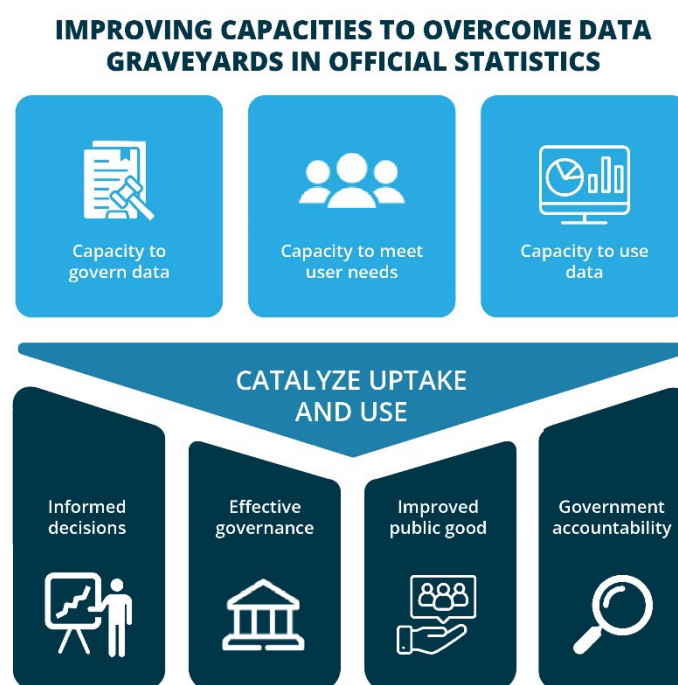# A TRANSFORMATION PROCESS FOR IMPROVED DATA USE

Conceptual Framework

SDSN TReNDS and Open Data Watch developed a framework to identify the institutional barriers that limit the use of official statistics, focusing on three core capacity challenges: i) the capacity of public sector entities to govern their data in a way that promotes its use while providing safeguards to prevent its misuse; ii) the capacity of official statistics producers to develop the products and services that meet user needs; and iii) tailoring the dissemination of official statistics in ways that correspond to the data literacy of their user communities. This conceptual framework aims to benefit producers of official statistics within the NSS in the Global South by providing information to heads of statistical offices and their managers and to government policy makers.

By identifying and overcoming these institutional barriers, the intention is to move from the lack of data use in decision-making and general lack of trust and awareness of NSS data towards more effective and sustained use of data for decision-making. When completed, this transformation process **(see Figure 1)** will increase evidence-informed decision-making, improve services at all government levels, improve the use of official data for the public good, and create better results tracking to hold governments to account. This framework is a first step in demystifying the process of data use by providing a way to measure and assess key data use challenges.

Figure 1: A Framework to Overcome Data Graveyards

Limitations

This conceptual framework stops short of assessing all factors that could derail the transformation from poorly used official statistics to those that are regularly and widely in use. The framework only covers elements that are within the control of actors of the NSS. As such, constraints pertaining to the physical infrastructure for information technology in a given country, including internet connectivity and processing speeds for data collection are outside

the scope of the framework. Also beyond the scope is the high-level political leadership necessary to develop and engage in evidence-based policymaking, modify laws and regulations that support data use, and the attendant funding required for data uptake and impact interventions. Although these fall beyond the scope of this framework, we encourage statistical offices to create positive incentives for data use within their existing purview, think creatively about how to turn limiting factors into enabling ones, and how to take advantage of existing champions within government. Partnerships with external stakeholders, such as bilateral donors and private companies for financing uptake and impact interventions and improving technical infrastructure can improve the technical foundations that lead to better production and use of official statistics.

Capacity to Govern Data

To govern their data, public sector entities develop laws, rules, and procedures describing how their data is accessed, collected, used, safeguarded, and shared, along with a clear process for developing and refining these laws and rules over time. As statistical laws are not often the top priority for a government's legislative agenda, producers of official statistics are often operating under out-of-date laws and, therefore, not empowered to go beyond simple mandates to collect and publish data in the most rudimentary form.

Without the capacity to govern data throughout the Data Value Chain, efforts to strengthen the feedback loop between users and producers of official statistics may be stifled by institutional and legal obstacles. To overcome this barrier, NSS entities should develop and implement national and organization-specific strategies and regulatory frameworks to build an enabling environment for managing, sharing, and protecting data, as well as creating incentives for collecting and acting on feedback from users.

National Plans and Organizational Strategies and Policies

Strategies and policies are important tools to set the agenda for data producers and ensure their institutions work across the entire data value chain from data collection and publication to uptake and impact. Such national and organizational documents provide a sense of direction, and they help NSS entities develop an appropriate data-driven culture within their organizations. As such, they are vital for mainstreaming data use in a country's statistical operations. Policy documents, such as the National Strategies for the Development of Statistics (NSDS) (PARIS21, 2017), open data strategies, or data use strategies are examples of policy instruments that further bolster data use. An example of how to improve NSDS formulation is available from PARIS21's new NSDS guidelines (PARIS21, 2020).

Another crucial element for improving data use is increasing the ease with which data are shared among various NSS entities and with other stakeholders to facilitate analysis. Data sharing and interoperability policies are therefore important elements for establishing an enabling environment for data use. Data sharing policies maximize the data available for policy making

while maintaining safeguards such as privacy protection. Interoperability policies govern how data from different sources can be joined up to produce new statistics and ensure that maximum value is derived from available data. These policies were (and continue to be) particularly important in the context of the COVID-19 pandemic, with data needed from across administrative health systems and other data sources.

Laws and Regulations That Enable Data Use

Governments have laws and regulations that define the rights and obligations of the bodies that compose the National Statistical System (NSS). They clarify the scope of that system and the procedures for developing, producing, and disseminating official statistics. These laws and regulations also determine whether these entities are able to take proactive steps towards facilitating data use, as they provide the Head of the NSS full authority over setting work program priorities and how collaboration and coordination is conducted across NSS entities. For example, whether an NSS entity can hire a Chief Data Officer (as in France and Estonia (SDSN TReNDS, 2019)) or form, fund, and maintain a user engagement process depends on whether this fits within the organization's mandate.

Though the ultimate decision to change the organization's mandate may fall outside the purview of the NSS organization, they can nevertheless advocate for changes to data governance legislation and participate in a process that develops a regulatory environment for data use and uptake. Laws related to data privacy and the protection of individual data are an important component of a data use ecosystem. And questions around how to publish, disseminate, and share microdata is a field of lively debate. These issues should be accounted for in strategies and policies that govern data sharing. They provide an opportunity to address what needs to change to improve the enabling environment for data use.

Capacity to Meet the Needs of Users

Even with sound data governance in place, producers of official statistics may not be able to assess and respond to the demand for their data, which often results in data that are not 'fit for purpose'. Reasons for this can be a lack of communication between data producers and users, issues around data quality and timeliness, or a mismatch between data demands and the capabilities of the NSS to meet these demands.

Recognizing Data Demand

Producers of official statistics can take proactive steps to map out the demands on their data (Mutwiri, 2022) to adapt their data production and use measures and be responsive to users' needs. As illustrated within the Data Value Chain (Open Data Watch, 2018), continuous feedback with users can institutionalize the process of identifying new sources of demand for data. Sourcing demand from individual users can, in an optimal situation, influence everything from the quality and the timeliness of data to the ways of accessing and sharing data, along with other

dimensions that respond directly to user needs. Data users and their demands may change over time, as such, the importance of a continuous feedback loop cannot be understated.

Meeting User Demands

Once NSS agencies recognize user demands, they must take steps to incorporate them into their data production processes. This requires an agile approach to data production that is new for many producers of official statistics, as it involves continuous engagement with users and regular assessment of agency capacity. As outlined by UNECE (n.d.), this can involve a range of organizational changes, from human resources, organizational frameworks, and evaluation, to data collection methods that allow for new data sources to be tapped and feedback to be shared with users in a more dynamic way.

Capacity to Use Data

While mapping demands for data can help data producers better understand what data are needed, understanding users' data literacy can determine how to publish and present this information. Data literacy refers to the ability to understand and act on the information presented in publications and datasets. Some policymakers may only need or understand a press release with a handful of high-quality and high-impact numbers or basic infographics. Others may require a variety of tools, including tables for assessing information about their constituency and extremely detailed data for monitoring frameworks or models that evaluate market conditions.

Capacity of Users to Understand, Use, and Analyze Data Based on Tools and Literacy

As with producing data that meet demands, data producers must also have the capacity to publish and disseminate data in ways that meet users where they are. Assessing the skill set and technical literacy of users is complicated and depends on each country's context, including socio-cultural factors around understanding data and using it to inform actions. It is important to note that statistical offices have limited influence on improving the analytical capabilities of data users. While improving the national standards for understanding data and statistics is beyond the ability of NSS agencies to improve, they can engage policymakers to improve their understanding of products published by the agency.

Some information on the national status of data-relevant skills may be available from ministries of education. Internationally, data on information and communication technology (ICT) training and digital skills are available through UNESCO Institute for Statistics (n.d.) and the International Telecommunications Union (ITU) (n.d.). For understanding how information is processed by policy makers and translated into action, statistical offices could draw on the literature that assesses *Policy Advisory Systems* (Craft and Howlett, 2013), which identifies and assesses the interactions between a set of actors who provide information, knowledge, and recommendations for action to policy makers. Until recently, research has primarily focused on testing and refining these frameworks through studies of OECD national governments. However,

a new wave of research is testing these frameworks across a broader range of countries (Saguin et al, 2018).

Additional insights may also be gathered from indicators that measure the inclusion of data in newspapers and what this may indicate about the data literacy of its readers. To this end, PARIS21 (2021) has developed a statistical literacy indicator based on how data are presented in online articles. Along with mapping users' data literacy, data producers can also consider the availability of tools, e-courses, or peer-exchange practices. In many situations, NSS entities, for example NSOs, provide trainings on interpreting statistics to interested members of the public or key stakeholder groups, such as journalists and civil society organizations.

Capacity of Data Producers to Provide Services for Enhanced Data Use and Literacy

With a clearer sense of what level of analysis suits each user group, data producers can identify activities to disseminate forthcoming publications and ensure that their products are impactful. Some of these activities may include following guidelines for user-friendly statistics, implementing workshops that explain existing and new features of data portals, or increasing data visualization within their publications (UNSD, 2021).

DATA USE PRACTICES AND LESSONS LEARNED

While the conversation around the importance of data use at international organizations and NGOs keeps evolving, NSS agencies are implementing actions to improve use of their data according to their capacity and interpretation of data use. Through its survey of 48 NSO representatives and interviews with four NSOs, the project team uncovered a wide range of existing practices to promote data use along the three dimensions of the transformation process. This evidence base allows for a description of data use practices to help all NSS agencies take steps to improve data use that fit their context. In this section, each category of the transformation process (Governing Data, Meeting the Needs of Users, and Using Data) is described based on country experiences sourced from the NSO survey and features best practices sourced from the survey, interviews, and supplementary research.

Capacity to Govern Data

The capacity to govern data impacts the ability of the NSS agency to improve data use based on its legal mandate and strategic policies. The experiences of countries across the world show a range of governance structures, ranging from restrictive mandates to flexible arrangements that allow for changing laws to reframe agencies like the NSO as a data steward. Producers of official statistics can also be agents of and participants in change, whether due to local efforts to centralize government functions or global events such as the COVID-19 pandemic. Country governance arrangements also show the range of policy and legal structures that will enable data use, such as inter-governmental data sharing arrangements and political directives to make inclusive data a core component of NSS agency activities. Based on the NSO survey, agencies also use both local and global standards and guidelines to inform their own ways of engaging with users, whether through data quality assurance, data portals, or open data standards.

Key Messages from NSO Survey

The survey of NSOs provides insight into how countries are working within the regulatory environment they exist in to improve data use, and in some cases, how the governance structure can change to encourage greater data use (See full results in Annex I). Around four in five NSOs responding to the NSO survey felt their statistical laws and data strategies encourage the use of official statistics and improved data sharing and user engagement. This can be a mandate or accountability mechanism that producers of official statistics can use to motivate their efforts to improve the use of their data. Yet, only half of the 48 NSO surveyed reported that these laws and policies affected their daily operations, indicating the difference between high-level directives regarding data use and actual practice, for better or for worse.

This finding indicates that there is room for NSOs to be flexible in their activities given their official mandates. For example, in countries where mandates do not emphasize the importance of data use and user engagement, NSOs may be able to be creative in their approach to improving data use practices. On the other hand, countries with official mandates but low human

capacity or low political will may not implement policies or practices to improve the use of their data.

Around four in five NSOs also said their national data strategies or user engagement processes changed to respond to new demands by users, including leaders and analysts at other government departments. Though the context within which this change occurred will be different in each country, the ability to change in response to new demands is an important feature of being able to cater to users, both within and outside of government. More work is needed to investigate what creates tipping points for change in favor of governance mechanisms that promote the use of official statistics, but the discussion in the next chapter of best practices offers glimpses of these conditions in a select number of countries.

Finally, the survey asked about what data standards or guidelines influence the NSO's work to improve the use of data. Table 1 displays all responses from most frequent (National Data Standards and Guidelines) to least frequent (write-in responses garnering only one response each). These results show that while there may not be a global definition or guidelines for data use, existing frameworks and principles, for example, on open data, are being used by countries to inform their own data use strategies.

Table 1: Which domestic or international guidelines influence NSO work related to data use? (multi-select)

Data Compact or Guidelines in use	Number of NSOs (n = 48)
National Data Standards/Guidelines	36
National Strategy for the Development of Statistics (NSDS) Guidelines on Open Data	20
Open Data Charter	20
UN Open Data Working Group Papers	18
Cape Town Global Action Plan	16
UNECE Strategic Communications Framework for Statistical Institutions	16
Open Data Handbook	14
GPSDD Interoperability Guide	9
Guidelines for UNECA's Developing an Integrated User Engagement Strategy for National Statistical Systems	9

World Bank Open Data Toolkit	9
European Statistics Code of Practice (write-in)	1
Generic Statistical Business Process Model (GSBPM) (write-in)	1
IMF Data Quality Assessment Framework (DQAF) (write-in)	1
IMF Special Data Dissemination Standard (SDDS) (write-in)	1
Open Data Inventory (write-in)	1
OECD Quality Framework and Guidelines for OECD Statistical Activities (write-in)	1

Best Practices

This section documents country experiences gleaned from the NSO survey, in-depth interviews, and desk research to highlight best practices for improving the capacity to govern data and its impact on data use practices.

Updated Statistical Law:

Consistent with the survey finding that most NSOs work to periodically adjust their legal mandates, New Zealand and Ghana are examples of countries that recently reevaluated their statistical laws to reflect the current statistical landscape. In the case of Ghana, the Statistical Service Act 2019 charges the NSO to "[develop], create awareness and operationalize the code of ethics and practice for the production and use of data […]" (GSS, n.d.). In the same vein, New Zealand's Data and Statistics Act (2022) seeks to promote consistent and collaborative practices across government in order to "enable the trusted collection and use of data for the production of official statistics and for research." Though these countries differ greatly in their income level and statistical capacity, the change in laws and mandates to closely link production and use of data underscore the increasing recognition that use is part of every NSS agency's responsibility.

These responsibilities must not only be granted, but also enabled. In the UK, the Statistics and Registration Service Act of 2007 and the Digital Economy Act of 2017 gave ONS new powers to access datasets from ministries and other public authorities in order to more easily communicate important national issues (UK Parliament, 2007; UK Parliament, 2017). Responsibilities to improve data use may also specify audiences for special attention: In Colombia's case, Juan Daniel Oviedo, Former Director General of DANE, states that his NSO has a legal and constitutional mandate to improve the visibility of minorities in statistical products and has worked closely with NSS ministries to achieve this (ECLAC, 2021).

Sometimes, this revision of the statistical law reflects a change in the entire setup of the NSS. In the Philippines, the government recognized the need for a more coordinated and consolidated system in the late 1990s (Ericta, 2012). A committee of national statisticians advised a change in the Philippine Statistical System (PSS) to address the communication breakdowns and delays in transmitting data from local to central offices caused by the decentralization of the previous statistical system. The evaluation by the committee culminated in the total reorganization of the Philippine Statistical System in 2013, with PSA as the new head of a diverse portfolio of tasks, among them civil registration and official statistics. The new efficiencies gained have made an impact: according to Lisa Bersales, former National Statistician of the Philippines, the PSA has been able to improve the coverage, timeliness, and quality of the data produced due to improved data governance and champions in leadership.

Mexico's statistical system was also organized around the principle of improved efficiencies but with the additional goal of full technical and management autonomy from the government. The 2008 enactment of the *Law on the National System of Statistical and Geographical Information (LSNIEG)* led to changes within INEGI's management structure, including the establishment of the National Advisory Council, the executive committees of the subsystems, and a series of specialized technical committees (Palma, 2021). According to Former INEGI President Eduardo Sojo, leadership from the founding Governing Board played a critical role in instituting changes within INEGI's governance structure to promote data use. In its 12 years of operation as an autonomous institution, Mr. Sojo believes that INEGI has gained the public's trust, and it is largely regarded by users as an objective and independent source of information, in large part due to legal independence granted by the 2008 law.

Though there are often long periods between revisions to the formal law governing NSS agency activities, regular reviews can act as a signal of the data demands of other parts of government. In the UK, parliamentary reviews, such as the House of Commons' 2019 report on re-defining and re-evaluating the UK Statistics Authority and the Statistics and Registration Service Act (UK Parliament, 2019), are important components of data use by the government. Such reviews can help to foster better practices in the development of statistical products, such as communications across different levels of data literacy.

Organizational Plans and Policies:

Within the official sanctioned activities prescribed by statistical laws, producers of official statistics can create their own plans that complement and further existing mandates on data use. For example, although Colombia has laws and decrees that guarantee the production and dissemination of official statistics at the national and territorial level, DANE's most recent 2020-2022 National Statistical Plan specifically defines the overall strategy for the production and dissemination of official statistics (DANE, 2020a). The plan also recognizes the need to improve the production and dissemination of statistics by the NSS. For instance, the plan's main objective is to produce new and enhance existing statistics that the country demands over the next five years and ensure data quality by unifying DANE's work in a single legal framework. Organizational

plans and policies can thereby help to standardize operations and mainstream the importance of and a work program for improving data use across a national statistical system.

Data Sharing and Interoperability Policies:

Though partly addressed in statistical laws and organizational plans and policies, data sharing and interoperability policies can create the framework for the NSS agency to be flexible in its data products based on user demand. A need for greater interoperability of health data in particular was recognized by the G7 and its member states in the context of the COVID-19 pandemic, including in forthcoming policies by member countries (DHSC, 2021). Better interoperability between government ministries will improve the ability to respond to future crises and improve efficiencies of administering data. During the pandemic, the United Kingdom passed emergency temporary legislations that enabled greater data sharing (DHSC, 2020). This allowed the ONS to use aggregated data – to maintain the privacy of individuals – from vaccination and hospital records for statistical purposes and to make recommendations for policy making.[1]

Similarly, the Statistics Canada Policy on the Use of Administrative Data Obtained under the Statistics Act describes how Statistics Canada may utilize administrative data managed by other government agencies (Statistics Canada, 2015). The government of Canada expects that policies like this will ease the response burden for agencies and will lead to better use of administrative data by Statistics Canada and the public. The African Information Highway (AIH) being implemented by the Statistics Department of the African Development Bank (AfDB) is another example of using interoperable systems (SDMX) to ease the response burden for countries and facilitate public access to official statistics (AfDB, 2014). Better data sharing between government departments can therefore improve the use of data by other government actors. However, these practices can also help government departments better communicate with non-governmental users, as their own access to data from different departments improves their ability to respond to different demands.

Data Privacy and Data Protection Policies:

Data protection policies, like the collection of policies passed in Africa in the last ten years (Schneidman, 2021), enable users to engage with data in a way that allays fears about data misuse, increasing the likelihood of data use. INEGI also has a strong data protection mandate. For instance, the Statistical Law of 2008 protects the confidentiality of individuals and extends the regulation to INEGI, specifying that it may not provide any person with data for fiscal, judicial, administrative, or any other purpose (Article 37) than what is constitutionally mandated.

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[1] The emergency legislations were reviewed, and the legislation is now withdrawn as of 1 July 2022. **A new directive** to share information has been released.

Data Stewardship Framework and Chief Data Stewards/Officers:

Data Stewardship as a concept is a promising new way to organize NSO and NSS activities with an eye towards greater coordination and dissemination of data held by the government. The United Nations Statistical Commission Working Group on Data Stewardship aims to define this term and activities that center the NSO in a modern NSS (UNSD, 2022). Data use is a crucial part of an NSO that sees itself as a steward of data rather than purely a producer: The first challenge that data stewards must face according to the Working Group is "to identify barriers and enablers to encourage widespread data use by different stakeholders in society."

At the human resources level, a data steward could be built out of the position of a Chief Data Officer (CDO) that exists in many contexts and often helps to maximize data use. For example, both France and Estonia have hired Chief Data Officers (SDSN TReNDS, 2019). In Estonia, Chief Data Officer Ott Velsberg advocates for data use and education. In other contexts, chief data officers like those in the US government can help coordinate data across ministries for cross-cutting problems, such as the opioid epidemic.

Other Mechanisms to Improve and Track Performance on Data Use via Data Governance:

- **Peer Learning:** Though this report is a start, NSOs and NSS entities will need to find experiences in countries comparable to their own to learn what data governance frameworks work best for them to improve data use. These can be neighboring countries or, as in the case of DANE, actors across the Latin America and Caribbean (LAC) region. DANE is also strengthening knowledge exchange at the global level through their work with the UN Working Group on Data Stewardship that it co-leads with Statistics Poland.

- **National Strategies for the Development of Statistics (NSDS) Guidelines:** Organizational plans and policies for NSS agencies are some of the most important mechanisms for integrating data use into strategies and activities. NSDSs are used by many low- and middle-income countries to plan the organizational strategy and envisioned budget allocation for their NSO. PARIS21 has published NSDS guidelines, including a special module on gender, that help countries facilitate data use in their data financing and management plans (PARIS21, 2020). As with laws, while these documents may cover multiple years, it is worthwhile to review them regularly. Mali, for example, has an annual exercise of reviewing if its NSDS meets the needs of users.

- **Compliance with UN Fundamental Principles of Official Statistics:** Maintained by PARIS21, this SDG indicator serves to ensure that worldwide legislation tracks the Fundamental Principles of Official Statistics (UNSD, 2018). In particular, the principles' emphasis on citizen's rights to statistics and confidentiality are relevant for providing a better enabling environment for data use.

- **Compliance with Statistical Standards and Methods Around the Production of Economic Statistics:** This indicator (part of the overall SPI) "is based on countries' use of internationally accepted and recommended methodologies, classifications, and standards regarding data integration. These standards facilitate data exchange and provide the foundation for the preparation of relevant statistical indicators" (Dang et al, 2021). An analysis of data use of economic statistics may be an easy entry point for relevant NSS agencies to consider the value of their existing activities, which in many countries starts with the production of indicators such as inflation and GDP.

Improving the capacity to govern data will help countries improve their data use practices. Regardless of how broad or narrow each agency's mandate may be, they have a variety of options to improve or work within their regulatory environments to improve the use of official statistics.

Capacity to Meet the Needs of Users

Open data published by the NSS has many benefits, but even fully open data may not be widely used and reused. In addition to a difficult governance structure, the lack of capacity or effort devoted to understanding and fulfilling the user's needs may inhibit their use. Changing this requires data producers to ensure that their data products speak to the specific interests and needs of users. This section will document country experiences gleaned from the NSO survey, in-depth interviews, and desk research to highlight best practices.

Key Messages from NSO survey

The NSO survey sought to better understand how NSOs promote data use externally in order to better analyze potential capacity gaps in national statistical systems. The results from this survey were particularly revealing with regards to how current practices meet user needs *(See full results in Annex I)*. For example, 93 percent of respondents confirmed that their NSO has taken steps to understand the demand for its data (including the methods listed in Table 2), but only 19 percent of respondents (9 out of 48) believed that their published data fully met the needs of their audience. This finding is particularly helpful because it hints at the gap between data producers' desire to comprehend the needs of their users and the capability to actually meet those needs.

The majority of respondents (80 percent) also reported that their country's national data strategy or user engagement processes have changed to respond to new demands by users, though the primary drivers for the shift in user-oriented practices was unclear. A similar number of respondents (70%) found it very important to identify the use of data they produce and are currently engaged in developing methods for measuring data use. But again, the drivers and motivations to do so become a critical point of understanding that should be subject of future studies. The reason for an NSO to deliberately understand and publish to the needs of their users will allow for a much more strategic, and likely effective, push for data use. However, the

survey revealed that even if this is understood, effective methods of communicating with and discerning the needs of users are not used frequently. For example, only 9 NSOs out of 48 NSO respondents engage their users to gather feedback on the data they publish every month. **Table 2** highlights what methods respondents are utilizing to assess the type of data most in demand by their users. These results show that a number of methods are used to assess the type of data most in demand by users. However, while there may be a number of ways to engage users, the most popular methods rely on impersonal feedback mechanisms (i.e., monitoring what type of data is being downloaded, tracking page views, or tracking engagement on the NSO's website /data portal). More work is needed to explore the barriers and incentives agencies face when adopting these methods to engage users.

Table 2: Which methods does your NSO use to assess the type of data most in demand by users?

Method utilized by NSOs	Number of NSOs (n = 48)
Monitoring downloads of data or statistical products.	39
User satisfaction surveys.	39
User workshops or stakeholder coordination meetings.	38
Tracking page views or engagement on NSO website or data portal page.	35
User council or user discussion group(s).	21
Monitoring of API for accessing data.	19
Independent review(s) of key stakeholders' satisfaction.	18
Tracking citations of data in publications.	15

Best Practices

This section documents country experiences gleaned from the NSO survey, in-depth interviews, and desk research to highlight best practices for improving the capacity to govern data and its impact on data use practices. The interviews highlighted a distinct difference in methods used between NSOs with a largely external user base as opposed to a largely internal (i.e., government) user base.

Prioritization of Underserved User Bases:

Utilize Public Communication to Target Marginalized Users: Colombia and Mexico both map out the demands for their data and adapt their data production and use measures to ensure data meet the needs of their audience. Colombia's DANE realized that the data being published failed to encompass the broad diversity of their national population through enhanced communication with the public. With the feedback gathered using qualitative methods, DANE worked to better understand the structure of existing data gaps and guide appropriate responses. What they found was that the lack of representation in data left the already vulnerable population groups statistically invisible, particularly the indigenous and Afro-descendant populations. To rectify this oversight, DANE has included a differential and intersectional approach in their most recent national data strategy. The production and dissemination of statistics will now take into account four dimensions previously not focused on in relation to marginalized communities in the country: gender, life cycle, ethnicity, and disability. Mexico's INEGI is another example of a country which deliberately seeks to understand their users. In order to assess the needs of users which have historically been underrepresented, INEGI hosts multiple programs with the aim of producing quality information on social, economic, and natural phenomena which affect a broad range of citizens.

Inclusion of Specialized Committees or Initiatives for Diverse User Groups: Both DANE and INEGI have taken crucial steps towards encouraging and standardizing more inclusive, disaggregated data across their national systems through collaborative efforts resulting from the joining of specialized committees or initiatives. INEGI has established specialized technical committees comprising stakeholders from diverse user segments, focusing specifically on government users of official statistics. This user-oriented engagement strategy, which adheres to the UN's Fundamental Principles of Official Statistics (UNSD, 2014), aims to incorporate the perspectives of the entire population and draws on the information gathered to produce data that are relevant and responsive to the needs of society. The specialized technical committees are collegial bodies chaired by INEGI or state authorities wherein specific issues and programs are discussed, including areas demand for data.

DANE also joined international initiatives - namely the Inclusive Data Charter (IDC) and Leave No One Behind initiatives (GPSDD, 2018; GPSDD, n.d.). Principle One of DANE's Inclusive Data Charter Plan is that all populations must be included in the data. To meet this objective, in 2019, DANE established the Differential and Intersectional Approach Group (GEDI by its acronym in Spanish) with the intention to include the IDC principles in DANE's strategic vision. This led to the creation of the Guide for the Inclusion of the Differential and Intersectional Approach in the Statistical Production of the National Statistical System (DANE, 2020b). This guide provides conceptual, normative, and methodological guidelines to implement the 'Differential and Intersectional Approach' when producing and disseminating statistical data. The guide outlines why adopting a differential and intersectional approach across the statistical system is important to creating a more accurate picture of diverse population groups within a country. Specifically, a differential and intersectional approach involves disaggregating data by multiple dimensions (for

example gender, ethnicity, age, location, migration status, and income) to identify inequalities, disparities, and the most marginalized and vulnerable groups.

Prioritization of Government Data Focused User Bases:

Direct Requests and Publications for Data from Government Users: The United Kingdom's primary user of ONS data is the UK government, followed by external users such as researchers and the general public. As such, ONS works carefully with various ministries, departments and agencies to provide these partners with relevant data. Because ONS produces data primarily for other government ministries, ONS determines demand for statistical data based on those government requests and directions. Similarly, the Philippine Statistics Authority (PSA) publishes data that is primarily used by other government ministries.

Publications and Awareness Campaigns: Although ONS does not have rigorous studies of the impact of its publications, it does have working groups that engage with more advanced statistical users. To understand the data-driven issues that the public is interested in, the ONS' analytical hub conducts short-term projects on topical debates and publishes data in frequent publications for public consumption. The PSA approaches their drive for broader user engagement by launching a number of communications and data awareness campaigns to engage the public and raise awareness of their broad suite of products. For example, the PSA organizes an annual national statistics month to enhance awareness and appreciation of the importance and value of statistics to different sectors of society, and all government agencies are invited to participate (PSA, n.d.f). The national statistics month, along with other events, provide opportunities to inform users of the data products that are available to them. Challenges still persist in measuring the impact of the data used (among both government and non-government users), but the awareness-raising campaigns have helped to increase the use of data across the country.

Before setting out to improve data use, NSS entities must ask themselves, "for whom should data use be improved?" Even if the answer is 'Everyone', segmenting their user base into government and other users, for example, can be useful to identify specific challenges to current data use efforts. There is a wide range of tools NSS entities are currently using and can use to articulate the 'need' for their products, but results from these tools must feed into programmatic efforts to target and disseminate data products to specific user bases through communication and engagement strategies.

Capacity to Use Data

The capacity to draw relevant information from data depends primarily on the skills and competencies of people working with data. As part of a larger conversation around quantitative education in a country overall, producers of official statistics should recognize the level of data literacy and skills among their audience and tailor their products accordingly while working with partners to improve data literacy and skills. The survey and case studies explored what national

statistical offices considered to be the biggest technical challenges and opportunities for improving data literacy and skills amongst users as well as amongst their staff. While statistical offices cannot substantially improve data literacy amongst the entire population that they serve, there are opportunities for them to influence data literacy for specific user segments.

Key Messages from NSO Survey

The NSO Survey included several questions on the tools and practices that NSOs use to improve users' data literacy and their capacity to find data on the NSO website. Of the 48 statistical offices surveyed, 60 percent host data literacy trainings and 54 percent of them collaborate with academia to develop classes or programs focused on data literacy. The survey also included several questions on skills and competencies that NSO staff need to strengthen. Of the 48 NSO respondents, 63 percent said data visualization skills need to be improved while 56% and 40% identified processing new sources of data and building engaging data portals as high priority areas, respectively.

The survey allowed respondents to share other experiences in developing capacity for greater data use. For example, to improve data use and promote trust in official statistics, Statistics Sierra Leone, the Sierra Leone News Agency, and PARIS21 are developing a training program to improve the data communication skills of journalists and statisticians in Sierra Leone. To engage with users of statistics, the National Statistical Committee of the Republic of Belarus (Belstat) holds roundtables and open-door events that are focused on increasing statistical literacy. Belstat also launched "Belstat will explain," a series of events catered to the media and the general public.

Best Practices

Work-Study Program:

The ONS has programs and trainings to advance data literacy throughout the UK government. For example, it has a two-year work-study program in data science through which graduates from the program transition into public sector roles. Beyond the work-study program, the ONS offers basic and intensive data science training courses, and it is considered the leading agency in the government's data science community. These education initiatives are led by the government's data science hub —a hub that was originally recommended by the 2016 independent review of the UK's economic statistics (Bean, 2016).

Innovative Ways of Engaging Users:

The PSA organizes conferences and competitions where students are exposed to data skills and training. Created in 1992, the Philippine Statistics Quiz (PSQ) assesses the statistical proficiency of university entrants (PSA, n.d.g). The PSQ is also a means to promote statistical curriculum amongst university students. Quiz winners go on to pursue university studies in quantitative fields and select winners have gone on to work for PSA.

Other Mechanisms to Improve Data Literacy:

Based on the desk research and interviews that Open Data Watch and SDSN TReNDS conducted, here are other examples of best practices to improve data literacy:

- **Tailored training for journalists:** PARIS21 and UN Women developed Communicating Gender Statistics, an e-learning course catered towards journalists using statistics to improve reporting on the situation of men and women (PARIS21, 2021). PARIS21 has also adapted its work from the national level by collaborating with Statistics Sierra Leone and the Sierra Leone News Agency on developing a local edition of this training.

- **Strengthening the role of fact checkers in official statistics:** In April 2022, Open Data Watch, PARIS21, and other partners organized a webinar with the focus on identifying ways that fact checkers and statistical offices can complement one another (PARIS21, 2022).

Throughout this discussion of capacity, the assumption has been that the entity producing data has greater capacity to analyze data than the user, however, our mapping reveals that statistical office staff equally need to hone data science and data processing skills. Hence, in addition to improving data literacy amongst key user groups, statistical offices should ensure that their own skills remain up to date to produce relevant and user-friendly datasets for public use. Both facets are important to ensure that data are produced in the appropriate formats and appropriately understood by consumers.

DISCUSSION

This report calls attention to four key insights that pertain to data governance, user engagement, and technical skills to enable greater use of official statistics:

- **Laws, organizational strategies, and data policies are critical, but they must evolve to ensure the appropriate infrastructure is in place to maximize data use.** Data sharing and interoperability policies have led to the implementation of open data portals and data exchange platforms in most of the countries surveyed. Organizational strategies and policies have similarly created a thriving culture for data use within select offices. These instruments, however, must continue to evolve to respond to the growing demand for data and to address the rapidly changing requirements needed to securely collect and share data. In addition, they must be supported by resources and the incentives to maintain them.

- **Relationships with users must be established and nurtured.** This requires national statisticians and NSS representatives to step outside of their comfort zone to identify users and assess their information needs. User engagement, whether in the form of workshops, specialized technical committees, or advisory councils, helps to strengthen the feedback loop between users and producers of official statistics. This feedback loop might take the form of engagement on functionalities of data portals, the quality of data, or integrating data into decision-making, among many other applications.

- **User-oriented communications strategies can be an effective enabler of greater data use.** As user needs are increasingly complex, more detailed information is needed about individual user groups (government, academic and the general public) through customized engagement and communication strategies. NSS entities are also best situated to meet the needs of users if they understand the user groups that they serve and develop targeted communications strategies across varying levels of needs and technical capabilities (for example, engagement with more advanced users of official statistics versus data novices). User-oriented communication strategies can also raise awareness about the products of the NSS.

- **New skills and competencies are needed among NSO staff for improved data dissemination**, including the ability to create data visualizations, utilize new data sources, disseminate new statistical products, and engage users. NSO representatives acknowledge the importance of capacity development for users and for their staff alike to enable greater use of official statistics. In terms of deepening user capabilities, this is a daunting task that primarily remains beyond the remit of most NSOs. Improving the use of data in government agencies and departments, for example, requires re-thinking recruitment and retention strategies, new job functions and skills identification, and development and training. In short, better date use requires fostering a data-driven culture across the whole of government.

Overall, our research demonstrates an increased awareness of an enabling regulatory environment for data use. The majority of NSOs surveyed reported awareness of statistical laws and strategies that inform the production and use of official statistics within their NSO, with a particular focus on national data standards and guidelines that expand data use while maintaining essential safeguards concerning privacy protections and ethical use. The trends observed in the aggregate are complemented by insights gathered from consultations with representatives from DANE, INEGI, PSA, and ONS, national statistical offices that have established strong data governance and regulatory frameworks to create an enabling environment for data use.

Additionally, there is an increased focus amongst NSS entities on user engagement and user satisfaction. The majority of respondents surveyed reported that their country's national data strategy or user engagement processes have changed to respond to new demands by users. What remains unclear, however, and what could be gathered through additional research are the primary drivers for the shift in user-orientated practices (for example, the COVID-19 pandemic, Sustainable Development Goals (SDGs) and Agenda 2030, or conversations with users). Conversations with representatives from DANE and PSA highlighted that changes in NSO leadership influenced the adoption of more user-oriented engagement and communication strategies, but these results are very specific to those country contexts. Survey results also revealed that statistical offices have taken steps to understand the demand for their data, including monitoring downloads of statistical data, tracking page views, and conducting user satisfaction surveys and user workshops to assess the types of data most in demand.

Although outside of the scope of the data use transformation process, exemplary leadership from institutional actors, both within the Government and within NSS entities, play a decisive role in facilitating data use. For example, when President Rodrigo Duterte of the Philippines signed Executive Order No. 2 on July 24, 2016, that instituted the state policy of public disclosure and transparency in public service, the PSA quickly responded by extending public access to their OpenSTAT platform, a national data portal that now serves as the central database for publicly available information (Espey, 2018). When combined with political will and suitable human resources, countries that have official mandates to engage users demonstrate considerable progress in adopting strategies and policies to fill observed capacity gaps.

FRONTIERS FOR DATA USE

This report lays out a framework for improving data use at NSS agencies by improving the capacity of organizations to govern data, meet the needs of users, and use data. However, the authors recognize that this is only the beginning of the conversation. Even if improving data use is part of the NSS agency mandate, it constitutes a new area of work for many agencies, most of which are already stretched in their capacities. Though high-level policies and statements may notionally support better data use, the adoption of these ideas by teams and departments in every-day operations is lagging behind. Furthermore, the link between efforts to improve data use and traditional data producer processes remains opaque to many, which hinders adoption. Although more work is needed to investigate this adoption gap, part of the reason may be that since effective data use requires sustained engagement with actors outside NSS agencies, it requires the capacity to communicate and engage with users, which may fall outside traditional data producer capacities, such as statistical modeling, data collection, and ICT knowledge.

The framework presented in this report demystifies the overall concept of data use, ties it to capacity challenges NSS agencies face, and lists best practices that enable agencies to build their capacity to improve the use of their data. Yet this can only be the start. Even in the current framework, the capacities to meet the demands of users and use data deserve further research, as best practices proved much harder to find. This reflects a more general need for the international and national data community to delve deeper on aspects of data use.

Measuring Data Use

The adage is that "what gets measured gets managed." More work is needed to enable NSS agencies to measure data use based on internal capacities and needs. This is imperative to track data use as an outcome in itself and is linked to the impact of statistical publications and user engagement. These options will need to reflect a range of needs and capacities according to country income, statistical capacity, and data use within an organization's strategy, but all with the goal of measuring data use.

International organizations and NGOs have a special role to play to push the field of measuring data use forward. Measuring data use is qualitatively and quantitatively difficult and international organizations and NGOs may be better placed than resource constrained NSS agencies to develop methodologies and test approaches to measure data use among a community of practice or collaborative. Other partnerships to develop these approaches could also involve the private sector or government agencies that act as users of official statistics rather than producers.

Two examples of recent efforts to measure data use are an AidData, PARIS21, and Open Data Watch project that worked with NSOs to measure the traffic to NSO websites (AidData et al, 2018), and PARIS21's proposed framework for measuring data use in policy documents

(PARIS21, 2021). Developing a typology of such measurements of data use, including citations of datasets in academic publications, website visits, and data downloads, or ratings of user satisfaction surveys, could enable NSS entities to ensure they have the tools required to link their data use practices to impact. In particular, such a typology would have to detail the constraints that must be overcome for each measurement, including to ensure that the collection of data on data use is continuous and that these data are acted on.

The international efforts must also be connected to country experiences with measuring data use, both to account for differing levels of capacity and different ways that measuring data use can fit into monitoring and evaluation of NSS data work. NSS agencies will be able to better connect the data use of specific user groups with the best way of measuring use. For example, while some users may best reflect their use through historical citations in academic journals, others may use data to make real-time decisions on sizing markets.

Advocacy for Data Use

Though the discourse around improving the use of official statistics has grown in volume in recent years, more work is necessary to reach key decision-makers and create a data use culture at NSS agencies. Political will is recognized as a binding constraint on the ability of NSS agencies to reform governance mechanisms and create and pursue user engagement strategies. However, country experiences have demonstrated the ability to maneuver within existing governance systems.

At the country level, more work is needed to explore the partnerships within NSS agencies and across the government that can amplify the importance of data use and shift political will over time. The case for measurement and improvement, likewise, has to be developed for each country based on the mandate for NSS entities and their business model. Statistical data requirements and funding should be explicitly included in the planning for all government programs, as in many countries there is presently no standard or coordinated way to assess priority data requirements within the government.

At the global level, international statistical conferences, such as the UN World Data Forum, the UN Statistical Commission, and the World Statistics Congress of the International Statistics Institute (ISI) have raised the profile of data use among attendees. However, even as there is agreement that data use is important for creating a virtuous cycle of production and use, spreading awareness about data use must extend beyond international seminars that are often attended only by a handful of NSO representatives from each country. Alongside ideas for measuring data use, international agencies can promote standards around data use that can be operationalized by countries. NSS entities like the NSO must be supported in their efforts to promote the value of improving data use and integrate principles around user-centered statistics into their everyday processes alongside working with national partners to improve analytics capability. The World Bank's Data Use and Literacy program (World Bank, n.d.) that

works with NSOs to improve awareness and capacities for data use is an important step in this direction.

Improving the measurement of data use and advocacy for more and better data use are two important steps to change the conversation from 'what' to 'how'. To kickstart the virtuous cycle where data production responds dynamically to data use, joint efforts by international agencies, country NSS agencies, NGOs, and academia are required to grow the evidence base of best practices and navigate ways to apply them. The challenges to better data use are numerous, but so are the potential solutions.

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ANNEX

Annex I: NSO survey report

About the Survey

Overview:

The Data Use Survey was co-led by SDSN TReNDS and Open Data Watch to better analyze capacity gaps to improve data use in national statistical systems. The survey was fielded online via Google Forms using Open Data Watch's National Statistical Office (NSO) contact lists. The preliminary results below showcase findings from the 48 National Statistical Offices (NSO) who participated in the survey.

Dates Fielded:

Wednesday, April 6, 2022, to Wednesday, 20 April 2022.

Coverage:

187 countries and territories were contacted on their NSO contact email by SDSN TReNDS. 48 NSO representatives from as many countries responded, for a response rate of 26%.

Key Findings:

- **Increased awareness of enabling environment for data use:** The majority of respondents (86%) are aware of statistical laws and data strategies that inform the production and use of official statistics within their NSO and they report that existing laws promote data sharing (85%). A small majority (54%) report that national strategies directly impact the daily work and tasks of statisticians within their NSO.

- **Increased focus on user engagement and user satisfaction:** The majority of respondents (81%) reported that their country's national data strategy or user engagement processes have changed to respond to new demands by users. What remains unclear are the primary drivers for the shift in user-oriented practices (e.g. COVID-19 pandemic, Sustainable Development Goals (SDGs)/Agenda 2030, national strategy, conversations with users, or some other primary driver). Nearly all respondents (96%) report that their NSO has taken steps to understand the demand for its data, monitoring downloads of statistical data, tracking page views, conducting user satisfaction surveys and user workshops to assess the types of data most in demand by data users.

- **Influence of standards and guidelines:** National data standards and guidelines are reported as more influential than international standards and guidelines in improving the use of data produced.

- **Collaboration to promote data use:** The majority of respondents (83%) report collaborating with civil society, private sector groups, or with other ministries to promote data use.

- **Skills and competencies needed for improved data dissemination:** The ability to create data visualizations, to utilize new data sources, and create data portals are reported as the top three skills needed to facilitate a greater understanding and use of official statistics.

Survey Responses by Region:

Region	Sub-region	Number of countries	Countries
Africa	Northern Africa	2	Tunisia, Morocco
Africa	Sub-Saharan Africa	7	South Africa, Sierra Leone, Namibia, Kenya, Zimbabwe, Mali, Mauritania
Americas	Latin America and the Caribbean	6	Colombia, Jamaica, Suriname, Paraguay, Mexico, Costa Rica
Americas	Northern America	2	Bermuda, Canada
Asia	Eastern Asia	2	Mongolia, Japan
Asia	South-eastern Asia	2	Thailand, Singapore
Asia	Southern Asia	2	Nepal, Pakistan
Asia	Western Asia	4	Palestine State, Qatar, Georgia, Saudi Arabia
Europe	Eastern Europe	5	Slovakia, Moldova, Czechia (Czech Republic), Hungary, Belarus
Europe	Northern Europe	5	Ireland, Latvia, Sweden, Lithuania, Estonia
Europe	Southern Europe	4	Serbia, San Marino, North Macedonia, Spain
Europe	Western Europe	3	Liechtenstein, Luxembourg, Switzerland
Oceania	Australia and New Zealand	2	New Zealand, Australia
Oceania	Melanesia	1	Fiji
Oceania	Polynesia	1	Samoa

*based on UN M49 region classifications https://unstats.un.org/unsd/methodology/m49

Survey Responses by Income Group:

Income Group	Number of countries
Low income	2
Lower middle income	10
Upper middle income	15
High income	21

*based on World Bank FY 2023 income groups
https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups

Questions and Responses

Govern Data:

1. Are you aware of any statistical laws, data strategies, or other structured processes (e.g., terms of use) that encourage the use of statistical data produced by your NSO or other government entities? (n = 48)
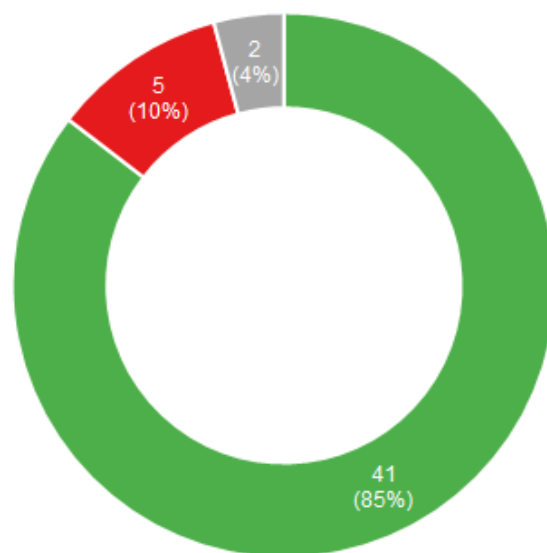
■ Yes ■ No ■ I am not sure

2. Do existing strategies or policies in your country include an emphasis on sharing data produced by the NSO or other NSS actors? (n = 48)

7 (15%)

41 (85%)

▪ Yes ▪ No
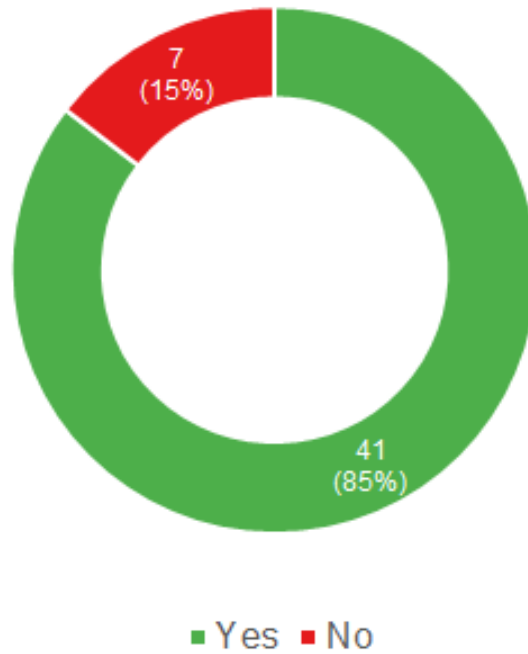
3. How do national strategies and policies shape the daily work and tasks of statisticians in your NSO? (n = 46)

3 (7%)   1

17 (37%)

25 (54%)

▪ Directly   ▪ Somewhat directly   ▪ Not directly   ▪ I am not sure

4. Have/has your country's national data strategy(ies) or user engagement processes changed to respond to new demands by users, including other actors in government (such as national government leaders or analysts)? (n = 48)
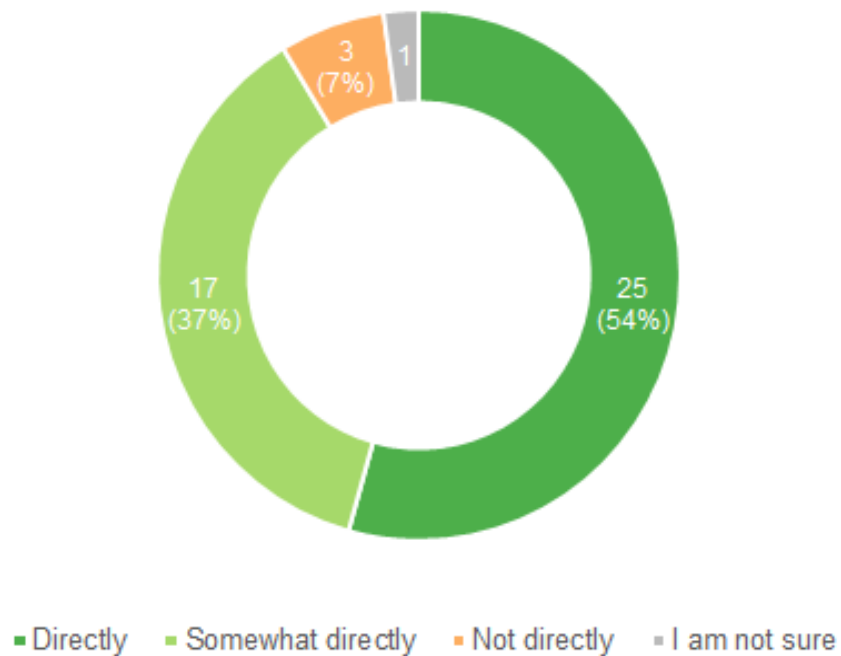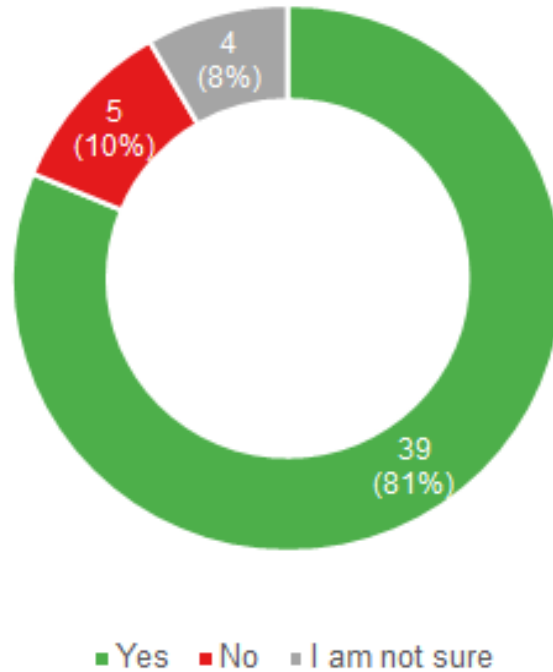

- Yes
- No
- I am not sure

5. Which domestic or international guidelines influence NSO work related to data use? (multi-select)

Data Compact or Guidelines in use	Number of NSOs (n = 48)
National Data Standards/Guidelines	36
National Strategy for the Development of Statistics (NSDS) Guidelines on Open Data	20
Open Data Charter	20
UN Open Data Working Group Papers	18
Cape Town Global Action Plan	16
UNECE Strategic Communications Framework for Statistical Institutions	16
Open Data Handbook	14

GPSDD Interoperability Guide	9
Guidelines for UNECA's Developing an Integrated User Engagement Strategy for National Statistical Systems	9
World Bank Open Data Toolkit	9
European Statistics Code of Practice (write-in)	1
Generic Statistical Business Process Model (GSBPM) (write-in)	1
IMF Data Quality Assessment Framework (DQAF) (write-in)	1
IMF Special Data Dissemination Standard (SDDS) (write-in)	1
Open Data Inventory (write-in)	1
OECD Quality Framework and Guidelines for OECD Statistical Activities (write-in)	1

Meet the Demands of Users:

1. Has your NSO taken steps to understand the demand for its data? (n = 47)
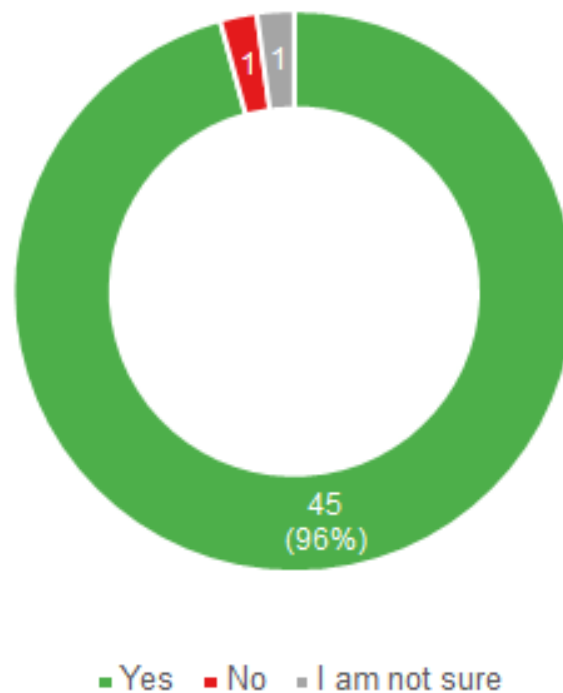
2. How important is it for your NSO to be able to identify the use of data it produces? (n = 48)
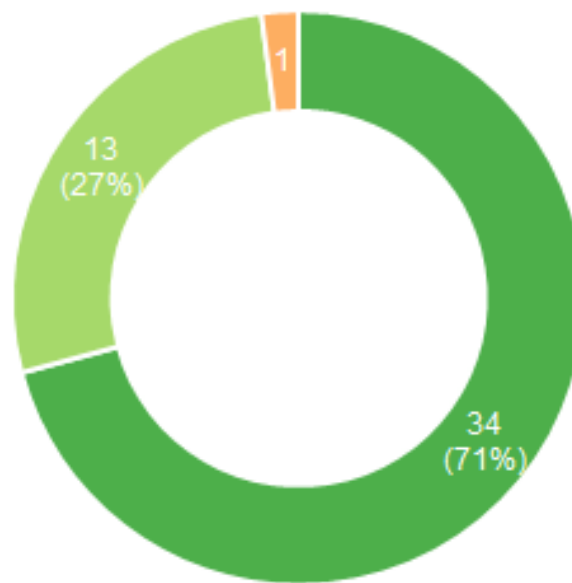
- Very important   - Somewhat important   - Not important

3. Which methods does your NSO use to assess the type of data most in demand by users?

Method utilized by NSOs	Number of NSOs (n = 48)
Monitoring downloads of data or statistical products.	39
User satisfaction surveys.	39
User workshops or stakeholder coordination meetings.	38
Tracking page views or engagement on NSO website or data portal page.	35
User council or user discussion group(s).	21
Monitoring of API for accessing data.	19
Independent review(s) of key stakeholders' satisfaction.	18
Tracking citations of data in publications.	15

4. How frequently does your NSO engage users to receive feedback on the data they publish? (n = 47)

- Very frequently - every month
- Somewhat frequently - every 6-12 months
- Infrequently - every 2-3 years
- Not frequently
- I am not sure

9 (19%)
22 (47%)
8 (17%)
4 (9%)
4 (9%)
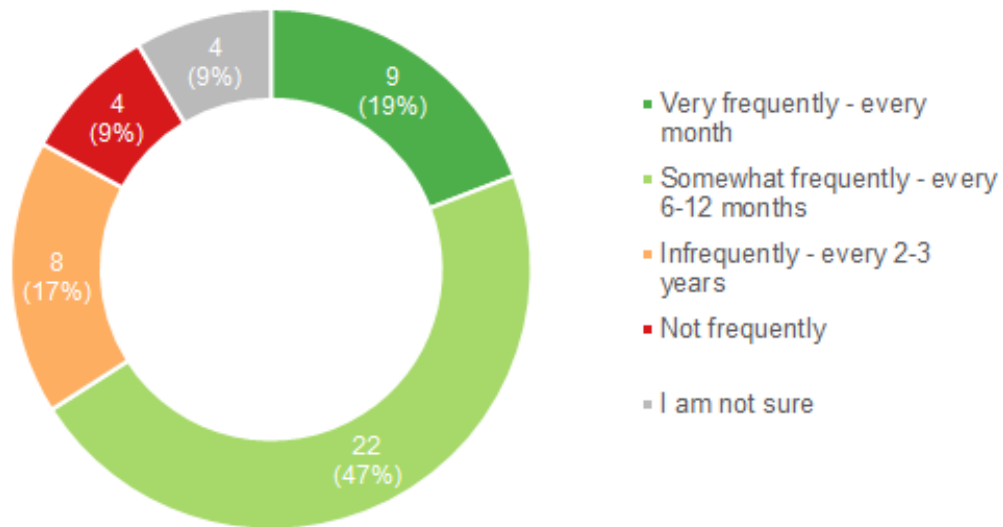
5. Please indicate how well you believe the data your NSO publishes meets the needs of data users? (n = 48)

2 (4%)
9 (19%)
37 (77%)

- Fully
- Somewhat
- I am not sure
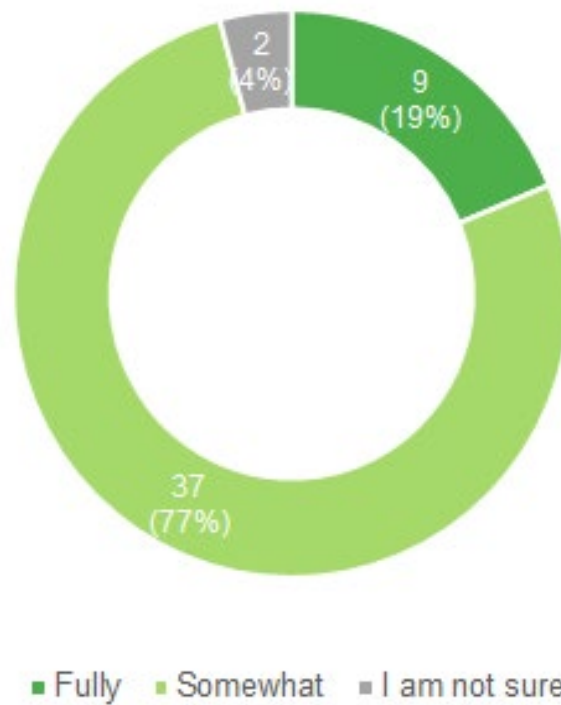
Use Data:

1. Has your NSO collaborated with civil society, private sector groups, or with other ministries to encourage data use? (n = 48)
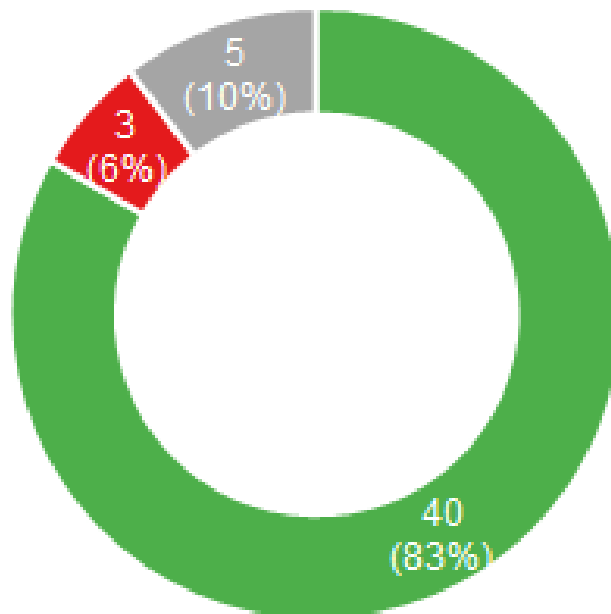
- Yes   - No   - I am not sure

2. Please select up to three skills or competencies that your staff need to strengthen or acquire to facilitate better use of your NSO's data.

Skills	Number of countries selecting as one of three skills
Creating data visualizations.	30
Using new sources of data.	27
Building engaging data portals.	21
Establishing communication strategies.	20
Providing tools for advanced users such as APIs.	16

Writing about statistics.	16
Building partnerships.	6

3. Which tools and practices, if any, does your NSO use to improve users' data literacy and their technical capacity to find data on the NSO website? Includes write-in option

Tools and Practices	Number of NSOs (n = 48)
Press conferences or press releases that provide specific contacts for further questions.	35
Utilizing social media.	35
Engaging with journalists and media	32
Hosting trainings to improve data literacy.	29
Publications of booklets tailored for specific groups.	28
Collaborating with academic institutions to develop classes/programs for increasing literacy.	26
My NSO does not use any tools or practices to improve users' data literacy and technical capacity to find data on the website.	2
Doing data visualization and having user friendly data stories for some of our key statistical publications.	1
European Statistics Competition	1
Events tailored for specific groups.	1
Statistical competitions for secondary school and university students	1
Use of visualizations (infographics video graphics and interactive dashboards) to enhance communication of statistics.	1

Annex II: NSO country case studies

Colombia

Adopting an Inclusive Approach: A data use case study of Colombia's Departamento Administrativo Nacional de Estadística

The National Administrative Department of Statistics (DANE) was created in October 1953. With the mission of serving as a basis for public and private decision-making through data and statistics, DANE plans, implements, and evaluates processes for the production and communication of statistical information at the national level (DANE, n.d.). The SDSN TReNDS and ODW project team spoke with representatives of DANE in April 2022 about how DANE has taken crucial steps towards encouraging and standardizing more inclusive, disaggregated data across the national statistical system.

Govern Data:

There is no global consensus with regards to data governance, in spite of international efforts that are attempting to address this issue. In spite of this, DANE approaches this in two specific ways: 1) through an institutional effectiveness perspective by strengthening and creating committees, councils and bodies, framed within the Colombia's National Statistical System (SEN, by its acronym in Spanish) and 2) through active participation in national and international initiatives targeting data use.

Although Colombia has laws and decrees that guarantee the production and dissemination of official statistics at the national and territorial level, DANE's most recent 2020-2022 National Statistical Plan specifically defines the overall strategy for the production and dissemination of official statistics (DANE, 2020a). This plan recognizes the need to improve the production and dissemination of statistics in the national statistics system (NSS) in Colombia. The main objective of this plan is to establish new and enhance existing statistics that the country demands over the next five years, assuring quality of the data by unifying DANE's work in a single legal framework.

In the context of targeting data use, DANE is involved in, and leads, national initiatives aimed at addressing data gaps and including marginalized communities. In fact, during the Eleventh Statistical Conference of the Americas, leaders from the statistical offices of Colombia and other organizations and institutions exchanged perspectives on data governance (ECLAC, 2021). It was during this event that Juan Daniel Oviedo, former Director General of DANE, explained that his NSO has a legal and constitutional mandate to improve the visibility of minorities in statistical products, and has worked closely with NSS ministries to achieve this. DANE will continue exploring data governance and related issues with actors across the Latin America and Caribbean (LAC) region through a series of activities, including strengthening the knowledge

exchange with the UN Data Stewardship Working Group which is currently co-led with Statistics Poland.

Meet the Demands of Users:

Colombia's historical context has left a lasting impact on wide swaths of society. Though there is a broad awareness of the inequalities in the country, it was not being captured in the country's official data. This left already vulnerable population groups, such as indigenous and Afro-descendant populations, statistically invisible. In the most recent national strategy, DANE included a differential and intersectional approach in the production and dissemination of official statistics by taking into account four dimensions related to marginalized communities previously not focused on: gender, life cycle, ethnicity, and disability. This has also been reflected in a change in DANE's motto, going from "Strategic information" to 'Information for everyone'. In order to meet the need for further visibility of different population groups in data, DANE joined international initiatives such as the Inclusive Data Charter (IDC) and Leave No One Behind initiatives (LNOB) (GPSDD, 2018; GPSDD, n.d.).

Principle One of DANE's Inclusive Data Charter Plan is that all populations must be included in the data. To meet this objective, DANE established the Differential and Intersectional Approach Group (GEDI by its acronym in Spanish) in 2019 with the intention to include the IDC principles in DANE's strategic vision. This led to the creation of the Guide for the Inclusion of the Differential and Intersectional Approach in the Statistical Production of the National Statistical System (DANE, 2020b). The guide provides conceptual, normative, and methodological guidelines to include the 'Differential and Intersectional Approach' in the process of production and dissemination of statistical data. The guide outlines why adopting a differential and intersectional approach across the statistical system is important to creating a more accurate picture of diverse population groups within a country. Specifically, a differential and intersectional approach involves disaggregating data by multiple dimensions (e.g., gender, ethnicity, age, location, migration status, income etc.) to identify inequalities, disparities, and the most marginalized and vulnerable groups.

DANE is also focusing on enhanced communication with the public to drive its user engagement. The Head of the Differential and Intersectional Approach statistics unit (GEDI, by its acronym in Spanish) at DANE, Karen García, explained that DANE is working to increase its communication with the public about how much better disaggregated and more representative the data is for their needs, as well as to provide more information about DANE's data collection processes and better distribute its findings (Welsh, 2020). For instance, after establishing the GEDI and making progress over two years, DANE designed and implemented a user-oriented communication strategy in 2021 (Oviedo et al, 2021). As a result, between January 2021 and March 2021, its social media followers increased by an average of 13.75%, and 14 socialization events were held with different stakeholders to guide DANE's website contents and design. There has also been an effort to produce more editorial materials that include DANE's analysis, rather than just annexes with statistical information that are not accessible to the general public or to

policymakers. Even more traditional communication tools, such as press conferences, are being made more inclusive and responsive to citizens.

The establishment of GEDI was an important step towards encouraging and standardizing more inclusive, disaggregated data across the national system. With this data, DANE is working to better understand the structure of existing data gaps and guide appropriate responses. In addition, its practices of open communication with citizens aims to depoliticize statistics and increase trust in official statistics.

Furthermore, in line with the commitment towards LNOB, DANE is currently launching the Voluntary Registry for the visibility of Gender and Sexual Diversity in Colombia, which will create a database to help produce statistics on the life conditions and information needs of LGBTQ+ population. Despite progress in the measurement of gender and sexual diversity, there are still important data gaps to fill. This creates a need for new surveys on diversity to understand the living conditions and experiences of discrimination and violence within the LGBTQ+ community.

Use Data:

Two principles in the IDC deal explicitly with data user skills and data producer capacity. Principle Four mentions that those responsible for the collection of data and production of statistics must be accountable, and Principle Five is that human and technical capacity to collect, analyze, and use disaggregated data must be improved. To achieve the former, the 2021 Inclusive Data Charter Monitoring Form from DANE indicated that the NSO has done significant work with data users and producers to further improve their data dissemination (Garcia, 2021).

Recognizing the difficulties that stakeholders might encounter when accessing, using and understanding statistical information, in 2021 DANE developed five workshops on implementing the guidelines on differential and intersectional approaches to data and statistics. DANE has also organized two-way communication workshops, created explanatory videos and tutorials, partnered with social leaders and civil society representatives, among other initiatives. This user-oriented approach was presented by Juan Daniel Oviedo and Camilo Méndez during a 2021 UNECE Expert Meeting on the Communication and Dissemination of Statistics.

Regarding producers' capacity, the Guide outlines why adopting a differential and intersectional approach across the statistical system is important to create a more accurate picture of different population groups. DANE highlights that this guide is explicitly integrated into the national statistical system, which includes the different Technical Directorates of DANE, the entities responsible for public policies, users of statistical information for decision-making, academia, civil society, social organizations, private sector entities, scientific communities, students, people working in communication and specialized journalism, to facilitate the interpretation of data, among others (DANE, 2020c).

Main Lessons:

- DANE's contributions to data governance, understanding and meeting the needs of their users, and assisting in the capacity and skill-building of data users and producers are all done from a place of inclusivity and intersectionality.

- Actively participating in SDG initiatives, such as Leave No One Behind and the Inclusive Data Charter, has allowed DANE to not only collaborate with other NSOs and international organizations, but also to participate in knowledge sharing.

- By focusing on inclusiveness and intersectionality in its statistics, DANE has been able to identify a need to further increase the visibility of different population groups (e.g. those with disabilities (Garcia et al, 2021)) in their data. This has facilitated greater coordination and collaboration among the various national-level actors, to ensure an inclusive, holistic approach that leaves no one behind. Focusing on these aspects has allowed DANE the opportunity to meet the broad demands and needs of their users in a unique way.

United Kingdom

Continuing evolution: A data use case study of United Kingdom's Office for National Statistics (ONS)

National statistical systems date back to the early 19th century in the United Kingdom (UK), having changed configurations many times since in response to new demands for data (Dunnell, 2007), particularly over the last 15 years. The UK's Statistics and Registration Service Act of 2007 led to the development of the UK Statistics Authority (UK Statistics Authority, 2012), an independent department that reports "directly to Parliament with the remit to oversee, promote, and safeguard the production and publication of official statistics that serve the public good." This also included the formation of a National Statistician, who oversees both the Statistics Authority and the Office for National Statistics (ONS). Ten years later, the Digital Economy Act was passed, granting the ONS further powers to obtain data from all public authorities and Crown bodies as well as mandate data from other ministries and from some businesses (ONS, 2021). The project team spoke with representatives of ONS in June 2022 about how these acts and other policies at ONS create enabling conditions for improved data use of official statistics.

Govern Data:

Governance mechanisms are useful to examine since they help set up the institutional and legal frameworks that enable the feedback loop between users and producers. In the UK, the Statistics and Registration Service Act of 2007 and the Digital Economy Act of 2017 gave the ONS new powers to study datasets from ministries and other public authorities. For example, during the COVID-19 pandemic, the United Kingdom passed emergency temporary legislations that enabled greater data sharing. This allowed the ONS to use aggregated data – to maintain data privacy of individuals – from vaccination and hospital records for statistical purposes and make recommendations for policy making. The emergency legislations are currently under review and are potentially set to expire – which could lead to a setback of the UK government's data sharing capacity.

Parliamentary reviews, such as the House of Commons' 2019 report on re-defining and re-evaluating the UK Statistics Authority and the Statistics and Registration Service Act, also help facilitate greater data use (UK Parliament, 2019). Such reviews can stand in as demand signals for better practices in statistical products by other actors within government, for example around communication across levels of data literacy.

This report also reviews issues around data sharing, for example, it stated that while the UK Statistics Authority prohibits the pre-release of ONS statistics, the report recommends that the ban of pre-released statistics should apply across the statistical system. This demonstrates progress from the European Statistical System (ESS) country assessment report on the United Kingdom's national statistical system from 2015 when these practices had not been updated yet (Snorrason et al, 2015).

Meet the Demands of Users:

The primary user of data produced by the ONS is the UK government, followed by external users, such as researchers and the general public. As such, the ONS works carefully with various ministries, departments, and agencies to provide these partners with relevant data. Currently, the ONS determines demand for statistical data based on government requests for data on key focus areas. Furthermore, renewed funding for ONS acts as a general signal for consistent and increasing demands for data.

In addition, the 2019 Parliamentary report also highlights the existence of over 20 user groups for various types of statistics, in addition to formal advisory committees for the national statistician (UK Statistics Authority, n.d.), which range from experts on pricing data to data ethics.

In terms of understanding other users, the ONS' Media Engagement Team has conducted mapping exercises to understand different types of data users. However, when it comes to gauging the impact of its publications, the ONS has not conducted any rigorous studies yet. The ONS also has working groups where they engage with more advanced statistical users – for example, to engage with economists, the ONS has a working group on economic statistics.

To better understand the data-driven issues that the public is interested in, the ONS examines news articles to determine the types of data that they should publish. For example, since the cost of living is a widely discussed topic across the media landscape, the ONS recently published a piece on the increasing cost of living and its impact on adults in Great Britain (ONS, 2022). Additionally, the ONS' analytical hub conducts short-term projects on a topical debate to inform the wider public and government departments.

The analytical hub at ONS presents an interesting example of trying out an idea in multiple context: While the analytical hub was originally tried at the time of the 2011 census, it did not have a successful run as it was over-regulated. It became more successful during the COVID-19 pandemic due to its flexibility and the fact that it did not become insular due to the practice of rotating lower-level ONS staff through the hub and other departments at ONS.

Use Data:

The ONS has various programs and trainings to advance data literacy throughout the UK government. For example, the ONS has a two-year work-study program in data science, where graduates from the program transition into public sector roles. Beyond the work-study program, the ONS conducts basic and intensive data science training courses, and it is considered the leading agency in the government's data science community. This work is led by the government's data science hub—which was originally recommended by a 2016 independent review of the UK's economic statistics (Bean, 2016).

To enhance producer capacity, the ONS occasionally collaborates with academia and civil society organizations during the survey design process. For example, the ONS conducted external

consultations to ensure that the census questions pertaining to gender and sexual identity were adequate (ONS, 2018).

Main Lessons:

Data use of official statistics in the UK is promoted by distinguishing characteristics and best practices in the areas of data governance, user engagement, and technical skills:

- Existing governing frameworks, such as the Statistics and Registration Service Act and the Digital Economy Act enable ONS to obtain data across the wider statistical system.

- Reviews such as the 2016 independent review and 2019 parliamentary review act as checks and provide new ideas for where to develop the statistical system.

- The ONS' cross-sector departments, like the analytics hub, enable new approaches to data analysis and data use to meet demands of users.

- The ONS' and National Statistician's engagement with dedicated user and expert groups gives statistical producers feedback on official statistics and allows for user-producer dialogue.

- The ONS is the leading organization in improving data literacy across the UK government, responsible for training government users of data with necessary data science or analytical skill sets.

Mexico

Independence and technical expertise: A data use case study of Mexico's National Institute of Statistics and Geography (INEGI)

Mexico's National Institute of Statistics and Geography (INEGI) was created by presidential decree on January 25th, 1983, with the mission of producing quality information on social, economic, and natural phenomena for public use. INEGI accomplishes this by serving as a direct producer of statistical and geographical information and as the coordinating body of Mexico's National System of Statistical and Geographical Information (SNIEG) (INEGI, n.d.a). As an autonomous institution, INEGI operates independent of Mexican government authorities, as stipulated within Article 26 of the 2008 *Law on the National System of Statistical and Geographic Information* (LSNIEG) (Camara de Diputados, 2021). INEGI is recognized as a producer of information, as well as a regulator of other government producers of statistical and geographical information.

INEGI conducts multiple programs to produce data for public use (Palma, 2021). They manage all national censuses, including the population, economic, agricultural and government census, and administer more than 50 nationally representative surveys on households, establishments, and agricultural units. They also collect administrative records from the various entities within the national statistical system, working with public institutions responsible for data registry to ensure timely delivery of information for review and publication. INEGI also produces the Global Indicator of Economic Activity (IGAE), the National Consumer Price Index (CPI), along with other economic indicators used in the annual and quarterly calculations of the GDP, as well as geographic and georeferenced statistical data at different levels of disaggregation (INEGI, 2022a; INEGI, 2022b). As such, INEGI is one of only two statistical offices in the world that houses both areas of specialization within the same governing body.

The administrative function of the institute falls to the President of INEGI who is responsible for executing the various programs outlined within INEGI's strategic plan (INEGI, 2016). The institute is overseen by the Governing Board composed of the President of INEGI and four vice-presidents, who are appointed by the President of the Republic, with the approval of the Senate (INEGI, n.d.a).

Govern Data:

With the 2008 enactment of the *Law on the National System of Statistical and Geographical Information (LSNIEG)* (*Law*), INEGI changed its legal and management structure, acquiring full technical and management autonomy from the government. Article 26 of the *Law* created SNIEG, which divided the statistical system into three national information subsystems: demographic and social, economic, and geographic and environmental subsystems. A fourth subsystem was later added focused on government, public security, and administration of justice. The *Law* has also led to subsequent changes within INEGI's management structure, including the establishment of the National Advisory Council, the executive committees of the subsystems,

and a series of specialized technical committees (Palma, 2021). According to Former INEGI President Eduardo Sojo, who presided over the first meeting of the Governing Board in October 2008, leadership from the founding Governing Board played a critical role in instituting changes within INEGI's governance structure to promote data use.

In the context of the *Law*, autonomy implies no hierarchical relationship with the public administration. For example, the President of INEGI and the Governing Board do not submit their technical decisions or administrative decisions to a higher authority, such as a minister or secretary of state, which is often the case in many countries. In its 12 years of operation as an autonomous institution, Mr. Sojo believes that INEGI has gained much of the public's trust and it is largely regarded by users as an objective and independent source of information. "With the law came a corresponding change in the culture of data production. INEGI does not create information products for the federal government, but for Mexico," contends Mr. Sojo.

INEGI also has a strong data protection mandate. For instance, The *Law* not only protects the confidentiality of individuals, but also extends the regulation to INEGI, specifying that it may not provide any person with data for fiscal, judicial, administrative, or any other purpose (Article 37) than what is constitutionally mandated.

Meet the Demands of Users:

The National Advisory Council and the various specialized technical committees comprise stakeholders from diverse user segments, focusing specifically on government users of official statistics. This user engagement strategy adheres to the UN's Fundamental Principles of Official Statistics (UNSD, 2014), which aims to incorporate the perspectives of the entire population and use the information gathered to produce data that are relevant and responsive to the needs of society.

The specialized technical committees are collegial bodies chaired by the representative of the government unit that is the most important producer or compiler of information. For example, the representative of the ministry of tourism chairs the specialized technical committee for data on tourism. INEGI acts as the technical secretary in those committees.

According to Mr. Sojo, INEGI services more than 150 government institutions, and they have established 38 specialized technical committees that comprise representatives from the judicial and legislative sector, the central bank, and the ministry of finance. These specialized technical committees have allowed INEGI to establish reciprocal communication with government users. For instance, Committee members are invited to share their concerns and needs during scheduled consultations, while INEGI can inform users of their newly released products.

"This technical committee system has enabled the institute [INEGI] to build meaningful relationships with users," notes Mr. Sojo. "The Ministry of Tourism requested a tourism satellite account. The private sector requested a flash estimate of GDP to provide an up-to-date snapshot

of the economy. And there were various other data products that came about as a result of direct consultations through the technical committee system."

In addition to the specialized technical committees, INEGI has established an Academic Advisory Council, enabling them to service academic institutions as a user group. INEGI was made aware of their need for microdata samples for research purposes, which was previously a major data use limitation. INEGI has since devised a strategy (INEGI, n.d.b) to safely and securely release microdata samples to meet the statistical information needs of this user segment.

Main Lessons:

- INEGI's technical committee system strengthens the feedback loop between users and producers of official statistics. Members of the specialized technical committees can make direct requests of data products that meet their specific needs. This technical committee system is supported by a strong governance structure.

- User engagement requires INEGI statisticians and management to, as Mr. Sojo puts it "get outside their comfort zone." Relationships with users need to be established and nurtured. This may be challenging for statisticians, but it is essential for institutions like INEGI to remain the go-to source for statistics that illuminate Mexico's social and economic progress.

Philippines

Changing systems and building a data use culture: A data use case study of the Philippine Statistics Authority (PSA)

The Philippine Statistics Authority (PSA) is the central statistical authority of the Philippines' government with the mission to deliver relevant and reliable statistics, efficient civil registration services, and an inclusive identification system for equitable development outcomes (PSA, n.d.a). The PSA was created in 2013 when the government enacted *The Philippines Statistical Act of 2013* that merged four data-producing agencies into one comprehensive authority (PSA, 2013). The agency constitutes the existing major statistical agencies engaged in primary data collection and compilation of secondary data, such as the National Statistics Office (NSO), the National Statistical Coordination Board (NSCB), the Bureau of Agricultural Statistics (BAS), and the Bureau of Labor and Employment Statistics (BLES). The Act also created the PSA Board which serves as the highest policy-making body on statistical matters (PSA, n.d.b).

The PSA is the primary agency responsible for planning, developing, disseminating, and enforcing statistical rules and regulations, and coordinating government-wide programs concerning the production of official statistics, general-purpose statistics, civil registration services, and the implementation and management of a biometric ID system (PSA, n.d.c, n.d.d). PSA is also responsible for national censuses and surveys, sectoral statistics, consolidation of administrative records, and compilation of national accounts as outlined within their 2021-2025 Strategic Plan (PSA, 2021).

The PSA, together with all statistical organizations, form the Philippine Statistical System (PSS) (PSA, n.d.e). This statistical system includes a policy-making body, a coordinating body, a statistical research and training institute, and all government-owned and -controlled corporations (GOCCs) engaged in statistical activities as their primary function or as part of their administrative or regulatory function.

Govern Data:

In the 1980s and early 1990s, numerous issues arose pertaining to the structure and legal frameworks governing the operations of the statistical system. This impacted the quality, reliability, and timeliness of the statistical products produced by the many actors within the PSS. In the late 1990s, the Government recognized the need for a more coordinated, consolidated system (Ericta, 2012). This led to a series of expert evaluations from a Special Committee of national statisticians, and ultimately, the subsequent reorganization of the PSS in 2013. The Committee concluded that the previous statistical system was too decentralized, resulting in communication breakdowns and delays in transmitting data from local to central offices, and thereafter delays in publishing data for public use. The Committee also highlighted the need to improve the system's responsiveness to the needs of users, particularly to ensure data could be efficiently used for policy and planning purposes.

Since its establishment in 2013, the PSA has achieved a number of successes stemming from the improved coordination of its agencies across government, including more centralized decision-making, reduced bureaucracy, and faster statistical production (Espey, 2018). For example, when President Rodrigo Duterte signed Executive Order No. 2 on July 24, 2016, which operationalized the public's constitutional right to information and instituted the state policy of full public disclosure and transparency in public service, the PSA quickly responded by extending public access to their OpenSTAT platform, a national data portal that now serves as the central database for publicly available information released under the Executive Order (Espey, 2018). The PSA has also made microdata for household surveys freely available (Albert, 2017), and they have made national financing statistics, including the balance of payments and national accounts, publicly available every quarter for streamlined policy and budgetary decision-making (Espey, 2018).

Prior to the unification of the agencies, "sharing of timely information among the four former statistics agencies was a challenge," shared Lisa Bersales, former National Statistician of the Philippines of the PSA. "You needed an MOU [Memorandum of Understanding] or data sharing agreement, so any innovation that one agency needed to do that would affect the others took a lot of institutional buy-in and time" (Espey, 2018). Since the change in governance structure, the PSA has successfully minimized institutional delays, and they have improved the timeliness of statistics. The agency has been able to quickly promote open data policies and open data standards, and they have steered a number of recent innovations, including implementing the PhilCRIS system to improve the timeliness and quality of Civil Registration and Vital Statistics (CRVS) data (PSA, 2016), establishing a new biometric ID program to issue national ID cards (Choi, 2022), and utilizing geospatial data to administer the census (Varona, 2019). According to Ms. Bersales, since its founding, the PSA has been able to improve the coverage, timeliness and quality of the data produced due to improved data governance and exemplary leadership from institutional champions both within the Government and the PSA.

Meet the Demands of Users:

According to Bersales, PSA's civil registration services, being a frontline service, are more widely recognized by the general public than the agency's function of providing official statistics. However, provision of these services has enabled the PSA to gain public trust.

The PSA has launched a number of communications and data awareness campaigns to engage the public and raise awareness of their broad suite of services. For example, the PSA organizes an annual national statistics month to enhance awareness and appreciation of the importance and value of statistics to different sectors of society, and all government agencies are invited to participate (PSA, n.d.f). The national statistics month, along with other events, provide opportunities to inform users of the various data products that are available to them. The PSA also organizes conferences and competitions where students are exposed to data skills and training, including an annual national statistics quiz (PSA, n.d.g). Quiz winners go on to pursue university studies in quantitative fields and select winners have gone on to work for PSA

according to Ms. Bersales. However, challenges still persist relating to measuring the impact of the data used (amongst both government and non-government users), but the awareness raising campaigns have helped to increase the use of data across the country.

Main Lessons:

Nine years since the passing of the Philippine Statistical Act and the creation of the PSA, the country has benefited from a high-level, centralized authority that is able to coordinate the production of statistics across government, spearhead innovation, promote open data standards, and ensure timeliness in data dissemination (Espey, 2018). The challenges persist, but the PSA has demonstrated the importance of strong governance structures to enhance data production and data use. The PSA has also demonstrated the importance of communication and data awareness campaigns to engage students, policy makers and other key user segments.