Part 4
SDG Data Systems and Statistics

The COVID-19 pandemic has prompted a massive shift in the demand for data, especially for timelier and higher-quality data (UNDESA, 2021). At the same time, socioeconomic impacts of the pandemic have rendered much of the pre-pandemic data less useful or outdated (Mahler et al., 2021). Governments have needed more rapid, geolocated, and granular data not only to track the trajectory of COVID-19 cases across their countries, but to ensure that basic resources for their citizens are targeted effectively and efficiently (UNStats, 2021b). With the elevated focus on and interest in data, COVID-19 has also set the stage for new user expectations, with many users – especially the general public – now expecting to obtain data in real time. As such, governments have had to find new ways to satisfy user demands with reduced budgets and staff resources, while also balancing data timeliness, precision, and quality needs. An SDSN initiative, the Thematic Research Network on Data and Statistics (TReNDS), mobilizes technical and policy-oriented solutions to advance the data revolution for sustainable devedevelopment.

Partnerships across sectors have proven critical in helping to meet this challenge (UNStats, 2022c). And in many countries, national statistics offices (NSOs) have become innovators during the pandemic. They have engaged in partnerships that were previously few and far between – working with stakeholders across sectors, including civil society, the private sector, academia, and NGOs to accelerate data innovations for policymaking and SDG attainment.

In this section, we highlight data innovations across sectors that have arisen as a result of the pandemic; discuss how these innovations have led to a greater focus on using data to enhance policymaking and SDG attainment; and share some of the key lessons learned to sustain and advance these developments to support SDG transformations.

4.1 Data innovations during the COVID-19 pandemic

Having timely, high-quality data has become the foundation of resilient and effective governments throughout the pandemic. However, COVID-19 has presented numerous obstacles to achieving this, including office closures; stretched government resources and budgets; significant disruptions to statistical operations; and delays in planned censuses, surveys, and other data programs (UN and World Bank, 2020; UNDESA, 2020).

Across countries, pragmatic decisions have been made to reprioritize staff and resources to modernize data capture methods and processes. Non-traditional sources, including citizen science, social media data, mobile phone data, and satellite imagery have been introduced to fill data gaps, while improved dissemination schemes have made

it easier for policymakers and the public to consume the data. To realize these feats, countries have embarked on a range of multi-disciplinary and cross-sector partnerships.

Modernizing data-collection methods and processes

Health risks as well as government measures introduced in response to the COVID-19 pandemic severely limited traditional mechanisms of primary data collection, particularly face-to-face surveys and other in-person data-capture methods. At the onset of the pandemic, NSOs around the world suspended face-to-face interviews and asked staff to work from home, although many lacked adequate technology and infrastructure for remote work (Hammer et al., 2021). According to a UN Statistics Division survey, two-thirds of national statistics offices reported that these disruptions limited their ability to produce essential data and meet international reporting requirements (World Bank, 2020). But the pandemic also presented an opportunity for countries to modernize their methods and processes – with the support of key global stakeholders, such as the World Bank – notably leveraging mobile and other remote technologies to improve enumeration strategies and data collection processes.

In response to social distancing measures, for example, the World Bank helped countries quickly pivot to telephone surveys to conduct its flagship household survey, the Living Standards Measurement Study (LSMS), which collects socioeconomic and livelihood data in low-income and lower-middle-income countries. The LSMS also provided technical and financial assistance to several African countries, including Ethiopia, Malawi, Nigeria, Tanzania, and Uganda, to implement high-frequency telephone surveys of the pandemic's socioeconomic impacts (World Bank, 2022a).

To administer its 2020 census, Ethiopia's Central Statistics Agency piloted its use of a public-domain Computer Assisted Personal Interviewing (CAPI) software package. Compared to the traditional paper-based approach used for previous censuses, the CAPI system provided more timely and accurate monitoring of field activities, allowing field teams to monitor the progress of enumeration activities and to analyze, in near real-time, the quality of data collected (Bruno et al., 2020). The CAPI system also enabled Ethiopia to introduce geographic information system (GIS) technologies to its census methodology, allowing enumerators to capture geotagged data at the household level and create associated map products for real-time monitoring and reporting. Several other countries within the region (including South Africa and Sierra Leone) have similarly adopted CAPI systems since the start of the pandemic (Concord Times, 2021; Statistics South Africa, n.d.).

The Maldives National Bureau of Statistics was also able to continue key statistical activities during COVID-19 by adopting innovative methods (PARIS21, 2021b). The bureau moved from face-to-face interviews to telephone surveys to produce its monthly consumer price index, and reweighted variables in its 2019/2020 Household Income and Expenditure Survey to account for incomplete data collection during the pandemic (National Bureau of Statistics Maldives, n.d.). Individual weights were adjusted to account for non-interviewed enumeration blocks, enabling estimates to be produced that were representative of the entire population.

During the pandemic, governments also began to use artificial intelligence (AI) and other novel data-collection methods to improve service delivery and policymaking. The Swedish region of Halland, for example, developed a comprehensive data warehouse to collect timely financial and clinical healthcare data from hospitals, primary care facilities, and ambulatory care facilities, integrating these disparate data sources into a single repository for real-time delivery of healthcare services (Emilsson, 2021). As a result, providers and researchers were able to analyze patient pathways, identify trends, and predict impacts on the capacity of intensive care units throughout the pandemic. In Greece too, the government launched a system based on machine-learning algorithms to determine which travelers entering the country should be tested for COVID-19, which helped authorities to better assess mitigation measures ("Greece Used AI to Curb COVID," 2021).

Non-traditional data sources

The pandemic has demonstrated the value of innovation to fill data gaps for greater accuracy, timeliness, and granularity. Although governments have in the past relied primarily on traditional data sources, COVID-19 helped accelerate the use of non-traditional sources – including citizen science, social media, and earth observation data – to support evidence-based decision making and further SDG attainment at the local and national levels (Khanna and Ramachandran, 2022).

Marine litter inflicts significant damage on Africa's coastlines every year, particularly in Ghana. Yet continuous data to monitor marine litter in Ghana was lacking. To help fill the data gaps, Ghana turned to an innovative approach. In 2020, the country's statistical service partnered with a coalition of key stakeholders to introduce citizen science methods to monitor progress on SDG 14.1.1b (plastic debris density), aligning methodologies and existing initiatives within the country, building partnerships, and fostering more efficient data collection (SDSN TReNDS, 2021). And in 2021, Ghana became the first country to report on indicator 14.1.1b using citizen science data.

Another example can be found in Colombia, where DANE, Colombia's National Administrative Department of Statistics, has begun using social media data to complement measurement of SDG 16 (promotion of peaceful and inclusive societies) (UNStats, 2022c). By analyzing data culled from Facebook, exchanges among diverse segments of the population are used to determine the prevalence of discrimination within the country, and to establish a baseline for SDG indicators 16.b.1 (proportion of the population who have felt harassed or discriminated against in the past 12 months) and 16.7.2 (proportion of the population who believe decision-making is inclusive and responsive). Similarly, in Serbia, NSOs have supplemented their official statistics by analyzing Facebook advertising data to better measure emigration trends (IISD, 2021). Using social network data as a proxy for the number of Serbian emigrants and the rate of migration, they were able to determine how the pandemic had affected Serbian emigration rates.

Earth Observation (EO) data is also being increasingly used to support evidence-based decision-making. For instance, during the pandemic, Thailand and the Philippines both used EO imagery alongside household survey and census data to assess poverty levels more accurately (Ernst and Soerakoesoemah, 2021). Similarly, GEOGLAM (Group on Earth Observations Global Agricultural Monitoring Initiative) uses EO data to improve food security and market transparency by producing timely and actionable remote-sensing information on agricultural conditions at the national, regional, and global scale (GEOGLAM, 2020). GEOGLAM produces monthly global "Crop Monitors," providing near real-time information on crop conditions. Their EO datasets have been used by many low- and middle-income countries to make pre-harvest production forecasts, to identify anomalies associated with droughts and other weather-related events, and to assess the pandemic's impact on the global food supply (GEOGLAM, 2022).

New dissemination schemes

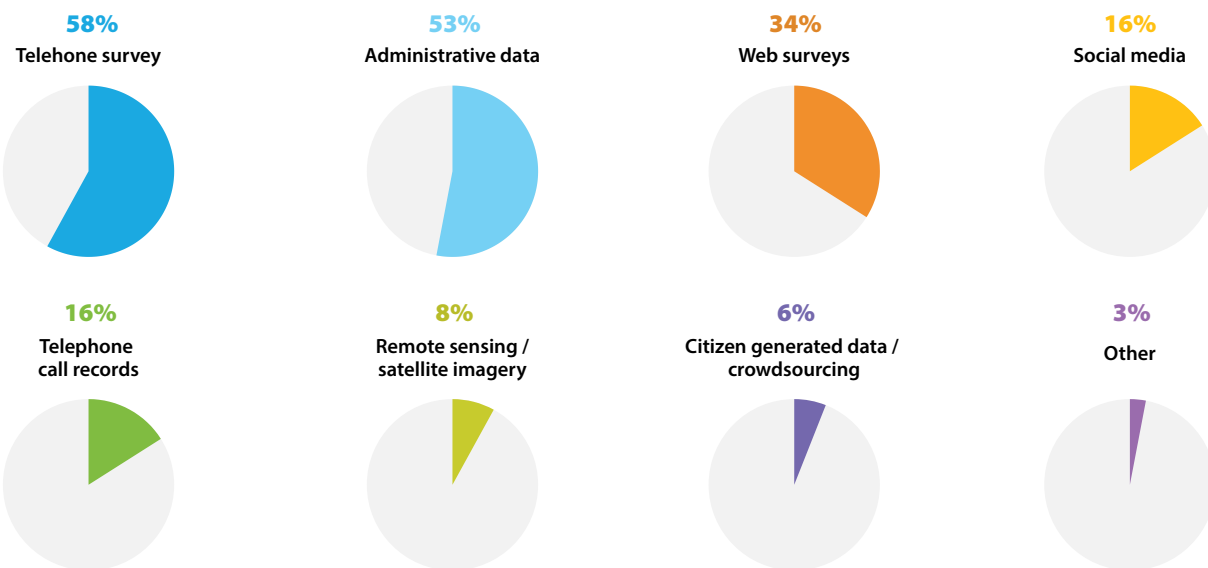COVID-19 has also significantly increased the demand for timely data among users who may lack technical data skills – prompting stakeholders to reevaluate their user-engagement and dissemination strategies. New dynamic dashboards and GIS products have been developed, as well as stronger data visualizations and infographics to facilitate a better understanding of data and statistics.

For instance, in South America, the Colombian-based think-tank, Cepei (Centro de Pensamiento Estratégico Internacional) has partnered with Tableau and the UN Multi-Partner Trust Fund to launch the COVID-19 Data and Innovation Centre: a platform for sharing experiences, knowledge, and recommendations to enhance response and recovery efforts in the Global South (Cepei, 2020). The platform features data stories targeted toward the public and key decision-makers, as well as dashboards and open datasets relating to the pandemic.

Eurostat, the European Union's statistical office, has also launched a regional dashboard where users can find monthly and quarterly updates on a selection of COVID-19 indicators, as well as brief descriptions of the economic and social situation in the latest available period (Eurostat, 2022). The dashboard has proven very successful among users, with several additional features and functionalities added recently to help policymakers readily access the data they

4. SDG Data Systems and Statistics

Figure 4.1

Use of non-traditional data sources by national statistics offices to monitor the COVID-19 pandemic

58%
Telehone survey

53%
Administrative data

34%
Web surveys

16%
Social media

16%
Telephone call records

8%
Remote sensing / satellite imagery

6%
Citizen generated data / crowdsourcing

3%
Other

Note: Based on responses from 122 national statistical offices to the question: "Is your institution using alternative/non-traditional data sources/approaches to analyze or monitor aspects of the COVID-19 pandemic?"

need to make timely decisions in response to the COVID-19 crisis. In addition to the dashboard, Eurostat has enhanced its monthly commentary with graphical analyses and other features to keep pace with user demands (UNStats, 2021a).

At the national level, Canada leveraged investments in new analytics tools and dashboards during COVID-19 that enabled policymakers to make more informed decisions, providing them with richer context and much greater data disaggregation (Statistics Canada, 2022; UNStats, 2021c). For example, Canada's NSO has developed a statistical geospatial explorer that gives users the ability to generate data visualizations at a more granular level and produce custom tabs on a range of socioeconomic topics (Apolitical, 2021; Statistics Canada, 2020).

In addition to data visualization tools, several institutions – such as Paraguay's National Institute of Statistics – have launched open data portals on their websites to make COVID-19 data readily available to the public and to respond to growing demands for public health information from policy-makers and civil society organizations alike (PARIS21, 2020).

Innovative and cross-disciplinary partnerships

The range of innovative partnerships built across the data sector in response to COVID-19 has also been a clear upside of the pandemic. This has proven that in times of crisis, new ways of working are needed to be able to pivot quickly and strategically, and that cross-sector partnerships are essential for building resiliency and innovation across government.

This was especially true in Jamaica (UNStats, 2022b). Faced with a rapidly evolving pandemic situation and growing demand from users, the Statistical Institute of Jamaica (STATIN) acknowledged that a non-traditional approach to gathering data was required, and that they needed to improve research coordination and the production of data on COVID-19 impacts in the country. To achieve this, the institute established a national research agenda for COVID-19, linking research to policymaking and involving stakeholders from across sectors, including the Ministry of Health and Wellness, local academia, and the private sector. Additionally, they worked to improve research processes using a whole-of-society approach to data

production, which led to the first nationally-representative telephone survey in Jamaica, conducted in collaboration with private-sector mobile phone networks. Moreover, partnerships with external actors prompted STATIN to reassess their administrative data sources and use them more efficiently, and to enhance their data-dissemination tools by including more user-friendly infographics.

To generate timely and accurate population and infrastructure data in response to COVID-19, the government of Sierra Leone, alongside the statistical office and some ministries, partnered with a range of leading data-science and geospatial organizations from the private sector (including Esri and Maxar), as well as regional commissions (including the UN Economic Commission for Africa) and NGOs (including GRID3 – Geo-Referenced Infrastructure and Demographic Data for Development). These partnerships enabled the country to produce critical geospatial datasets, analyses, and tools to support the government's COVID-19 response, publishing them under an open, non-commercial license (Government of Sierra Leone, 2020).

In Chile too, the government worked across sectors to develop a data platform to provide the public with timely updates on COVID-19 (UNStats, 2020). The country's National System of Coordination of Territorial Information (SNIT) worked alongside various ministries, the NSO, and private sector partners, such as Esri, to develop a COVID-19 Territorial Viewer so that all citizens could access territorial information on COVID-19 at the national, regional, and municipal levels (IDE Chile, 2022). A team of journalists and designers contributed to the development of the Viewer to ensure that the data was easy for the public to visualize and understand.

New multi-stakeholder partnerships for the SDGs have also taken shape during the pandemic. For instance, in Senegal, multi-stakeholder and cross-sectoral partnerships helped enhance capacity-building and knowledge-sharing around priority land-use indicators and small-area estimation methodologies (Global Partnership for Sustainable Development Data, 2022). As part of the multi-stakeholder Data For Now initiative, Senegal's National Agency of Statistics and Demography (ANSD, *Agence Nationale de Statistique et de la Démographie*) also partnered with UN Habitat, the UN Food and Agriculture Organization (FAO), and the UN Statistics Division to build capacity for measuring SDG indicators 2.3.1 and 2.3.2.

4.2 Emerging lessons for data systems

The country examples we have cited underscore recent shifts (in a large part due to COVID-19) towards better use of data to inform policymaking and SDG attainment. While the pandemic continues to evolve, lessons and trends that are likely to continue include the following:

- **The value of developing data that is fit-for-purpose.** The pandemic demonstrated that data is not valuable if it is not designed with users' needs in mind. Data must be timely, disaggregated, high-quality, and presented in a format and through a means that decision-makers can understand and act quickly on.

- **Post-pandemic, traditional approaches to survey taking, data production, and analysis will no longer satisfy user needs – non-traditional approaches are required.** As highlighted by the numerous country cases above, governments have successfully adopted new data approaches to keep pace with demands that have permanently raised user expectations. Partnerships are essential to continue to harness these innovations.

- **The importance and value of cross-sector partnerships**. Before the pandemic, multi-disciplinary and cross-sector partnerships within the data sector were still novel. Fortunately, COVID-19 has changed this for the better and enabled countries to take a whole-of-government approach to their data strategies.

- **Dissemination efforts should be prioritized alongside production efforts**. The pandemic prompted the development of hundreds of innovative platforms and dashboards to enable the public to understand the impact of COVID in near real time. It also encouraged governments to rethink their strategies to ensure that data production is accompanied by effective dissemination strategies that make data easier to use and understand for individuals who may lack technical aptitude and data literacy skills.

- **Data innovations are working.** As demonstrated, many countries are seeing positive, tangible results from the innovations they have adopted. For instance, since developing their new products, use of Statistics Canada's website has tripled (UNStats, 2021c).

- **Data innovations are emerging beyond the national level.** The pandemic has spurred innovations in data across other sectors, including within civil society (where we are seeing greater civic engagement in data to hold governments accountable) and the private sector (where there have been new efforts to improve ESG reporting) (Cameron, 2021; Chinn et al., 2021).

The COVID-19 pandemic is a major setback for sustainable development everywhere. Yet as with other major crises in the past, new ideas emerged during the pandemic that may help advance SDG policies and roadmaps to 2030 and beyond. Data systems and statistics were mobilized in new ways to inform countries' responses to the pandemic. In particular, the pandemic underscored the value of non-traditional data sources and approaches, including citizen science, social media, and earth observation data. It also catalyzed data partnerships and innovations across sectors and fostered the development of more fit-for-purpose, timely, and disaggregated data to support targeted policy interventions. Global efforts, including by the UN Statistical Commission, aim to solidify these improvements and innovations across nations and further greater cross-sector knowledge exchange (UNStats, 2022a).

Looking ahead, financing data systems continues to be a critical challenge, especially in LICs and LMICs. Despite heightened demand for data, its financing remains stagnant (PARIS21, 2021a). Cross-sectoral partnerships and initiatives to spur innovation – such as the Joint SDG Fund of the United Nations and the recently launched Clearinghouse for Financing Development Data – are positive developments, but to fully prepare countries for future epidemics and ensure the achievement of the 2030 agenda, significant investments in financing for national statistical and health information systems are paramount (Joint SDG Fund, 2022; PARIS21, 2021c).

4. SDG Data Systems and Statistics