



# EXECUTIVE SUMMARY

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## ICT IN HEALTH SURVEY

# 2021

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# Executive Summary

## ICT in Health 2021

### COVID-19 Edition – Adapted methodology

Since 2013, the ICT in Health survey has investigated the adoption and use of information and communication technologies (ICT) in Brazilian healthcare facilities. In its eighth edition, it presents data collected in the context of the COVID-19 pandemic in Brazil, obtained under a situation where the healthcare system and professionals faced a demand for care for thousands of cases of the disease. Therefore, this edition employed an adapted methodology, and interviews were conducted only with managers of the facilities.

In recent years, there has been an increase in the use of computers and Internet access in Brazilian healthcare facilities. The facilities that presented lower percentages of access to basic ICT infrastructure were still public facilities, of which 6% did not have access to computers and the Internet (about 3,000), and outpatient facilities, of which 4% did not have computers or Internet access (about 3,600). Among private facilities, inpatient facilities, and facilities that provided diagnosis and therapy

services (SADT), computer and Internet access were universalized. Regional disparities were also observed, as shown in Figure 1.

There was a growth trend in the use of devices such as laptops and tablets in 2021. The results of the survey indicated that 29% of healthcare facilities used tablets and 61% used laptops, percentages higher than those found in 2019 (17% and 48%, respectively).

Connection via cable or optical fiber was present in 94% of healthcare facilities with Internet access, an increase of eight percentage points in relation to 2019. The second most-used type of connection was mobile or via 3G or 4G modem (36%). Radio connections (12%) and satellite connections (5%) were used by a smaller percentage of facilities.

The maximum download speed of the main connection of healthcare facilities also presented an upward trend. Connection speeds above 100 Mbps were present in 23% of facilities, a percentage that was 11% in 2019. The main types of facilities responsible for this increase were private facilities (36%), inpatient facilities with more than 50 beds (39%), and those that

### Computerization of Primary Health Units

In 2021, 94% of Primary Health Units (PHUs) had computers and 92% accessed the Internet. Access was mostly on desktop computers (92%), but the use of laptops and tablets took place in about 40%. In addition, in 91% of PHUs, Internet access was provided by cable or optical fiber connections, and in 17%, by mobile connections. The connection speeds were still slower than those of other types of facilities, considering that the maximum speed in 41% of these facilities was 10 Mbps. Another highlight was the growing use of electronic health records, which reached 89% of PHUs (up from 78% in 2019).

provided diagnosis and therapy services (30%). Despite these advances, there is still room for improvement, mainly in the connection speeds of public and outpatient facilities, which maintained lower speed ranges.

### IT GOVERNANCE AND INFORMATION SECURITY

As for IT governance and management, the results indicated that only 29% of healthcare facilities had IT departments, with a significant difference between public (17%) and private (40%) facilities. Regarding technical support in IT, in 61% of public facilities, this service was performed by providers hired by health departments. Most private facilities (58%) used service providers hired by the facilities themselves.

Items related to information security were also mentioned in greater proportions compared to 2019 (Chart 1), especially regarding encryption tools. These tools were most used by inpatient facilities with more than 50 beds and facilities that provided diagnosis and therapy services.

With the coming into force of the Brazilian General Data Protection Law (LGPD, and with the goal of monitoring compliance of healthcare facilities with the new requirements, a new indicator was included in this edition. The results showed that about 30% of the facilities mentioned the implementation of some compliance strategies. A higher percentage of inpatient facilities with more than 50 beds and facilities that provided diagnosis and therapy services adopted measures to comply with the new law. The most-cited measures were offering service channels to patients (38%); providing information and communication reports about the LGPD (32%); and surveying personal data and classifying it (31%). Therefore, it is clear that there is a need for all healthcare facilities to expand their efforts to ensure the privacy and

protection of the personal data of patients and users of electronic systems.

### PATIENT DATA IN ELECTRONIC FORMAT

The adoption of electronic systems to record patient information proved crucial for epidemiological monitoring during the health crisis. The results of the survey pointed to greater availability of these systems, considering that they were present in 88% of facilities in 2021, six percentage points higher than in 2019. Emphasis goes to public facilities, whose percentage went from 74% to 85% in this period. Despite the progress, regional disparities were still found: In the Northeast region, 81% of facilities had electronic systems, while in the other regions this percentage was around 90%.

These results also influence greater availability of patient data in electronic format:

in practically all the items investigated, there was an increase in the percentage of healthcare facilities (Chart 3). The availability of data varied according to the type of facility and, in general, was more present in inpatient facilities with more than 50 beds. Greater computerization of PHUs was also reflected in this indicator, with all items showing an increase

in their percentage when compared to 2019.

Regarding the functionalities of electronic systems, there was an increase in functionalities related to patient care, such as writing medical prescriptions (from 47% in 2019 to 58% in 2021), listing patients by diagnosis (from 39% to 46%), and listing medications being taken by a specific patient (from 24% to 33%).

### ONLINE PRESENCE AND TELEHEALTH

Easier access to health information became even more necessary during the health crisis. Nonetheless, the percentage of healthcare facilities with websites remained stable (around 42%).

LESS THAN HALF  
OF HEALTHCARE  
FACILITIES  
IMPLEMENTED  
COMPLIANCE  
MEASURES  
ALIGNED WITH LGPD  
REQUIREMENTS

FIGURE 1  
**USE OF COMPUTERS AND THE INTERNET IN THE LAST 12 MONTHS (2021)**

Total number of healthcare facilities (%)

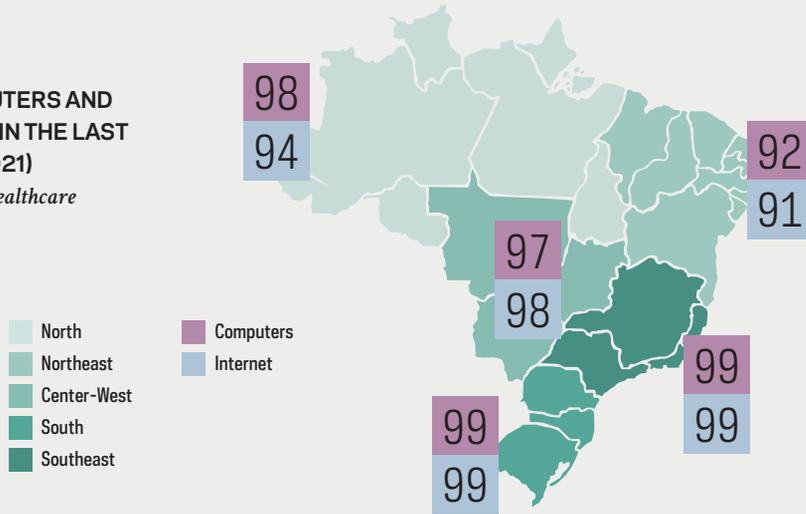


CHART 1  
**HEALTHCARE FACILITIES BY TYPE OF INFORMATION SECURITY TOOL USED (2019 AND 2021)**

Total number of healthcare facilities that used the Internet in the last 12 months (%)

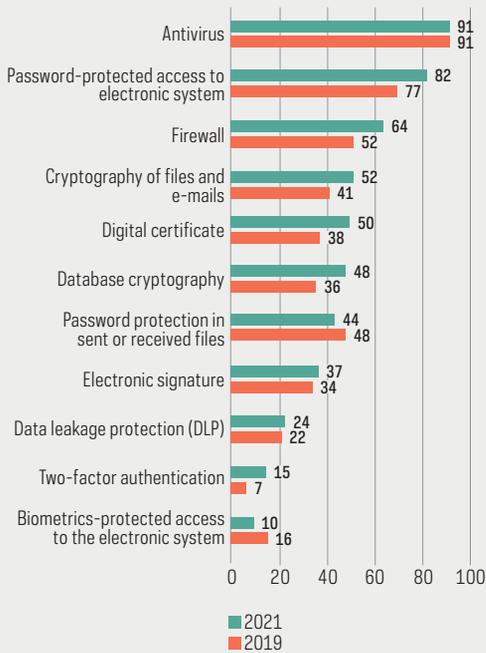
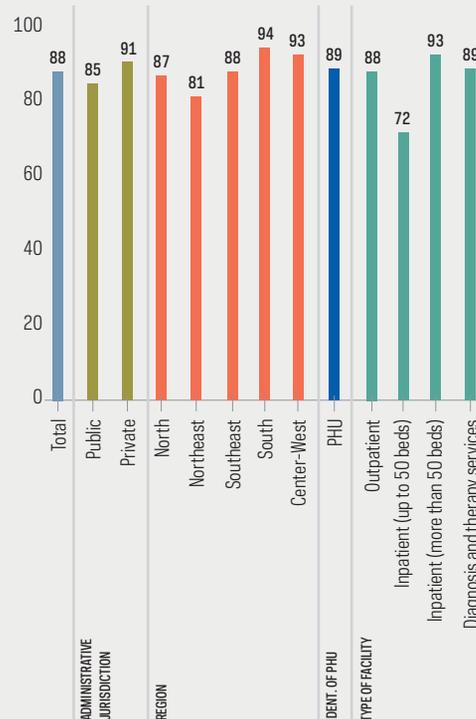


CHART 2  
**HEALTHCARE FACILITIES BY AVAILABILITY OF AN ELECTRONIC SYSTEM TO RECORD PATIENT INFORMATION (2021)**

Total number of healthcare facilities that used the Internet in the last 12 months (%)



It is worth noting that the highest percentage of websites was found among facilities that provided diagnosis and therapy services (71%). There was a small increase in the proportion of facilities that had social network profiles (from 46% in 2019 to 53% in 2021).

The only online service that increased in availability compared to the previous edition was interactions with medical teams (9% to 15% in the period). Other services, such as booking appointments and tests, and viewing one's patient chart and lab test results, remained stable.

The use of telehealth was boosted during the pandemic, and its use was important to maintain several healthcare services. In this edition of the ICT in Health survey, a new item was included regarding teleconsultations, considering the changes in the law and the authorization granted by the Ministry of Health to use this resource for patient access. Teleconsultations were made available by 18% of healthcare facilities. With the exception of distance learning and distance research activities, the other items investigated by the survey increased in comparison to 2019 (Chart 4).

#### **ADOPTION AND USE OF NEW TECHNOLOGIES**

Starting with this edition, the survey included a new module about the adoption and use of new technologies by healthcare facilities, considering that they are tools that can contribute to improving clinical, governance, and strategic processes in healthcare planning, enabling better reach of digital health and its

monitoring. Results indicated that a significant proportion of healthcare facilities used cloud services (Chart 5).

Only 4% of facilities (about 4,268) performed Big Data analysis, while among public facilities, this percentage was 1% (about 635), and among private facilities, 6% (about 3,633). Among the facilities that performed Big Data analytics, 73% used in-house teams and 47%, external service providers. The main

source used was the facility's internal data, originating in patient demographics, forms, and medical records (76%).

The use of Artificial Intelligence was mentioned by about 4,600 facilities, while robotics was cited by about 3,700.

**TELEHEALTH IN PHUS: 30% OFFERED REMOTE PATIENT MONITORING AND 14% OFFERED TELECONSULTATIONS**

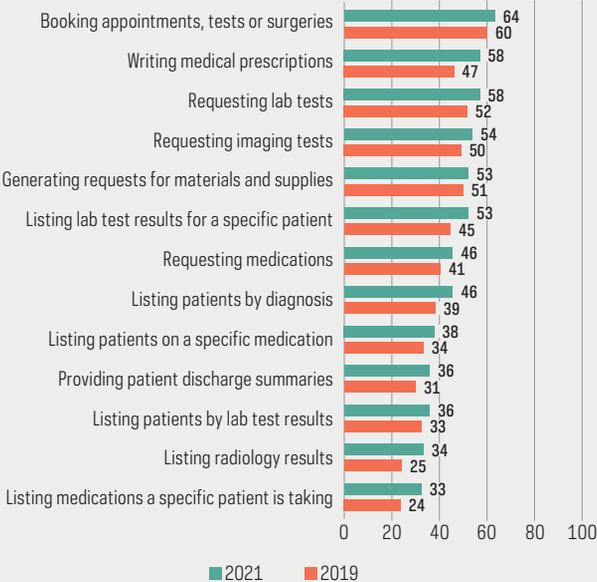
### **Survey methodology and access to data**

Due to the demand for methodological improvements for the dissemination of more disaggregated data and limitations imposed on data collection during the COVID-19 pandemic, this edition collected data only from healthcare facilities. Data collection was carried out, using telephone interviews and a web questionnaire, with 1,524 managers between January and August 2021. The results of the ICT in Health survey are available on the Cetic.br|NIC.br website (<http://www.cetic.br>). The tables of estimates and margins of error for each indicator are also available for download on the Cetic.br|NIC.br website.



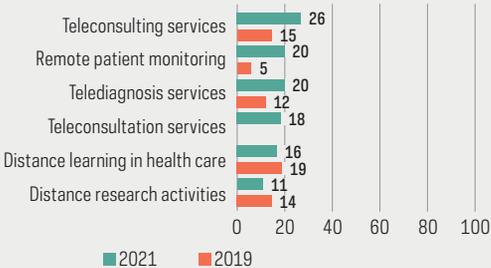
**CHART 3  
HEALTHCARE FACILITIES BY AVAILABLE ELECTRONIC SYSTEM FUNCTIONALITY (2019 AND 2021)**

Total number of healthcare facilities that used the Internet in the last 12 months (%)



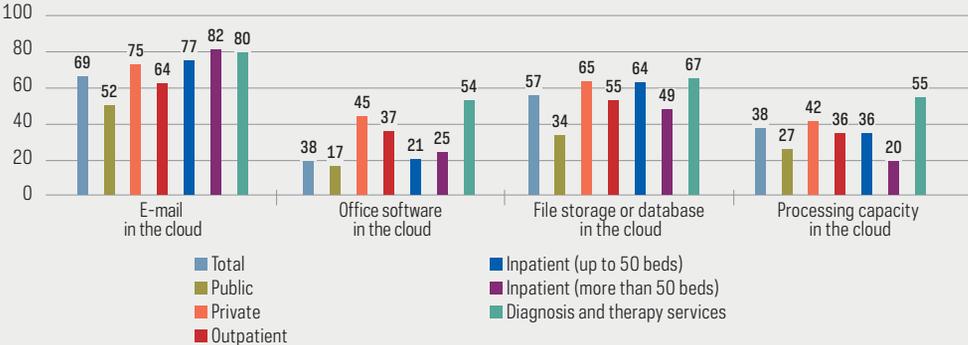
**CHART 4  
HEALTHCARE FACILITIES BY TELEHEALTH SERVICES AVAILABLE (2019 AND 2021)**

Total number of healthcare facilities that used the Internet in the last 12 months (%)



**CHART 5  
HEALTHCARE FACILITIES THAT USED CLOUD SERVICES (2021)**

Total number of healthcare facilities with information technology departments or areas (%)



## ABOUT CETIC.br

cetic.br

The Regional Center for Studies on the Development of the Information Society, a department of NIC.br, is responsible for producing indicators and statistics on the access and use of the Internet in Brazil, disseminating analyzes and periodic information on the Internet development in the country. Cetic.br is a Regional Study Center, under the auspices of UNESCO. More information at <http://www.cetic.br/>.

## ABOUT NIC.br

nic.br

The Brazilian Network Information Center – NIC.br (<http://www.nic.br/>) is a non-profit civil entity, which in addition to implementing the decisions and projects of the Brazilian Internet Steering Committee, has among its attributions: coordinate the registration of domain names – Registro.br (<http://www.registro.br/>), study, address and handle security incidents in Brazil – CERT.br (<http://www.cert.br/>), study and research network technologies and operations – CEPTRO.br (<http://www.ceptro.br/>), produce indicators on information and communication technologies – Cetic.br (<http://www.cetic.br/>), implement and operate Internet Exchange Points – IX.br (<http://ix.br/>), enable the participation of the Brazilian community in the global development of the Web and support the formulation of public policies – Ceweb.br (<http://www.ceweb.br/>), and host the Brazilian W3C office (<http://www.w3c.br/>).

## ABOUT CGI.br

cgi.br

The Brazilian Internet Steering Committee, responsible for establishing strategic guidelines related to the use and development of the Internet in Brazil, coordinates and integrates all Internet service initiatives in the country, promoting technical quality, innovation and dissemination of the services offered. Based on the principles of multistakeholderism and transparency, CGI.br represents a democratic Internet governance model, internationally praised, in which all sectors of society participate equitable in the decision-making. One of its formulations is the 10 Principles for the Governance and Use of the Internet in Brazil (<http://www.cgi.br/principios>). More information at <http://www.cgi.br/>.



### Access complete data from the survey

The full publication and survey results are available on the **Cetic.br** website, including the tables of proportions, totals and margins of error.

