

Water and Sanitation Services in Latin America and the Caribbean

An Overview of Databases and
Information Gaps

Authors:

Darcia Datshkovsky
Jesse Madden Libra
Analía Gómez Vidal

Water and Sanitation Division

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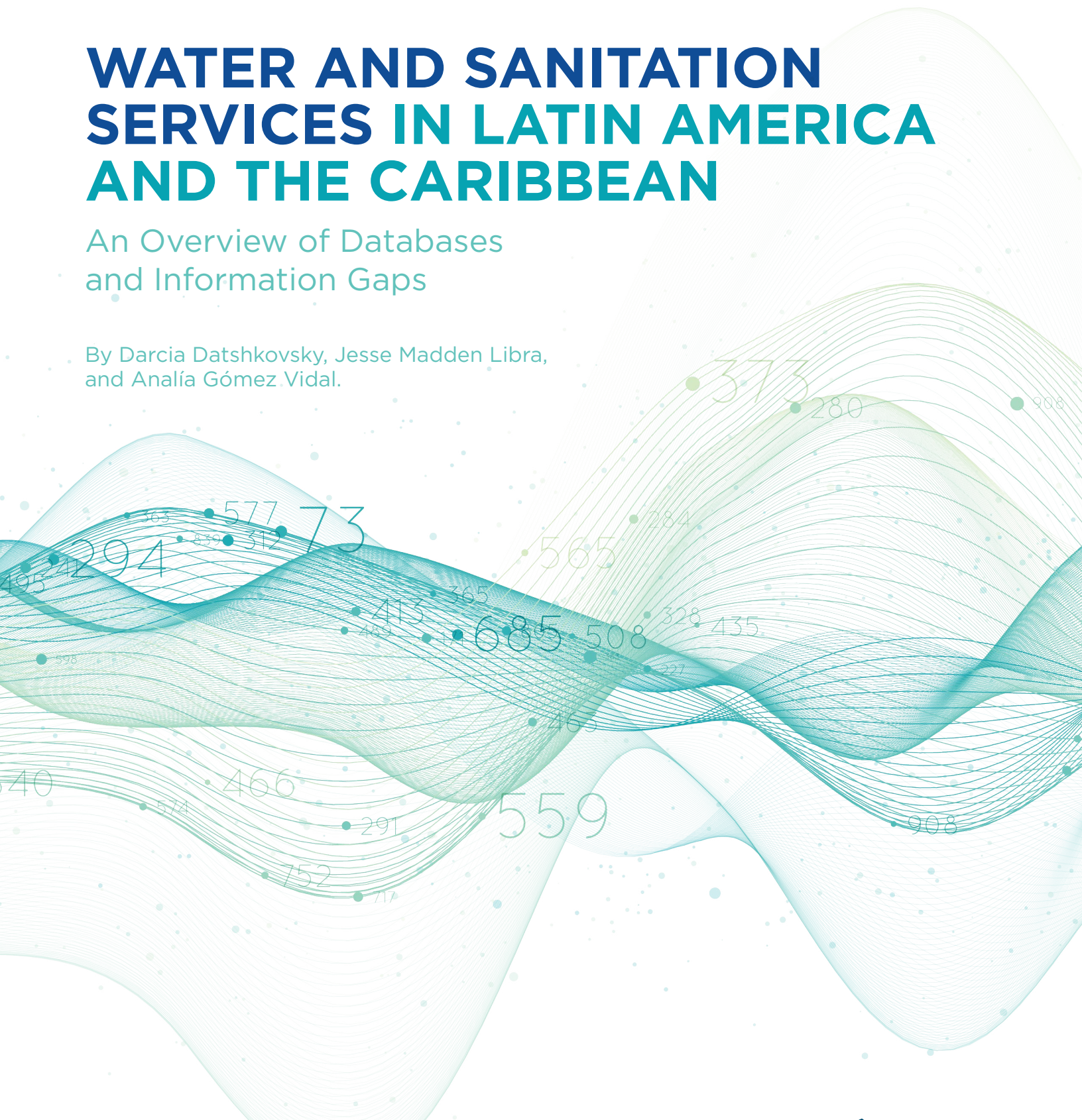
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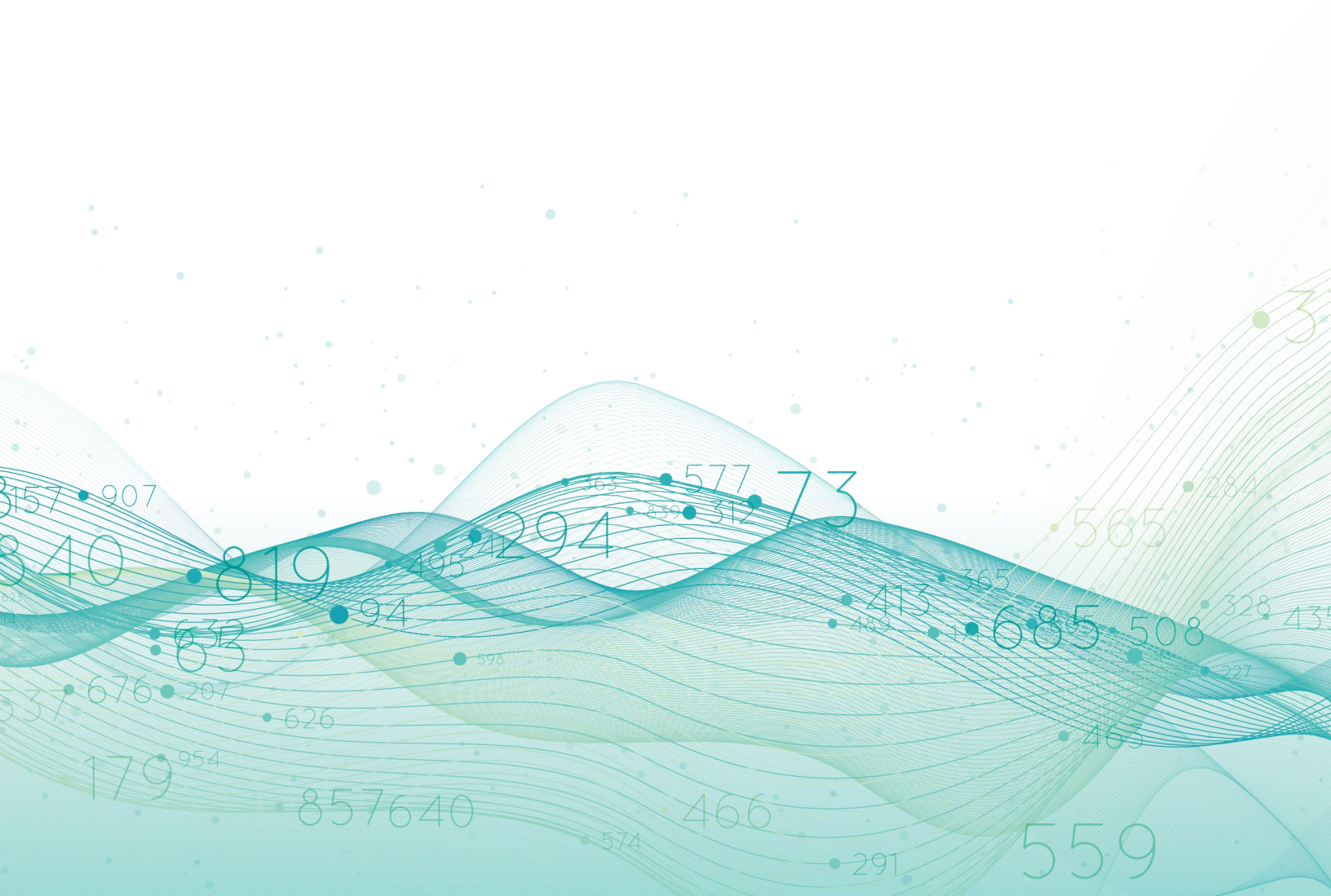


WATER AND SANITATION OBSERVATORY FOR
LATIN AMERICA AND THE CARIBBEAN



INDEX

INTRODUCTION	3
DATA SOURCES USED.....	5
DEFINITION OF INDICATORS	8
COMPARISON OF HOUSEHOLD SURVEY QUESTIONS	13
LESSONS LEARNED: COLLABORATION WITH LAPOP 2018-2019	23
CONCLUSIONS	28
BIBLIOGRAPHIC REFERENCES	29



INTRODUCTION



At present, the international community's efforts to achieve sustainable development are anchored primarily in the scope of the Sustainable Development Goals (SDGs) in the 2030 Agenda for Sustainable Development. The role of these goals is two-fold: on the one hand, they define a global economic and social vision to which the international community aspires; and, on the other hand, these goals (taken alongside their respective indicators) allow the measurement of progress toward said objectives.

As such, the SDGs also represent a series of metrics to guide daily work on sustainable development issues. Establishing said metrics and having consistent, reliable, and comparable information for each indicator is essential for directing the efforts and investments needed to achieve the SDGs. Without this data, it is difficult to know with certainty what the needs are to achieve these, and if the public policies aimed at achieving them are effective. This technical note focuses on the water and sanitation sector to analyze the difficulties and opportunities for measuring its indicators, focusing on indicators 6.1 and 6.2.

Measuring progress toward SDGs presents a variety of obstacles. Two of them include the heterogeneity of the definitions and the limitations of existing data sources. First, the indicators exhibit a certain flexibility in their definitions. For example, the condition of availability of water services can be measured using different time horizons. In this way, the lack of consistency in defining the

indicator can lead to much more variation in the data among regions, countries, and even localities. On the other hand, the collection of information for measuring these indicators requires significant resources and labor to guarantee their continuity and comparability over time. National household surveys are currently the best source of data for measuring indicators 6.1 and 6.2 (of SDG 6), focused on water and sanitation services, because they allow the collection of a sample that's large enough to allow a more accurate diagnosis, and its periodicity allows the continuity of the analysis. Nonetheless, national household surveys follow individual methodologies, making inter-country comparison more difficult. These two obstacles result in an incomplete measurement process, one that makes it difficult to compare countries. In this way, it is practically impossible to have a regional, or even national, diagnostic that is consistent, comparable, and reliable over time.

To understand these two obstacles and their role in the measurement of SDG 6 indicators, this document offers a comparison of the available sources of information regarding water and sanitation in Latin America and the Caribbean.

This comparative work, carried out by Darcia Datshkovsky between 2019 and 2021, has been informed by the Inter-American Development Bank's (IDB) Water and Sanitation Division's effort to collect original data, which in turn seeks to offer a regional diagnostic through reliable, comparable, and consistent data. Three fundamental parts of this work are included in this document: the description of the sources used in the comparison, as well as their limitations; the design of the questions focused on water and sanitation

and their relation to the parameters established by the Joint Monitoring Programme (JMP) of WHO/Unicef; and general recommendations to be considered in the future design of questions, including the exercise carried out by the IDB's Water and Sanitation Division in collaboration with Vanderbilt University's LAPOP.

The objective of this work is to propose opportunities and challenges facing the water and sanitation sector using the available data, and the need to have access to additional data in order to improve our diagnostic and to measure progress toward achieving the SDGs. In this way, it will not only be possible to quantify the progress toward the SDGs, but also to inform public policies and to refine the development and implementation of efforts focused on achieving sector objectives.

DATA SOURCES USED

National household surveys carried out by each country were identified in order to compare questions and available data.

In each case, the most recent household survey including questions about water and sanitation, as well as other desired dimensions of statistical analysis (such as geographical data), were selected. Thus, while most of the surveys included in this analysis were from 2018, the temporal range covered by the surveys was broad. For example, the 2014 household survey was used for Nicaragua, while the 2019 national household survey was used for Brazil. [Table 1](#) presents the list of household surveys used in the comparison.

Based on the lessons learned through this comparative analysis, the IDB's Water and Sanitation Division designed a new module of questions focused on water and sanitation in collaboration with LAPOP. This module was included in the AmericasBarometer round of surveys conducted in 2018 and 2019 for the 18 countries included in this study. The survey sample size by country varied between 1,498 (Brazil) and 1,682 (Peru). The design and sample size were intended to guarantee representativeness at a national level (based on the number of adults who were of voting age), and in the urban/rural division¹. A summary of the results of this collaboration and new lessons learned are included in this document². This data complements the information provided by the Latin American and Caribbean Water and Sanitation Observatory (OLAS)³.

1. For more details about the sample design, see Americas Barometer 2018/19 Technical information. Available at: https://www.vanderbilt.edu/lapop/ab2018/AmericasBarometer_2018-19_Technical_Report_W_102919.pdf Accessed on October 8, 2021.

2. For more information about the results of said survey, see Gomez Vidal, Machado, and Datshkovsky (2021).

3. Latin American and Caribbean Water and Sanitation Observatory (OLAS). Available at: <https://www.olasdata.org/es/about/>. Accessed on October 8, 2021.

TABLE 1: HOUSEHOLD SURVEYS UTILIZED

Country	Year	Survey	Nº of households	Institute
Argentina	2018	Permanent Household Survey (Encuesta Permanente de Hogares)	36,452	National Statistics and Census Institute (Instituto Nacional de Estadística y Censos, INDEC)
Bolivia	2018	Household Survey (Encuesta de Hogares)	11,195	National Statistics Institute (Instituto Nacional de Estadística, INE)
Brazil	2019	National Household Survey by Continuous Sample (Pesquisa Nacional por Amostra de Domicílios Contínua)	151,979	Brazilian Geographical and Statistical Institute (Instituto Brasileiro de Geografia e Estatística, IBGE)
Chile	2017	National Socioeconomic Survey (Encuesta de Caracterización Socioeconómica Nacional)	70,948	Ministry of Family and Social Development (Ministerio de Desarrollo Social y Familia)
Colombia	2018	Grand Integrated Household Survey (Gran Encuesta Integrada de Hogares)	58,243	National Administrative Department of Statistics (Departamento Administrativo Nacional de Estadística, DANE)
Costa Rica	2018	National Household Survey (Encuesta Nacional de Hogares)	10,942	National Statistics and Census Institute (Instituto Nacional de Estadística y Censos, INEC)
Dominican Republic	2018	Continuous National Labor Force Survey (Encuesta Nacional Continua de Fuerza de Trabajo)	6,457	Central Bank (Banco Central)
Ecuador	2017	National Employment, Unemployment, and Underemployment Survey (Encuesta Nacional de Empleo, Desempleo y Subempleo)	30,023	National Statistics and Census Institute (Instituto Nacional de Estadística y Censos, INEC)
El Salvador	2018	Multipurpose Household Survey (Encuesta de Hogares de Propósitos Múltiples)	20,840	General Directorate of Statistics and Censuses (Dirección General de Estadística y Censos, DIGESTYC)

TABLE 1: HOUSEHOLD SURVEYS UTILIZED (CONT.)

Country	Year	Survey	N° of households	Institute
Guatemala	2018	National Employment and Income Survey (Encuesta Nacional de Empleo e Ingresos)	5,191	National Statistics Institute (Instituto Nacional de Estadística, INE)
Honduras	2018	Permanent Multipurpose Household Survey (Encuesta Permanente de Hogares de Propósitos Múltiples)	6,151	National Statistics Institute (Instituto Nacional de Estadística, INE)
Jamaica	2015	Survey of Living Conditions	1,716	Planning Institute of Jamaica (PIOJ) Statistical Institute of Jamaica (SIOJ)
Mexico	2018	National Household Income and Expenses Survey (Encuesta Nacional de Ingreso y Gasto de los Hogares)	74,647	National Institute of Statistics and Geography (Instituto Nacional de Estadística y Geografía, INEGI)
Nicaragua	2014	National Household Survey to Measure Living Standards (Encuesta Nacional de Hogares sobre Medición de Nivel de Vidas)	6,851	National Institute of Development Information (Instituto Nacional de Información de Desarrollo, INIDE)
Panama	2018	Multipurpose Household Survey (Encuesta de Hogares de Propósitos Múltiples)	11,678	National Institute of Statistics and Census (Instituto Nacional de Estadística y Censos, INEC)
Paraguay	2017	Permanent Household Survey (Encuesta Permanente de Hogares)	9,570	National Statistics Institute (Instituto Nacional de Estadística, INE)
Peru	2018	National Household Survey about Quality of Life and Poverty (Encuesta Nacional de Hogares sobre Condiciones de Vida y Pobreza)	37,462	National Institute of Statistics and Computing (Instituto Nacional de Estadística e Informática, INEI)
Uruguay	2018	Continuous Household Survey (Encuesta Continua de Hogares)	42,282	National Statistics Institute (Instituto Nacional de Estadística, INE)

Source: Original design by Darcia Datshkovsky and Jesse Madden Libra based on available surveys.

DEFINITION OF INDICATORS

The SDGs are a series of goals established by the international community, and are designed to reduce poverty, improve the quality of life around the planet, and to care for the environment.

Among these objectives is Goal 6, which calls for universal access to secure water and sanitation services by 2030. This analysis focuses on indicators 6.1.1 (Proportion of the population that uses safely managed potable water supply services) and 6.2.1 (Proportion of the population that utilizes: a. safely managed sanitation services and b. installations for soap- and water-based hand-washing), which implies that these indicators can be measured at the household level. Below, indicators 6.1.1 and 6.2.1 are presented individually, and a method for measuring them correctly at the household level is proposed.

INDICATOR 6.1.1: ACCESS TO IMPROVED WATER SOURCES

According to the SDGs, the definition of safely managed water requires complying with three specific requirements, which include:

1. Located on the premises
2. Available when needed
3. Free of fecal contamination and contamination by priority chemicals.

Sources of water classified as “improved” include piped water to the plot or the home, water from bored tubes or tube wells, rainwater, water distributed in tank trucks or water carriers, water from public pipes, and protected springs. On the other hand, options that are not included in the category of improved water sources are surface water or water from boreholes or tubeless wells (due to their possible exposure to fecal or chemical contamination).

Based on this categorization and compliance with the three requirements mentioned above, the following is suggested as a classification system for improved water sources⁴:

1. Piped Water
 - a. Piped into dwelling
 - b. Piped into compound, yard or plot
 - c. Piped to neighbor
 - d. Public tap / standpipe
 - e. Borehole or tubewell
2. Dug well
 - a. Protected well
 - b. Unprotected well
3. Water from Spring
 - a. Protected spring
 - b. Unprotected spring
4. Rainwater Collection

4. JMP (2018). “Core questions on water, sanitation, and hygiene for household surveys”. Available at: <https://washdata.org/monitoring/methods/core-questions>. Accessed February 15, 2022.

5. Delivered water
 - a. Tanker-truck
 - b. Cart with small tank / drum
6. Water kiosk
7. Packaged water
 - a. Bottled water
 - b. Sachet water
8. Surface water (river, stream, dam lake, pond, canal, irrigation channel)
9. Other (specify)

In addition to this categorization, a key factor to consider is the intended use of water from these sources. Specifically, the most important differentiation is found between drinking water and water for household use. This distinction is important because, for example, the JMP

establishes that bottled water can only be considered an improved source if it is used for drinking, and if the consumer has an additional improved source for domestic use⁵.

AVAILABILITY OF SOURCES IN INDICATOR 6.1.1

The availability of the water source is a fundamental characteristic, as seen in the definition of improved water sources, provided in the previous section. Nonetheless, measuring the availability of water is threatened, in practical terms, by two variables: first, not all countries include questions about water availability in their surveys, and second, timing varies considerably among countries that include questions about water availability, making direct comparison among countries impossible. The variability in how the question is asked in those surveys that include a question about continuity of water availability, is presented in Table 2.

TABLE 2: VARIATION IN TIMING FOR QUESTIONS ABOUT WATER AVAILABILITY

Country	Period of availability considered	Frequency of period of availability
Brazil	Within the past month	Days
Bolivia	General	Days and hours
Colombia	General	All day, all hours
El Salvador	Within the past week	Days and hours
Jamaica	Within the past month	Number of cuts
Mexico	General	Days
Panama	Seasonal (summer and winter)	Days and hours
Paraguay	General	Hours
Peru	General	Days and hours

Source: Design by Darcia Datshkovsky and Jesse Madden Libra, based on available surveys.

5. Unicef/WHO (2017). "JMP 2017 Thematic Report on Safely Managed Drinking Water" (p. 37). Available at: <https://washdata.org/report/jmp-2017-tr-smdw> Accessed on October 13, 2021.

To deal with variations in timing the JMP uses a 50 percent rule, specifying that access is available when needed if a household has access 4 out of 7 days of the week or 12 out of 24 hours of the day. This is a very generous classification and the JMP recommends that countries circumvent this issue by asking a more general question:

Second, the measurement of goal 6.2.1 is even more complex due to the issue of solid waste treatment and the available information about it. In many cases, waste treatment is conducted outside the home. Facilities that drain to public sewer systems require in-plant treatment to be considered improved. Septic tanks, in contrast,

Question	Answer options
In the last month, has there been any time when your household did not have sufficient quantities of drinking water when needed?	<ol style="list-style-type: none"> 1. Yes, at least once 2. No, always sufficient 3. Don't know

Source: JMP (2018). "Core questions on water, sanitation, and hygiene for household surveys".

INDICATOR 6.2.1A: ACCESS TO IMPROVED SANITATION FACILITIES

Indicator 6.2.1a estimates the proportion of access to safely managed sanitation facilities. To be considered as such, the facilities must not be shared with other households, and must comply with three other conditions with respect to excrement:

1. Treated and eliminated on-site,
2. Temporarily stored and later emptied and transported for off-site treatment,
3. Or transported through a sewer with wastewater and later treated off-site.

The measurement of these categories is even more complex than is the case for Indicator 6.1.1. This is due to a variety of factors. First, the exclusivity of sanitary facilities is essential for characterizing facilities as being safely managed. This question is asked in varied ways among the household surveys considered. Some countries ask whether the bathroom is for exclusive use (Argentina), while others ask about each type of facility within the household (El Salvador). Some countries, however, do not include any question that covers this requirement (Chile, Nicaragua, Paraguay, Peru, and Guatemala).

require constant emptying and maintenance. In both cases, most users are unaware of whether these requirements are met and the destination of their excrement and wastewater. As such, it is much more difficult to measure indicator 6.2.1 precisely.

With respect to the categories considered for measuring this indicator, connection to the sewerage network is considered the best sanitation system, with a flush toilet connected to the sewerage system considered to be the ideal facility. Another category is a septic tank, which refers to a flush toilet connected to a lined tank that allows the separation of liquids and solids. For this category to be considered an improved facility, it is necessary for the septic tank to receive constant maintenance, to be emptied regularly, and for it to be lined. As mentioned previously, the users are not always aware of this level of detail or information, and in many cases, this category is considered alongside another non-improved category: a cesspool (in this case, the solid waste is simply retained).

Finally, there is a series of alternative facilities that do not imply a connection to the sewerage network, but which demonstrate significant differences between those that are improved

FIGURE 1: REGIONAL VARIATION IN QUESTIONS ABOUT EXCLUSIVE USE FACILITIES



Source: Design by Darcia Datshkovsky and Jesse Madden Libra based on available surveys.

and those that are not. The two conditions that determine whether these options are improved facilities include: a. that the final location of the excreta does not cause ground contamination, and b. that the facility has a cover of some sort, thus impeding the contamination of gases and odors at the surface. Another factor for these facilities is that they respond to local solutions, informed by the needs and practices adopted by the culture of different regions.

- 6. Included in Argentina, Bolivia, Chile, Ecuador, Paraguay, and Peru.
- 7. Included in Bolivia, Chile, El Salvador, and Paraguay.
- 8. Included in Bolivia, Chile, Ecuador, Honduras, and Paraguay.
- 9. Included in Nicaragua y Peru.
- 10. Included in Mexico.

Based on these distinctions, the following alternatives that were included in at least one of the household surveys in the region are considered improved facilities:

- a. Toilet/latrine with floor/sanitary pit latrine/cesspool⁶
- b. Ecological toilet (compost latrine, solar latrine)/chemical (dry or composting)⁷
- c. Latrina with slab/floor/hydraulic closure⁸
- d. Latrine with treatment⁹
- e. Biodigester¹⁰

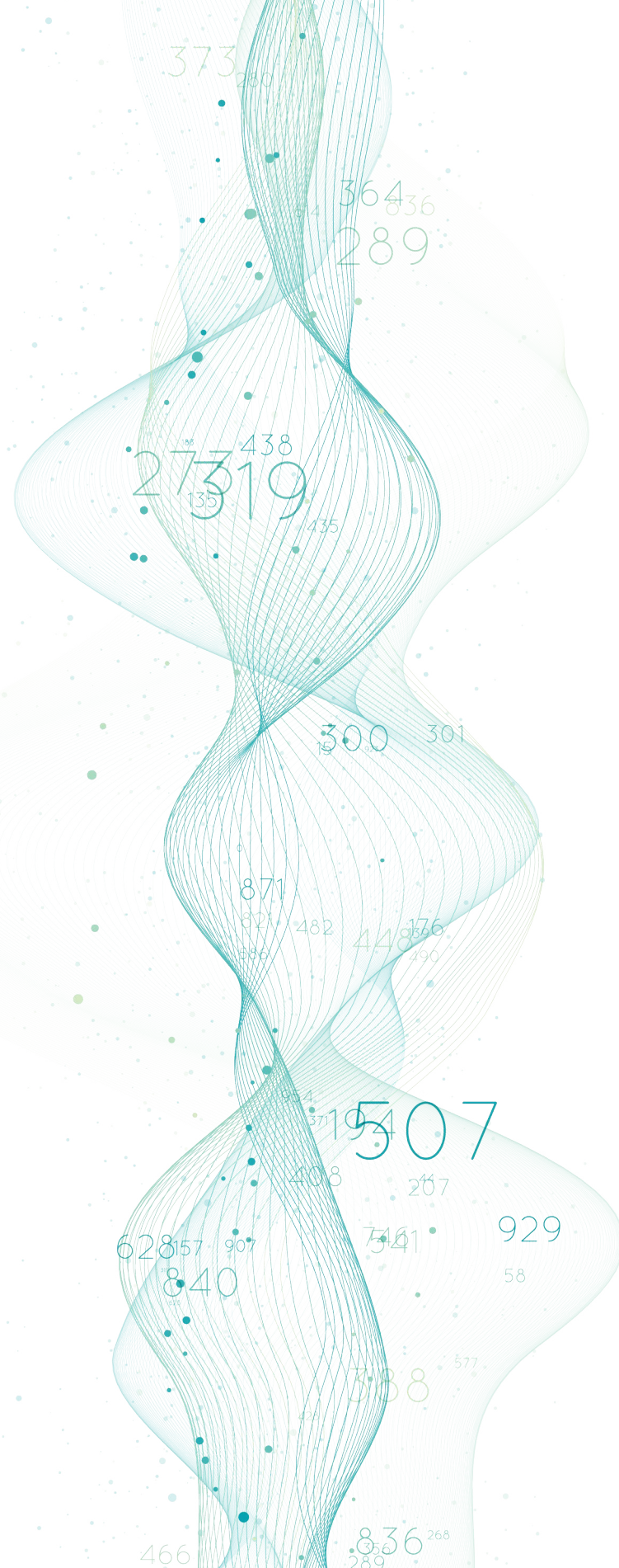
Based on the current categorization of improved versus unimproved sanitation facilities, the JMP recommends the following classification system for household surveys:

- 1. Flush / pour flush
 - a. Flush to piped sewer system
 - b. Flush to septic tank
 - c. Flush to pit latrine
 - d. Flush to open drain
 - e. Flush to don't know where
- 2. Dry pit latrines
 - a. Pit latrine with slab
 - b. Pit latrine without slab / Open pit
- 3. Composting toilets
 - a. Twin pit with slab
 - b. Twin pit without slab
 - c. Other composting toilet
- 4. Bucket
 - a. Container based sanitation
- 5. Hanging toilet / hanging latrine
- 6. No facility/ Bush / Field
- 7. Other (specify)

INDICATOR 6.2.1B: ACCESS TO HYGIENIC FACILITIES

Indicator 6.2.1b represents the proportion of the population that uses facilities to wash their hands with soap and water. The handwashing facilities should be located on-site, but they can be fixed or mobile, and can include a sink with tap water, buckets with faucets, a spout faucet and jugs or sinks designated for handwashing. Soap includes bar soap, liquid soap, powdered detergent, and soapy water¹¹. The majority of countries do not ask about access to handwashing facilities in their household surveys, and as such there is very little data available on the prevalence of access to handwashing facilities in the region. Countries interested in incorporating handwashing questions into their national survey should follow the JMP recommended question structure.

The next section presents [Table 1](#), a direct comparison by country of the distinct questions included in the household surveys. The objective of this comparison is to identify the categories included in each case, the data points offered by each survey, and which areas offer opportunities for refining the measurement of indicators 6.1.1 and 6.2.1, based on the suggestions established in this section.



¹¹. For more details about Indicator 6.2.1b, visit <https://www.sdg6monitoring.org/indicator-621/>

COMPARISON OF HOUSEHOLD SURVEY QUESTIONS

This section presents the comparison of questions related to water and sanitation that are included in the national household surveys in [Table 1](#).

For each case, the table of included questions is presented, as is a brief summary of opportunities and limitations each question poses to the measurement of indicators 6.1.1. and 6.2.1. considering what has been discussed previously. This comparison is also part of the work carried out by the Latin American and Caribbean Water and Sanitation Observatory (OLAS), which provides access to available data by country from the national household surveys that are considered in this document. Part of this information contributes to the methodological framework of said database.

INDICATOR 6.1.1 - COMPARISON OF QUESTIONS

To examine the main aspects of water access, national household surveys should include questions that address the following aspects of access to water:

- Is the main water source an improved source?
- Is the source on-site?
- Is water available when it is needed?
- The water does not contain biological or chemical contaminants.

This section reviews the common structures of questions that seek to quantify these aspects and their capacity to capture the necessary data.

IMPROVED WATER

The countries of the region use varied strategies in the national household surveys to ask citizens about their potable water source. Some countries specify the use of water (in other words, whether the question refers specifically to drinking water, water for household chores, etc.), while others make absolutely no mention of the intended use. Most of the surveys ask specifically whether households have access to running water, usually specifying if this is part of the municipal network. However, other improved water sources are often ignored or are not defined fully. For example, Chile's 2017 National Socioeconomic Characterization Survey (CASEN) asks, "Where does the household's water come from?", with the response options enumerated in [Table 3](#).

While this question permits the collection of a good amount of information about water sources used by a household, it does not allow differentiation between protected and non-protected wells, nor does it mention springs or the intended use of water. In contrast, the 2018 Household Survey of Bolivia specifies both the intended water use and all improved and unimproved water sources, which makes it easier to determine whether a household has access to an improved water source ([Table 4](#)).

TABLE 3: QUESTION DESIGN ABOUT WATER SOURCE – CHILE

Question	Response options
Where does the household's water come from?	<ol style="list-style-type: none">1. Public network with own meter2. Public network with shared meter3. Public network without meter4. Well or waterwheel5. River, creek, lake, or estuary6. Tank truck7. Other source. Which? Please specify.

Source: National Socioeconomic Characterization Survey (CASEN), 2017, Chile.

TABLE 4: QUESTION DESIGN ABOUT WATER SOURCE – BOLIVIA

Question	Response options
Drinking water comes mainly from...	<ol style="list-style-type: none">1. Networked pipe inside the household?2. Networked pipe outside the household?3. Public faucet?4. Rainwater collection?5. Drilled or lined well, with a pump?6. Dug well, covered, with pump?7. Dug well, covered, without pump?8. Dug well, uncovered?9. Protected spring?10. Unprotected river, ditch, slope?11. Bottled water?12. Tank truck?13. Other? (Please specify)

Source: 2018 Household Survey of Bolivia.

SOURCE LOCATED ON-SITE

Most national surveys in Latin America and the Caribbean ask in some way about the location of water access, specifically, about access to the tap. However, it is often the case that this factor is incorporated into the question about the water source, which can complicate the analysis by mixing the type of water source with its location. For example, the 2018 Household Survey of Bolivia combines the subject of location with the subject of the main source of potable water (Table 4). It is possible that a household receives its water via a pipe inside the household with a pumped well as the source, but the format of the question does not allow those surveyed to offer this as a response.

The surveys that obtain clearer responses about location to access ask about it as a separate question. **For example, the 2018 Multipurpose Permanent Household Survey of Honduras asks the question directly, without categorizing the responses by water source:**

offers complete information. Another key point to consider is that none of the household surveys ask about the time required to collect potable water, a fact that impedes obtaining information about availability, one of the key factors of defining a source as “improved.”

AVAILABLE WHEN NEEDED

Continuity of access is addressed in 39% of the national surveys that are considered in this document, and they comprise the OLAS data set. The way in which these surveys address the theme of continuity varies from one survey to another (some ask whether water is available 24 hours a day, seven days a week, while others simply ask respondents to quantify the number of outages within the past month). Examples of these variations are presented in Table 6, which serves to complement Table 2. It is important to point out these differences, given that previous works have highlighted how different ways of measuring continuity can impact the results that are obtained (Gómez Vidal, Machado, and Datshkovsky, 2021).

TABLE 5: QUESTION DESIGN REGARDING LOCATION OF WATER SOURCE - HONDURAS

Question	Response options
106. Where do you get your water?	<ol style="list-style-type: none">1. Inside the home.2. Outside the home and on the property.3. Off the property, within at least 100 meters.4. Off the property, more than 100 meters.

Source: 2018 Multipurpose Permanent Household Survey of Honduras.

In this case, the options do not even specify if it is from the tap, based on a previous question intended to determine the water source. In this way, simply asking about the location of the source, without mentioning what type of source, still

TABLE 6: DESIGN OF QUESTIONS ABOUT CONTINUITY OF WATER SERVICE

Country	Question	Response options
Brazil	Within the past 30 days, with what frequency was water from the general network available to this household?	<ol style="list-style-type: none"> 1. Daily. 2. From 4-6 days a week. 3. From 1-3 days a week. 4. Another frequency.
Bolivia	Generally speaking, how many hours per day is water service available? How many days per week?	
	Hours	
	Days	
Colombia	5. Is water from the aqueduct available 24 hours per day, seven days a week?	<ol style="list-style-type: none"> 1. Yes. 2. No.
El Salvador	How many days was water available?	
	How many hours per day was water available during the past week?	
Jamaica	How many times have you had water source lock-off in the last 30 days?	
Mexico	How many days a week is water available in this home?	<ol style="list-style-type: none"> 1. Daily. 2. Every third day. 3. Two times a week. 4. One time a week. 5. Once in awhile.
Panama	How many days a week is drinking water available?	
	Summer	
	Winter	
	How many hours per day is water available?	
	Summer	
	Winter	

TABLE 6: DESIGN OF QUESTIONS ABOUT CONTINUITY OF WATER SERVICE (CONT.)

Country	Question	Response options
Peru	Does the household have access to water service every day of the week?	1. Sí. 2. No.
	How many hours?	
	How many days?	

Source: Design by Darcia Datshkovsky and Jesse Madden Libra based on available surveys.

WITHOUT BIOLOGICAL OR CHEMICAL CONTAMINANTS

Unfortunately, this is a variable that is difficult to capture in a household survey, given that it focuses on measuring a variety of facets related to quality of life, and not just with respect to water and sanitation. The determination of water quality requires tests that are not always feasible due to monetary and training limitations. Nevertheless, surveys can measure perceptions about water quality. In Latin America and the Caribbean, very few national household surveys pose questions related to water quality. Guatemala's 2018 National Employment and Income Survey asked

respondents, "What is the main treatment given to your drinking water?" This question allows us to address the perception of water quality based on whether the respondents consider it necessary to apply additional treatments to their water supply.

INDICATOR 6.2.1A - COMPARISON OF QUESTIONS

To examine the aspects of access to sanitation, national household surveys should ask if facilities:

- Are improved
- Are exclusive to the household, and

TABLE 7: DESIGN OF QUESTIONS ABOUT THE TREATMENT OF WATER RECEIVED

Question	Response options
4. What is the main treatment given to your drinking water?	1. None. 2. It's boiled. 3. It's filtered. 4. They put bleach in it. 5. The buy purified water. 98. Other source.

Source: National Employment and Income Survey of Guatemala, 2018.

- Whether the waste is eliminated in a secure manner (treated and disposed of on-site, stored temporarily and then emptied and treated off-site, or transported through the sewerage system along with wastewater to be treated at another site).

This section reviews the common structure of questions that intend to determine these aspects and their capacity for capturing necessary data. It is important to note that, given that this is based on the questions used by each country, variations exist among countries with respect to the terms used to refer to the same categories.

IMPROVED FACILITIES

Improved sanitation facilities include flushing or emptying into the sewerage system, pit latrines that empty into septic tanks, ventilated improved pit latrines, or pit latrines with slab or composting toilets. In Latin America and the Caribbean, countries generally collect data about the type of facility used by the household, but rarely are the categories specific enough to determine whether the facility is improved. Colombia’s 2018 Grand Integrated Household Survey provides a good example of those countries that ask about the sanitation facilities (see Table 8).

Some of the response options clearly constitute improved sanitation facilities in terms of the type of installation, but other responses are ambiguous. The “Latrine” response, for example, does not specify whether the waste is correctly isolated from the environment (as is the case for improved pit latrines with ventilation and slab pit latrines) or not. Neither is there a clear option for households that use composting toilets. An example of a survey that offers more specific response is the 2018 Household Survey of Bolivia (see [Table 9](#)).

This way of formulating questions and answers allows researchers to use survey data to evaluate water and sanitation access, to determine definitively whether the household has improved facilities, given that it considers the type of facility and the level of security with which waste is managed.

FACILITIES THAT ARE EXCLUSIVE TO THE HOUSEHOLD

Improved facilities should be for the exclusive use of the household in order to be considered improved. Of the 18 household surveys examined, 12 addressed the question in a direct form, asking respondents if they share their facilities with

TABLE 8: DESIGN OF QUESTIONS ABOUT IMPROVED SANITATION FACILITIES – COLOMBIA

Question	Response options
3. The sanitary service used by the household is:	<ul style="list-style-type: none"> a) Toilet connected to the sewerage network b) Toilet connected to a septic tank c) Toilet lacking connection d) Latrine e) Hanging latrine f) There is no sanitary service.

Source: Grand Integrated Household Survey of Colombia, 2018.

TABLE 9: DISEÑO DE PREGUNTAS SOBRE INSTALACIONES DE SANEAMIENTO MEJORADAS - BOLIVIA

Pregunta	Opciones para responder
¿Qué tipo de baño, servicio sanitario o letrina utilizan normalmente los miembros de su hogar?	<ol style="list-style-type: none"> 1. Baño o letrina con descarga de agua. 2. Letrina de pozo ciego con piso. 3. Pozo abierto (pozo ciego sin piso). 4. Baño ecológico (seco o de compostaje). 5. Ninguno (arbusto/campo).
¿El baño, servicio sanitario o letrina tiene desagüe... (sólo aplica para opción 1 de pregunta anterior)	<ol style="list-style-type: none"> 1. A la red de alcantarillado? 2. A una cámara séptica? 3. A un pozo de absorción? 4. A la superficie (calle/quebrada/río)? 5. No sabe?

Source: Encuesta de Hogares de Bolivia 2018.

other households (Table 10). Some surveys mixed the type of facility and exclusivity, while others asked about the exclusivity of facilities in a separate question. Generally, formulating this question separately allows more specific response options to the question regarding the type of facility.

SECURE DISPOSAL

The surveys generally lack information about how waste is treated. In the case of toilets that empty into the sewerage system, households often don't know whether wastewater is treated sufficiently and securely. Large gaps exist in the data with respect to wastewater treatment in Latin America and the Caribbean, but in general, it is estimated that wastewater treatment rates are low, with an annual average of just 35% of wastewater receiving some kind of primary treatment (Xie et al., 2016).

In the case of latrines and toilets connected to septic tanks, the majority of the surveys do not ask about maintenance. Ecuador's National Employment, Unemployment, and Underemployment Survey (ENEMDU, 2017) is an exception, because it addresses the subject of emptying the latrine or septic tank. In general, septic tanks should be emptied every three to five years, but the survey does not ask how many times, nor how often.

Even in cases where households maintain their septic systems, once the waste is transported off-site, the majority of households do not know if their wastewater is disposed of in an adequate and secure manner.

TABLE 10: DESIGN OF QUESTIONS REGARDING EXCLUSIVITY OF SANITATION FACILITIES

Country	Question	Response options
Argentina	The toilet is...	<ol style="list-style-type: none"> 1. for the exclusive use of the household. 2. shared with others/households in the same dwelling. 3. shared with other dwellings. 4. There is no toilet.
Brazil	How many bathrooms (with shower or bathtub and toilet) are for the exclusive use of residents in this household, including those located on the land or on this property?	(Open response)
Bolivia	The bathroom, sanitary service, or latrine is...	<ol style="list-style-type: none"> 1. used only by the household? 2. shared with other households?
Colombia	4. The household's bathroom is...	<ol style="list-style-type: none"> a. For the exclusive use of members of the household. b. Shared with people from other households.
Costa Rica	V13b. The bathroom is...	<ol style="list-style-type: none"> 1. only for the household? 2. for this and other households?
Dominican Republic	12. The household possesses:	<ol style="list-style-type: none"> 1. a toilet for private use. 2. a toilet for shared use. 3. a latrine for private use. 4. a latrine for shared use. 5. does not have.
Ecuador	Do you have a bathroom that is shared with other people who are not members of this household?	<ol style="list-style-type: none"> 1. Yes. 2. No.
El Salvador	318. This household shares a bathroom with other households (2 no)	<ol style="list-style-type: none"> 1. Yes. 2. No.
Honduras	206. The use of the bathroom is...	<ol style="list-style-type: none"> 1. Exclusive. 2. Shared.

TABLE 10: DESIGN OF QUESTIONS REGARDING EXCLUSIVITY OF SANITATION FACILITIES (CONT.)

Country	Question	Response options
Jamaica	6. Are toilet facilities used only by your household, or do other households use the same facilities	1. Exclusive. 2. Shared.
Mexico	13. Is the bathroom shared with other households?	1. Yes. 2. No.
Panama	1L. The bathroom is:	1. Exclusive. 2. Shared.
Uruguay	Is the bathroom for exclusive use?	1. Yes. 2. No.

Source: Design by Darcia Datshkovsky and Jesse Madden Libra based on available surveys.

TABLE 11: DESIGN OF QUESTIONS REGARDING EMPTYING OF SEPTIC TANK OR THE LIKE - ECUADOR

Question	Response options
Have you ever emptied the SEPTIC TANK/CESSPOOL/LATRINE that you use?	1. Yes. 2. No.

Source: Ecuador's National Employment, Unemployment, and Underemployment Survey, 2017.

INDICATOR 6.2.1B - COMPARISON OF QUESTIONS

In large part, the household surveys do not address Indicator 6.2.1b. The exception is Bolivia's 2018 Household Survey, which asks households if they have access to clean water, soap, and towels. The survey asks about hygiene facilities and access to soap but does not provide specific information that confirms whether these are inside the home or outside it, nor information about the kind of facility.

Country	Question	Response options
Bolivia	Could you show me the place where the members of the household wash their hands most frequently?	(1) Observed. (2) Not observed.
	The household has... clean water.	(1) Yes (2) No.
	Soap	(1) Yes (2) No.
	Towel	(1) Yes (2) No.

Source: Household Survey of Bolivia, 2018.

CONCLUSION OF COMPARISON OF QUESTIONS

In Latin America and the Caribbean, household surveys are a useful tool for capturing data about access to water and sanitation. However, the differences in the design of questions and answers among countries poses problems when it comes to producing comparable metrics across the region. The fact that the surveys are also temporally disparate further presents methodological problems that impede comparison. The JMP has standardized questions for household surveys that, in the event of their adoption, could be of great use for the selection and comparison of data from the entire region.

Finally, in addition to the suggestions and comparisons presented in this paper, it is worth noting that the JMP offers material about improving practices for the collection of data related to water and sanitation via household surveys, in its 2018 publication, [*Preguntas principales sobre agua, saneamiento e higiene para uso en encuestas de hogares*](#). The work carried out by this study is informed by these suggestions, as well as offering complementary information.

LESSONS LEARNED: COLLABORATION WITH LAPOP 2018-2019

As a response to the differences and difficulties that emerge in the comparison of available data, the IDB's Water and Sanitation Division worked in collaboration with Vanderbilt University to incorporate a module specifically related to water and sanitation in the 2018-2019 round of LAPOP's AmericasBarometer.

This module included 18 countries from the region and was divided into two parts: a first, general section, common to all of the included countries, and a second specialized section, which was included as a subset of just six countries. This first

experience focused on developing questions that, informed by this exercise of comparison and the suggestions of the Joint Monitoring Programme, could measure indicators 6.1.1. and 6.2.1 in a way that was comparable and consistent throughout the 18 countries¹².

[Table 12](#) presents eight original questions included in the AmericasBarometer 2018-2019 survey. The ninth question, R12, is part of a battery of questions traditionally included in the survey that complements the work focused on the water and sanitation SDGs. Some of the main characteristics to consider in these questions include:

12. For more information about this project and its results, see Gómez Vidal, Machado, and Datshkovsky (2021).

TABLE 12: QUESTIONS ABOUT WATER AND SANITATION INCLUDED IN LAPOP 2018-2019

Question	Response options
R12. Potable water inside the household	(0) No. (1) Yes.
PSC1. What is the main source of water that the members of your household use for drinking?	(01) Pipe or public network/of the faucet/tap/sink inside the house/home. (02) Pipe or public network in the patio/lot/parcel/plot. (03) Irregular connection/tapped into the public network. (04) Community faucet or tank for public use. (05) Lined well (with pump). (06) Covered dug well (without pump). (07) Uncovered dug well (without pump). (08) Covered spring. (09) Uncovered spring. (10) Rainwater collection. (11) Bottled water (large water bottles or water in bags). (12) Cart with a small tank or drum. (13) Truck/cistern tank/water pipe/water tank. (14) River, creek, canal, irrigation canal. (77) Other. (888888) Doesn't know. (988888) No response.
PSC2. What is the main source of water used in your home for other purposes, such as cooking and handwashing?	(01) Pipe or public network/of the faucet/tap/sink inside the house/home. (02) Pipe or public network in the patio/lot/parcel/plot. (03) Irregular connection/tapped into the public network. (04) Community faucet or tank for public use. (05) Lined well (with pump). (06) Covered dug well (without pump). (07) Uncovered dug well (without pump). (08) Covered spring. (09) Uncovered spring. (10) Rainwater collection. (11) Bottled water (large water bottles or water in bags). (12) Cart with small tank or drum. (13) Truck/cistern tank/water pipe/water tank.

TABLE 12: QUESTIONS ABOUT WATER AND SANITATION INCLUDED IN LAPOP 2018-2019 (CONT.)

Question	Response options
	<p>(14) River, creek, canal, irrigation canal. (77) Other. (888888) Doesn't know. (988888) No response.</p>
<p>PSC7. How many days per week does your household receive water from or via aqueduct/pipes/public network?</p>	<p>(0) Less than one day per week. (1) One day per week. (2) Two days per week. (3) Three days per week. (4) Four days per week. (5) Five days per week. (6) Six days per week. (7) Seven days per week. (888888) Doesn't know. (988888) No response. (999999) Not applicable.</p>
<p>PSC8. How many hours a day do you have water service?</p>	<p>Note the number of hours _____</p>
<p>PSC9. During the past four weeks, how many times was your regular water service interrupted?</p>	<p>[Note the number] _____</p>
<p>PSC11. The toilet or sanitary service of this household is connected to</p>	<p>(1) Sewerage/drainage/sanitation system. (7) Connected to a treatment system/plant. (2) Tank/septic tank/cesspool outside the home. (3) Pipe that leads to a creek or other source of surface water. (4) Other answer [flow/discharge/discard/discard to another place]. (5) Flow/discharge/discard/exit to an unknown place/unsure/doesn't know where. (6) Well/cesspool/silo not connected to any system. (888888) Doesn't know. (988888) No response.</p>
<p>PSC11A. What is used as a toilet in your household?</p>	<p>(1) Improved latrine with ventilation. (2) Pit latrine with slab/toilet. (3) Pit latrine without slab/toilet/open pit. (4) Compositing toilet/latrine (dry/ecological/composting). (5) Bucket.</p>

TABLE 12: QUESTIONS ABOUT WATER AND SANITATION INCLUDED IN LAPOP 2018-2019 (CONT.)

Question	Response options
	<p>(6) Toilet//hanging toilet/latrine. (7) No infrastructure or uses bush or outdoors/surface. (77) Other. (888888) Don't know. (988888) No response. (999999) Not applicable.</p>
<p>PSC12. Do you share this bathroom with other households?</p>	<p>(1) Yes. (2) No. (888888) Don't know. (988888) No response.</p>

- a. **Differentiation of use of water sources:** Based on the discussion about indicator 6.1.1. and the comparison of questions, PSC1 and PSC2 distinguish the use of water sources to allow greater clarity in the analysis.
- b. **Distinction of types of sources:** In PSC1 and PSC2, the categories were divided to specify which were improved and which were unimproved. For example, a distinction is made between a dug well and covered and uncovered springs.
- c. **Measurement of service continuity:** Considering the variation of possible time horizons for measuring continuity, this module contains three questions focused on capturing interruptions and service continuity: PSC7, PSC8, and PSC9. These questions allow continuity measurement in four different ways, based on whether the consumer experiences interruptions: the number of days per week that they have service; the number of hours per day that they have service; and a combination of these measures to capture whether they have 24/7 service.
- d. **Differentiation of facilities and waste destination:** From PSC11 and PSC11A, it is possible

to obtain more detailed information about the sanitation facilities (whether they are improved or not), and the destination of the wastewater (if they are managed in a secure manner or not). This categorization, made through two complementary questions, offers a greater, more detailed analysis about sanitation access in the household.

- e. **Measurement of facility exclusivity:** In addition to the nature of the facilities and the safe management of wastewater, the definition of improved access to sanitation includes the exclusivity of the installations. Question PSC12 fulfills the objective of measuring this dimension in order to complete the three dimensions of improved sanitation that comprise indicator 6.2.1.

Based on this first collaboration experience, the Water and Sanitation Division took the lessons learned and incorporated a new module of questions about water and sanitation into the 2020-2021 LAPOP's AmericasBarometer survey. In the second experience, the team replicated the questions included in this section with minimal changes, and included additional questions aimed at studying how users view the service and the usage decisions they take as a result.

CONCLUSIONS

The Strategic Development Goals provide a series of guidelines and goals for the international community with respect to sustainable development, but also offer intermediate metrics that permit quantification of the distance between the current situation and said objectives.

In this way, **measuring the scope of the SDGs becomes an essential tool for diagnosing and refining the formulation of public policies for achieving these objectives.** However, this empirical effort faces a series of obstacles with respect to how and with what instruments or questions data are collected for measurement.

The present work offers a conceptual and empirical exercise in three parts. First, it presents the definitions of Sustainable Development Goal 6, focused on water and sanitation, and explores the key dimensions of indicators 6.1.1. and 6.2.1. From there, the second part presents a regional comparison of the most recent household surveys that include questions about water and sanitation. This comparison suggests that the variation in the design of questions and answers, as well as the temporal difference of the surveys, complicates the comparative analysis of progress

toward indicators in all of Latin America and the Caribbean. There is a number of factors and suggestions mentioned throughout the document that would improve the comparability, consistency, and reliability of these metrics at the national and regional levels. Finally, the third section of this document offers an example of how to implement these suggestions in practice, through the collaboration between the Interamerican Development Bank's Division of Water and Sanitation and Vanderbilt University's LAPOP. In turn, the Latin American and Caribbean Water and Sanitation Observatory (OLAS) includes on its platform a database that is based on the document *Methodology for the Management of Data by Country (Metodología de Manejo de Datos por País, 2021)*, which provides information on the work of validation and standardization that the team carried out as an extension of this comparative analysis.

Thus, based on the analysis presented here and the lessons learned, the team seeks to inform the future design of data collection efforts related to water and sanitation in Latin America and the Caribbean. **Having reliable, consistent, and comparable data is a key element for formulating public policy in the region that is effective, and that contributes to the achievement of the Sustainable Development Goals.**

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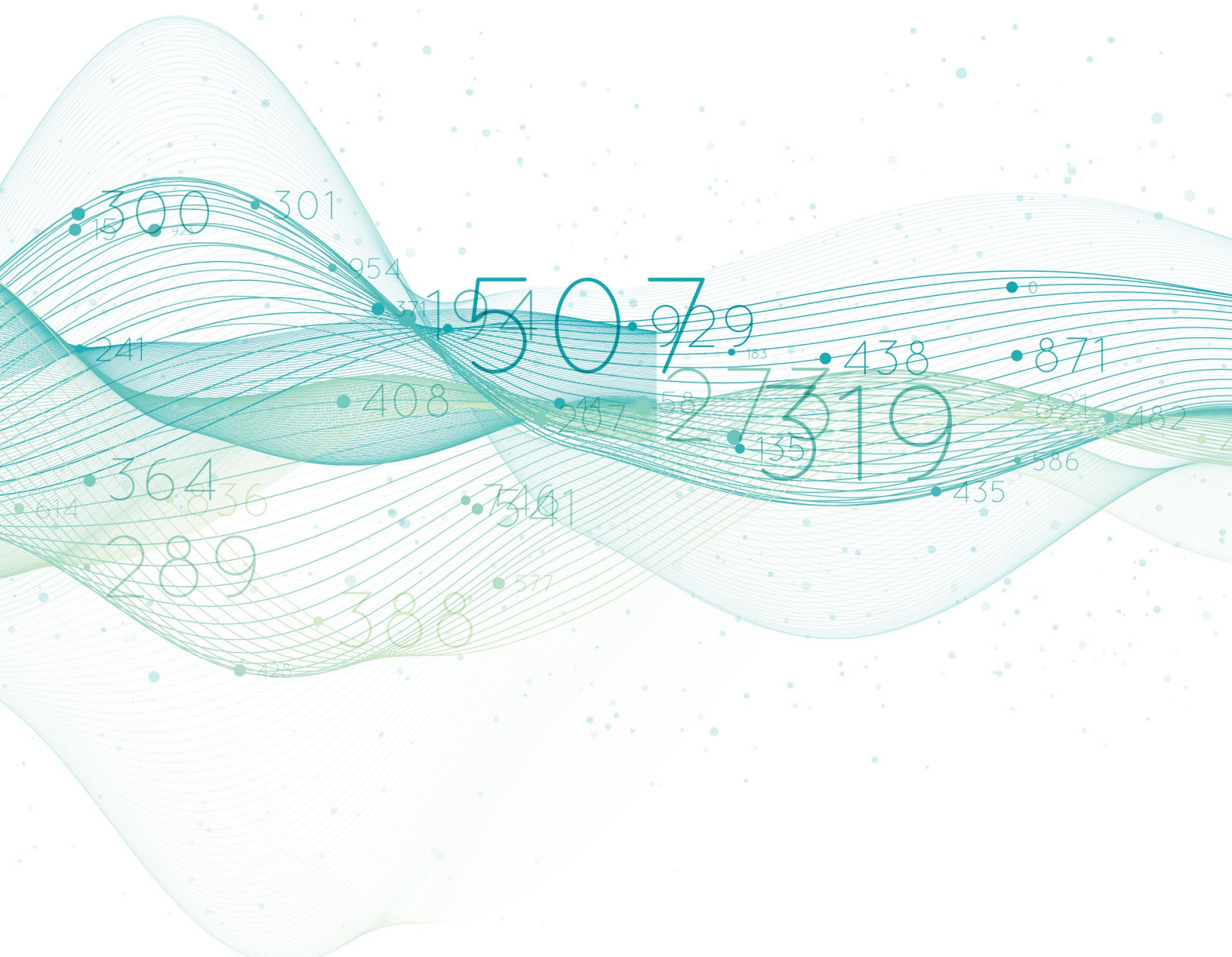
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