United Nations | Department of Economic and Social Affairs

CEPA strategy guidance note on

Data sharing

February 2021

The United Nations Committee of Experts on Public Administration (CEPA) has developed a set of principles of effective governance for sustainable development. The essential purpose of these voluntary principles is to provide interested countries with practical, expert guidance on a broad range of governance challenges associated with the implementation of the 2030 Agenda. CEPA has identified 62 commonly used strategies to assist with the operationalization of these principles. This guidance note addresses data sharing, which is associated with the principle of sound policymaking and can contribute to strengthening the effectiveness of institutions. It is part of a series of such notes prepared by renowned experts under the overall direction of the CEPA Secretariat in the Division for Public Institutions and Digital Government of the United Nations Department of Economic and Social Affairs.

In reading this guidance note, individuals in government ministries and agencies who are less familiar with the topic will be able to understand the fundamentals. Those who have perhaps taken initial steps in this area with limited follow-through or impact will be able to identify how to adjust elements of their practice to achieve better results and to better embed and institutionalize the strategy in their organizations. Those who are more advanced in data sharing will be able to recognize the practices which contribute to its success.

Understanding the strategy

Better decisions require better information. Having access to reliable, accurate public-sector data is crucial for sound policymaking. Accurate data helps to answer fundamental questions on selecting proper actions, to realize intended outcomes and to achieve the overall effectiveness of economic and social programmes. Public sector institutions across countries and levels of government gather data from individuals and companies as a part of their routine administration of programmes. Yet, these administrative records are rarely valued as strategic pieces of information to assess the functioning of programmes, a pathway to building strong public institutions, or a means to solving much larger social and global challenges. The United Nations Sustainable Development Goals (SDGs) promote data sharing as essential for sound policymaking, central to effective governance, and necessary for the advancement of the 17 SDGs by 2030.[1]

Progress on promoting data sharing since the adoption of the SDGs is already underway. Having widespread international agreement, an urgency for action, and continued measurement of progress towards the 17 goals, 169 targets and 232 specific indicators means that United Nations Member States must prioritize data sharing on their government and public agency agendas. The SDGs are being used in national development plans, academic research and foreign aid prioritization. Efforts are also being undertaken to measure and monitor the status of SDG achievement on an ongoing basis. Performance accountability helps maintain the promotion of data sharing among internal and external stakeholders. The United Nations Educational, Scientific and Cultural Organization (UNESCO), for example, reported a significant increase in the adoption of Access to Information laws in response to pursuing the SDGs, citing examples from Kenya, Mexico and Sri Lanka, as well as SDG16 Data Initiative, among others.[2]

By themselves, programme administrative records cannot achieve all these feats because they are typically limited. Yet, when combined with other sources of data, such as business or individual censuses or administrative records from other programmes, they can be quite powerful in helping to target public resources. In an age of low-cost, high-volume computing power, matching data from across programmes is increasingly possible, but it requires government leaders to establish a strong institutional culture in support of data sharing between programmes, across government, and with the public while also protecting privacy as much as possible to maintain public trust. This note offers guidance to public administrators on strategies for improving responsible data sharing that respect individual privacy to advance sound policymaking. This approach emphasizes the need for strong and balanced data

[1] The SDGs provide a model for addressing the most important economic, social and environmental challenges of our time. Governments cannot achieve the SDGs on their own, which is why the United Nations is calling on organizations around the world to align their operations with the SDGs.
[2] UNESCO, 2020, *Beyond the Numbers: Using Access-to-Information Data to Achieve Sustainable Development Goals*. Available at YouTube.

governance as well as a commitment from governments at all levels to unleash the potential of data for better policies and public service delivery.

"Data sharing" within the public sector should be a formal process in which countries grant restricted access to appropriate segments of their data to various programme agencies or non-government researchers that are supporting activities (such as programme evaluations) authorized under the country's governing data confidentiality laws and regulations.[3] Data sharing embraces laws, policies and practices that allow data-gathering agencies to provide anonymized segments of their records for decision-making, policy analysis and programme evaluation purposes. Where combining records may be necessary, the data linkage is made in a secure environment, access is restricted, and results are reported in anonymized form so that private or confidential data are not revealed about individuals or firms.

Data sharing has long been encouraged by the scientific community and is regarded as a professional standard for enabling the reproducibility of results and informing the larger scientific community. This globally recognized standard of practice for better science has the added benefits of encouraging more connections and collaborations between scientists, greater public trust in scientific advances and greater efficiency gains as it allows researchers to share resources.[4] However, adopting the practice of data sharing, even when the benefits are widely perceived, requires a great deal of effort, resources, collaboration and public engagement. Public-sector data sharing offers the same benefits afforded to scientists but is in limited use within most countries and their public institutions.

Sharing data for policymaking can improve the evidence available to leaders as they determine which development programmes are likely to produce the greatest benefits. According to calculations from the Organisation for Economic Cooperation and Development (OECD), data access and sharing is estimated to generate social and economic benefits worth between 0.1 per cent and 1.5 per cent of gross domestic product (GDP) in the case of public-sector data, and between 1 per cent and 2.5 per cent of GDP when also including private-sector data.[5]

While data sharing is important for evidence-based policymaking, it does not just happen. In this context, effective data governance that respects privacy principles in the interest of maintaining public trust is vital to sustaining public support for data sharing and ensuring that linked data remain available for analysts' use. Enabling access to existing administrative records for programme research and analysis requires active management, engaging trained professionals with an understanding of not only the capabilities of matched data but also the sensitivity to the political concerns associated with maintaining guardrails to protect

[3] Poole, K. and E. Harpel, 2018, *Advancing State Data Sharing for Better Economic and Workforce Development*. Center for Regional Economic Competitiveness (CREC) State Data Sharing Initiative.
[4] United States Geological Survey (USGS), *Why Share Your Data.* Available at https://www.usgs.gov/products/data-and-tools/data-management/why-share-your-data
[5] OECD, 2019, *Enhancing Access to and Sharing of Data: Reconciling Risks and Benefits for Data Re-use across Societies*. Available at https://www.oecd-ilibrary.org/science-and-technology/enhancing-access-to-and-sharing-of-data_276aaca8-en

confidential data. Barriers like trust, technology, analytic capacity, data security and privacy must all be considered. Building public trust is especially key for success. In one recent survey, just 9 per cent of people felt that the government had their best interests at heart when data sharing, and only 15 per cent were confident that government agencies would deal well with a cyberattack.[6]

Undoubtedly, the ability to share data at scale through the Internet has brought new threats to the security and privacy of personal information that amplifies the need for trust between government and citizens and across government departments. Better engagement with citizens and clearer explanations of when and why data is used can help build confidence. The same approach works well for public administrators working across agencies. Beyond concerns about trust and security, data sharing is also about getting the right data in the right place at the right time as a driver of value: making services work for the people who use them, improving government systems and processes, and supporting better decisions.[7]

Public sector situation and trends

Effective public-sector data sharing has been recognized by the United Nations as helping to achieve the broader 2030 Agenda.[8] Several countries are in the process of establishing national data strategies, like Canada, the United Kingdom and the United States, recognizing the value of data-governance frameworks that incorporate whole-of-government approaches.[9] These countries are looking to manage data as an enterprise-wide asset with a comprehensive vision and road map to harness data-dependent capabilities. As big data sources are fundamentally different, it requires careful planning to become a digital-savvy government.

A national data strategy puts the needs of the public at the center of public services, using data to connect across the "silos" of government to create a seamless digital government

[6] Centre for Data Ethics and Innovation, 2020, *Addressing Trust in Public Sector Data Use*. Available at https://www.gov.uk/government/publications/cdei-publishes-its-first-report-on-public-sector-data-sharing/addressing-trust-in-public-sector-data-use#appendix-1-case-studies

[7] Comptroller and Auditor General, Challenges in using data across government, Session 2017–2019, HC 2220, National Audit Office, June 2019. Available at https://www.nao.org.uk/wp-content/uploads/2019/06/Challenges-in-using-data-across-government-Summary.pdf

[8] United Nations, 2015, *Transforming Our World: The 2030 Agenda for Sustainable Development*. Available at https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf

[9] See Government of the United Kingdom, 2020, National Data Strategy. Available at https://www.gov.uk/government/publications/uk-national-data-strategy/national-data-strategy#executive-summary; Government of Canada, 2018, Report to the Clerk of the Privy Council: A Data Strategy Roadmap for the Federal Public Service. Available at https://www.canada.ca/en/privy-council/corporate/clerk/publications/data-strategy.html#toc0; and United States Office of Management and Budget, Federal Data Strategy: Leveraging Data as a Strategic Asset (2020). Available at https://strategy.data.gov

experience for the customer.[10] Since 2003, Singapore has made strategic investments in data and digital infrastructure as part of its national data strategy. Singapore Personal Access (SingPass) enables users to securely access over 300 digital government services from 110 government agencies, including on mobile devices. Its Smart Nation and Digital Government Office oversees the development of the infrastructure necessary to achieve the efficient flow of data across government and between and among government agencies.[11] "Single Sources of Truth" are designated as authoritative sources for data elements that may be used by multiple government entities instead of collecting such data themselves – this ensures quality, consistency and inter-operability of data across the government.

Other countries are advancing data sharing in certain programme areas and policy sectors. The OECD conducted an examination of more than 200 policy initiatives on data sharing across 37 countries and found that most initiatives focus on public-sector data (almost 65 per cent of initiatives).[12] These types of initiatives typically promote more open access to government data for researchers and the public. There is a growing trend towards facilitating data sharing within the public sector (almost 15 per cent of all initiatives on public-sector data) and enhancing access to and sharing of geospatial and transportation data. A smaller share of policy initiatives invests in expanding data analytic capacities (12 per cent of all initiatives). This is often done through the establishment of research and technology centres.

In contrast with OECD countries, the developing world faces additional hurdles in leveraging open data effectively and equitably. Low and middle-income countries often have fewer resources, expertise and technological capabilities at their disposal to solve challenges inherent to data sharing initiatives, such as those associated with data collection, management and security.[13] In Mexico's effort to reduce the digital divide through its e-Mexico exercise, for instance, a 15-year lag in technological currency was estimated in the Federal Ministries and government agencies' computer infrastructures.[14] Other roadblocks, such as lower levels of digital literacy, lack of reliable Internet access and insufficient technical support often cause problems for end users attempting to access open data.[15] Given this environment, it is no surprise that only five low- and middle-income countries appeared in the top 25 of the Open

[10] Wiseman, J., 2020, *Silo Busting: The Challenges and Success Factors for Sharing Intergovernmental Data*. IBM Center for The Business of Government. Available at http://www.businessofgovernment.org/sites/default/files/Silo%20Busting.pdf

[11] Wiseman, J., 2020, *Engines of Innovation: How investments in data and digital infrastructure and human capital paved the way for customer-responsive and data-informed government in Singapore*. Institute for Excellence in Government. Available at https://scholar.harvard.edu/files/janewiseman/files/engines_of_innovation_singapore_case_study.pdf

[12] OECD, 2019, Enhancing Access to and Sharing of Data.

[13] Bezuidenhout, L., S. Leonelli, A. Kelly and B. Rappert, 2017, *Beyond the Digital Divide: Towards a Situated Approach to Open Data.* Science and Public Policy. 44. 464-475. Available at https://www.researchgate.net/publication/322113899_Beyond_the_digital_divide_Towards_a_situated_approach_to_open_data.

[14] Luna-Reyes, L. F., J. R. Gil-Garcia and C. B. Cruz, 2007, *"E-mexico: Collaborative Structures in Mexican Public Administration."* International Journal of Cases on Electronic Commerce, 3(2), 54-70.

[15] Verhulst, S. G. and A. Young, 2017, The GovLab. "*Open Data in Developing Economies: Toward Building an Evidence Base on What Works and How."* p. 52. Available at https://odimpact.org/files/odimpact-developing-economies.pdf

Data Barometer rankings, a global measure of how governments are publishing and using open data for accountability, innovation and social impact.[16] However, there are many examples of governments, non-profits and academic institutions working together to overcome these challenges, especially when the initiative is focused on a well-defined goal, is financially sustainable and utilizes partnerships to educate community members about the project.[17] One such example is OpenRBF, a web-based platform used by Burundi's Ministry of Health to track healthcare expenditures and outcomes across the country.[18] This initiative has been linked to a reduction in severe cases of malaria and the platform has since been expanded to education and AIDS awareness programmes.[19]

While each country has its own national priorities, governance structures and existing capacities, most will face a similar set of data sharing challenges: data governance, information technology, building user understanding and identifying performance metrics.

Data governance

Data governance refers to the processes and framework for managing data assets, including "a system of decision rights and accountabilities for information-related processes, executed according to agreed-upon models which describe who can take what actions with what information, and when, under what circumstances, using what methods."[20] Data governance remains a challenge for public institutions in most countries. Success requires attention to the decisions about who can use the data, who "owns" the data, when the data can be used, and for what purposes it can be used. The approaches taken by Germany and the United Kingdom to the governance of data related to smart meters, which capture real-time household electricity consumption, highlight the variation in approaches, particularly those related to privacy concerns. The United Kingdom chose to centralize all data processing and access through a single new company while Germany created a market for a new certified category of device, the smart meter 'gateway', which allows personalized end-to-end encryption between the home and various data users.[21]

Governments can create either internal processes or statutory language to provide a rationale and explicitly allow data sharing for specified purposes following agreed-upon rules. India's government issued a National Data Sharing and Accessibility Policy (NDSAP) in 2012. The

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[16] World Wide Web Foundation, 2016, Open Data Barometer Global Report (Fourth Edition). Available at http://www.opendatabarometer.org. *Low and middle income country classifications retrieved from the World Bank. June 2020 classifications https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups#:~:text=For%20the%20current%202021%20fiscal,those%20with%20a%20GNI%20per*

[17] Verhulst, S. G. and A. Young, 2017, The GovLab. *"Open Data in Developing Economies: Toward Building an Evidence Base on What Works and How."* pp. 50-58. Available at https://odimpact.org/files/odimpact-developing-economies.pdf

[18] Graft, A., A. Young and S. Verhulst, 2017, The GovLab. *"Burundi's Open RBF: Making Health Spending and Performance Transparent"* p. 9. Available at https://odimpact.org/files/case-burundis-open-rbf.pdf

[19] Ibid. p. 5.

[20] Data Governance Institute (DGI).

[21] British Academy and Royal Society, Data Management and Use: Case Studies of Technologies and Governance (2017). Available at https://royalsociety.org/-/media/policy/projects/data-governance/data-governance-case-studies.pdf

national policy recognizes that "given the deployment of substantial level of investment of public funds in collection of data and the untapped potentials of benefits to society, it has become important to make available non-sensitive data for legitimate and registered use."[22] Since then, various data holding organizations of central and state governments have published their non-sensitive data to registered users for scientific, economic and social developmental purposes.

Information technology

Information technology undergirds data-sharing efforts. Continuing advances in information technology and data storage should favour greater public-sector data sharing in the years ahead. The return to public agencies' investments in information technology infrastructure, particularly to support data-driven policymaking, is significant. A study from the Massachusetts Institute of Technology found that organizations adopting data-driven decision-making achieve 5 per cent to 6 per cent higher productivity and output growth than their peers, even after controlling for other investments and the use of information technology.[23] Samples of information technology issues related to data sharing include finding common identifiers to match different data files and establishing appropriate safeguards to protect shared data, among others.

Illustrating the power that common identifiers can have, one of the most significant international movements in data sharing may be the efforts to create a common identifier for firms. The establishment of a "Legal Entity Identifier" (a unique global identifier for legal entities) emerged from the 2008 financial crisis. Much like the role of the Internet Corporation for Assigned Names and Numbers (ICANN) in Internet governance, the Global Legal Entity Identifier Foundation was chartered to manage a globally accessible database of firms to enhance the security of international transactions.[24] Endorsed by the global Financial Stability Board as well as the Group of 20 financial ministers and central banks, the charter was designed to make data about firms accessible to an internationally recognized body.

The experiences of countries striving to improve data sharing for research and programme evaluation suggests that leveraging other leading public-sector agencies or offices (typically outside of the participating agencies) or university partners can provide the additional resources and technical expertise necessary to make significant advances in improving

[22] Government of India, National Data Sharing and Accessibility Policy. Available at https://dst.gov.in/national-data-sharing-and-accessibility-policy-0

[23] Brynjolfsson, E., 2011, *Strength in Numbers: How Does Data-Driven Decisionmaking Affect Firm Performance?* Massachusetts Institute of Technology (MIT). Available at http://ebusiness.mit.edu/research/papers/2011.12_Brynjolfsson_Hitt_Kim_Strength%20in%20Numbers_302.pdf

[24] ICANN, available at https://www.icann.org/; and Global Legal Entity Identifier Foundation, available at https://www.gleif.org/en/ It is important to secure interoperability with a personal identification number (PIN) or code assigned to any person or business and that this PIN is used systematically across the overall administration when collecting information. Geo-referenced information can also contribute to better data sharing and quality control.

information technology infrastructure.[25] National statistical offices, for example, can play a substantial role in the establishment of a sound institutional, organizational, methodological, and technological framework supporting a favourable data exchange environment through the development of a consistent, coherent, and integrated administrative data ecosystem.[26] Otherwise, data stewards and users – who are often subject matter experts but not necessarily information technology experts – will continue to take the small steps available to them to tweak processes and systems within their own offices or agencies.

Building user understanding

Government leaders and public administrators often do not understand the nuances of administrative data. Consequently, they may not value its potential contributions to sound policymaking. Data sharing is rarely a prominent issue for them. Even data-minded leaders can lack an appreciation for the types of information available or the nuances in varied data sets. This further necessitates better explanations on the importance of data sharing and political champions to support the effort. In Australia, the Prime Minister maintains high level leadership for public data policy, assigning the Assistant Minister for Cities and Digital Transformation with responsibility for close oversight of public data policy.[27] Important elements to promote user understanding of the value of data sharing include educating public officials on the importance of data sharing, informing data users of what data are (and are not) available, and establishing data storage protocols to manage data access.[28] Data-sharing advocates should also manage decision makers to gain support, build relationships with internal and external stakeholders, and find ways to keep data sharing on government and agency agendas.

A growing number of public sector entities are addressing barriers to data sharing with the creation of data intermediaries. These groups identify points of contact to handle data requests. This follows the approach widely used in the private sector. Private companies, large and small, are working to leverage the potential of "big data" (large, diverse sets of information) for more detailed market analytics. In 2020, the percentage of firms investing more than $50 million in their data analytics capacity is up to 64.8 per cent from just 39.7 per cent in 2018. Nearly all (98.8 per cent) surveyed firms are investing in Big Data and Artificial Intelligence initiatives.[29] This has led to the creation of a new Chief Data Officer (CDO) job

[25] CREC, 2018, Advancing State Data Sharing.
[26] It is not the role of a national statistical office to collect data on behalf of the administration, but the national statistical office can complement and sometimes even replace data obtained through heavy and costly surveys and censuses with administrative data. Administration entities for which data collection and processing is a secondary activity can benefit from the know-how and expertise of national statistical offices. More information on the use of administrative data for statistical purposes is available on the webpage of the Administrative Data Collaborative https://unstats.un.org/capacity-development/admin-data/.
[27] Australian Government, 2016, Public Sector Data Management: Implementation Report. Available at https://www.pmc.gov.au/sites/default/files/publications/Implementation%20of%20the%20Public%20Sector%20Data%20Management%20Report.pdf
[28] CREC, 2018, Advancing State Data Sharing.
[29] New Vantage Partners Big Data and AI Executive Survey, 2020. Available at https://www.newvantage.com/press

classification, which is a dedicated senior executive position responsible for the utilization and governance of data across an organization.[30] The CDO oversees a range of data-related functions that may include data management, ensuring data quality, data sharing and creating a data strategy. They may also be responsible for data analytics and business intelligence, which is the process of drawing valuable insights from data.

In the United States, for example, the near unanimous passage of the Evidence-Based Policy Act in January 2019 has led to the creation of the CDO as a new mandated role in all federal departments.[31] Very few agencies previously had such a role, and many of those positions were created in 2020 as part of the roll out of the United States Federal Data Strategy. As government CDOs become more prevalent across cities, states and countries, it is important to understand the role's multiple responsibilities. CDOs are responsible for safeguarding government data, but they should also help agencies better use their data and connect citizens with government data to make it more actionable.[32] Government CDOs also provide oversight in managing privacy and protecting citizens' information.

Identifying performance metrics

Finally, public administrators involved in advancing data sharing initiatives should not lose sight of sharing as a means to an end. Integrating quality data by sharing supports the assessment of defined performance metrics when researching the outcomes and impacts of public investments. This goal must remain front and centre as the framing argument for increasing data access. Public sector efforts to integrate data sharing with programme outcomes should include discussions about how to articulate the most relevant metrics and how administrative data can help to validate programme outcomes to internal and external audiences.

[30] Zetlin, M., 2020, *What is a Chief Data Officer? A Leader Who Creates Business Value from Data.* Available at https://www.cio.com/article/3234884/what-is-a-chief-data-officer.html
[31] United States Government, Foundations for Evidence-Based Policymaking Act of 2018. Available at https://www.congress.gov/bill/115th-congress/house-bill/4174. Among the primary groups involved in promoting public-sector data sharing in the United States are the Data Foundation, Actionable Intelligence for Social Policy, the Future of Privacy Forum, and the Information Technology and Innovation Foundation.
[32] Georgetown University's Beeck Center and Deloitte's Center for Government Insights, Government CDO Playbook. Available at https://www2.deloitte.com/us/en/insights/industry/public-sector/chief-data-officer-government-playbook.html

Methods of implementation

Data sharing promotes sound policymaking, but it requires effective implementation to be successful. Public administrators charged with executing these policies should address cultural barriers to data sharing within and across agencies. While privacy and confidentiality laws establish limits around administrative data sharing – especially when personally identifiable information is involved – many laws allow users to share some data for specified purposes, such as research and programme oversight. In fact, barriers to data sharing are more frequently cultural than legal, requiring the need for clearer explanations of what constitutes "authorized uses" of data.[33] One survey of public policymakers seeking to promote greater use of data for programme evaluation found that 88 per cent were unsure about data-sharing rules while 75 per cent said lack of access affected their ability to do their jobs.[34] Government agency staff often express concern about severe penalties for violating disclosure rules, making it easier to say "no" when unclear about the specific laws and regulations. Agencies may have a tradition of data stewardship that emphasizes protecting and keeping data, rather than sharing access. Agencies may also fear they will lose control over how others will use the data, which could result in negative reports about the agency itself or improper use of data in inferior quality research.[35]

Implementation success needs leadership at the highest levels, with ongoing communication with staff and other organization leadership to sustain the agency's commitment to data sharing. In this effort it is helpful to emphasize an agency's need to answer broader research questions that can improve public policies associated with investing public funds and delivering programmes and services more efficiently. Although counter-intuitive, experiences with government leaders found that laws and policies that specifically identify who can share, for what purposes, and when the sharing could occur, are more likely to result in effective data sharing.[36] It appears that public administrators highly value legislative and regulatory structure giving explicit permission to share data while flexibility in an uncertain environment inhibits data sharing.

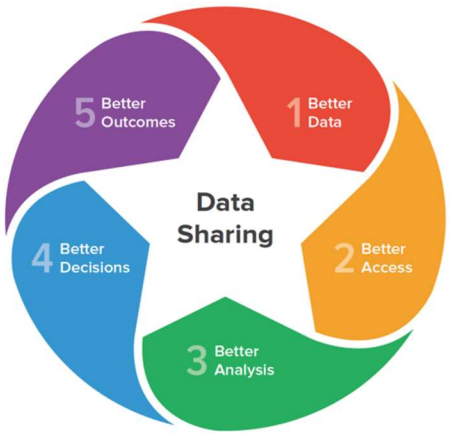
The value of data sharing is linked to a simple five-step logic (see Figure 1).[37] There is growing recognition that public-sector data contain valuable information that could support policy analysis and programme evaluation. If the laws that protect public-sector data and govern access are more widely understood, leaders can create secure pathways to appropriate and efficient data access. With access provided to "micro" data (about individual people or businesses) under legally appropriate frameworks, agencies and researchers can conduct more rigorous policy analysis and programme evaluations. With this, leaders provided with more

[33] Commission on Evidence-Based Policymaking, 2017, *The Promise of Evidence-Based Policymaking*. Available at https://cep.gov/report/cep-final-report.pdf
[34] CREC, 2018, Advancing State Data Sharing.
[35] Government Technology, 2014, *Building a Government Data Culture*. Available at https://www.govtech.com/data/Building-a-Government-Data-Culture.html
[36] CREC, 2018, Advancing State Data Sharing.
[37] CREC, 2018, Advancing State Data Sharing.

rigorous impact assessments can make better-informed decisions about public investments. Decisions that are more evidence-based and data-driven result in better outcomes for public programme participants and communities. Such decisions, and decision-making processes, also more effectively advance the SDGs.

Figure 1. Data sharing theory of change

- **Better Data** – Administrative records result from transactions between governments and companies or workers, providing valuable insights about their program-relevant characteristics and activities.
- **Better Access** – Countries can take steps to enable access to specified administrative data in compliance with the spirit and intent of data confidentiality laws.
- **Better Analysis** – Available administrative data provide information not otherwise available that can improve understanding of the impact of public investments.



- **Better Decisions** – Leaders armed with better research can make more informed decisions.
- **Better Outcomes** – Evidence-based decisions are likely to result in more effective program outcomes.

Source: Center for Regional Economic Competitiveness

Addressing the legal framework for the sharing of data by public employees is particularly important for implementation success, as government staff rarely play lead roles in generating legislation and are the recipients rather than creators of legal restrictions. Data-sharing process management entails the day-to-day work of government employees responding to data-sharing requests, determining eligibility and appropriateness of use, preparing Memorandums of Understanding (MOUs) or data-sharing agreements, and ensuring data use remains in compliance with agreements. Among the key issues here is ensuring that data requestors have the capacity to maintain the data in a safe and secure environment.[38] A useful framework for public agencies to consider in managing the risks of sharing data is the "Five-Safes" framework.

- Safe data: can the data disclose identity?
- Safe people: can the users of the data be trusted?
- Safe setting: does the access environment prevent unauthorized use?
- Safe outputs: are the project results likely to disclose identity?
- Safe project: is the purpose of use appropriate?

[38] CREC, 2018, Legal Guide to Administrative Data Sharing for Economic and Workforce Development. Available at http://statedatasharing.org/data-sharing/2018-03_-_SDS_Legal_Guide_to_Administrative_Data_Sharing_for_Economic_and_Workforce_Development.pdf

This framework allows data custodians to place appropriate controls, not just on the data itself, but on the way in which it is managed and accessed.[39]

Improving data-sharing processes comes with costs, such as hiring or tasking staff who have the appropriate technical, legal, statistical or programme evaluation expertise; making data sharing a priority rather than an afterthought to current staff workloads; and investing in information technology enhancements within and across agencies.[40] Agencies need these staff and information technology resources to streamline data-sharing policies and processes, respond to requests for information and establish data governance procedures. Over time such streamlining will enable greater data access at lower costs.[41] In turn, decision makers and citizens will gain more insight into programme effectiveness, enabling better decisions on the allocation of programme funds.

A starting point for an effective data-sharing investment is creating data inventories,[42] which can catalogue the data various agencies collect, to know the extent of what data is available. It is hard to request data when one does not know what data is available. An inventory of public-sector data includes what administrative data is collected, how it is collected, how it is stored and how variables are defined. An oversight authority (data governance committee) should manage the inventory process by providing the scope of the effort, deadlines, performance metrics and guidelines.[43] Even small steps toward standardization through data inventories can help streamline the data-sharing process for both data stewards and users. Successful data inventories help public administrators determine how to use the data sets correctly for policymaking, service delivery improvements and evaluation projects.

Past this starting point are efforts to move the exchange of administrative data away from a strictly ad hoc basis, where the day-to-day work of government employees is responding to data-sharing requests, to a much more systematic data exchange system ensuring that data is, when possible and appropriate, collected only once and shared with or reused by other administrative entities. This cuts red tape. It also allows for more emphasis on data quality, including the consistency, coherence, coverage and timeliness of the collected information. This would benefit the compilation of more statistics and indicators, such as tracking the progress made on the SDGs.

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[39] Hamilton, N., 2018, *Why should we care about Data Sharing?* Altis. Available at https://altis.com.au/why-should-we-care-about-data-sharing/

[40] CREC, 2018, Advancing State Data Sharing.

[41] A goal for administrative data exchange is to be supported by compatible, if not integrated, information technology, software and data platforms, to avoid having each administrative entity develop its own data ecosystem.

[42] The stages of collecting and processing administrative data are often poorly documented (no metadata) with the consequences being that the quality dimensions, including the concepts, definitions and coverage of the data, are difficult to assess.

[43] GovEx Labs, *Data Inventory Guide*. Available at https://labs.centerforgov.org/data-governance/data-inventory/

Case studies

Following is a sample of data-sharing efforts in select countries and with a focus on different social groups.

Burundi has partnered with technology company BlueSquare and others to leverage an open data online platform to track results-based financing initiatives in its healthcare, public health and education systems. In 2014, the Ministry of Health sought a way to improve Burundi's healthcare results-based financing initiative, whereby medical facilities are compensated based on performance metrics, through a more sophisticated tracking of performance and accountability. To do this, the country implemented OpenRBF, a web-based platform designed specifically for results-based finance management. This online software is used by health professionals across the country to collect data on the quality and quantity of care being provided, while administrators at the Ministry of Health process the data against performance requirements to disperse the correct subsidy payment. The platform features an online portal that makes the data easily accessible to the public.[44] Since its implementation in the healthcare sector, OpenRBF has been expanded to Burundi's education system. This time, the international development organization Cordaid partnered with BlueSquare. Similar to how it works within the health sector, educators use an electronic device to report data that is then stored in the OpenRBF database. Data can be verified by a third party and Cordaid can access it to make performance-based payments to schools.[45] While direct benefits are difficult to determine, the initiative has been associated with "improved educational access for students of all ages, a better gender balance in programmes, better teaching methods and improved academic performance scores."[46] In both settings, OpenRBF has made project management more efficient, as programme performance can be tracked and visualized by project managers, government officials and non-profits in real time and without having to wait for periodic reports from the field.

Estonia is continuing its Information Sharing Data Sheet (X-Road) initiative. The objective of X-Road is to facilitate data exchange and linkage by connecting both national and decentralized databases. X-Road enables citizens, government agencies and private-sector organizations to securely use most Europe-wide data that are registered in national registries.[47] X-Road is structured as an interoperability platform for access to existing decentralized databases and a data exchange layer that can be used by public and private sector actors. It is independent of platforms and architectures and provides secure interoperability for data

[44] Graft, A., A. Young and S. Verhulst, 2017, *Burundi's Open RBF: Making Health Spending and Performance Transparent*. The GovLab. Available at https://odimpact.org/files/case-burundis-open-rbf.pdf
[45] Kagoyire, A. 2016, *"Inspiring Change in Burundi's Education System with OpenRBF."* Available at https://medium.com/@BlueSquare.org/inspiring-change-in-burundi-s-education-system-with-openrbf-by-al%C3%A9a-kagoyire-project-manager-af1fbb6d31d9#.ac8i9w7es
[46] Graft, A., A. Young and S. Verhulst, 2017, *Burundi's Open RBF: Making Health Spending and Performance Transparent*. The GovLab. p. 9. Available at https://odimpact.org/files/case-burundis-open-rbf.pdf
[47] OECD, 2019, *Enhancing Access to and Sharing of Data: Reconciling Risks and Benefits for Data Re-use across Societies*. Available at https://www.oecd-ilibrary.org/science-and-technology/enhancing-access-to-and-sharing-of-data_276aaca8-en

exchanges and identification of trusted actors in digital service delivery. The foundation for Estonia's digital transformation began in 2001, with the country's focused effort to create a digital state and digital citizens: the X-Road data infrastructure and a compulsory national digital ID.[48] The digital ID makes it possible for citizens to be identified electronically and to use digital signatures. Together, X-Road and the digital ID make it possible to digitally sign contracts, access public services, order prescriptions, file taxes and vote, among other functions. In delivering services, the Estonian government is motivated by the "once-only" principle where public agencies should only collect data that is not previously maintained in any other public-sector databases.[49] If a company or an individual has already submitted data to the public sector, they should not be forced to do it twice. X-Road allows for quality verification of the data, which is possible because public and private-sector institutions can connect their information systems to X-Road. Several thousand public and private services now use the system: 30 per cent of votes are cast digitally (in both local and national elections); almost all personal income tax declarations and medical prescriptions are done online; and most medical records held by hospital and family doctors are accessible online.[50] The Estonian government estimates that its eGovernment infrastructure has led to annual savings of about 2 per cent of GDP and more than 800 years in working time for the public and private sectors.

In the **United States**, the Workforce Data Quality Initiative (WDQI) supports the development and use of longitudinal administrative databases that integrate workforce data and education data often maintained independently at the individual state level for workforce and education programmes. WDQI is led at the federal level by the Department of Labor, which awards grants to support state governments in building longitudinal data systems (LDS) linking administrative data on state-level workforce and education programmes over time.[51] The LDS concept first originated with the Department of Education's Statewide Longitudinal Data System grants.[52] These data systems maintain detailed, high-quality, student- and staff-level data; the systems link these data across entities and over time, providing a complete academic and performance history for each student; and make these data accessible through reporting and analysis tools.[53] School and student records are supplied by state education agencies. State workforce agencies are asked to integrate programme, benefit and labor market information data sets into the state LDS to improve the longitudinal aspect and to create a

[48] Kattel, R. and I. Mergel, 2018, *Estonia's digital transformation: Mission mystique and the hiding hand.* UCL Institute for Innovation and Public Purpose Working Paper Series (IIPP WP 2018-09). Available at https://www.ucl.ac.uk/bartlett/public-purpose/publications/2018/sep/estonias-digital-transformation-mission-mystique-and-hiding-hand
[49] Information System Authority [Estonia], 2019, Data Exchange Layer X-tee. Available at http://www.ria.ee/en/state-information-system/x-tee.html
[50] Kattel, R. and I. Mergel, 2018, Estonia's digital transformation.
[51] United State Department of Labor, Workforce Data Quality Initiative. Available at https://wdqi.workforcegps.org/
[52] National Center for Education Statistics, Statewide Longitudinal Data Systems Grant Program. Available at https://nces.ed.gov/programs/slds/about_SLDS.asp
[53] National Forum on Education Statistics, 2010, Traveling through Time: The Forum Guide to Longitudinal Data Systems, Book 1 of 4, What is an LDS? Washington, DC: National Center for Education Statistics, Institute of Education Sciences, United States Department of Education.

holistic picture for individuals over time, from early childhood to employment. Being able to analyze performance at the individual level helps educators, workforce practitioners and policymakers at the local and state levels improve policies, eventually leading to improved outcomes for all.[54] New data-sharing arrangements between public-sector agencies at the state level, as well as between state governments and the federal government, can make use of the grant. The state-federal agreements are designed to help link the 50 state systems into a national data-sharing system. The LDS also includes business records collected from companies located in the state, which companies already must report for state-based Unemployment Insurance programme administration. It should be noted that an LDS is defined less by the type of system used to store the data and more by the type of individual-level data maintained in the system, how comprehensive those data are, whether the data spans many years, and how they are made available for research and analysis. Nearly three-quarters of all state governments in the United States have sought these grants to build their own LDS.

Peer-to-peer learning and research

Several public-sector specific journal articles and consultant research reports exist to help guide public administrators interested in pursuing data-sharing strategies.[55] Much of the underlying interest in data sharing intersects with how big data can help with policymaking and improved work processes. A big challenge facing the public sector is inadequate access to talent with expertise in big data and data science fields, limited by the ability to offer wages that compete with private sector demand for these skills. The mechanics of data sharing are often siloed from decision makers. Data sharing skills are typically regarded as specialized activities performed by information technology departments, data scientists, and legal departments, but the value is captured when these skills are integrated with the demands of policymakers and programme leaders for better analytics about the public investments for which they are responsible.[56] Perhaps having more public sector specialists trained in the same

[54] Social Policy Research Associates, Putting Data to Work: A Guide to Building Longitudinal Data Systems from a Workforce Perspective. Available at: https://www.spra.com/wordpress2/wp-content/uploads/2016/08/Putting-Data-To-Work.pdf

[55] See International Journal of Public Administration index. Available at https://www.tandfonline.com/toc/lpad20/current; Center for Regional Economic Competitiveness, State Data Sharing Initiative. Available at http://statedatasharing.org/; CompTIA, 2019, Homelessness and Opioids: A Roadmap for Sharing Data to Enable More Effective Collaboration. Available at https://comptiacdn.azureedge.net/webcontent/docs/default-source/advocacy-documents/comptia_homelessness-and-opioids_white_paper_web.pdf?sfvrsn=b8dd9e51_2.

[56] Many public administration education programmes incorporate research and statistics courses into the curriculum for aspiring public-sector officials, recognizing that to be successful, public administrators need some understanding of statistical theory be both effective users and translators of data. These courses typically seek to describe general approaches to public sector research and data measurement, conducting basic statistical analyses of raw data, and evaluating statistical research performed by others. For example: Berner, M., 2013, *Statistics for Public Administration: Practical Uses for Better Decision Making*, 2nd Edition. International City Management Association. Available at https://icma.org/publications/statistics-public-administration-practical-uses-better-decision-making-2nd-edition Instruction on tapping the potential of big data and data sharing to transform the delivery of public services is less common.

kind of data analysis techniques that innovators within information and communications technology companies use would result in more efficient solutions to pressing social issues.[57] Applicable peer-to-peer learning and research on data sharing can also be gleaned from the reports and experiences of private-sector companies, who understand the power of big data and enterprise-wide data strategies. Several private and non-profit entities produce notable reports that can inform both the private and public sectors, including Gartner, EY, McKinsey & Company and The Conference Board.

The OECD has also done considerable work on the issue of data governance for enhancing access to and the sharing of data, both across the public sector and with the public.[58] The OECD's November 2019 report "Enhancing Access to and Sharing of Data: Reconciling Risks and Benefits for Data Re-use across Societies" identifies best practices to balance different interests in a way that ensures that the benefits of data access and sharing are reaped, while the associated risks are managed and reduced to a socially acceptable level.[59] The report is based on the findings of the OECD expert workshop held in Copenhagen, Denmark, in October 2017. For public administrators, the report includes hundreds of examples of policy initiatives undertaken across dozens of countries. These offer a range of possible efforts to consider as well as lessons learned. The OECD indicates it is working towards the development of general principles to consider when enhancing access to and sharing data across the economy in a coherent manner, as well as OECD legal instruments for further guidance. Two existing legal instruments on the subject are particularly relevant to public administrators: the OECD's Recommendation of the Council for Enhanced Access and More Effective Use of Public Sector Information; and Recommendation of the Council on Digital Government Strategies.[60]

In the United States, resources.data.gov is an online repository of policies, tools, case studies, and other resources to support data governance, management, exchange and use throughout the federal government.[61] It includes Metadata Schema guidelines to document and list agency data sets and application programming interfaces. The site also includes case studies and examples related specifically to public-sector data sharing, along with other data-related topics.

The European Union has issued a call for European legislation on open data and the reuse of public-sector information, also known as the 'Open Data Directive' (Directive (EU)

[57] Ruhil, A., 2020, *Why Learning Data Analysis Is Essential for Public Administrators*. Available at https://onlinemasters.ohio.edu/blog/why-learning-data-analysis-is-essential-for-public-administrators/
[58] OECD, *Data governance: Enhancing Access to and Sharing of Data.* Available at http://www.oecd.org/sti/ieconomy/enhanced-data-access.htm
[59] OECD, 2019, *Enhancing Access to and Sharing of Data: Reconciling Risks and Benefits for Data Re-use across Societies*. Available at http://www.oecd.org/going-digital/enhancing-access-to-and-sharing-of-data-276aaca8-en.htm
[60] OECD, 2008, Recommendation of the Council for Enhanced Access and More Effective Use of Public Sector Information. Available at https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0362; and OECD, 2014, Recommendation of the Council on Digital Government Strategies. Available at https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0406
[61] United States Government, Resources.data.gov: A Repository of Federal Enterprise Data Resources. Available at https://resources.data.gov/

2019/1024).[62] The new directive will influence public-sector data sharing approaches within and across Member States. The directive provides a common legal framework for a European market for government-held data (public-sector information) with rules to promote transparency and fair competition. The rules encourage European Union Member States to facilitate the reuse of data from the public sector with minimal or no legal, technical or financial constraints. For example, public-sector bodies will not be able to charge more than the marginal cost for the reuse of their data, except in very limited cases, with a particular focus placed on high-value data sets such as statistics or geospatial data. These data sets have a high commercial potential and can speed up the emergence of a wide variety of value-added information products and services.[63] Additional rules will limit the conclusion of agreements that lead to exclusive reuse of public-sector data by private partners, while requiring policies for open access to publicly funded research data to be made accessible via repositories. European Union Member States must adopt the directive by July 2021.

The African Union, in partnership with the United Nations Commission for Africa and others, renewed its push to create a continental data governance framework through the launch of the Africa Data Leadership Initiative (ADLI) in 2020. ADLI is described as a peer network for policymakers, social advocates and private sector stakeholders to collaborate and leverage data for the benefit of equitable growth and social progress across the African continent.[64] One of the initiative's three principle goals is to contribute to a "framework for an African Data Governance Agenda to build a comprehensive data policy for the continent."[65] While no such framework yet exists, scholars have suggested that the inter-governmental organization's 2014 Convention on Cyber Security and Personal Data Protection agreement may be used as a starting point to standardize "cross border data flow policies."[66] While member countries have been slow to fully commit to the agreement, it appears it may be gaining momentum. Five of the eight countries that have adopted the Convention on Cyber Security and Personal Data Protection did so in the last two years.[67]

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[62] European Union, Directive (EU) 2019/1024 of the European Parliament and of the Council of 20 June 2019 on open data and the re-use of public sector information. Available at https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1561563110433&uri=CELEX:32019L1024

[63] European Union, European legislation on open data and the re-use of public sector information. Available at https://ec.europa.eu/digital-single-market/en/european-legislation-reuse-public-sector-information

[64] African Union, 2020, *"African Union Leading on Data Economy in Africa for Africa."* Press release available at https://au.int/ar/node/39363

[65] United Nations Economic Commission for Africa. 2020, *"ECA, Smart Africa & Future State launch Africa Data Leadership Initiative."* Available at https://www.uneca.org/storys/eca-smart-africa-future-state-launch-africa-data-leadership-initiative

[66] Ademmuyiwa, I. and A. Adeniran, 2020, *Assessing Digitalization and Data Governance Issues in Africa.* Centre for International Governance Innovation. CIGI Papers No. 244. P. 7. https://www.cigionline.org/sites/default/files/documents/no244_0.pdf

[67] African Union, 2020, List of Countries Which Have Signed, Ratified/Acceded to the African Union Convention on Cyber Security and Personal Data Protection. https://au.int/sites/default/files/treaties/29560-sl-AFRICAN%20UNION%20CONVENTION%20ON%20CYBER%20SECURITY%20AND%20PERSONAL%20DATA%20PROTECTION.pdf

International development cooperation

The United Nations system strongly supports data use, building capacity among Member States to use data, and encouraging data-sharing partnerships. These advances are important means to achieving the 17 SDGs, 169 targets and 232 specific indicators that all Member States have agreed to try to achieve by 2030. A signature event for international development cooperation in this field is the annual World Data Forum, hosted by the United Nations, which brings together data and statistical experts and users from governments, civil society, the private sector, donor and philanthropic bodies, international and regional agencies, the geospatial community, the media, academia, and professional bodies.[68] Data experts and users gather to spur data innovation, mobilize high-level political and financial support for data, and build a pathway to better data for sustainable development. The World Data Forum is organized by the High-level Group for Partnership, Coordination and Capacity-Building for Statistics for the 2030 Agenda for Sustainable Development, with substantial support from the World Data Forum Programme Committee, under the guidance of the United Nations Statistical Commission and in close consultation with Member States, international partners, and other stakeholders. The Statistics Division of the United Nations Department of Economic and Social Affairs supports the organization of the Forum in its role as Secretariat of the High-level Group, the Programme Committee and the Statistical Commission.

The most recent 2020 Forum brought together, virtually, over 5,000 data experts from more than 100 countries to discuss how the global data community has responded to the data demands from the COVID-19 pandemic, the importance of quality data and statistical systems to better respond to future shocks and disasters, solutions to improve data availability to fulfill the 2030 Agenda and the SDGs and promoting political and financial commitments to improve data in all countries. Data sharing, both across the public sector and with the public, was emphasized under the "Building trust in data and statistics, including by applying data principles and governance to new and existing data sources and implementing open data practices" conference theme.

Additionally, the Cape Town Global Action Plan for Sustainable Development Data, informally launched at the first World Data Forum held in January 2017 in Cape Town, South Africa and adopted by the United Nations Statistical Commission at its 48th session, addresses data sharing and better use of data. The Action Plan is referenced in the resolution on the work of the Statistical Commission adopted by the General Assembly the same year.[69] The current version incorporates inputs received by the statistical community, including national statistical systems, and other stakeholders, following an open consultation held in late 2016.

[68] United Nations, World Data Forum. Available at https://unstats.un.org/unsd/undataforum/
[69] United Nations General Assembly resolution 71/313 of 6 July 2017. Available at https://undocs.org/a/res/71/313.

Key action items related to data sharing, both across the public sector and with the public, are contained throughout the six strategic areas outlined in the plan.[70]

Subsequently, the Dubai Declaration was announced at the 2018 World Data Forum held in Dubai and endorsed by the United Nations Statistical Commission at its 50th Session in March 2019. This declaration calls for the establishment of an innovative funding mechanism open to all stakeholders, mobilizing both domestic and international funds, that will help activate partnerships and funding opportunities to strengthen the capacity of national data and statistical systems.[71] Included in the Dubai Declaration is the tenet stressing the importance of coordination across the statistical system, including better use and integration of public-sector administrative data sources.

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[70] United Nations, Cape Town Global Action Plan for Sustainable Development Data. Available at https://unstats.un.org/sdgs/hlg/Cape-Town-Global-Action-Plan/
[71] United Nations, Dubai Declaration. Available at https://unstats.un.org/sdgs/hlg/dubai-declaration/