

The Global Data Governance Project: 52 case studies

May 05, 2021

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Executive Summary:

Data is the most collected, analyzed, shared, and/or traded goods or services around the world. Despite its ubiquity, data governance is a relatively new governance responsibility for many countries. We know little about how nations govern various types of data at the national and international level and what that means for the achievement of other important policy goals. Data governance, however, is a relatively new governance responsibility for many countries. The OECD defines data governance as principles, policies, standards, laws, regulations, and agreements designed to control, manage, share, protect, and extract value from various types of data.² The World Bank also notes that the data driven economy can only be sustained by a robust legal and regulatory data governance framework.³ However, there is no roadmap for data governance.

To provide greater insights into what governments are doing, the Data Governance Mapping Project at the [Digital Trade and Data Governance Hub](#) aims to illuminate whether and how countries govern three different types of data: personal, public, and proprietary, at the national and international levels. The project was funded by grants from [Tufts University's IDEA 2030 research initiative](#) supported by the Mastercard Impact Fund; the [Institute for Data, Democracy, and Politics](#) at GW; and the [GWU Center for International Business](#).

Methodology: The team developed a [questionnaire](#) that covers 45 different aspects of public, proprietary, and personal data governance for each country, at the national and international levels. We focused on hard law: domestic laws, regulations and executive orders related to data as well as international agreements and treaties governing data. We did not evaluate enforcement of these laws, regulations, agreements or treaties.

We found:

- **Data governance is a work in progress for every one of our case studies.** Almost every case study nation has put in place laws, regulations, and/or executive orders to govern all three types of data.
- **No nation seems close to comprehensive data governance, which we define as a systemic and flexible approach to govern different types of data use and reuse.** Such a system regulates government as well as private sector use of personal and proprietary data and empowers users. Ultimately, it moves “individuals and firms from a

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² OECD, Regulatory Effectiveness in the Era of Digitalization, June 2019, <https://www.oecd.org/gov/regulatory-policy/Regulatory-effectiveness-in-the-era-of-digitalisation.pdf>

³ World Bank, World Development Report: [Data for Better Lives](#), 2021, p. 189, <https://www.worldbank.org/en/publication/wdr2021>

system based on risk avoidance and aversion to one based on confidence in data processes governing various types of data.”⁴

- **Researchers often correlate income with quality of governance but we don't know if that's equally true for data governance.**⁵ In general, the nations doing the most in data governance tend to have high incomes and are more experienced in using data. These nations are more reliant on data innovation to grow their economy. Policymakers in these nations may also see greater public demands to govern data (as example to protect privacy and freedom of expression online). However, so far we have not found income always correlates with comprehensive personal data governance. The US, as an example, is just beginning to discuss how best to govern personal data at the national level and how to achieve a more coherent approach to data use and reuse, data sharing and personal data protection. The EU, the UK, and Australia are moving from proposals to data sharing platforms and regulatory sandboxes.
- **Policymakers are just beginning to think about the spillover effects of data governance on their economy and on the achievement of other policy goals** (for example how trade secrets rules may affect individuals' ability to control reuse of their data or how the governance of personal data may affect national security).
- **Significant convergence on personal data protection laws:** Fifty one (or 98%) of our case study countries had a personal data protection law; only the UAE did not. Moreover, 64 percent of our cases had adopted a comprehensive approach to personal data protection, which we defined as covering private and government use of data, informed consent, an agency to enforce the law and rules governing 3rd party transfer or sale of personal data. However, higher income countries did not have the most comprehensive approaches to personal data protection. Several high income countries such as Taiwan and New Zealand do not mandate informing data subjects when their data is transferred or sold to a third party. We also find that many of the mechanisms used in personal data protection that were popularized by the EU are now being put into law in other parts of the world.
- **Major convergence on public data governance:** Over 80 percent of our case studies had an open data law, meaning that in general data collected, utilized, analyzed, and funded by the case study government was made open for its citizens and others to utilize. However, many nations, including low income developing countries, are still

⁴ Australian Government Productivity Commission, “Data Availability and Use, Productivity Commission Inquiry Report: Overview and Recommendations, No. 82, (2017)

⁵ Herbert H. Werlin, Poor Nations, Rich Nations: A Theory of Governance, *Public Administration Review* Vol. 63, No. 3 (May - Jun., 2003), pp. 329-342, Angus Deaton, How do we improve governance in poor countries? World Bank Blog, <https://www.weforum.org/agenda/2015/10/how-do-we-improve-governance-in-poor-countries/>; and World Bank, World Bank Governance Indicators, <https://info.worldbank.org/governance/wgi/Home/Documents#wgiDataCrossCtry>

figuring out how to govern public data and make it useful to their constituents, whether for research or business purposes. Consequently, 48 percent do not mandate such data be provided in a machine readable format which makes it easier to use and reuse.

- **Some convergence on proprietary data governance:** 76 percent of our cases had enacted a trade secrets law and 80 percent of our cases participated in an international trade agreement with trade secrets provisions. However, we found some evidence that governments were pushing back against firm control of data use and reuse. For instance, 47 percent of nations with a trade secret law did not give firms using data analytics explicit control over data they analyzed using a mechanism protected under trade secrets, while 52.9 percent of nations did give these firms such control.
- **Significant convergence on data governance in trade agreements:** 77 percent of our cases participated in a trade agreement with provisions encouraging electronic authentication and e-signatures; 71.2 percent participated in an agreement with aspirational language to encourage interoperability of privacy regimes; and 78.8 percent with aspirational language on cyber-security.
- **We focused on four types of innovations in data governance to see if governments were increasingly adopting these initiatives; investment reviews,⁶ corporate governance rules; data sharing and collective rights.**

Investment Review: 19 percent of our case studies have enacted new laws that maintain their countries' openness to foreign investment, but require a special review process to ensure that such investment does not expose the nation to national security risks.

Corporate governance: 12 percent of our case studies require publicly held firms to use financial reports to inform their stakeholders of breaches of personal data. Some 19 percent required a review of foreign investment in data-rich firms.

Data sharing: 67 percent of our cases encouraged sharing from business to government, while 52 percent encouraged firms to share business confidential data with each other.

Collective rights: 30 percent of our case study nations had adopted personal data protection rules that protected not just individual rights, but also encouraged individuals to work with others to address collective harms caused by misuse of personal data.

⁶ Damien Van Pyvelde, Stephen Coulthart and M. Shahriar Hossa, Beyond the Buzzword: Big Data and National Security Decision-making, Chatham House, 2017; https://www.chathamhouse.org/sites/default/files/images/ia/INTA93_6_06_VanPyvelde%20et%20al.pdf; Susan Ariel Aaronson, Data is Dangerous, Comparing the Risks That the United States, Canada and Germany See in Data Troves, CIGI Paper No. 241, 2020, <https://www.cigionline.org/publications/data-dangerous-comparing-risks-united-states-canada-and-germany-see-data-troves>

Background

Selection of Case Studies⁷

We chose 52 countries from the 90 nations surveyed by the Tufts Digital Economy Index (now the [Digital Intelligence Index](#)). The group of 90 nations includes many nations that have some level of digital prowess, which we define as the ability to use data both to solve problems and to create new and/or more efficient data driven goods and services. Nations with digital prowess tend to be early innovators not only in the use of data, but also in the governance of data.

To ensure that we created a balanced sample, we grouped countries by region and income. Table 1 breaks down the sample by income and region. Table 2 illuminates the full set of 52 countries. The 40 countries covered in this analysis include only one country from Africa and we expect our statistics to change significantly when we present the full 52.

Table 1
Country Case Studies by Region and Income Using World Bank Metrics⁸

	High income	Upper middle income	Lower middle income	Low income	Total
East Asia & Pacific	4	4	2	0	10
Europe & Central Asia	13	4	1	0	18
Latin America & Caribbean	1	4	1	0	6
Middle East & North Africa	3	2	1	0	6
North America	2	0	0	0	2
South Asia	0	0	3	0	3
Sub-Saharan Africa	0	1	3	2	6
Total	23	15	11	2	

⁷ We received funding from Tufts/Mastercard to research 40 countries and two months later received additional funds from GWU Center for International Business and Economic Research (funding from the US Government) and GWU's Institute for Data, Democracy, and Politics, funded by various US foundations such as Knight and Ford.

⁸ The European Union is a case study "nation," but it is not included in this table because the World Bank does not include it in its regional or country specific income groupings.

**Table 2:
Country List**

Country	Region	Income category
Japan	East Asia & Pacific	High income
Singapore	East Asia & Pacific	High income
South Korea	East Asia & Pacific	High income
Taiwan	East Asia & Pacific	High income
China	East Asia & Pacific	Upper middle income
Indonesia	East Asia & Pacific	Upper middle income
Malaysia	East Asia & Pacific	Upper middle income
Thailand	East Asia & Pacific	Upper middle income
Philippines	East Asia & Pacific	Lower middle income
Vietnam	East Asia & Pacific	Lower middle income
Australia	Europe & Central Asia	High income
Estonia	Europe & Central Asia	High income
Germany	Europe & Central Asia	High income
France	Europe & Central Asia	High income
Finland	Europe & Central Asia	High income
Hungary	Europe & Central Asia	High income
Ireland	Europe & Central Asia	High income
Netherlands	Europe & Central Asia	High income
New Zealand	Europe & Central Asia	High income
Norway	Europe & Central Asia	High income
United Kingdom	Europe & Central Asia	High income
Switzerland	Europe & Central Asia	High income
Sweden	Europe & Central Asia	High income
Azerbaijan	Europe & Central Asia	Upper middle income
Georgia	Europe & Central Asia	Upper middle income
Russia	Europe & Central Asia	Upper middle income
Turkey	Europe & Central Asia	Upper middle income
Ukraine	Europe & Central Asia	Lower middle income
European Union	Europe & Central Asia	
Uruguay	Latin America & Caribbean	High income
Argentina	Latin America & Caribbean	Upper middle income
Brazil	Latin America & Caribbean	Upper middle income
Chile	Latin America & Caribbean	Upper middle income
Mexico	Latin America & Caribbean	Upper middle income

Bolivia	Latin America & Caribbean	Lower middle income
Israel	Middle East & North Africa	High income
Saudi Arabia	Middle East & North Africa	High income
United Arab Emirates	Middle East & North Africa	High income
Iran	Middle East & North Africa	Upper middle income
Jordan	Middle East & North Africa	Upper middle income
Morocco	Middle East & North Africa	Lower middle income
Canada	North America	High income
United States	North America	High income
Bangladesh	South Asia	Lower middle income
India	South Asia	Lower middle income
Pakistan	South Asia	Lower middle income
South Africa	Sub-Saharan Africa	Upper middle income
Côte d'Ivoire	Sub-Saharan Africa	Lower middle income
Kenya	Sub-Saharan Africa	Lower middle income
Nigeria	Sub-Saharan Africa	Lower middle income
Ethiopia	Sub-Saharan Africa	Low income
Uganda	Sub-Saharan Africa	Low income

Development of Questionnaire

During the summer and fall of 2020, Hub staff were asked to review the World Bank's questionnaire for the World Development Report which focused on data as a tool for development and the role of data governance in that process. That questionnaire served as the foundation for the World Bank's Digital Business Indicators.⁹ We used that questionnaire as a baseline for our own approach. However, we adopted a different analytical strategy and took a broader scope in examining data governance. Instead of mailing a questionnaire to government officials, we performed a desk study. We also added questions to cover both the three types of data as well as investment and corporate governance laws, regulations, and executive orders that directly govern various types of data.

We used an iterative process to develop the questionnaire. First, we asked several scholars of data governance to review and critique the questionnaire and we revised the draft based on

⁹ Digital Business Indicators measure the laws, regulations, and bureaucratic processes that affect digital businesses in 21 pilot countries. They cover: connectivity, data privacy and security, logistics, payment, and digital market regulations. The indicators are based on information collected through questionnaires administered to experts in the private sector and public sector authorities, in each country. Once the data were collected, the study team analyzed the information in conjunction with publicly available data on agency websites and the texts of relevant laws and regulations. The data are current as of June 30, 2018, and do not reflect any changes to the laws or administrative procedures after that date.

<https://pubdocs.worldbank.org/en/581091563808671795/Digital-Business-Indicators-Methodology-Notes.pdf>

their comments.¹⁰ Next, as we began to use the questionnaire, we discarded or revised confusing questions. Ultimately, we narrowed the research to [45 key questions](#) that assess:

1. *Where* data governance occurs:
 - domestic law (*we do not cover state or provincial law*)
 - international agreements, treaties, etc.
2. *What* type of data is being governed:
 - Personal data
 - Generic data (all types of data)
 - Public data - info created/collected/processed/ disseminated/ disposed of for/by public sector information bodies (all branches of government produce and commission huge quantities of data and information. Governments increasingly encourage the use, reuse, and free distribution of data to stimulate innovation and better service delivery.
 - Proprietary data; data governed under trade secrets law or regulations. Firms often use trade secrets (such as algorithms to reuse data they have collected and/or analyzed.
3. When the data is governed, e.g. when it is:
 - collected, stored, processed, and/or transferred
4. *Who* are the government entities governing data
5. *How*: An analysis of the approach governments take to data governance. The *how* will be reflected in our analysis of innovative and comprehensive data governance.

Findings

We have divided our findings into 5 groups:

- Personal data
- Public data
- Trade secrets governance of data
- Governance of data in trade agreements
- National data governance innovation

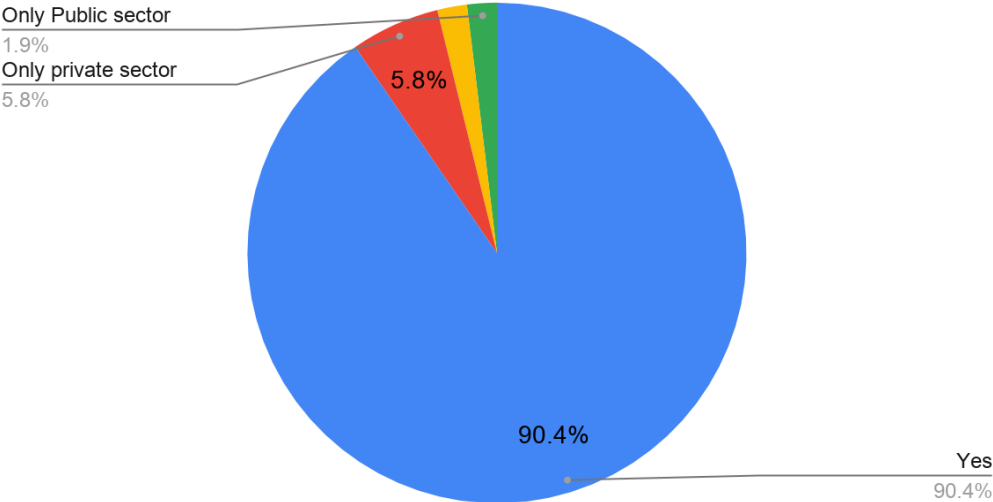
Findings related to the Governance of Personal Data

Nations have developed different approaches to protecting personal data. As a result, our questionnaire included 17 questions which identify key elements of personal data governance.

¹⁰ Reviewers included Dr. Carolina Aguerre, University of St. Andrews, Argentina; Stefaan Verhulst, NYU; and Dr. Kristina Irion, University of Amsterdam, the Netherlands.

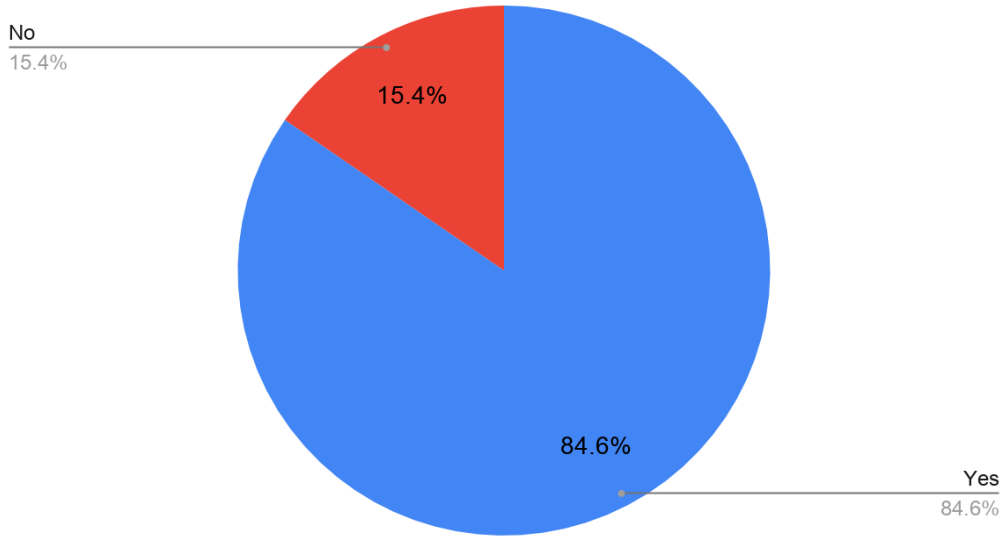
First we sought to examine if the country had a basic personal data protection law governing public use of personal data; and a law governing private sector use of personal data. Ninety percent of our case study nations had a law (laws) governing personal data used by both public and private entities.

1. Does the country have a law or regulation governing how both the private and public sector can use personal data?



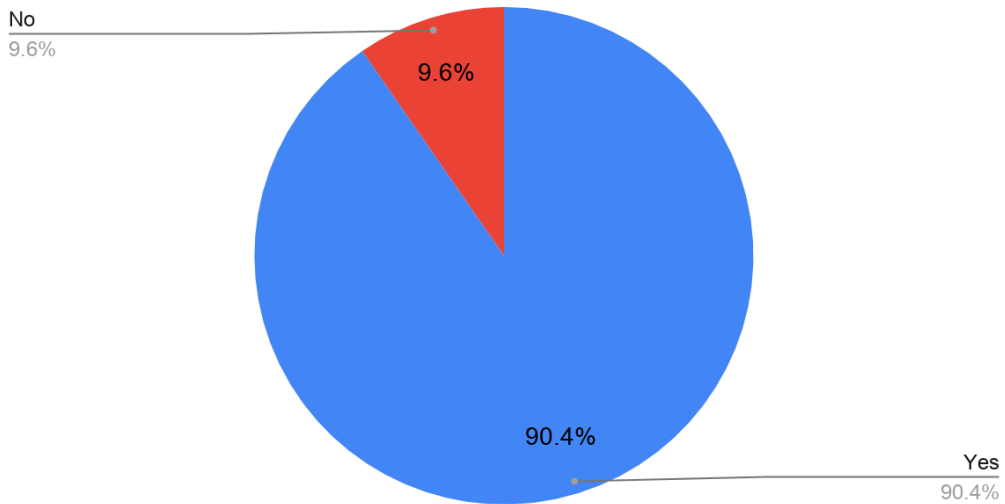
Eighty-five percent of our cases had a law requiring the creation of an agency tasked with enforcing personal data protection.

15. Is an agency tasked with enforcing personal data protection regulations?



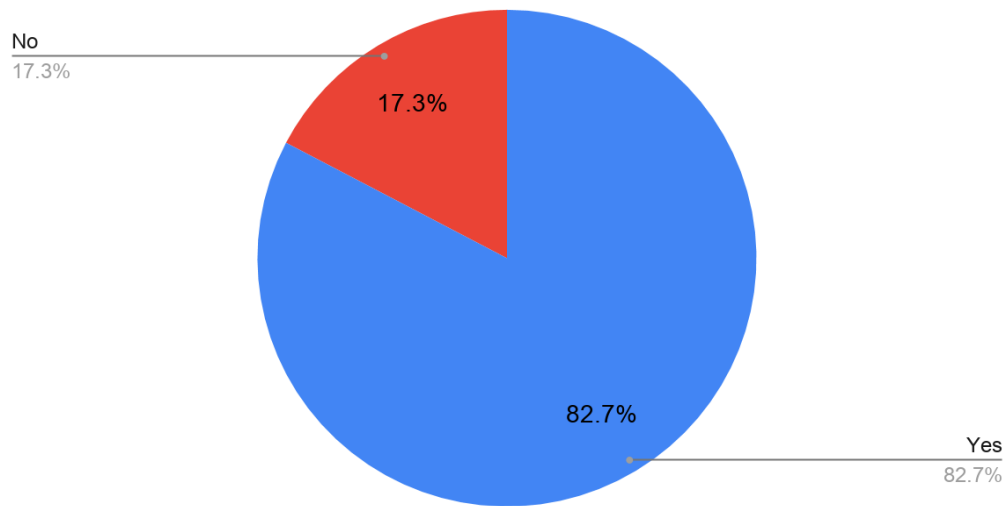
Ninety percent of our cases had a law requiring informed consent--that data subjects must be informed as to how their personal data was being used.

5. Are data controllers required to inform data subjects on how their personal data will be used?



Finally, 83 percent had a law or regulations requiring data controllers to inform data subjects when their data is transferred or sold to third parties.

7. Are data controllers required to inform data subjects when their data is transferred or sold to third parties?



Next we provide a more country specific overview of these key elements of personal data protection in Table 3. A ✓ means the law has these attributes, a ∅ means it does not.

Table 3: Overview of Comprehensive Personal Data Governance

Country	Region	Income category	Personal data protection private and public	Agency for enforcement	Informed consent	Must inform subjects when their data is transferred or sale to third party
Japan	East Asia & Pacific	High income	✓	✓	✓	✓
Singapore	East Asia & Pacific	High income	✓	✓	✓	✓
South Korea	East Asia & Pacific	High income	✓	✓	✓	✓
Taiwan	East Asia & Pacific	High income	✓	✓	✓	∅
China	East Asia & Pacific	Upper middle income	Private only	∅	✓	✓
Indonesia	East Asia & Pacific	Upper middle income	✓	✓	✓	✓
Malaysia	East Asia & Pacific	Upper middle income	Private only	✓	✓	✓
Thailand	East Asia & Pacific	Upper middle income	✓	✓	✓	∅
Philippines	East Asia & Pacific	Lower middle income	✓	✓	✓	✓
Vietnam	East Asia & Pacific	Lower middle income	✓	✓	✓	✓
European Union	Europe & Central Asia		✓	✓	✓	✓
Australia	Europe & Central Asia	High income	✓	✓	✓	✓
Estonia	Europe & Central Asia	High income	✓	✓	✓	✓
Germany	Europe & Central Asia	High income	✓	✓	✓	✓
France	Europe & Central Asia	High income	✓	✓	✓	✓

Finland	Europe & Central Asia	High income	✓	✓	✓	✓
Hungary	Europe & Central Asia	High income	✓	✓	✓	✓
Ireland	Europe & Central Asia	High income	✓	✓	✓	∅
Netherlands	Europe & Central Asia	High income	✓	✓	✓	✓
New Zealand	Europe & Central Asia	High income	✓	✓	✓	∅
Norway	Europe & Central Asia	High income	✓	✓	✓	✓
United Kingdom	Europe & Central Asia	High income	✓	✓	✓	✓
Switzerland	Europe & Central Asia	High income	✓	✓	✓	✓
Sweden	Europe & Central Asia	High income	✓	✓	✓	✓
Azerbaijan	Europe & Central Asia	Upper middle income	✓	✓	✓	✓
Georgia	Europe & Central Asia	Upper middle income	✓	∅	✓	✓
Russia	Europe & Central Asia	Upper middle income	✓	✓	✓	✓
Turkey	Europe & Central Asia	Upper middle income	✓	✓	✓	✓
Ukraine	Europe & Central Asia	Lower middle income	✓	✓	✓	✓
Uruguay	Latin America & Caribbean	High income	✓	✓	✓	✓
Argentina	Latin America & Caribbean	Upper middle income	✓	✓	✓	✓
Brazil	Latin America & Caribbean	Upper middle income	✓	✓	✓	✓
Chile	Latin America & Caribbean	Upper middle income	✓	∅	✓	∅
Mexico	Latin America & Caribbean	Upper middle income	✓	✓	✓	∅
Bolivia	Latin America & Caribbean	Lower middle income	✓	∅	✓	✓
Israel	Middle East & North Africa	High income	✓	✓	✓	✓
Saudi Arabia	Middle East & North Africa	High income	✓	∅	∅	✓
United Arab Emirates	Middle East & North Africa	High income	∅	✓	∅	✓
Iran	Middle East & North Africa	Upper middle income	✓	∅	✓	✓
Jordan	Middle East & North Africa	Upper middle income	✓	∅	∅	∅
Morocco	Middle East & North Africa	Lower middle income	✓	✓	✓	✓
Canada	North America	High income	✓	✓	✓	∅
United States	North America	High income	✓	✓	✓	✓
Bangladesh	South Asia	Lower middle income	✓	✓	∅	✓
India	South Asia	Lower middle income	✓	∅	✓	✓
Pakistan	South Asia	Lower middle income	∅	✓	✓	✓
Ethiopia	Sub-Saharan Africa	Low income	Public only	✓	∅	✓
Uganda	Sub-Saharan Africa	Low income	✓	✓	✓	✓
South Africa	Sub-Saharan Africa	Upper middle income	✓	✓	✓	∅
Côte d'Ivoire	Sub-Saharan Africa	Lower middle income	✓	✓	✓	✓
Kenya	Sub-Saharan Africa	Lower middle income	✓	✓	✓	✓
Nigeria	Sub-Saharan Africa	Lower middle income	✓	✓	✓	✓

To our surprise, most countries at all income levels took a comprehensive approach. Moreover, income did not directly correlate with the comprehensiveness of personal data protection. Some

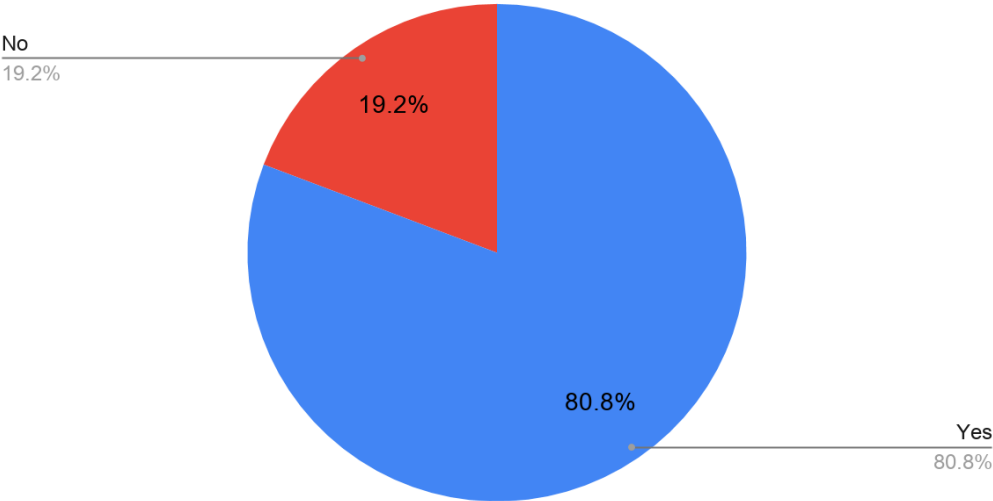
high income countries such as the UAE have no law protecting personal data; Several high income countries such as Taiwan and New Zealand do not mandate informing data subjects when their data is transferred or sold to a third party.

Rules and Regulations Governing Public Data

In this next section, we provide an overview of whether the government has made public data open for review, use, and reuse.

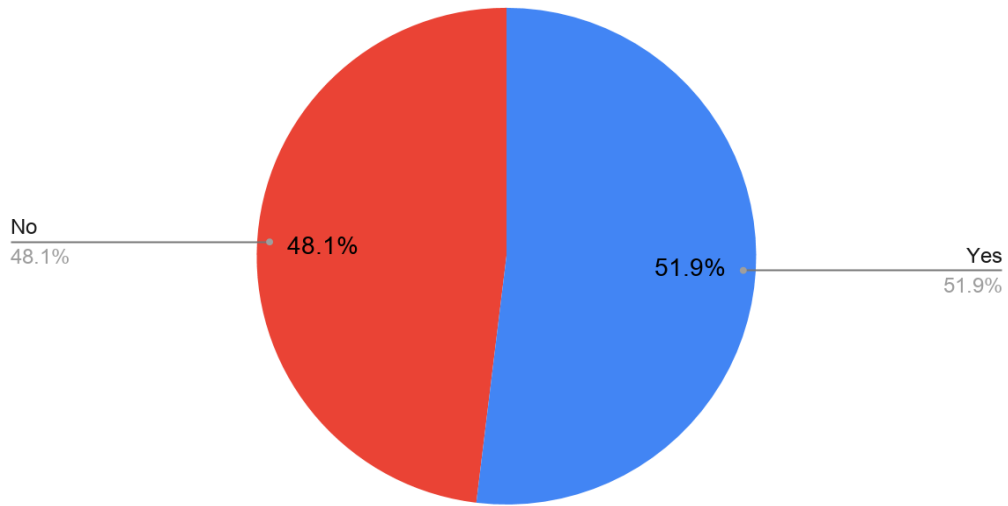
We first examined if our case studies have enacted a law or regulation requiring that it do so with certain exceptions such as for national security data. Eighty-one percent of our case studies had such a law.

31. Does the government have a law that mandates or requires the government to make data open for public use?



Fifty-two percent of our case studies had a law requiring that various types of data should be made available in a machine readable format. Such a law makes it easier for non-governmental entities to reuse public data and/or mix it with other data sets.

32. Does the country have a law requiring public data to be provided in a machine readable format where possible?



Seventy-one percent of our cases required that publicly funded datasets should be made available and accessible to the public at large.

33. Does the government require publicly funded datasets be made available to and accessible by their citizens?

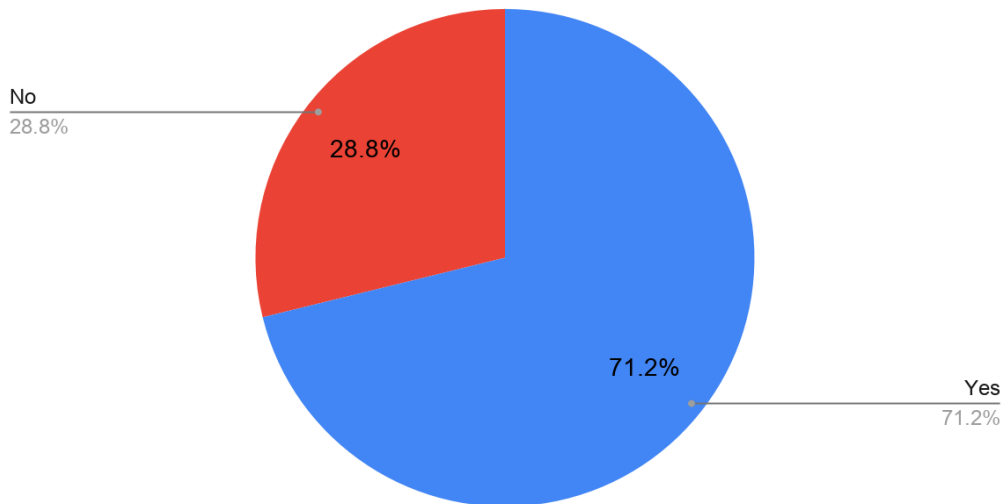


Table 5 summarizes our case studies' governance of public data. It reveals that many nations are still figuring out how to govern public data and make it useful to their constituents, whether for research or business purposes. A ✓ means the government has such a law, a ∅ means they

do not. As you can see, many nations, including high income nations do not have public data laws and or require such openness.

Table 5: Governance of Public Data

Country	Region	Income category	open data act	Machine Readable	Open publicly funded datasets
Japan	East Asia & Pacific	High income	✓	∅	✓
Singapore	East Asia & Pacific	High income	∅	∅	∅
South Korea	East Asia & Pacific	High income	✓	✓	✓
Taiwan	East Asia & Pacific	High income	✓	∅	✓
China	East Asia & Pacific	Upper middle income	✓	✓	∅
Indonesia	East Asia & Pacific	Upper middle income	✓	∅	✓
Malaysia	East Asia & Pacific	Upper middle income	✓	✓	∅
Thailand	East Asia & Pacific	Upper middle income	✓	✓	✓
Philippines	East Asia & Pacific	Lower middle income	✓	✓	✓
Vietnam	East Asia & Pacific	Lower middle income	✓	✓	✓
European Union	Europe & Central Asia		∅	∅	✓
Australia	Europe & Central Asia	High income	✓	✓	✓
Estonia	Europe & Central Asia	High income	✓	✓	✓
Germany	Europe & Central Asia	High income	✓	✓	✓
France	Europe & Central Asia	High income	✓	✓	✓
Finland	Europe & Central Asia	High income	✓	✓	✓
Hungary	Europe & Central Asia	High income	✓	✓	✓
Ireland	Europe & Central Asia	High income	∅	∅	✓
Netherlands	Europe & Central Asia	High income	✓	∅	✓

New Zealand	Europe & Central Asia	High income	✓	✓	✓
Norway	Europe & Central Asia	High income	✓	✓	∅
United Kingdom	Europe & Central Asia	High income	∅	∅	✓
Switzerland	Europe & Central Asia	High income	✓	∅	✓
Sweden	Europe & Central Asia	High income	✓	✓	✓
Azerbaijan	Europe & Central Asia	Upper middle income	✓	✓	✓
Georgia	Europe & Central Asia	Upper middle income	∅	∅	∅
Russia	Europe & Central Asia	Upper middle income	✓	∅	∅
Turkey	Europe & Central Asia	Upper middle income	∅	∅	∅
Ukraine	Europe & Central Asia	Lower middle income	✓	∅	✓
Uruguay	Latin America & Caribbean	High income	✓	✓	✓
Argentina	Latin America & Caribbean	Upper middle income	✓	✓	✓
Brazil	Latin America & Caribbean	Upper middle income	✓	✓	✓
Chile	Latin America & Caribbean	Upper middle income	✓	∅	✓
Mexico	Latin America & Caribbean	Upper middle income	✓	∅	∅
Bolivia	Latin America & Caribbean	Lower middle income	✓	∅	∅
Israel	Middle East & North Africa	High income	✓	∅	✓
Saudi Arabia	Middle East & North Africa	High income	✓	∅	✓
United Arab Emirates	Middle East & North Africa	High income	∅	∅	∅
Iran	Middle East & North Africa	Upper middle income	✓	∅	∅
Jordan	Middle East & North Africa	Upper middle income	✓	✓	∅
Morocco	Middle East & North Africa	Lower middle income	✓	∅	✓
Canada	North America	High income	✓	✓	✓
United States	North America	High income	✓	✓	✓
Bangladesh	South Asia	Lower middle income	✓	✓	✓
India	South Asia	Lower middle income	✓	✓	✓
Pakistan	South Asia	Lower middle income	✓	✓	✓
Ethiopia	Sub-Saharan Africa	Low income	✓	∅	✓
Uganda	Sub-Saharan Africa	Low income	∅	∅	∅
South Africa	Sub-Saharan Africa	Upper middle income	✓	✓	✓
Côte d'Ivoire	Sub-Saharan Africa	Lower middle income	✓	✓	✓
Kenya	Sub-Saharan Africa	Lower middle income	∅	∅	∅
Nigeria	Sub-Saharan Africa	Lower middle income	∅	∅	∅

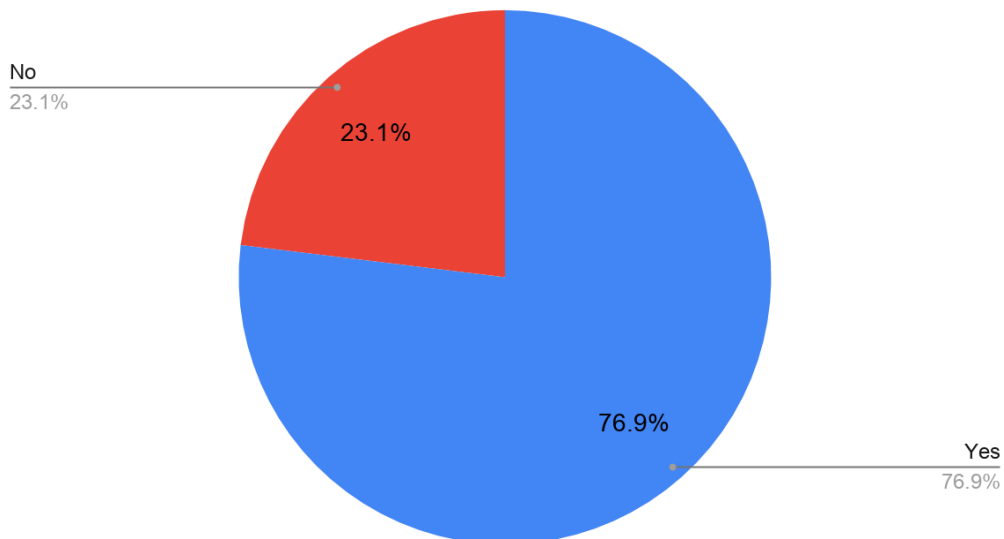
Rules Governing Trade Secrets

Firms can use trade secret laws to protect algorithms, techniques, and other mechanisms. These firms rely on trade secrets rather than other forms of intellectual property protection in several conditions: when a firm is working with a technology that can't be easily reverse engineered or independently developed, when the technology is characterized by rapid

development, and when technologies cannot easily be described. Hence, data driven technologies such as AI technologies are particularly well suited to protection by trade secrets. In addition, firms that use trade secrets to protect proprietary data can also control the use and reuse of personal data sets that they have analyzed using these techniques.¹¹ Finally, many governments have enhanced their trade secrets protection in the wake of rising trade secret theft.¹² For these reasons, we sought to see how such rules affected data governance and control and ownership of data.

We first asked if the country had a trade secrets law and found 76.9 percent had enacted such a law.

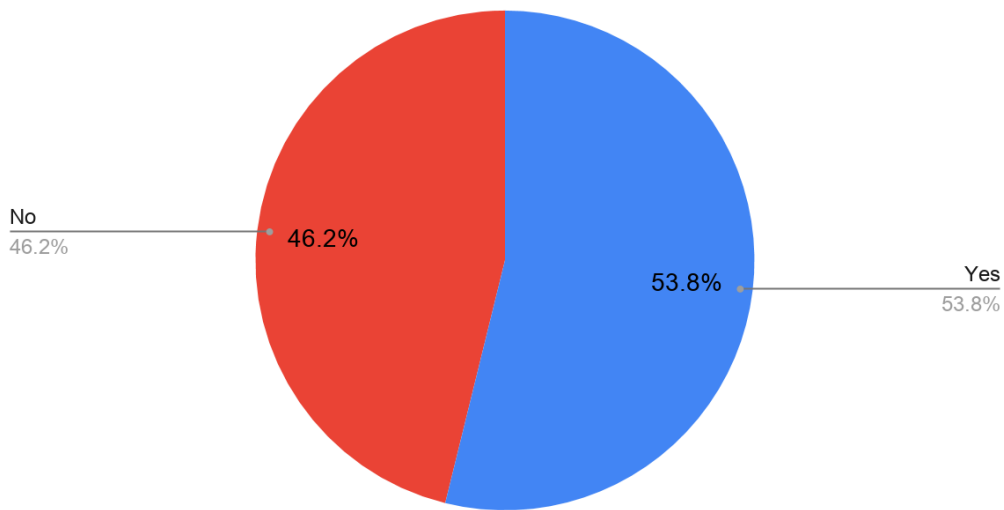
28. Has the government enacted a law or regulations protecting trade secrets?



¹¹ Stacey Collett, How to protect algorithms as intellectual property CSO, July 13, 2020, <https://www.csoonline.com/article/3565195/how-to-protect-algorithms-as-intellectual-property.html>; and Jessica M. Meyers, Artificial Intelligence and Trade Secrets, ABA Webinar Feature, January/February 2019, https://www.americanbar.org/groups/intellectual_property_law/publications/landslide/2018-19/january-february/artificial-intelligence-trade-secrets-webinar/

¹² Curiak, Dan and Ptashkina, Maria, Quantifying Trade Secret Theft: Policy Implications (April 9, 2021). CIGI Paper 253. Waterloo: Centre for International Governance Innovation., Available at SSRN: <https://ssrn.com/abstract=3706511> or <http://dx.doi.org/10.2139/ssrn.3706511>

29. Does the law allow firms to control the reuse of data analyzed by data analytics protected under trade secrets law?



We next sought to understand if under trade secrets law, firms could claim control over data that was analyzed by proprietary datasets and/or algorithms. While some 46.2 percent did not grant such control, 53.8 percent of our cases did.

We were surprised to see some countries did not have a trade secrets law yet agreed to language governing trade secrets in trade agreements. We hypothesize that these countries may be signaling their respect for less formal IPR protections without officially including these practices in domestic law.

34. Has the government agreed to provisions regulating trade secrets in its trade agreements?

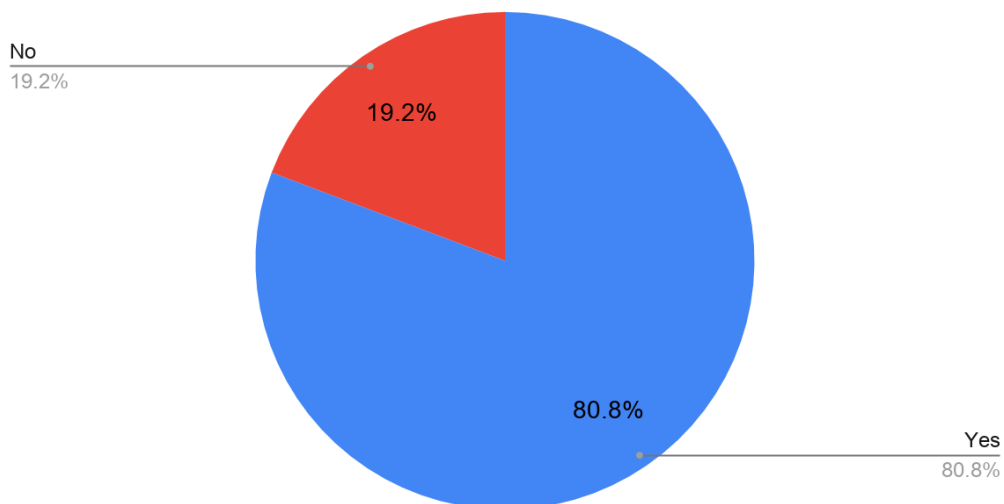


Table 6: Comprehensive Governance of Trade Secrets

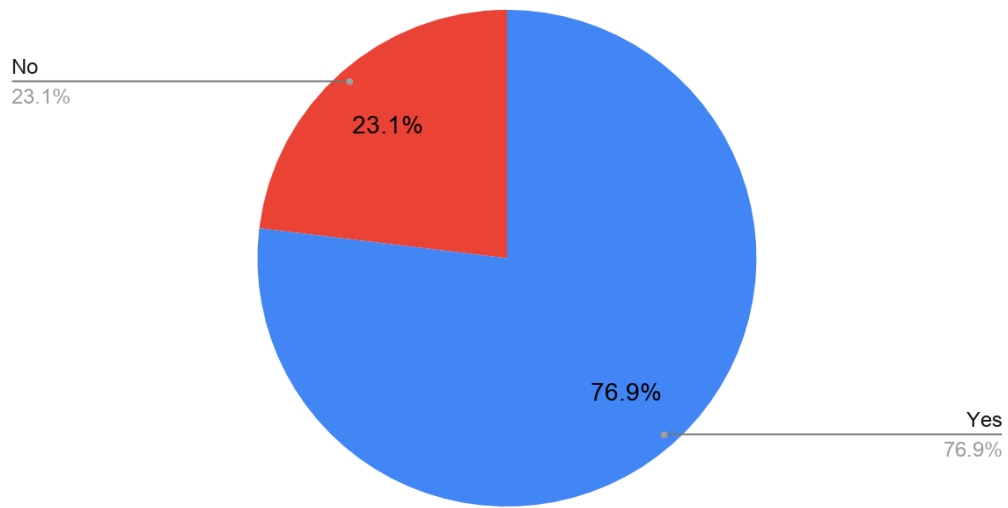
Country	Region	Income category	Trade secrets law	Does it grant firms control over data use and reuse	Has the country agreed to trade secret rules in international agreements
Japan	East Asia & Pacific	High income	✓	✓	✓
Singapore	East Asia & Pacific	High income	∅	∅	✓
South Korea	East Asia & Pacific	High income	✓	✓	✓
Taiwan	East Asia & Pacific	High income	✓	✓	✓
China	East Asia & Pacific	Upper middle income	✓	✓	✓
Indonesia	East Asia & Pacific	Upper middle income	✓	✓	✓
Malaysia	East Asia & Pacific	Upper middle income	✓	∅	✓
Thailand	East Asia & Pacific	Upper middle income	✓	✓	✓
Philippines	East Asia & Pacific	Lower middle income	✓	✓	✓
Vietnam	East Asia & Pacific	Lower middle income	✓	✓	✓
European Union	Europe & Central Asia		✓	✓	✓
Australia	Europe & Central Asia	High income	✓	✓	✓
Estonia	Europe & Central Asia	High income	∅	∅	✓
Germany	Europe & Central Asia	High income	✓	✓	✓
France	Europe & Central Asia	High income	✓	✓	✓
Finland	Europe & Central Asia	High income	✓	✓	✓
Hungary	Europe & Central Asia	High income	✓	✓	✓
Ireland	Europe & Central Asia	High income	✓	✓	✓
Netherlands	Europe & Central Asia	High income	✓	✓	✓
New Zealand	Europe & Central Asia	High income	∅	∅	✓
Norway	Europe & Central Asia	High income	✓	✓	✓
United Kingdom	Europe & Central Asia	High income	✓	✓	✓
Switzerland	Europe & Central Asia	High income	✓	∅	✓
Sweden	Europe & Central Asia	High income	✓	✓	✓
Azerbaijan	Europe & Central Asia	Upper middle income	✓	∅	∅
Georgia	Europe & Central Asia	Upper middle income	∅	∅	✓
Russia	Europe & Central Asia	Upper middle income	✓	∅	✓
Turkey	Europe & Central Asia	Upper middle income	✓	✓	✓
Ukraine	Europe & Central Asia	Lower middle income	✓	✓	✓
Uruguay	Latin America & Caribbean	High income	✓	∅	∅
Argentina	Latin America & Caribbean	Upper middle income	✓	∅	∅
Brazil	Latin America & Caribbean	Upper middle income	✓	∅	✓

Chile	Latin America & Caribbean	Upper middle income	✓	∅	∅
Mexico	Latin America & Caribbean	Upper middle income	✓	✓	∅
Bolivia	Latin America & Caribbean	Lower middle income	∅	∅	∅
Israel	Middle East & North Africa	High income	✓	∅	✓
Saudi Arabia	Middle East & North Africa	High income	✓	∅	✓
United Arab Emirates	Middle East & North Africa	High income	✓	✓	✓
Iran	Middle East & North Africa	Upper middle income	✓	✓	∅
Jordan	Middle East & North Africa	Upper middle income	✓	∅	✓
Morocco	Middle East & North Africa	Lower middle income	∅	∅	✓
Canada	North America	High income	∅	∅	✓
United States	North America	High income	✓	✓	✓
Bangladesh	South Asia	Lower middle income	✓	∅	✓
India	South Asia	Lower middle income	∅	∅	✓
Pakistan	South Asia	Lower middle income	∅	∅	✓
Ethiopia	Sub-Saharan Africa	Low income	∅	∅	✓
Uganda	Sub-Saharan Africa	Low income	✓	✓	✓
South Africa	Sub-Saharan Africa	Upper middle income	✓	✓	∅
Côte d'Ivoire	Sub-Saharan Africa	Lower middle income	✓	✓	✓
Kenya	Sub-Saharan Africa	Lower middle income	∅	∅	∅
Nigeria	Sub-Saharan Africa	Lower middle income	∅	∅	∅

Governance of Data in Trade Agreements

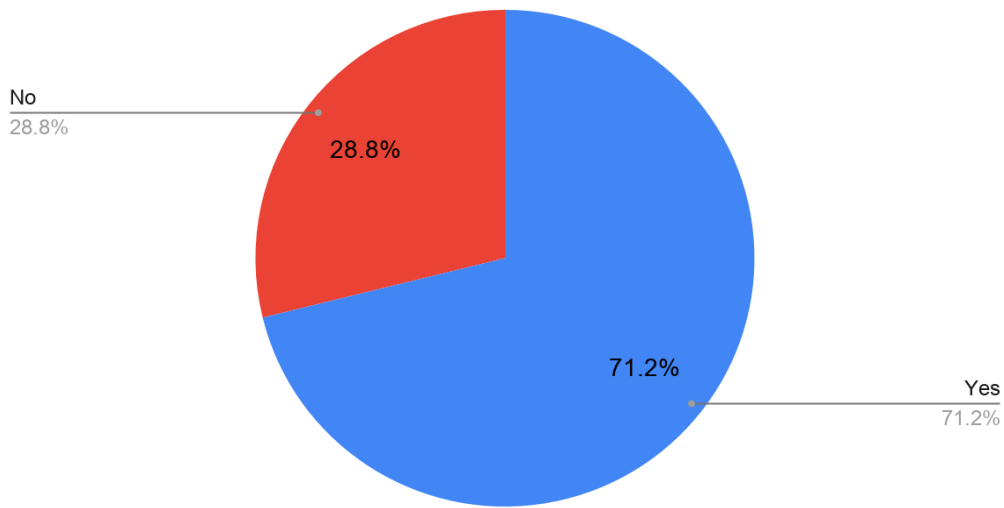
Many but not all of our case studies participated in digital trade or e-commerce agreements. We focused here on 3 aspects. First, 76.9 percent of our case study nations participated in trade agreements with language facilitating the use of electronic authorization and e-signatures. Such provisions can build trust and facilitate trade relations.

36. Has the government agreed to a trade agreement with provisions on electronic authorization and e-signatures?



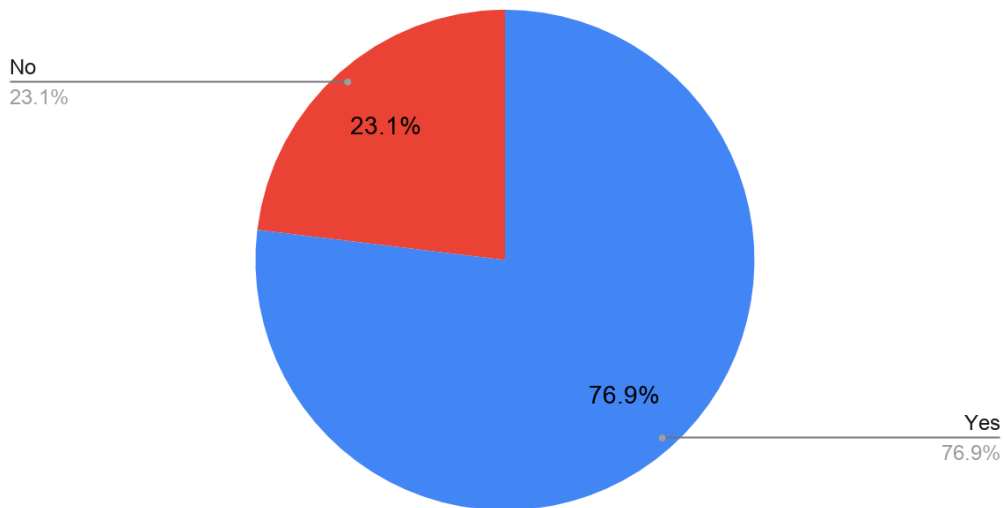
Most of these trade agreements say “enforce your own laws” on privacy, spam, and consumer protection. But some trade agreements use aspirational language to promote cooperation and interoperability for personal data protection regimes. 71.2 percent of our case study nations participated in a trade agreement with such language.

39. Has the government agreed to trade agreements with language designed to promote the interoperability of personal data regimes?



Finally, we sought to see if the government agreed to a trade agreement with aspirational language promoting cyber-security and found 76.9 percent participated in an agreement with such language.

41. Has the government agreed to a trade agreement with aspirational language promoting cyber-security?



The table below reveals that countries of all income levels participated in a trade agreement with a wide range of provisions on e-signatures, cooperation on interoperability for data protection regimes, and on cybersecurity. While 87 percent of high income countries agreed to each of these provisions, only 43 percent of upper middle income to low income countries has

these provisions. Lower income countries (countries with a relatively small data-driven economy and data exports were less likely to participate in such agreements.)

Table 6: Case Study Participation in Trade Agreements with Comprehensive Language on Data Governance

Country	Region	Income category	e-signature/ authentication	Personal data protection cooperation	cybersecurity cooperation
Japan	East Asia & Pacific	High income	✓	✓	✓
Singapore	East Asia & Pacific	High income	✓	✓	✓
South Korea	East Asia & Pacific	High income	✓	✓	✓
Taiwan	East Asia & Pacific	High income	✓	✓	✓
China	East Asia & Pacific	Upper middle income	✓	✓	✓
Indonesia	East Asia & Pacific	Upper middle income	✓	✓	✓
Malaysia	East Asia & Pacific	Upper middle income	✓	✓	✓
Thailand	East Asia & Pacific	Upper middle income	✓	✓	✓
Philippines	East Asia & Pacific	Lower middle income	✓	✓	✓
Vietnam	East Asia & Pacific	Lower middle income	✓	✓	✓
European Union	Europe & Central Asia		✓	✓	✓
Australia	Europe & Central Asia	High income	✓	✓	✓
Estonia	Europe & Central Asia	High income	✓	✓	✓
Germany	Europe & Central Asia	High income	✓	✓	✓
France	Europe & Central Asia	High income	✓	✓	✓
Finland	Europe & Central Asia	High income	✓	✓	✓
Hungary	Europe & Central Asia	High income	✓	✓	✓
Ireland	Europe & Central Asia	High income	✓	✓	✓
Netherlands	Europe & Central Asia	High income	✓	✓	✓
New Zealand	Europe & Central Asia	High income	✓	✓	✓
Norway	Europe & Central Asia	High income	✓	∅	✓
United Kingdom	Europe & Central Asia	High income	✓	✓	✓
Switzerland	Europe & Central Asia	High income	✓	✓	✓
Sweden	Europe & Central Asia	High income	✓	✓	✓
Azerbaijan	Europe & Central Asia	Upper middle income	∅	∅	∅
Georgia	Europe & Central Asia	Upper middle income	✓	✓	✓
Russia	Europe & Central Asia	Upper middle income	✓	∅	✓
Turkey	Europe & Central Asia	Upper middle income	✓	✓	∅

Ukraine	Europe & Central Asia	Lower middle income	✓	✓	✓
Uruguay	Latin America & Caribbean	High income	✓	∅	✓
Argentina	Latin America & Caribbean	Upper middle income	✓	✓	✓
Brazil	Latin America & Caribbean	Upper middle income	∅	∅	∅
Chile	Latin America & Caribbean	Upper middle income	✓	✓	✓
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India	South Asia	Lower middle income	∅	∅	✓
Pakistan	South Asia	Lower middle income	✓	✓	∅
Ethiopia	Sub-Saharan Africa	Low income	∅	✓	✓
Uganda	Sub-Saharan Africa	Low income	∅	✓	✓
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Côte d'Ivoire	Sub-Saharan Africa	Lower middle income	∅	∅	∅
Kenya	Sub-Saharan Africa	Lower middle income	∅	∅	∅
Nigeria	Sub-Saharan Africa	Lower middle income	∅	∅	∅

Innovation in Data Governance

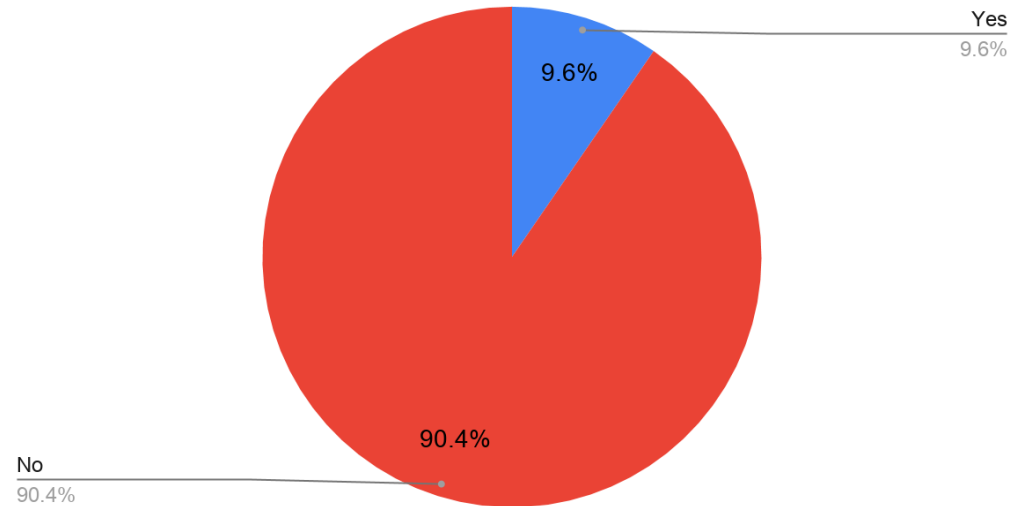
To better understand how data governance innovation is adopted by various countries, we focused on 4 types of innovative approaches to the governance of data. We looked at corporate governance rules; investment reviews; data sharing strategies; and a broader vision of personal data protection which covers collective as well as individual rights.

Corporate governance

Several nations use corporate governance rules to directly regulate how their firms govern, protect, and utilize data. Nearly ten percent of our case studies require publicly held firms to use

financial reports to inform their stakeholders of breaches of personal data. Such corporate reporting could act as a further incentive to firms to protect personal data.

26. Are firms publicly held firms required to use financial reports to inform their stakeholders of breaches of personal data?

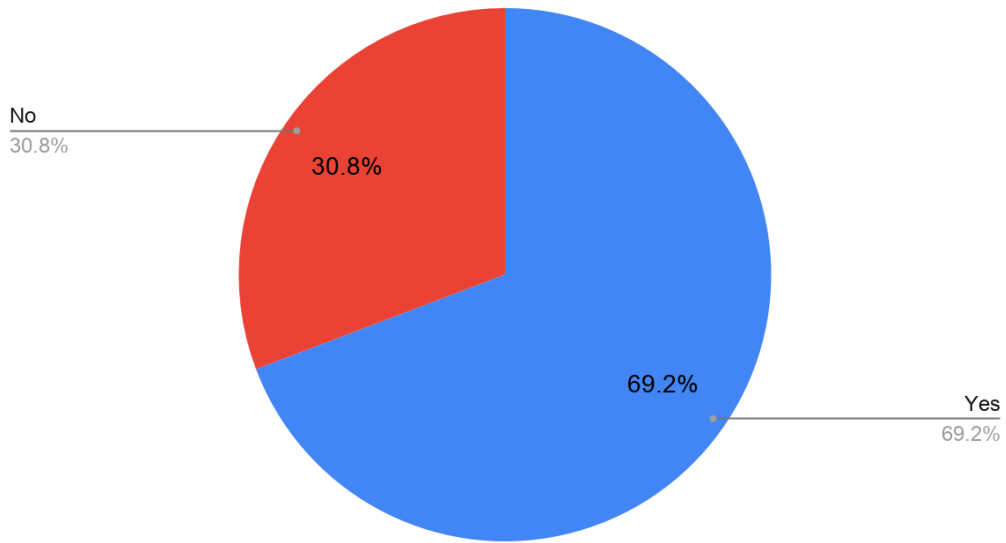


Data sharing strategies

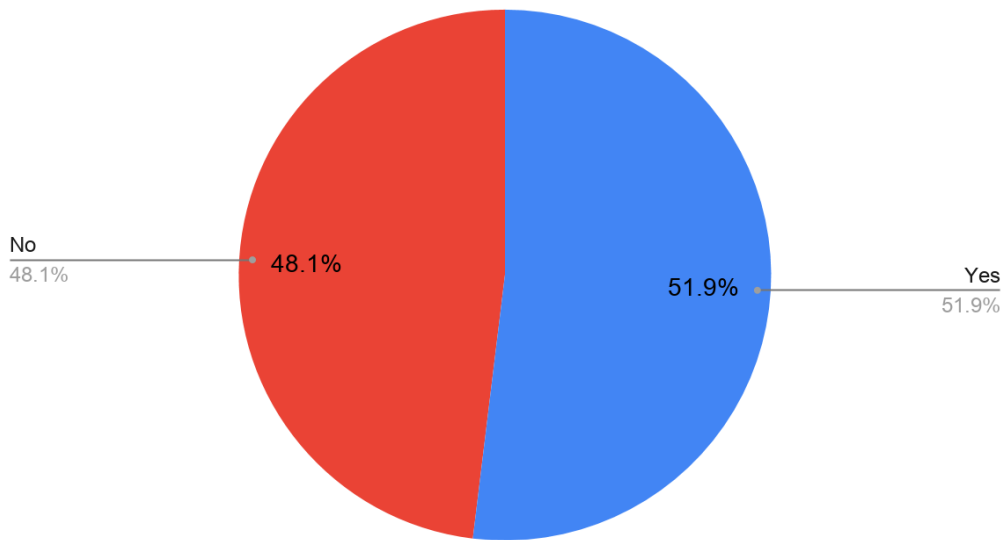
Governments increasingly understand that they can use policies to encourage data sharing among different entities. Governments that share data with the public and civil society sectors may unlock or expose new information. Meanwhile, firms that share data with governments and other firms and researchers may discover new efficiencies, develop new or improve existing products, create new or better services, solve problems, or find new collaborators. However, without trust mechanisms, entities are often reluctant to share data. Sixty-nine percent of our cases had established rules or policies to encourage businesses to share their data with government bodies. Fifty-two percent had established policies or rules to encourage business to share data with other firms. But the road between business and government seems to flow from government to business; few had rules encouraging firms to share their business confidential data with government entities in the public interest, as the EU plans.¹³

¹³ <https://digital-strategy.ec.europa.eu/en/policies/strategy-data>

30a. Business to government



30b. Business to business

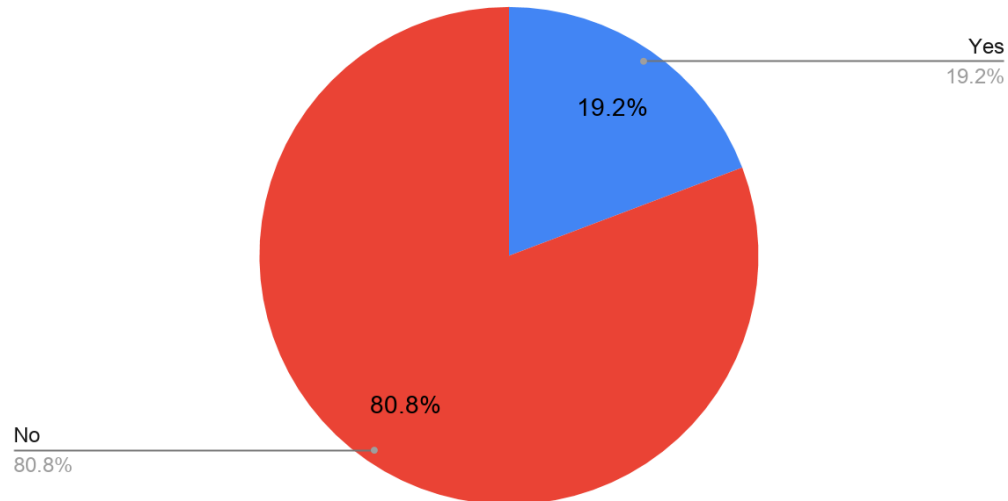


Investment reviews of Data Rich Firms

In recent years, policymakers in several states have come to recognize that personal data sets can be stolen from both public and private sources and cross-referenced to reveal individual as well as national security secrets. As a result, some countries have enacted laws restricting foreign investment in data-rich firms or they mandated that such investments must undergo a

special review process. While the bulk of countries had not done so, 19.2 percent had enacted such a law.

20. Have foreign investors been required to undergo a special review process if the foreign investor seeks to invest in firms that collect and process sensitive



Advance Collective as Well as Individual Rights in Personal Data Protection Laws

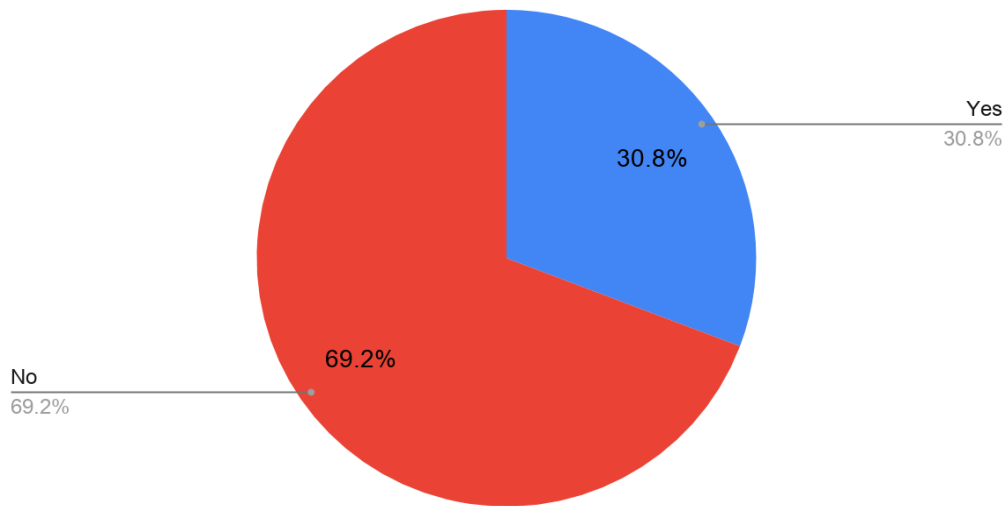
Big data analytics often requires a huge supply of personal data (both individual and collective data), which is collected, anonymized, grouped, and then analyzed to make decisions, correlations, and predictions. Individuals categorized by such techniques often don't know that they have been "sorted."

However, recent history is rife with examples of bias and individual as well as collective data-driven harms (harms to groups of individuals). For example, a 2019 study, published by Science found that some U.S. hospitals and insurers managed care by utilizing an algorithm¹⁴ that discriminated against people of color with complex medical needs. Thirty-one percent of our case study nations, including the EU, had updated their data protection laws to allow individuals to band together to collectively challenge misuse of their data.¹⁵

¹⁴ <https://science.sciencemag.org/content/366/6464/447/tab-pdf>

¹⁵ <https://data.consilium.europa.eu/doc/document/ST-9573-2020-REV-1/en/pdf>

22. Does the personal data protection law makes reference to any kind of collective rights inherent in personal data privacy/security/protection?



Next steps:

We are beginning to draft our analysis of innovative data governance and comprehensive data governance due June 1.

We are trying to get a better understanding of convergence and divergence in approaches to data governance.

Meeting on May 11 to discuss findings.

As we analyzed the data, we are mindful that we are missing the role of soft law: government strategies (AI plans; data sharing platforms and data trusts), smart manufacturing plans, standards, and the norm setting clubs (the D-10 and the International Grand Committee, G-7 etc). We would welcome a discussion of whether and how we might include these aspects in a future project proposal.