

2023

Annual Report Cetic.br



cetic.br
Regional Center for
Studies on the
Development of the
Information Society

nic.br
Brazilian Network
Information Center

cgi.br
Brazilian Internet
Steering Committee

About CGI.br

The Brazilian Internet Steering Committee (CGI.br) was created with the purpose of coordinating and integrating all Internet service initiatives in Brazil, as well as promoting technical quality, innovation, and dissemination of Internet services.

About NIC.br

The Brazilian Network Information Center (NIC.br) was created to implement the decisions and projects of the Brazilian Internet Steering Committee.

About Cetic.br

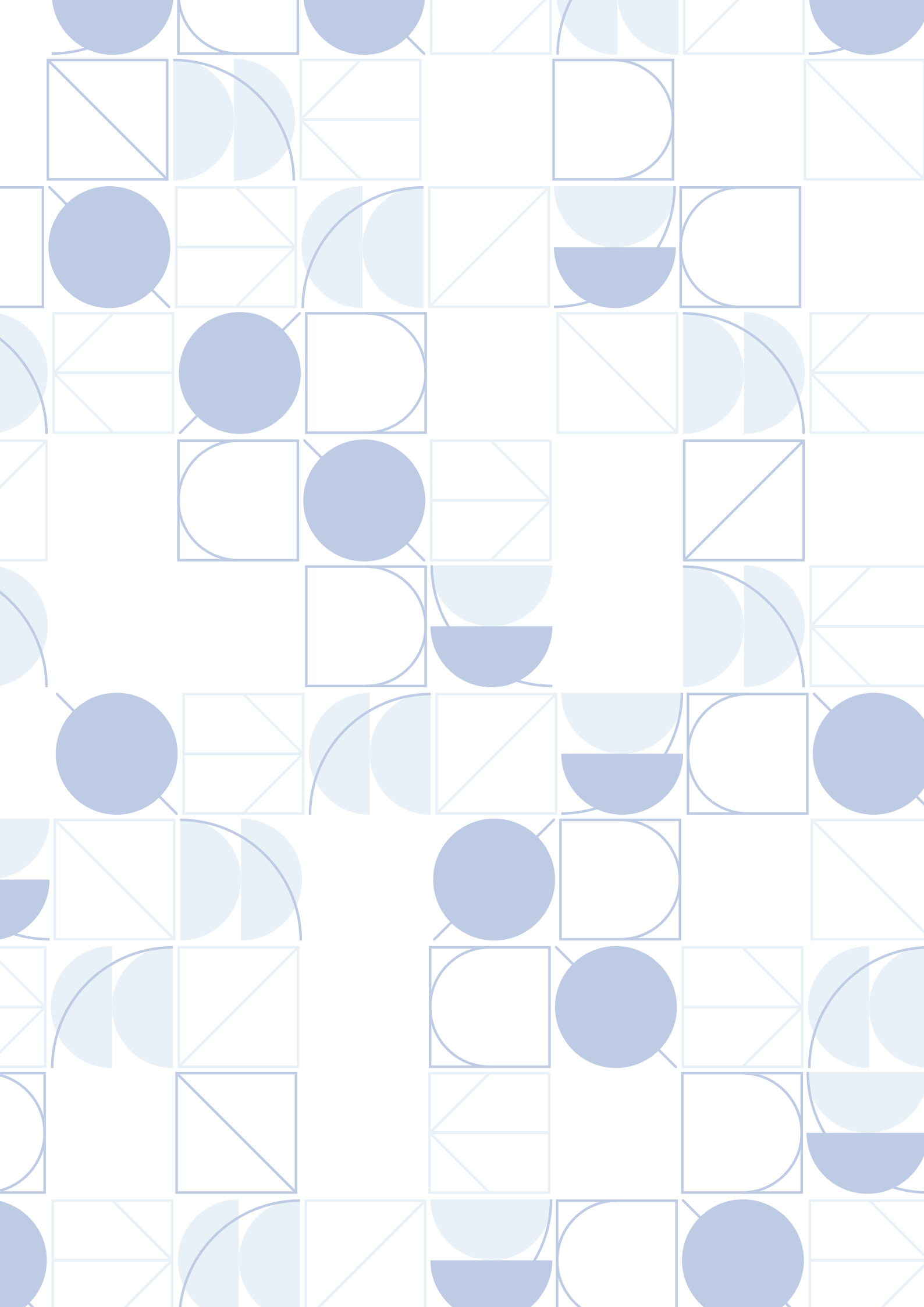
The Regional Center for Studies on the Development of the Information Society (Cetic.br) is the NIC.br department responsible for the production of indicators and statistics on the availability and use of the Internet in Brazil. In 2012, Cetic.br|NIC.br was approved as a UNESCO Category 2 Centre with the mission of monitoring the development of knowledge and information societies in Latin America and the Portuguese-speaking countries of Africa.



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Message from the CEO

As we release the 2023 Annual Report for the Regional Center for Studies on the Development of the Information Society of the Brazilian Network Information Center (Cetic.br|NIC.br), I am honored to share with you the significant accomplishments achieved by our Center over the past year.

Cetic.br|NIC.br's projects and initiatives are geared towards grasping the implications of the digital transformation in society. These efforts have been instrumental in advancing our mission to generate reliable statistical data and to provide insightful analysis, which is essential for understanding the rapidly evolving digital landscape and for providing high-quality data to governments and an extensive array of national and international stakeholders.

In a year characterized by new advancements in digital technologies, particularly in Artificial Intelligence and large language models (LLM), Cetic.br|NIC.br has undertaken new projects in measurement and statistical data production to match the growing need for data. The societal implications of LLMs, including dissolution of language barriers, provision of real-time translation services, and impacts on global communication and employment, are profound. These points offer a snapshot of LLMs' broad impact across sectors such as education, justice, healthcare, and beyond, presenting both opportunities and challenges that call for measured responses.

Cetic.br|NIC.br remains committed to meet the challenge of quantifying the societal impacts of emerging digital technologies. We strive to develop innovative methods that integrate various data sources and types, aiming to provide a comprehensive understanding of the socioeconomic consequences of digital advancements.

In addition to our standard national ICT surveys and sector-specific reports, 2023 has seen Cetic.br|NIC.br start a new study on

meaningful connectivity in Brazil and produce data to support the Brazilian Observatory on Artificial Intelligence (OBIA), which is poised to be a central hub for collaboration and knowledge-sharing within the AI community. Cetic.br|NIC.br also plays an active role in ongoing discussions about the Latin America AI Index, as well as ongoing deliberations regarding the establishment of the OECD AI Index.

Our capacity-building efforts in ICT measurement in partnership with key partners – the UN Economic Commission for Latin America and the Caribbean (UN-ECLAC), the Latin American Development Bank for Latin America and the Caribbean (CAF), the National School of Statistical Science (ENCE/IBGE), and the Inter-American Development Bank (IADB) – have focused on disseminating expertise and success stories in ICT statistics and evidence-based policymaking. Furthermore, our contribution to revising UNESCO's Internet Universality Indicators (IUI) and offering technical support to countries implementing them remains steadfast.

All these initiatives and our data production processes through national surveys are entirely financed by resources generated by Brazil's Internet domain name registry, under the .br ccTLD, managed and operated by NIC.br.

I would like to conclude with heartfelt thanks to our staff, valued partners, and the extensive network of experts who collaborate with us. Together, we are harnessing the transformative power of data for policy guidance, cutting-edge research, and steering the future of our digital society toward a path that values progress, inclusivity, trust, ethics, and social good.

Demi Getschko – CEO
Brazilian Network Information
Center (NIC.br)

2023 Highlights

In 2023, Cetic.br|NIC.br reaffirmed its commitment to advancing the measurement and understanding of the implications of information and communication technologies (ICT) in the development of information and knowledge societies. The ongoing process of digital transformation – particularly highlighted by the rapid adoption of technologies like Artificial Intelligence (AI) and large language models (LLMs) – is marked by the increasing integration of disruptive technologies in critical sectors, creating new requirements for decision-making and policy formulation. These developments have underscored the critical need for robust statistical data to understand the multifaceted impacts of digital transformation on socioeconomic and sustainable development. In response to these challenges, Cetic.br|NIC.br has innovated its methodologies, integrating new approaches into its existing measurement initiatives. This includes projects focused on measuring meaningful connectivity, aimed at understanding the nuances of Internet access and usage beyond basic connectivity metrics, and the introduction of new studies on the implications of AI.

Building on its efforts to address the challenges of the digital transformation landscape, Cetic.br|NIC.br, as a UNESCO Category 2 Centre, carried out a broad spectrum of activities in 2023. These activities included comprehensive data collection through sample surveys and qualitative research, as well as various capacity-building initiatives. A notable highlight of 2023 was the Center's pivotal

role in the establishment of the Brazilian Observatory on Artificial Intelligence (OBIA), through the production of new AI indicators in the context of enterprises, government organizations, schools, and healthcare facilities. This initiative underlines Cetic.br|NIC.br's dedication to deepening its understanding of, and shaping the discourse around, emerging technologies like AI.

Cetic.br|NIC.br's new initiatives on measuring meaningful connectivity, along with its involvement in projects like OBIA, have proven to be crucial in understanding the evolving digital landscape. As Artificial Intelligence (AI) increasingly permeates various societal, political, and economic facets, the role of Cetic.br|NIC.br in producing reliable data and fostering insightful analysis and dialogues becomes increasingly vital within the new digital ecosystem. Understanding this ecosystem requires engaging in discussions about data governance, focusing on collaboration to develop innovative methodological approaches, exploring new data sources, and promoting data sharing. Cetic.br|NIC.br's active participation in these debates is pivotal in uncovering new opportunities to produce quality, timely evidence for policymaking, ensuring that decisions are informed by accurate and current data in this rapidly changing digital era.

In 2023, Cetic.br|NIC.br conducted a comprehensive series of national ICT surveys covering various societal domains, including households, enterprises, government, education, health, and children. These annual surveys, augmented by other consistent research and studies,

were key in capturing evolving trends in digital technology adoption. The Center's enhancement of data collection and analysis was evident, with the execution of 11 national ICT surveys yielding 615 indicators, reflecting its growing commitment to providing in-depth insights into the digital landscape.

Cetic.br|NIC.br played a pivotal role in advancing public discourse through a series of engaging public debates and events. These forums were instrumental in disseminating and discussing findings from national ICT surveys, creating a collaborative space for stakeholders to share ideas and deepen their understanding of the implications of ICT in society. The Center's dedication to advancing ICT knowledge and skills was apparent in its diverse range of capacity-building initiatives. It successfully executed several workshops, engaging 171 participants in interactive learning experiences focused on ICT applications and data analysis. In addition, Cetic.br|NIC.br hosted a variety of webinars and debates, which attracted over 3,005 viewers, and offered massive open online courses (MOOCs) in partnership with international organizations, registering 5,500 individuals. These online courses focused on critical areas such as the role of ICT in achieving Sustainable Development Goals (SDGs) and the impact of AI on the rule of law. This wide range of capacity-building initiatives showcases Cetic.br|NIC.br's dedication to empowering individuals and professionals with the knowledge and skills necessary to navigate and contribute to the evolving digital landscape.

Furthermore, Cetic.br|NIC.br significantly

strengthened its cooperation networks in 2023, building upon the foundations laid with stakeholders in Latin American, Caribbean, and Portuguese-speaking African countries in the previous year. This regional collaboration was key to achieving shared goals and exchanging insights on digital transformation. The Center also deepened stakeholder engagement, fostering dialogues on critical areas, including the digital economy, governance, and sector-specific ICT applications. This ongoing, enriching interaction emphasized Cetic.br|NIC.br's dedication to meaningful collaborations that contribute to shaping the discourse on digital progress and policy development.

“ In 2023, we witnessed a significant transformation in the digital realm, driven by the advancements in AI and LLMs. These developments presented complex challenges for our conventional measurement and analytical methodologies. At Cetic.br|NIC.br, this motivated us to innovate, leading to the development of new methods in data collection and analysis. These initiatives reflect our unwavering commitment to stay at the forefront of the ever-evolving digital landscape. It is essential for us to ensure that our data production initiatives are not only robust but also acutely relevant for policymaking in an era marked by rapid technological advancements. ”

Alexandre Barbosa - Head of the Regional Center for Studies on the Development of the Information Society (Cetic.br|NIC.br)

2023 Facts & Figures

703

Field interviewers involved
in data collection

45

Field coordination
supervisors

11

Publication of ICT surveys,
NIC.br Sectoral Studies & Internet
Sectoral Overview

45,812

Interviews carried out in all
of Cetic.br|NIC.br's surveys

615

Indicators published

296

External experts involved
in ICT survey projects

11

Expert meetings
(multistakeholder groups)

2,814

Media appearances

2

New cooperation agreements
signed in 2023

17

Number of cooperation
agreements in force

3,005 views

Webinars and public debates
organized by Cetic.br|NIC.br

5,500

registered individuals

MOOCs: "Tech for Good: The Role of
ICT in Achieving the SDGs" and "AI
and the Rule of Law"

171
participants

Capacity-building and workshops on
research methodologies¹

¹ The participants were enrolled in the following capacity-building workshops: "NIC.br Annual Workshop on Survey Methodology" and "School of Digital Transformation."

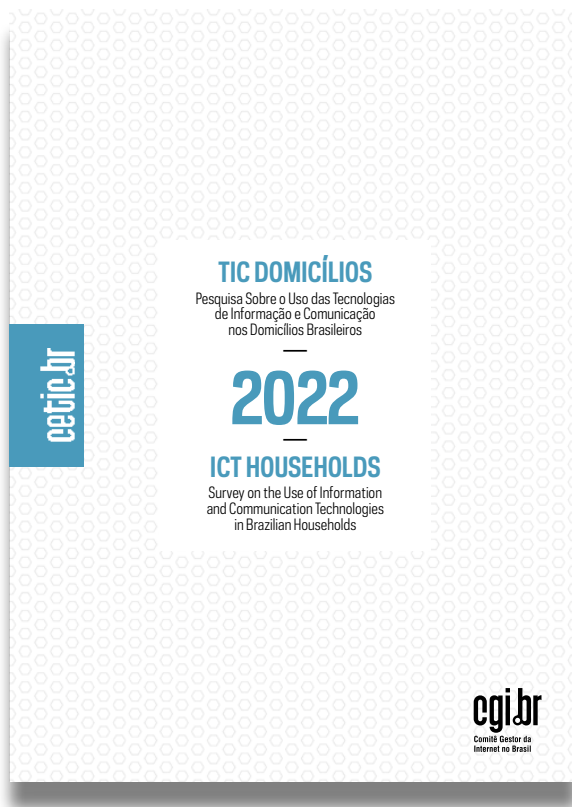
Publications

The production of high-quality statistical data to monitor access to and use and appropriation of information and communication technologies (ICT) is a central activity developed by Cetic.br|NIC.br. The Center carries out a set of four annual ICT survey projects – related to households, education, health, and children – in addition to regular surveys with other periodicities – related to enterprises, electronic government, cultural institutions, nonprofit organizations, Internet service providers, and Internet public access centers. Besides regular surveys, Cetic.br|NIC.br publishes other studies related to the challenges to digital technology adoption among individuals and organizations using quantitative and qualitative approaches. These projects cover critical areas for monitoring the development of knowledge and information societies, while also generating relevant data for monitoring the Sustainable Development Goals (SDGs) and targets defined by the United Nations (UN) in its 2030 Agenda for Sustainable Development.

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ICT Households

Carried out annually since 2005, the ICT Households survey aims to measure ICT use in Brazilian households, individual access to computers and the Internet, and activities developed online, among other indicators.

In this edition, the survey presented an overview of the digital skills of Internet users in Brazil, with an emphasis on the verification of information found on the Internet and the adoption of security measures to protect devices and online accounts. This edition reached a total of 20,688 households, and face-to-face interviews were carried out between June and October 2022.

Since the 2015 edition, all of the ICT Households micro databases and documentation have been available for download on Cetic.br|NIC.br's website.

Articles published in ICT Households 2022

Digital citizenship: The Uruguayan strategy

Magdalena Seijo, Valeria Colombo, Leticia Brandino Pontillo & Andrea Sallé Onetto

Access to online healthcare solutions in Latin America and the Caribbean: 2022-2023

Mark W. Datysgeld & Christiane Tavares F. da Silva

Precarious Internet connectivity in Brazil: Notes for a data-driven characterization

Paloma Rocillo

Reducing digital inequalities in older adults: Impacts of access to technology on the rights and quality of life of the elderly population

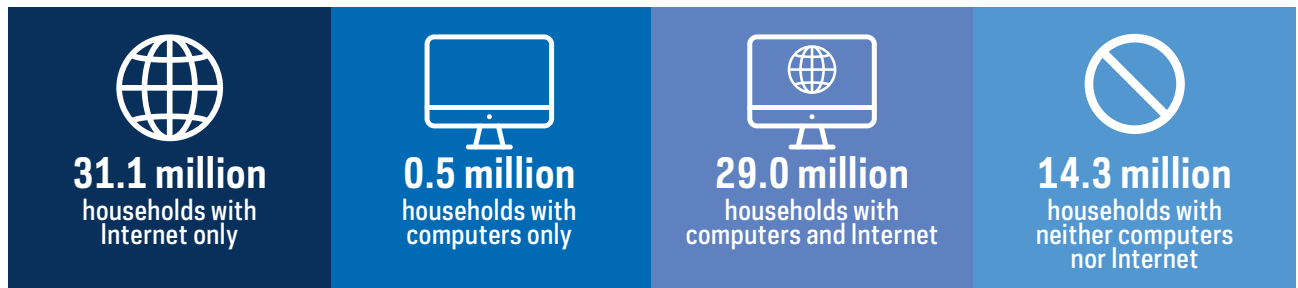
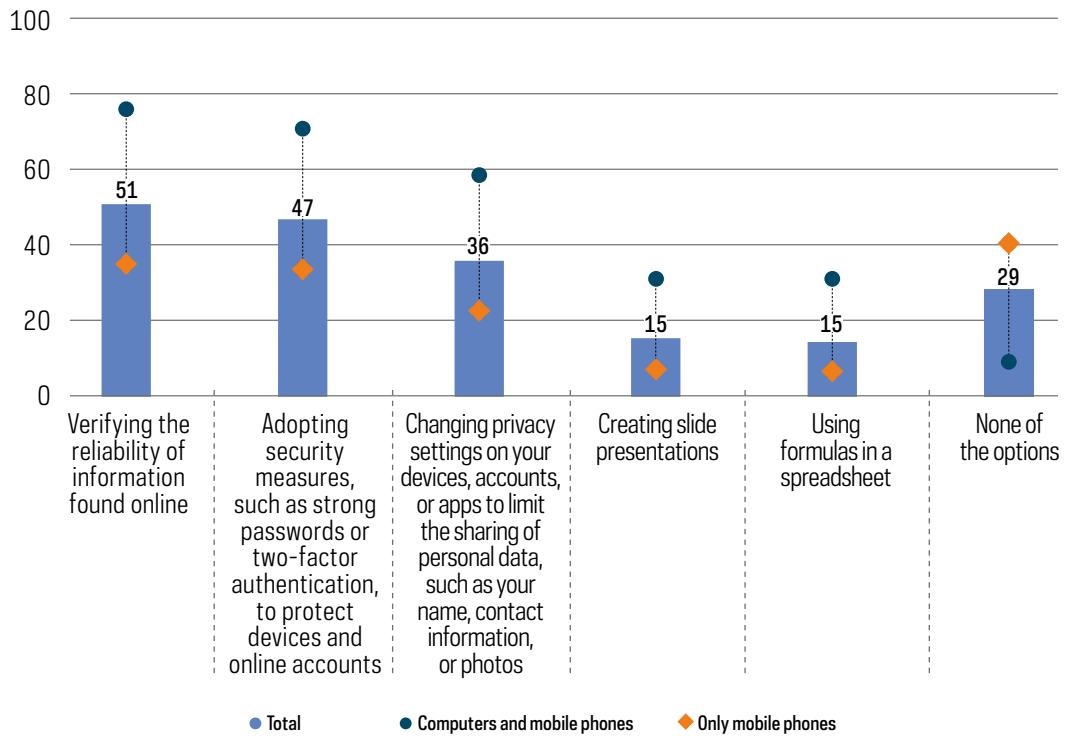
José Carlos Vaz & Mayra de Paula Panegassi dos Santos



In 2022, nearly **60 million (80%)** Brazilian households had Internet access.

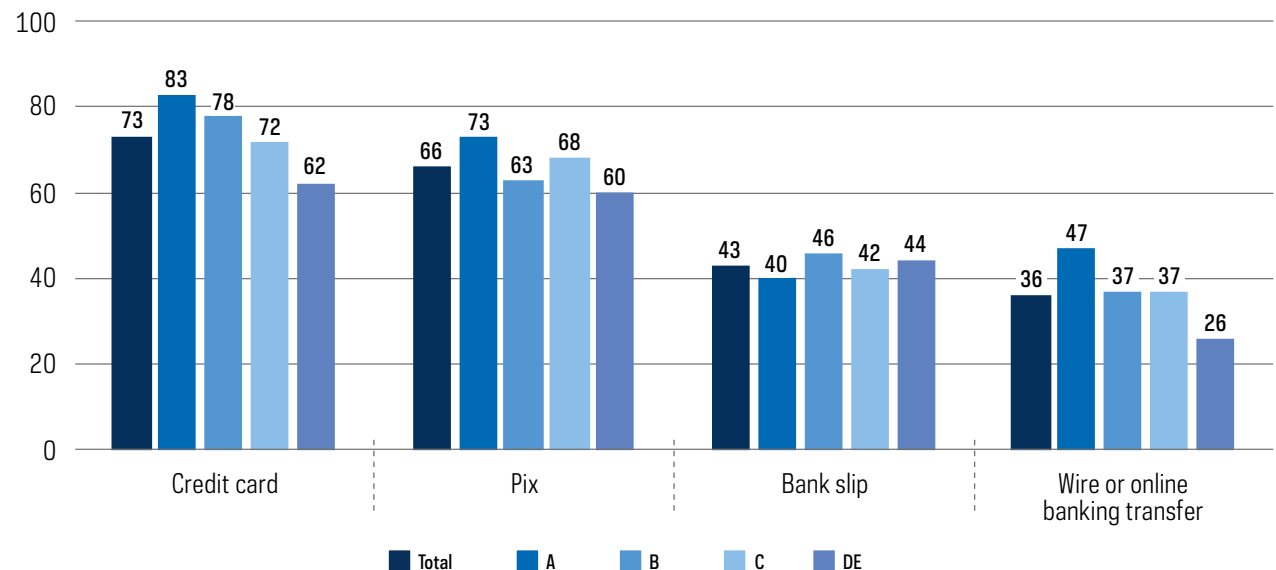
INTERNET USERS BY SELECTED DIGITAL SKILLS AND ACCESS DEVICES (2022)

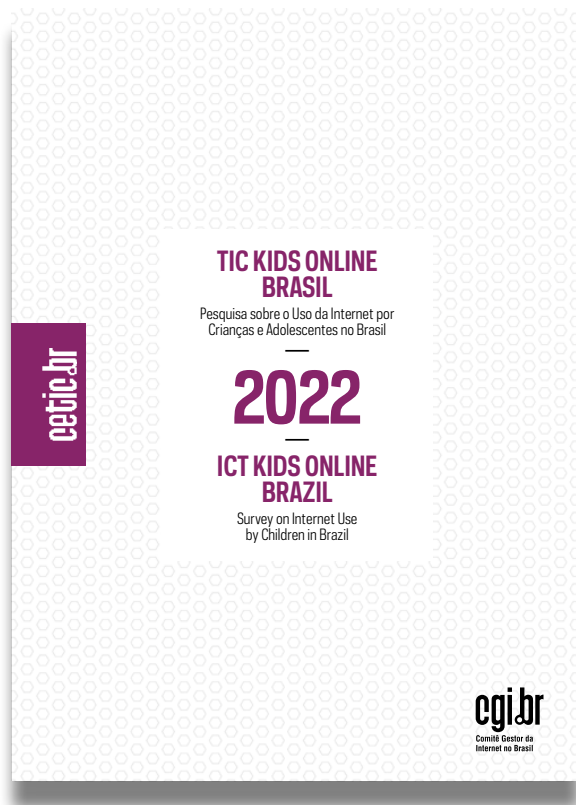
Total number of Internet users (%)



INTERNET USERS WHO PURCHASED GOODS OR SERVICES ONLINE, BY PAYMENT METHOD AND SOCIAL CLASS (2022)

Total number of Internet users who purchased goods or services online in the last 12 months (%)





ICT Kids Online Brazil

The goal of the ICT Kids Online Brazil survey is to understand how the population 9 to 17 years old uses the Internet and how they deal with risks and opportunities related to its use. It is fully aligned with the methodological framework of the Global Kids Online network and the Latin America Kids Online network.

The 2022 edition highlighted that low Internet speed and lack of mobile data are conditions of Internet use frequently perceived by respondents, especially among lower socioeconomic classes. Restricted access and use conditions limit online opportunities and the development of digital skills. Interviews were carried out face-to-face with the survey population (children 9 to 17 years old and their parents or legal guardians) in a total of 2,604 households.

Since the 2015 edition, the micro databases and documentation of the ICT Kids Online Brazil survey have been available for download on Cetic.br|NIC.br's website.

Articles Published in ICT Kids Online Brazil 2022

Disrupting Harm: Generating national evidence to prevent and respond to online child sexual exploitation and abuse

Angela Davis, Marium Hussein, Daniel Kardefelt-Winther, Camila Perera Aladro, Jennifer Quarti & Rogers Twesigye

Children and adolescents online: Risks, vulnerabilities and personal data protection

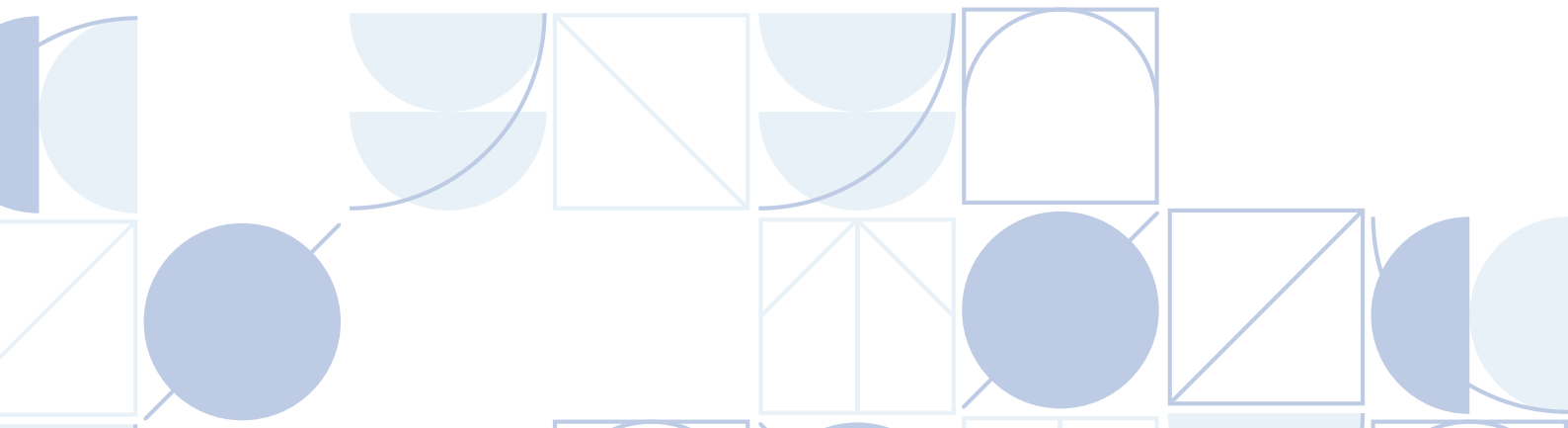
Ramon Silva Costa, Mariana Venâncio Pereira & Laura Carvalho Ferraz da Silva

Child online protection - Institutional actions of Anatel, ITU and ANPD


Renata Figueiredo Santoyo & Fernando de Mattos Maciel

Playing safely? Adolescents' perceptions of risks and opportunities in online games


Rodrigo Nejm, Emanuella Ribeiro Halfeld Maciel, Isabella Ferro & Guilherme Alves da Silva



In 2022, **43%** of Internet users 9 to 17 years old reported using **computers to access the Internet.**




87%
listened to online music




82%
watched videos, programs, movies, or series online



80%
looked up information on the Internet for schoolwork



70%
downloaded applications

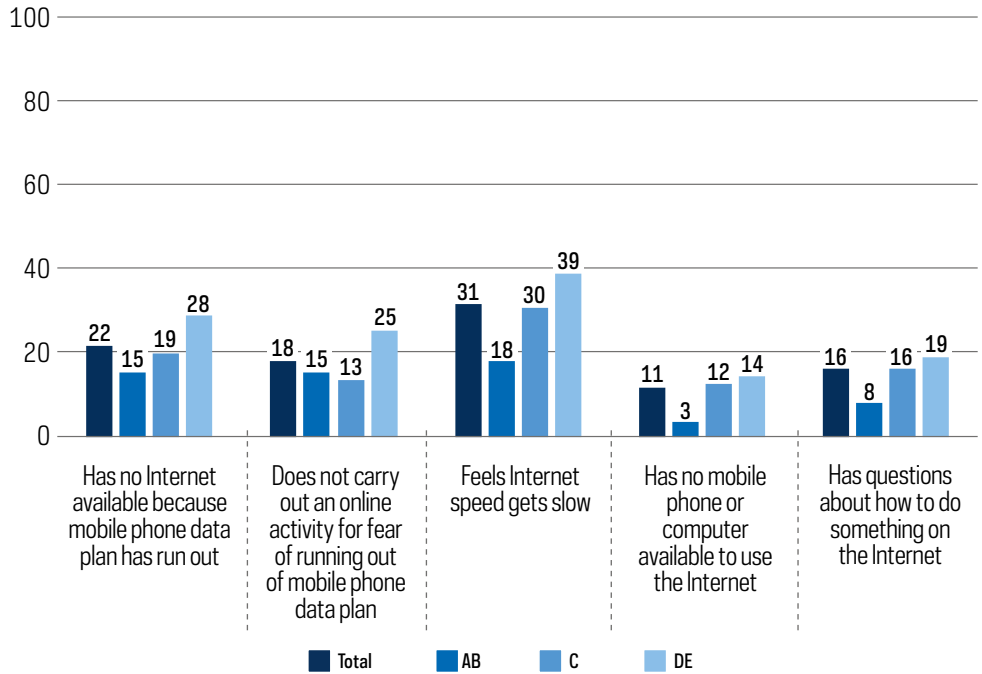


58%
played games online with other players

CHILDREN BY FREQUENCY OF SITUATIONS EXPERIENCED FOR INTERNET ACCESS AND USE, BY SOCIAL CLASS (2022)

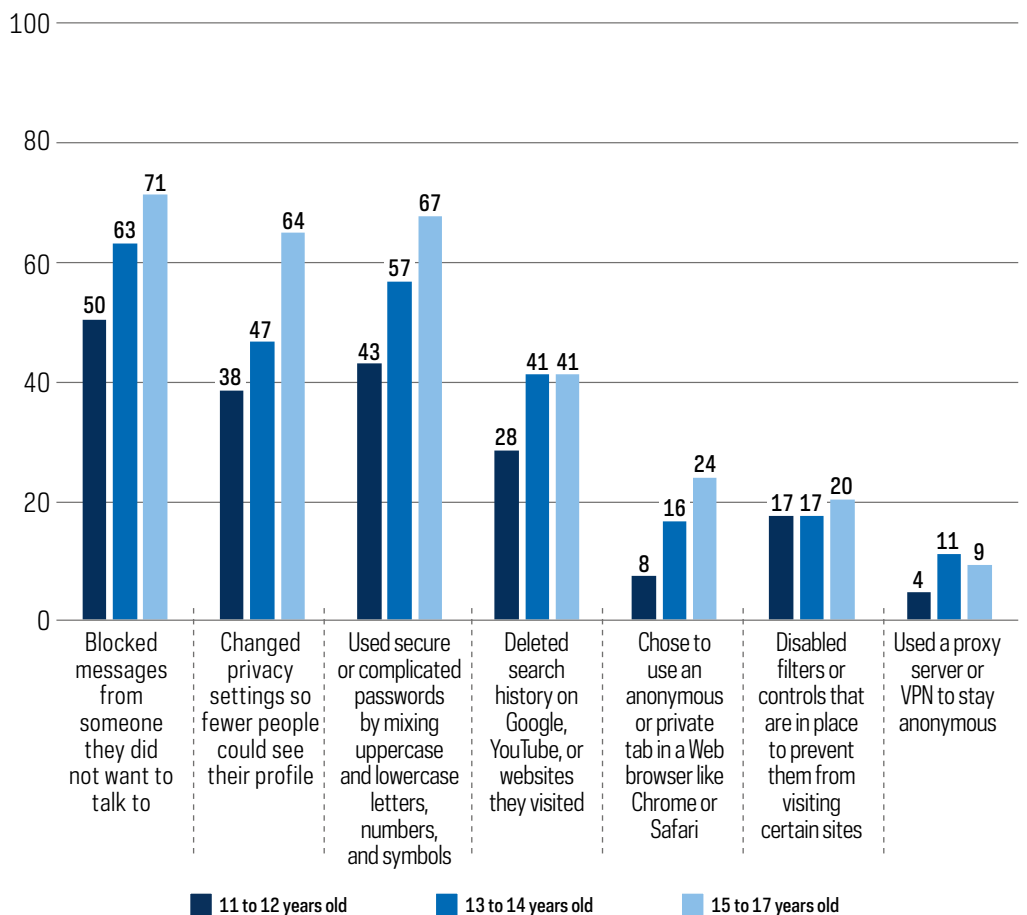
Total number of Internet users 9 to 17 years old (%)

*Always or almost always



CHILDREN BY STRATEGIES TO PROTECT THEIR PRIVACY, BY AGE GROUP (2022)

Total number of Internet users 11 to 17 years old (%)





ICT in Education

Carried out annually since 2010, the ICT in Education survey aims to investigate ICT access, use, and appropriation by students, educators, and school managers in Brazilian public and private Primary and Secondary educational institutions located in urban and rural areas.

The 2022 edition mapped meaningful connectivity in schools and between students and teachers; the offer of teacher training; the use of educational resources, platforms, applications, and school management systems; the production, use and treatment of data by schools, students and teachers (data for learning and privacy); and digital skills development in schools, such as media and information literacy, education for digital citizenship, data and AI literacy, and computational thinking. Interviews were carried out in 1,394 schools, with 959 school managers, 873 directors of studies, 1,424 teachers, and 7,192 students, totaling 10,448 interviews.

Articles published in ICT in Education 2022

Preparing for the realities of Artificial Intelligence: A key challenge for education in the 2020s

Neil Selwyn

Global transformations, local choices: Navigating the impacts of Artificial Intelligence on education

Velislava Hillman, Molly Esquivel, Priscila Gonsales, Samantha-Kaye Johnston & Emmanuel C. Ogu

Participation of children in Artificial Intelligence policies and development

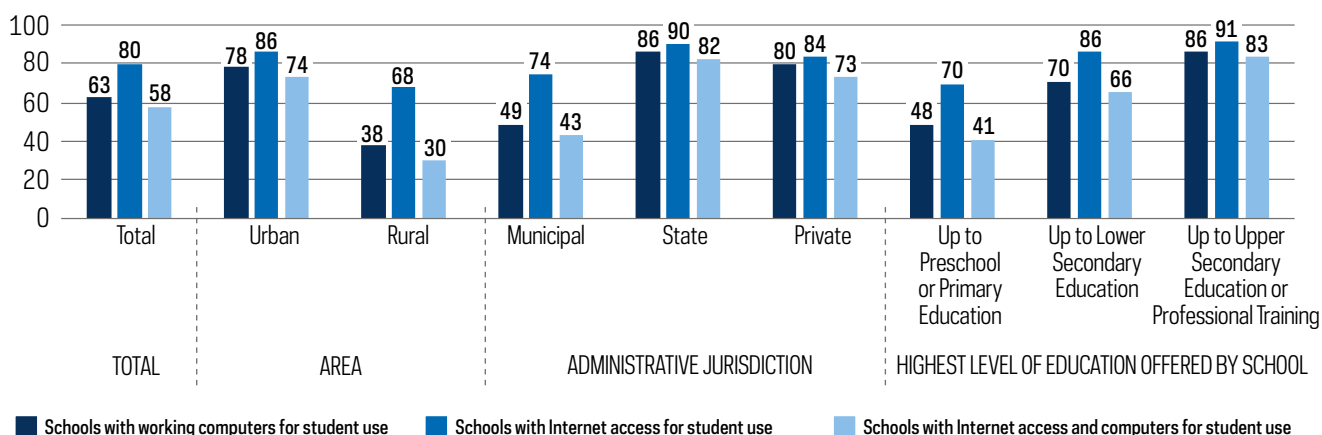
Lionel Brossi

Surveillance technologies and education: Mapping the use of facial recognition in public schools

Fernanda Martins, Bárbara Simão, Clarice Tavares & Anna Martha Araújo

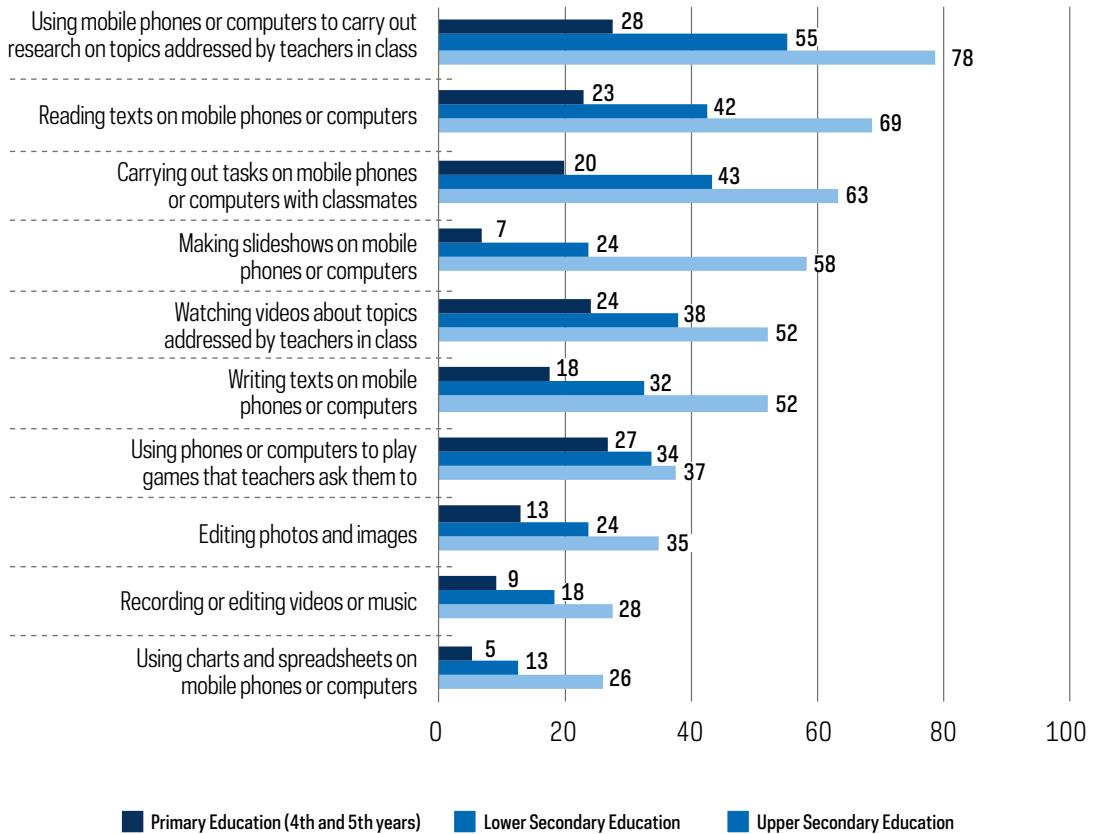
SCHOOLS BY CONNECTIVITY AVAILABILITY FOR STUDENT USE IN EDUCATIONAL ACTIVITIES (2022)

Total number of Primary and Secondary Education schools (%)





STUDENTS BY USE OF DIGITAL TECHNOLOGIES IN EDUCATIONAL ACTIVITIES AT SCHOOL (2022)

Total number of students in Primary and Secondary Education schools who are Internet users (%)




94%
of schools had
Internet access

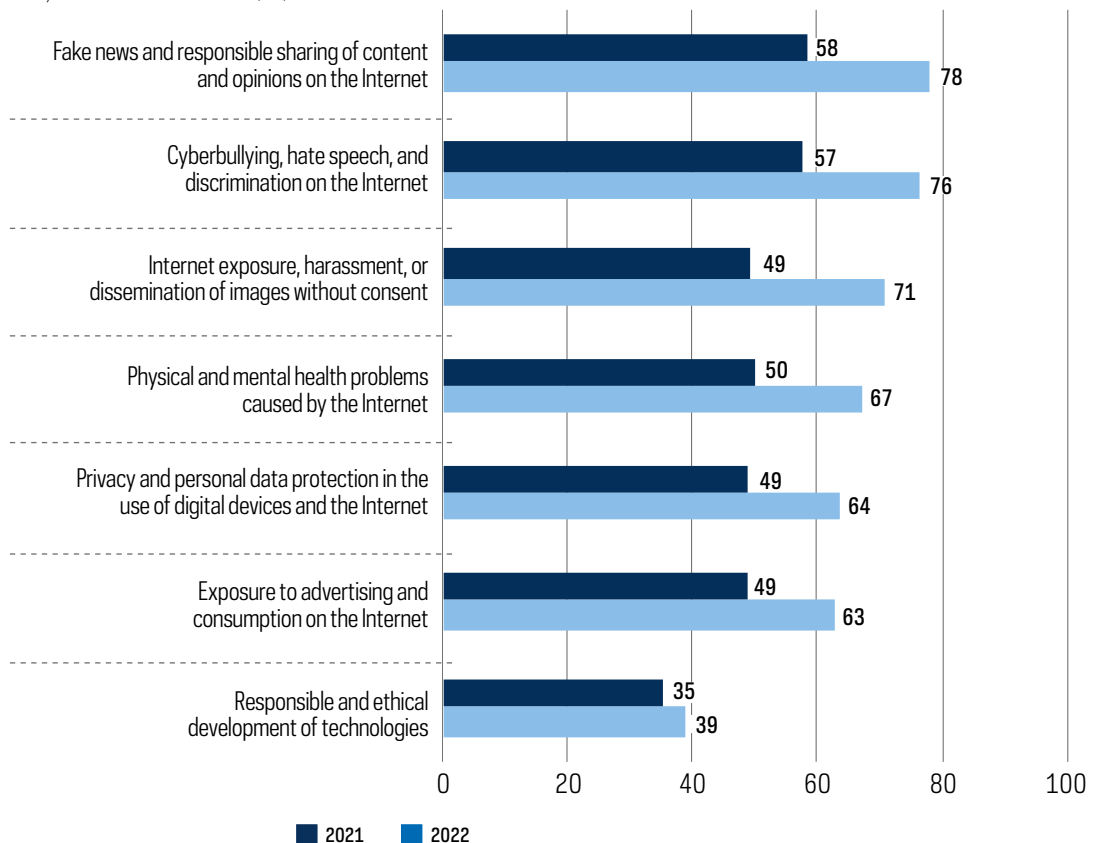

91%
of schools had
working computers

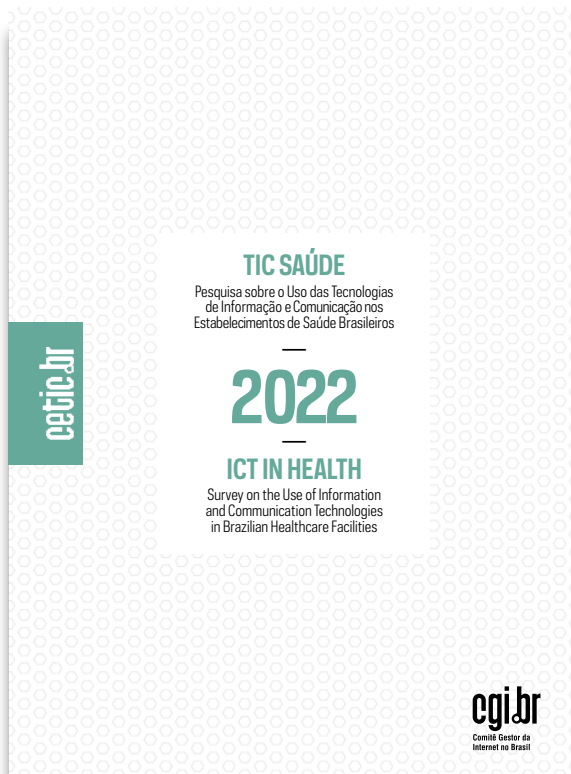

89%
of schools had
computers and
Internet access

TEACHERS BY THEMES OF ACTIVITIES CARRIED OUT WITH STUDENTS REGARDING SAFE, RESPONSIBLE AND CRITICAL USE OF THE INTERNET IN THE 12 MONTHS PRIOR TO THE SURVEY (2021 - 2022)

Total number of Primary and Secondary Education teachers (%)

89% of teachers say they had carried out activities with students on at least one of these topics.





ICT in Health

Since 2013, the ICT in Health survey has been conducted to produce indicators on the adoption of ICT in Brazilian healthcare facilities and their usage by healthcare professionals such as physicians and nurses.

For the 2022 ICT in Health survey, interviews were conducted in 2,127 healthcare facilities and with 1,942 healthcare professionals. The survey showed an increase in the use of technologies by healthcare professionals compared to the scenario before the pandemic. It also investigated the use of new technologies by healthcare facilities, including Big Data analysis and AI.

Articles published in ICT in Health 2022

Digital health in Canada

Elizabeth M. Borycki, Evangeline M. Wagner & Andre W. Kushniruk

On the reputation of medical AI: Metrics and concepts to evaluate AI systems in medicine

Federico Cabitza & Andrea Campagner

The use of information and communication technologies in continuing education in healthcare

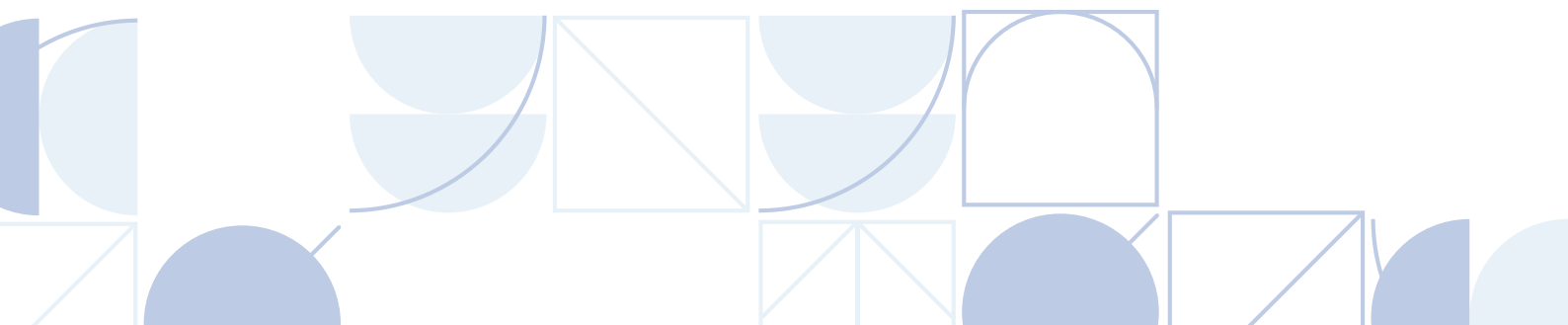
Alessandra Aniceto Ferreira de Figueirêdo, Fernanda Pereira de Paula Freitas, Lucas Pinto de Amorim, Rafael Oliveira Pitta Lopes & Renata de Carli Rojão

Capacity building in digital health: Experience at Hospital Italiano de Buenos Aires - Argentina

Paula Otero

The future of health and the KIWs - Digital health, multiprofessionalism, and hospitals in the future

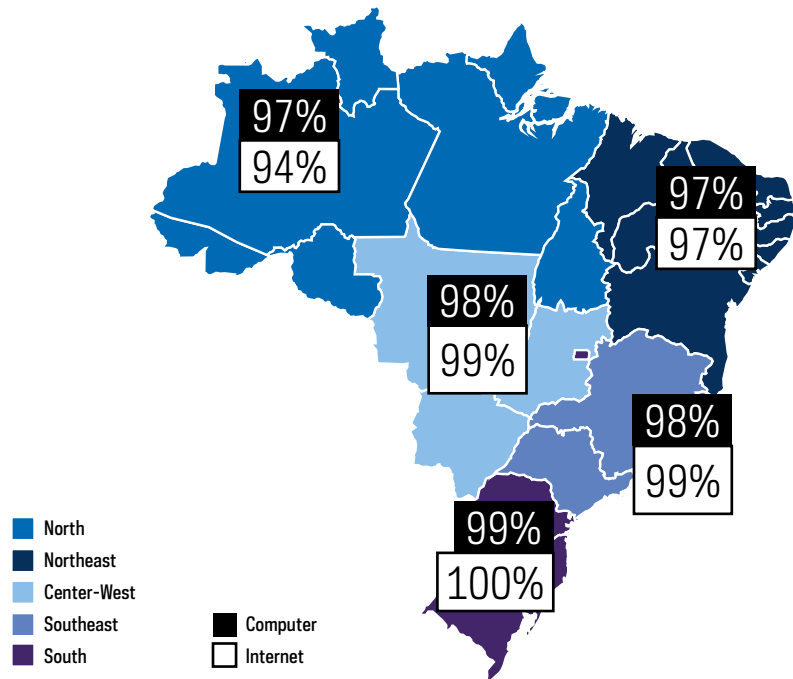
Henrique Manuel Gil Martins



The use of **computers and the Internet** is almost universal in Brazilian healthcare facilities, and the primary healthcare units are also advancing with **97%** of them with access to computers and Internet. The main disparities are between the regions of the country.

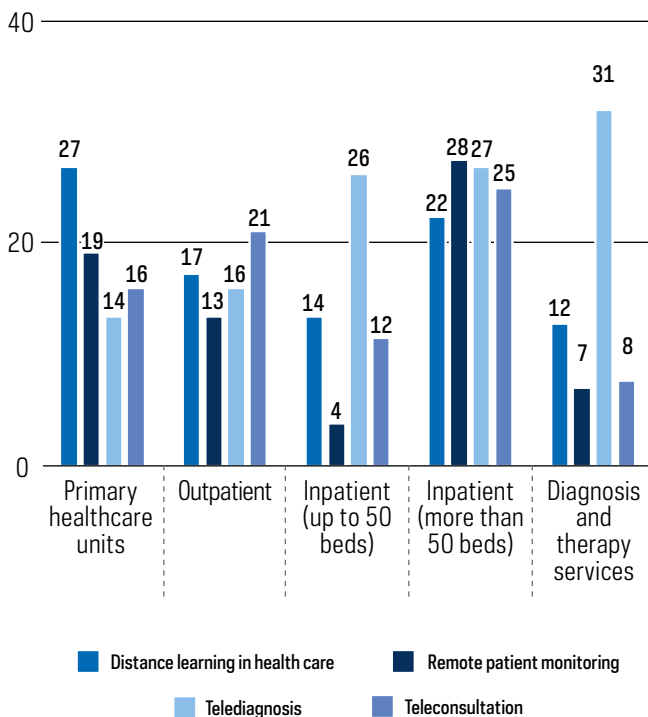
USE OF COMPUTERS AND THE INTERNET IN HEALTHCARE FACILITIES (2022)

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



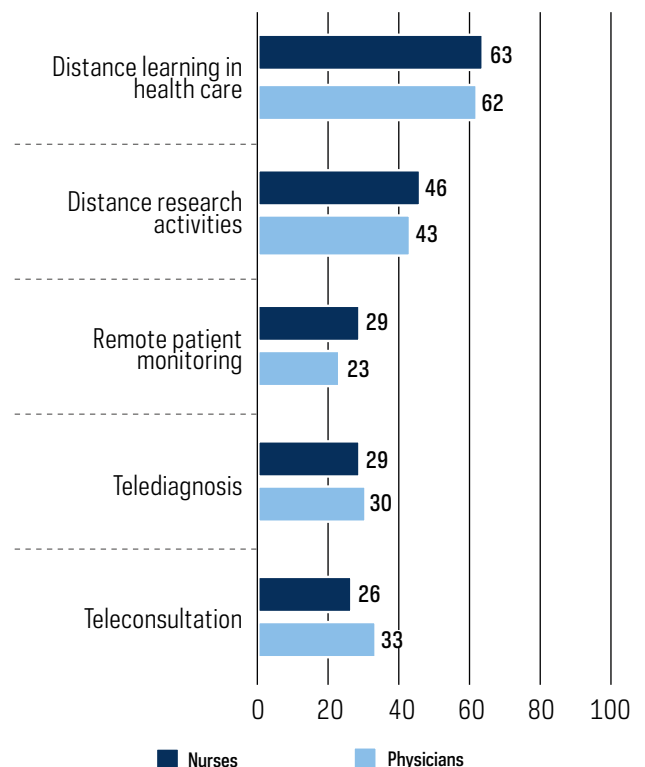
HEALTHCARE FACILITIES BY TELEHEALTH SERVICES AVAILABLE (2022)

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



HEALTHCARE PROFESSIONALS, BY TELEHEALTH FUNCTIONALITIES AVAILABLE AT THE FACILITY (2022)

Total number of nurses and physicians with computer access at the healthcare facility (%)



Medical prescription: 68% do it on the computer and 21% do it both on the computer and manually

Nursing prescription: 51% do it on the computer and 27% both on the computer and manually



ICT in Culture

Conducted since 2016, The ICT in Culture survey investigates the presence of ICT infrastructure and the use of these technologies in Brazilian cultural facilities, focusing on internal management, public relations, and collection digitization. It also presents information about IT management in these institutions and the perceptions of the contributions and challenges of computer and Internet use in cultural facilities, including archives, heritage sites, libraries, cinemas, museums, culture points, and theaters.

The ICT in Culture 2022 survey conducted interviews for a total of 1,966 cultural facilities using the computer-assisted telephone method. In this edition, due to the migration of in-person activities to the virtual environment in the post-pandemic period, new indicators were added about the monitoring of the public who participated in the activities offered by the institutions remotely and the development of distance activities. The edition also included indicators on the compliance of institutions with the Brazilian General Data Protection Law (LGPD).

Articles published in ICT in Culture 2022

Using computational methods for researching digital archives

Juliana Marques

LAMs in the Semantic Web: An analysis of the Brazilian scenario

Juliana Martins de Castro Barroso & Célia da Consolação Dias

Brazil: Games Industry Report 2022

Ivelise Fortim, Davi Noboru Nakano, Luiz Ojima Sakuda & Eduardo Ferezim dos Santos

Music platforms and recommendation algorithms

Daniela Ribas Ghezzi

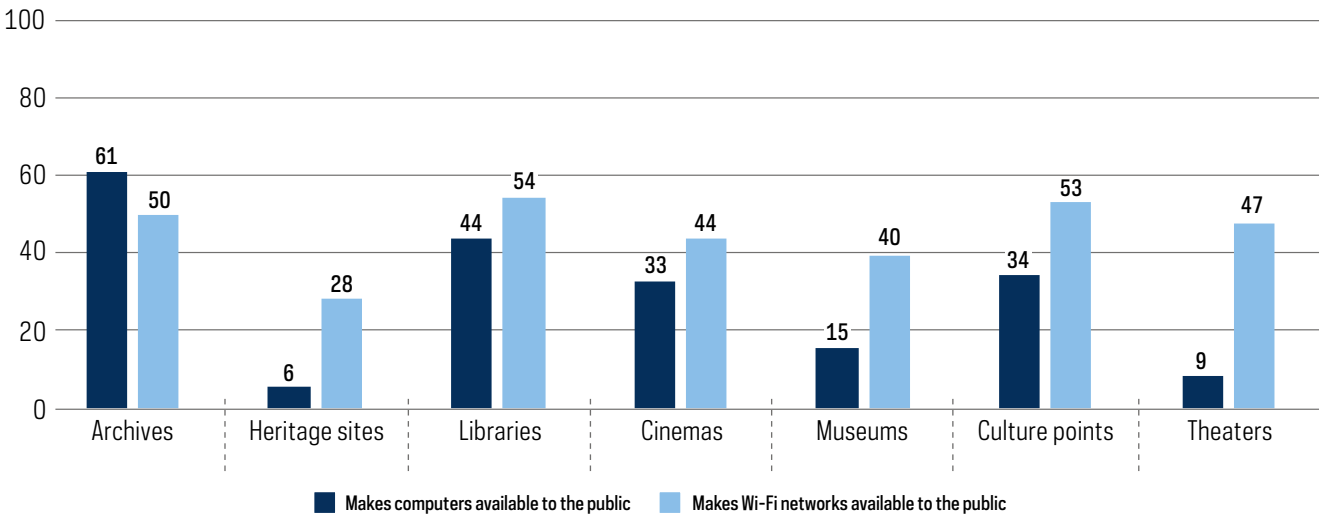
Cultural diversity on the Web: The cases of Mutha, Clube da Caixa Preta, and Wyka Kwara


Filipe Albuquerque Ito Russo




CULTURAL FACILITIES BY AVAILABILITY OF COMPUTERS AND WI-FI NETWORKS TO THE PUBLIC (2022)

Total number of cultural facilities (%)







44%
of libraries made available computers to the public



50%
of archives made available free Wi-Fi to the public



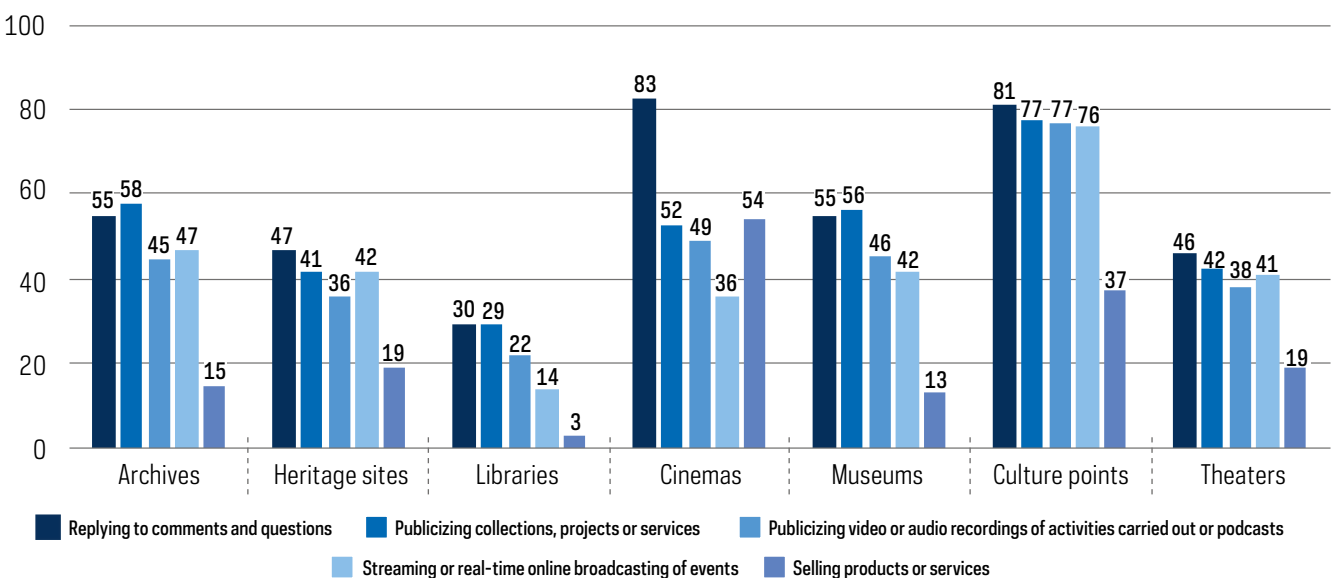
30%
of museums offered workshops or formative programs through in-person and remote formats




17%
of culture points used platforms or social networks to fundraising


CULTURAL FACILITIES BY TYPE OF ACTIVITY CARRIED OUT ON ONLINE PLATFORMS OR SOCIAL NETWORKS IN THE LAST 12 MONTHS (2022)

Total number of cultural facilities (%)







68%
of museums digitalized their collections



14%
of libraries made available digital collections to the public



53%
of culture points made available digital collections to the public online



43%
of archives made available digital collections on the institution's website



ICT Nonprofit Organizations

Conducted since 2012, the ICT Nonprofit Organizations survey investigates administrative and financial capacities of nonprofit organizations, their access to and use of information and communication technologies, their ICT infrastructure, capabilities, and skills, barriers these organizations face to ICT access and use, and data protection and privacy initiatives adopted by them.

The ICT Nonprofit Organizations 2022 survey, with a total of 1,520 interviews conducted, highlighted challenges related to both accountability and transparency of nonprofit organizations' actions, as well as their fundraising and institutional development capacities. The survey also investigated actions taken by the organizations to deal with the COVID-19 pandemic. In many cases, the use of ICT, particularly websites and social networks, was fundamental to promoting the mobilization and communication of organizations with society.

Articles published in ICT Nonprofit Organizations 2022

Use of technology in data coproduction by citizens and civil associations

Fernanda Lima-Silva, Mário Martins, Lívia Castro Degrossi & Maria Alexandra Cunha

The periphery online: ICT and collective mobilization during the pandemic

Patricia Maria E. Mendonça, Jessica Gonçalves & Cássio Aoque

Social currency, technologies, and development: The ICOM Community Bank in the pandemic

Camilla Reis, Paula Chies Schommer & Willian Carlos Narzetti

Implications of social media use by civil society organizations

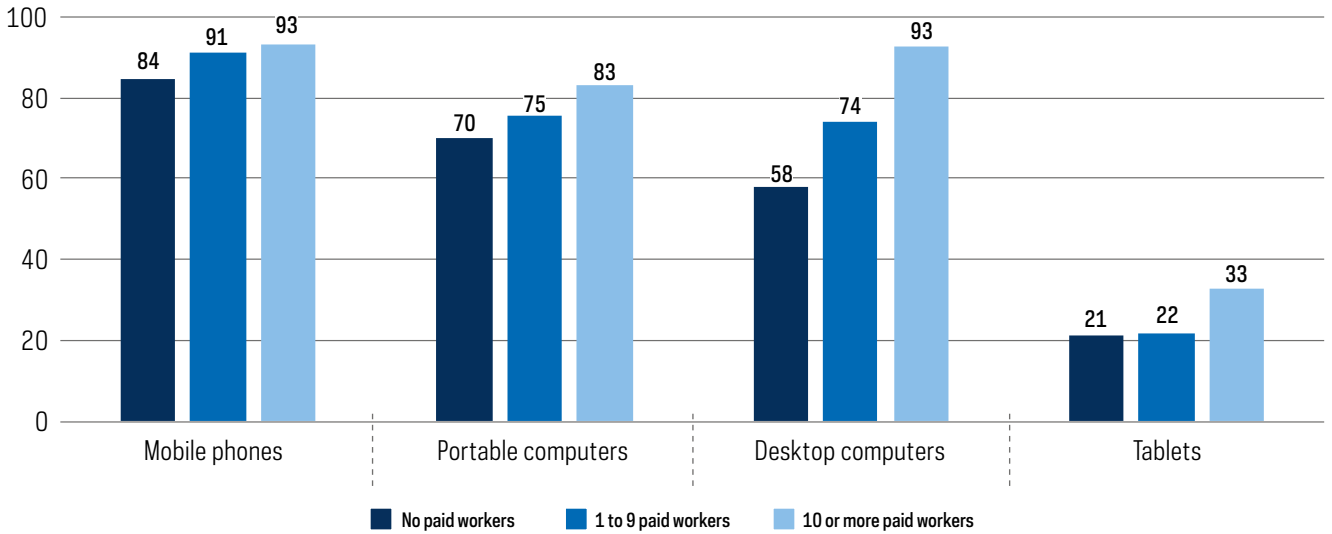
Laura Conde Tresca

ICT, individual donations, and nonprofit organizations

João Paulo Vergueiro, Flávio Pinheiro & Marcos Paulo de Lucca-Silveira

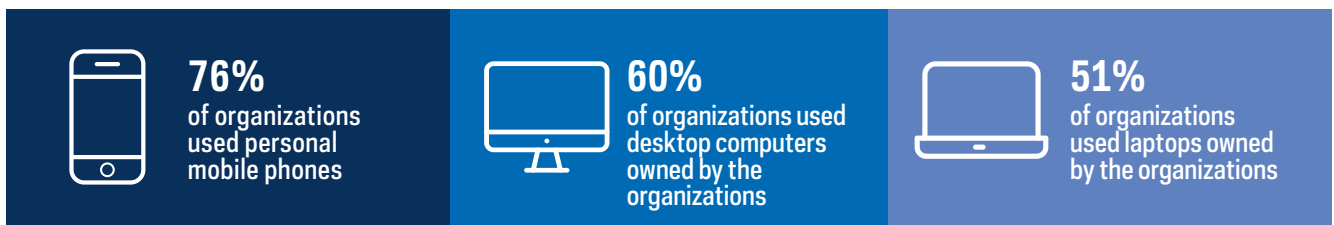
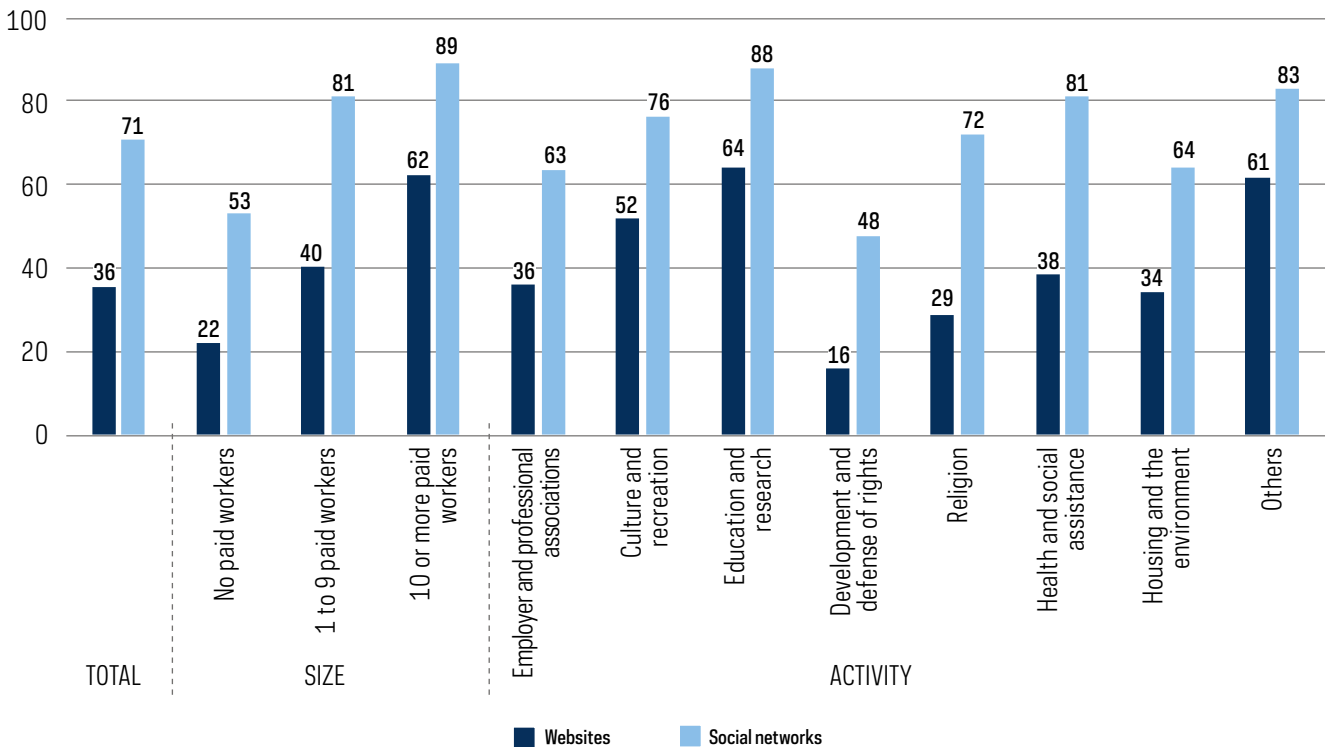
ORGANIZATIONS BY DEVICES (2022)

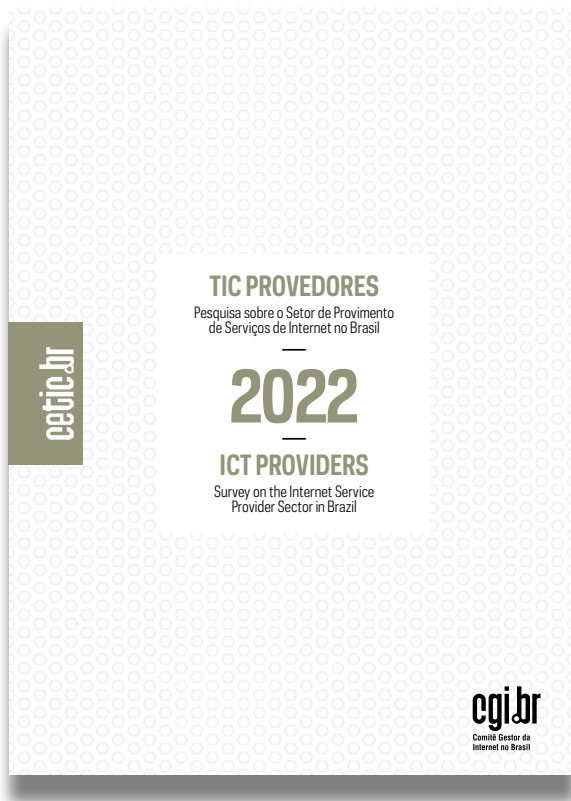
Total number of organizations (%)



ORGANIZATIONS BY WEBSITES AND/OR SOCIAL NETWORKS, BY SIZE AND ACTIVITY (2022)

Total number of organizations (%)

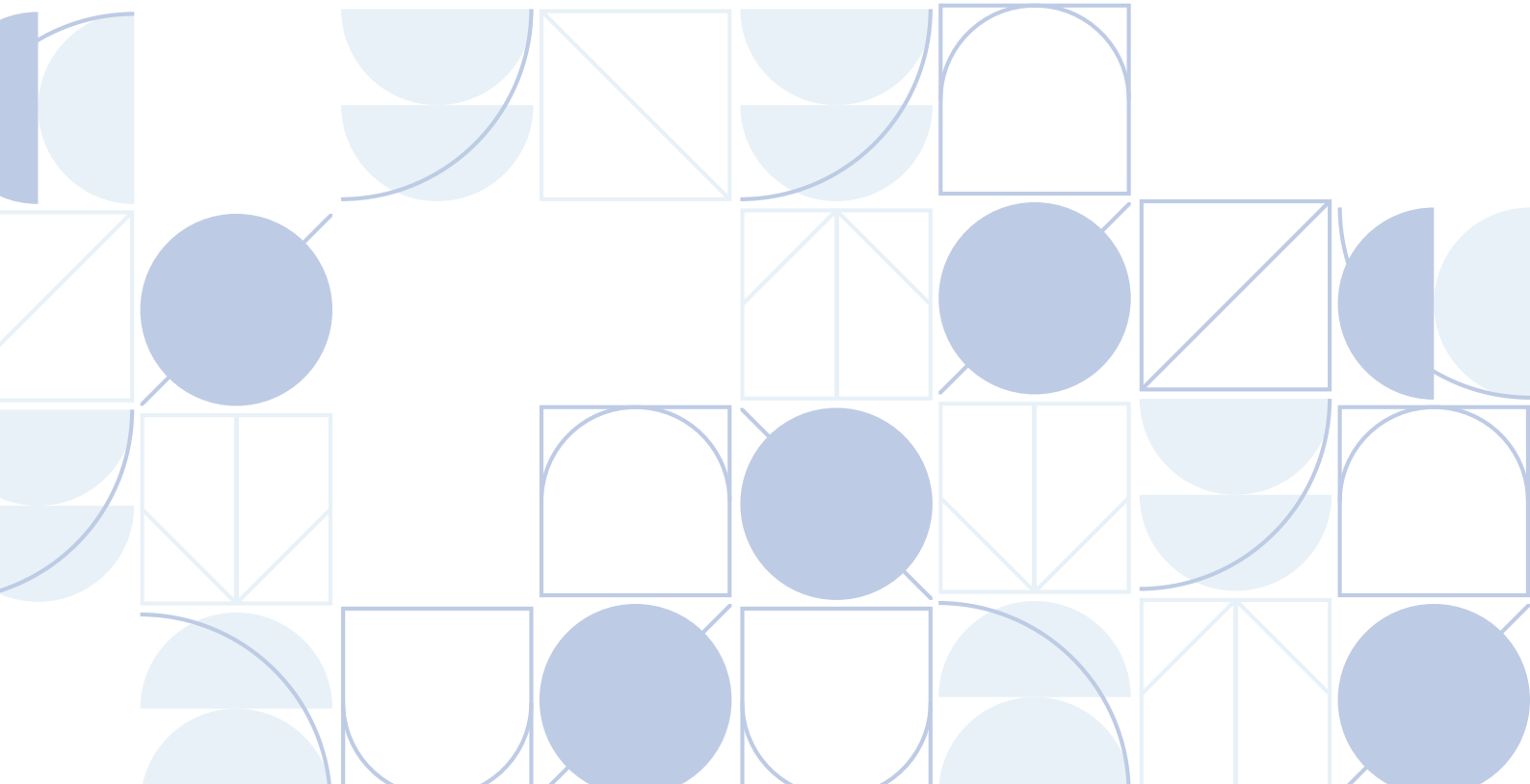




ICT Providers

Carried out since 2011, the objective of the ICT Providers survey is to map the Internet access provision sector in Brazil. To this end, the survey established the characteristics of Internet service providers in terms of the services they offer, market operations, and technologies adopted.

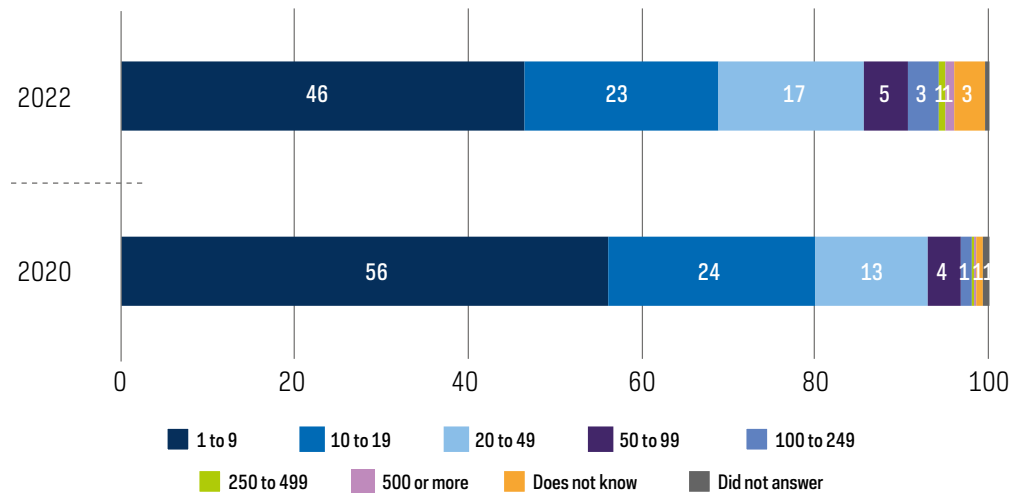
The ICT Providers 2022 survey, carried out with 2,008 ISPs, revealed important changes in Brazil's Internet service provider (ISP) market. While previous editions highlighted the growth of small ISPs, present in the most remote areas of the country, the 2022 edition shows stability in the total number of ISPs in activity, with evidence of greater consolidation in the sector.



The survey estimated that, in 2022, there were **11,630 enterprises** actively operating in Brazil.

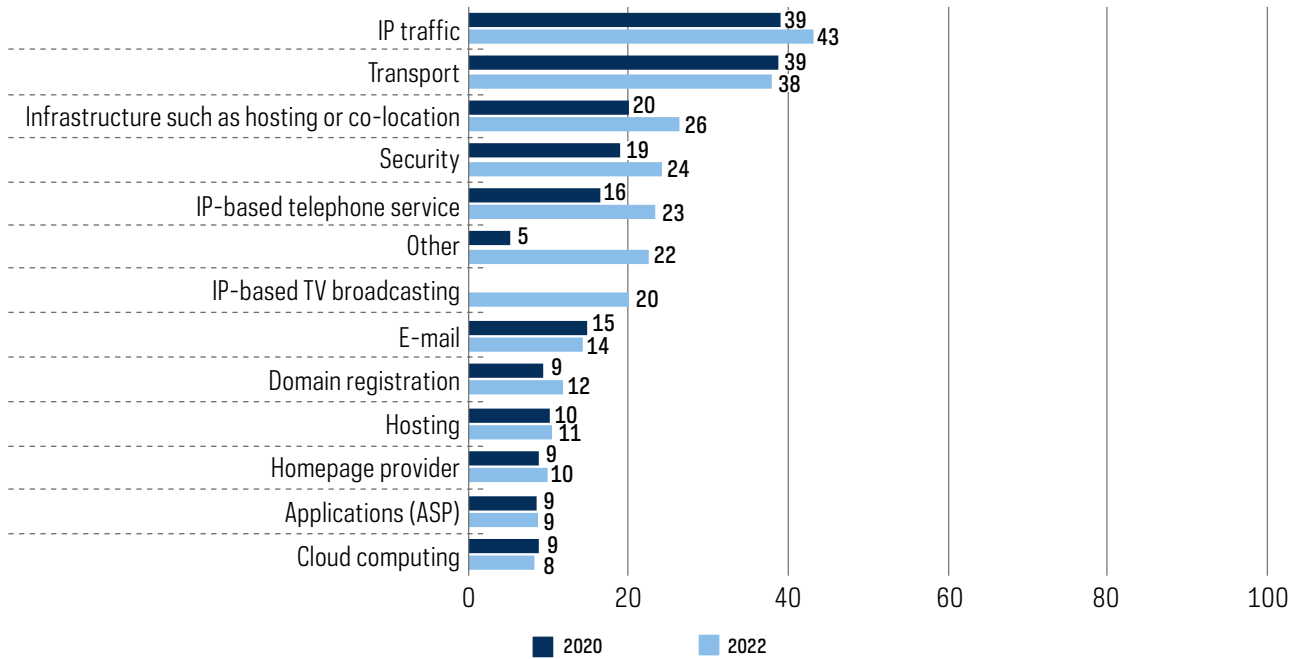
ISPS BY PERCENTAGE RANGE OF EMPLOYED PERSONS (2020-2022)

Total number of ISPs (%)



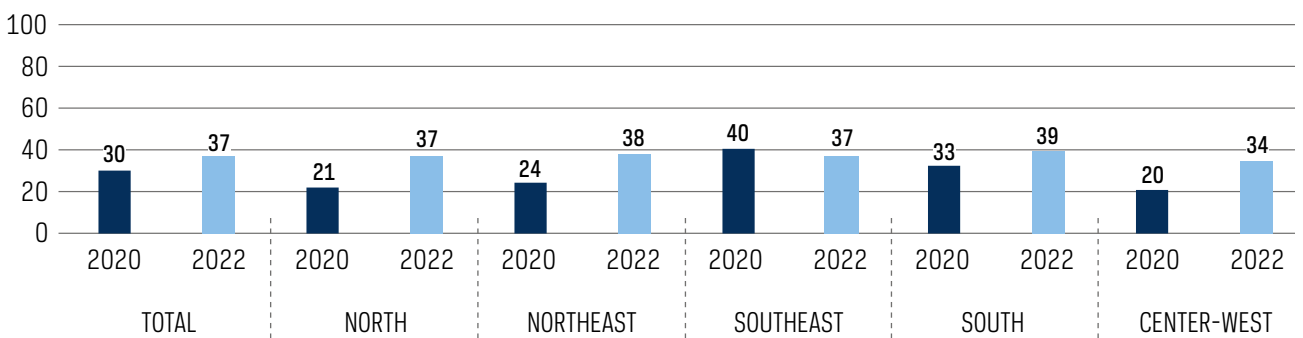
ISPS BY TYPE OF SERVICE OFFERED (2020-2022)

Total number of ISPs (%)



ISPS THAT PARTICIPATED IN INTERNET EXCHANGE POINTS (IX.BR OR IXP), BY REGION (2020-2022)

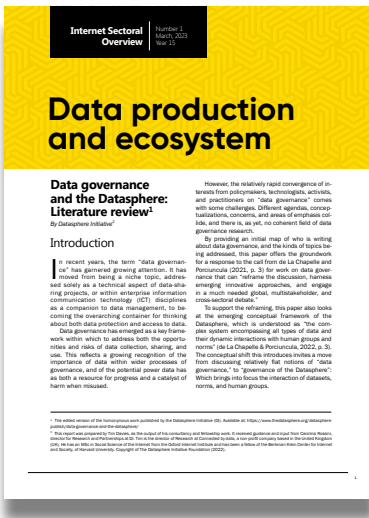
Total number of ISPs (%)



Internet Sectoral Overview

The Internet Sectoral Overview (ISO) is a quarterly publication produced by Cetic.br|NIC.br that addresses various themes related to access to and use of digital technologies in diverse sectors of society. Available in Portuguese and English, the articles, interviews, and infographics

featured in the ISO explore current debates on digital inclusion and also draw on data and findings that derive from the research conducted by Cetic.br|NIC.br. Four editions were published in 2023 addressing “Data governance: Challenges and opportunities for building a data ecosystem.”



Year 15 - No. 1: Data production and ecosystem

COLLABORATORS:

- **Article I** - “Data governance and the Datasphere: Literature review” (Datasphere Initiative)
- **Interview I** - “Big Data and the production of public statistics” with Pedro Luis do Nascimento (SCIENCE)
- **Article II** - “The promises and challenges of data-centric digital transformation in the age of Artificial Intelligence,” by Moinul Zaber (UNU)
- **Interview II** - “Document management and memory in the Judicial Branch” with Anita Lübbe (TRT-4)
- **Domain Report** - “Domain registration dynamics in Brazil and around the world”
- **Answer to your questions** - “Analysis of Big Data in the Public Sector”



Year 15 - No. 2: Personal data protection: Privacy and reliability in the digital environment

COLLABORATORS:

- **Article I** - “Individual’s perspectives on privacy and personal data protection in Brazil,” by Winston Oyadomari, Ramon Silva Costa, and Manuella Maia Ribeiro (NIC.br)
- **Interview I** - “Data privacy and security in Brazil,” with Rafael Zanatta (Data Privacy Brazil)
- **Article II** - “Emerging privacy-enhancing technologies: Current regulatory and policy approaches,” by OECD
- **Interview II** - “Data governance for personal data protection and digital security policies in Latin America,” with Carolina Botero Cabrera (Karisma Foundation)
- **Domain Report** - “Domain registration dynamics in Brazil and around the world”
- **Answers to your questions** - “Enterprises and the protection of personal data”



Year 15 - No. 3: Data economy: Concepts and challenges for measurement

COLLABORATORS:

- **Article I** - "Governing the data economy," by Marielza Oliveira (UNESCO)
- **Interview I** - "The data economy in Brazil," with Marcos Dantas (UFRJ/CGI.br)
- **Article II** - "Policy options for the data economy: A literature review," by Ramy El-Dardiry et al. (Netherlands Bureau for Economic Policy Analysis)
- **Interview II** - "Data and the free nature of Internet," with Michael Kende (Datasphere Initiative)
- **Domain Report** - "Domain registration dynamics in Brazil and around the world"
- **Answer to your questions** - "Online activities and the digital crumbs"



Year 15 - No. 4: Data collaboratives and data sharing

COLLABORATORS:

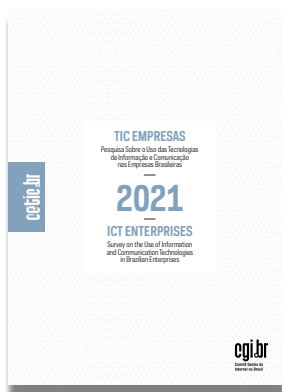
- **Article I** - "Data collaboratives: Enabling a healthy data economy through partnerships," by Stefaan Verhulst (NYU)
- **Interview I** - "Data sharing, cybersecurity, and privacy," with Katitza Rodriguez (EFF)
- **Article II** - "Creativity, innovation and open data: Fostering inclusive growth in Africa," by Kristophina Shilongo et al. (Mozilla Foundation)
- **Interview II** - "Data, digital technologies, and the information society," with Paulo Rená (UnB)
- **Domain Report** - "Domain registration dynamics in Brazil and around the world"
- **Answers to your questions** - "Privacy and personal data protection in the government"

Other ICT Survey Projects



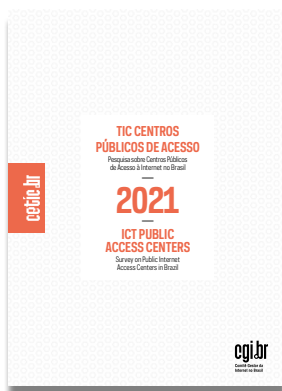
ICT Electronic Government

Conducted every two years since 2013, the ICT Electronic Government survey investigates the supply of e-government services in Brazil. With the aim of analyzing this scenario, interviews are conducted with ICT managers and people responsible for the digital content of governmental organizations at the three levels of government (federal, state, and local), and in all branches (Executive, Legislative, Judiciary, and Public Prosecutor's Office).



ICT Enterprises

Since 2005, the ICT Enterprises survey has been conducted to measure the adoption of ICT in enterprises with 10 or more employed persons. Its objective is to investigate access to infrastructure, as well as use and appropriation by the private sector of new technologies, mapping their perceptions of associated benefits.



ICT Public Access Centers

The ICT Public Access centers survey presents a mapping of information on the provision of Internet access by public access centers in Brazil supported by the federal government, particularly telecenters, in view of the importance of these sites in fighting digital exclusion and reducing inequalities related to technology adoption and use in Brazil.



Privacy and Personal Data Protection

With the growing adoption of digital technologies by public and private organizations and by individuals, it is essential to understand how privacy and personal data protection is perceived in Brazil and identify the strategies they adopt to ensure it. In this context, Cetic.br|NIC.br initiated in 2021 the project "Privacy and personal data protection: Perspectives of individuals, enterprises, and public organizations in Brazil". The analysis is divided into three dimensions: individuals (ICT Panel survey); enterprises (based on data from the ICT Enterprises 2021 survey); and public organizations (based on data from the ICT Electronic Government, ICT in Health, and ICT in Education surveys).

Public Debates: Advancing Information and Knowledge Societies

Cetic.br|NIC.br sponsors widespread public debates and technical meetings with key stakeholders from the government, academia, the private sector, and international and civil society organizations to discuss the socioeconomic and cultural implications of digital technologies and the development of knowledge and information societies. Debates are based on an interdisciplinary approach to discussing the multifaceted aspects related to access to, and use and appropriation of, technologies by different segments of society.

During 2023, the Center held public events that marked the launch of new publications and also served as a forum for discussing relevant themes, encouraging informed public debate on digital technologies and society. Among several public debates organized by the Center throughout the year, several focused on relevant findings from the national ICT surveys conducted by Cetic.br|NIC.br. Public debates are one of the transparency mechanisms that legitimize its work on data production. Below are some of the main events that took place in 2023.

Launch of the ICT in Health 2022 publication

August 2023 - São Paulo

The launch of the ICT Health 2022 publication at the event Brazilian Digital Health Panorama: advances and challenges, organized by the São Paulo Regional Nursing Council. Results were presented on the adoption of ICT in healthcare facilities and use by healthcare professionals (physicians and nurses). The panel featured experts in digital health, who discussed the appropriation of technologies by professionals, especially nurses, and the security of information in electronic format.

Speakers: Alexandre Barbosa (Cetic.br|NIC.br), Luciana Portilho (Cetic.br|NIC.br), Heimar de Fátima Marin (Scientific coordinator of the ICT in Health survey), Ana Estela Haddad (Secretary of Information and Digital Health/Ministry of Health), Marizélia Leão Moreira (National Council of Municipal Health Secretaries - CONASEMS), Antonio Carlos Onofre de Lira (President of the Brazilian Society of Health Informatics - SBIS), Luis Gustavo Kiatake (Director of Institutional Relations of SBIS).



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Launch of the ICT Households 2022 and the ICT Kids Online Brazil 2022 publications

August 2023 - São Paulo

Drawing on the evidence provided by the ICT Households 2022 and ICT Kids Online Brazil 2022 surveys, the panel “Digital technologies and the fight against inequalities: Challenges for enforcing rights and guaranteeing well-being” discussed the importance of the digital divide when thinking about the fight against other social inequalities in Brazil.

Marielza Oliveira (United Nations Educational, Scientific and Cultural Organization [UNESCO]) argued that access to online information has effectively become a mediator for other human rights, and that being excluded from certain digital spaces means, in practice, being excluded from these rights. According to her, to reach Internet universality, it is necessary to identify who the disconnected are, information that is provided by the two surveys from Cetic.br|NIC.br.

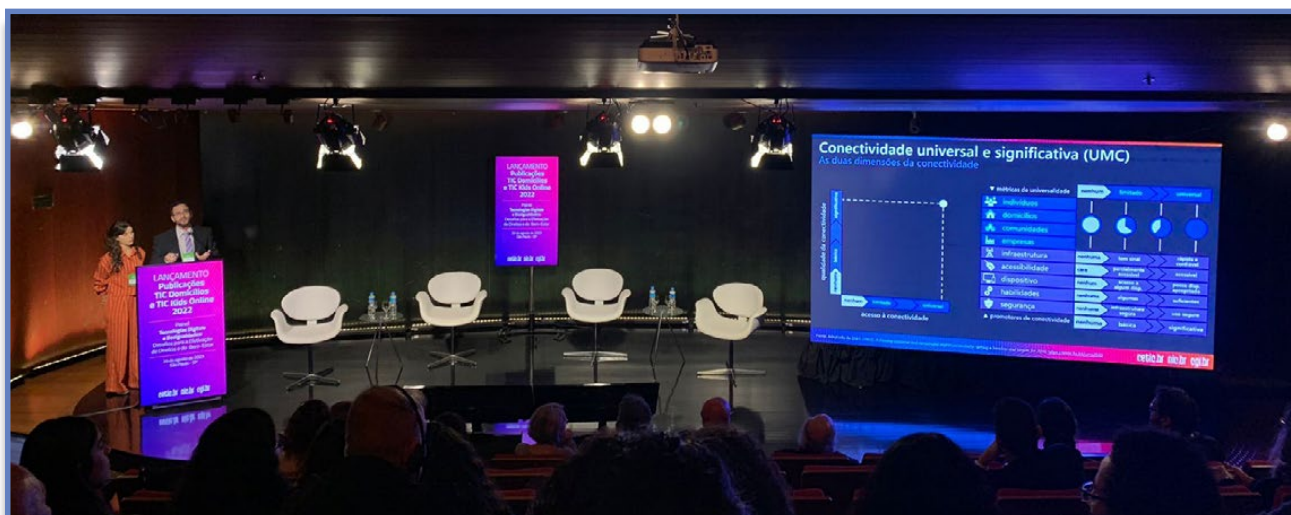
Valeria Jordan (Economic Commission for Latin America and the Caribbean [UN-ECLAC]) highlighted that the regional agenda, Plan of Action for the Information and Knowledge Society in Latin America and the Caribbean (eLAC), has among its objectives advancing meaningful connectivity. She

shares the idea that the exercise of fundamental rights depends on online access opportunities, and that structural disparities are translated into digital inequalities, which affect, above all, the most vulnerable and excluded population.

Marta Arretche (University of São Paulo [USP]) considered the data from ICT Kids Online Brazil survey on inequality in Internet use among children and adolescents particularly alarming. She argued that this is producing a distinction between the digital semi-literate and highly digitally prepared, which will have long-term consequences. For her, it is necessary to create an agenda capable of reducing gaps that risk becoming permanent.

Before the debate, Fabio Storino and Luísa Adib, coordinators of the ICT Households and ICT Kids Online Brazil surveys, respectively, presented the main indicators featured in the publications being launched at the event.

Speakers: Marielza Oliveira (UNESCO), Valeria Jordan (UN-ECLAC), Marta Arretche (USP, Department of Political Science), Fabio Senne (Cetic.br|NIC.br).



Launch of the ICT In Education 2022 Publication

November 2023 - São Paulo (Brazil)

The launch event for the publication of the 2022 edition of the ICT in Education survey took place during the VIII International Web Curriculum Seminar, held in person by the Graduate Program in Education: Curriculum, of the Pontifical Catholic University of São Paulo (PUC-SP). Based on evidence produced by the ICT in Education survey, the panel discussed the ways in which educational institutions can play the role of promoters of digital education, while also working on the construction of learning and well-being spaces and ensuring rights for students.

The launch session was preceded by a lecture by Valtencir Mendes, Chief of Education at the Regional Office for Education for Latin America and the Caribbean (OREALC/UNESCO Santiago).

Speakers: Valtencir Mendes (OREALC/UNESCO Santiago), Alexandre Barbosa (Cetic.br|NIC.br), Daniela Costa (Cetic.br|NIC.br), Ana Dal Fabbro (Ministry of Education [MEC]), Fernanda Martins (InternetLab), Ivan Siqueira (Federal University of Bahia [UFBA]).

Moderator: Rodrigo Nejm (Specialist in digital citizenship and childhood).



Launch of the ICT Providers 2022 publication

December 2023 - São Paulo

The fifth edition of the ICT Providers survey was launched on December 7, 2023, during the 13th Internet Infrastructure Week, promoted by NIC.br, one of the most important events on technical aspects of connectivity in the country. On that occasion, Fabio Senne presented the main findings of the survey, especially the decrease in the number of enterprises, indicating a process of consolidation in the sector: the number of companies operating decreased from 12,826 to 11,630 from 2020 to 2022.



Capacity-building and Awareness-raising

Cetic.br|NIC.br's capacity-building programs aim to bring together the main stakeholders involved in the production, analysis, and use of ICT indicators in public policies, academia, and sectoral market analysis. These programs are directed toward data producers and users, such as national statistical institutes, ministries, regulatory agencies, international organizations, and academic institutions.

In addition to disseminating technical knowledge about survey methodology, they are a forum for promoting debates about the importance of ICT statistics for evidence-based policymaking and

for discussing new measurement possibilities, while highlighting the potential of ICT for development. In addition to regular capacity-building and awareness-raising activities about the importance of ICT statistics and the massive open online course (MOOC) "ICT and Sustainable Development," in 2023 the Center supported the development and launch of a MOOC on the subject of AI in the judiciary – a UNESCO initiative with The Future Society, Cetic.br|NIC.br, the National Judicial College, and the Institute of Electrical and Electronics Engineers (IEEE). Offered in an open and free format and available in 7 languages, the course was divided into 6 modules.

MOOC // "Tech for Good: The Role of ICT in Achieving the SDGs"

This program, offered in a massive open online course (MOOC) format through the edX Platform, is a joint initiative by Cetic.br|NIC.br, UNESCO, and the SDG Academy. Set up as a self-paced course, it provides students with a set of 10 modules that address ICT as a critical component for achieving the SDGs. The course brings together thought leaders and changemakers from all regions of the world in fields related to ICT and sustainable development. It addresses the role of ICT in achieving the SDGs in five important areas: i) how digital technologies are empowering billions of people around the world by providing access to education, healthcare, banking, and government services; ii) how ICT is being used to inform smarter, evidence-based policies to improve people's lives in fundamental ways; iii) how these

technologies can be used for measuring and monitoring the achievement of the SDGs; iv) new challenges that technology can introduce, such as privacy, data management, risks to cybersecurity, e-waste, and the widening of social divides; and v) ways in which stakeholders are coming together to answer big questions about what our future will look like in a hyper-digitized world.

In its latest edition, the course received 1,601 enrollments, which included learners from the United States, India, Brazil, Indonesia, and Nigeria, among other countries. Since its launch in 2018, more than 8,000 learners from diverse backgrounds have enrolled in the course, reaffirming the relevance of continued discussions around the role of technologies for achieving the SDGs.

Course modules:

- **Module 1:** Welcome to the Digital Age
- **Module 2:** Technology for Governments and Citizens
- **Module 3:** ICT Infrastructure
- **Module 4:** ICT Innovations in Health
- **Module 5:** Learning in Knowledge Societies
- **Module 6:** Promoting Financial Inclusion
- **Module 7:** Measurement and Metrics for ICT and the SDGs

- **Module 8:** Artificial Intelligence for Development
- **Module 9:** Concerns for our Digital Future
- **Module 10:** The Way Forward

Languages: Videos in English; transcriptions in English, Spanish, Portuguese and Russian.

Registration and more information:
<https://sdgacademy.org/course/tech-for-good/>

MOOC // “AI and the Rule of Law”

The 2023 edition of the massive open online course (MOOC) “AI and the Rule of Law” achieved over 5,500 registered individuals from 140 countries. Developed by UNESCO and The Future Society, with the support of Cetic.br|NIC.br, the National Judicial College, and the Institute of Electrical and Electronics Engineers Standards Association (IEEE SA), and the contribution of the UNESCO Multi-Donor Programme on Freedom of Expression and Safety of Journalists (MDP) and the Open Society Foundations, it is an introductory course engaging judicial operators in a global discussion around AI’s application and impacts on the rule of law. The MOOC is structured in six modules, enabling the unpacking of the opportunities and risks associated with the adoption of AI technologies across justice systems, as well as their impact for the administration of justice, with a focus on human rights, AI ethics, and governance issues.

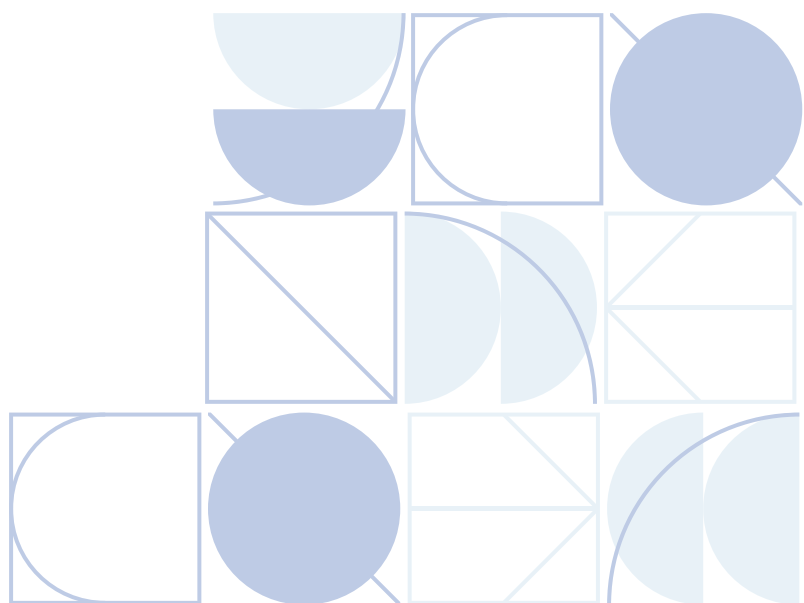
The target audience of the MOOC is judges, prosecutors, public defenders, and other stakeholders working for judiciary branches, prosecution services worldwide, and sectors including legal technology companies. Other relevant audience groups include policymakers, academics, and civil society representatives.



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Languages: English, French, Spanish, Russian, Chinese, Arabic and Portuguese.

More information:
<https://www.unesco.org/en/articles/training-judges-lawyers-and-prosecutors-artificial-intelligence-and-rule-law>



13th NIC.br Annual Workshop on Survey Methodology

The 13th edition of the workshop focused on the new landscape of data production, ecosystem, and governance. The workshop event took place at the NIC.br head office from August 28th to August 31st and had 105 participants, who attended in person or remotely.

In a closed and exclusive format, the audience profile was made up of public managers, researchers, and representatives of civil society and international organizations. The meeting, promoted by the Regional Center for Studies on the Development of the Information Society (Cetic.br) in partnership with the National School of Statistical Sciences (ENCE) of the Brazilian Institute of Geography and Statistics (IBGE), featured short courses on new methodological approaches for multi-source data production, presentations of practical cases and projects using new approaches, innovative methods and tools, and provided insights into methodological challenges and opportunities for data production.

DAY 1

Keynote: Social Aspects of Artificial Intelligence

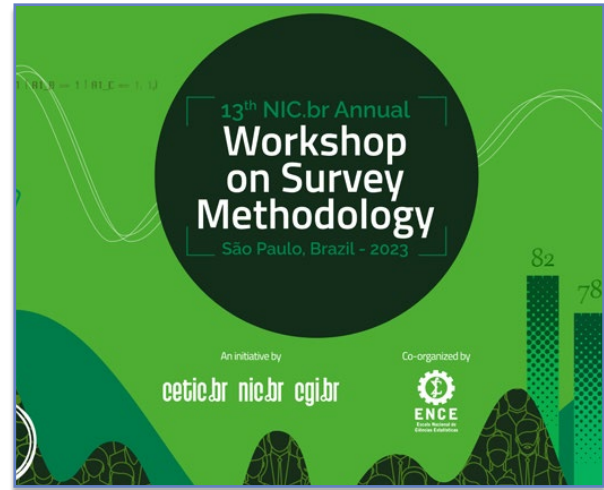
Speaker: Frauke Kreuter, University of Maryland / Ludwig Maximilian, University Munich (US, Germany)

Keynote: Artificial Intelligence: Ethical Landscape, Transparency and Bias

Speaker: Caitlin Mulholland, Pontifical Catholic University of Rio de Janeiro (Brazil)

Keynote: Transformation of the Travel & Tourism Statistical System in the UK

Speaker: Mike Prestwood, Office for National Statistics - ONS (UK)



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Short Course I: Harnessing Naturally Occurring Data to Measure and Analyze Individual Income, Expenditure, and Assets

Speaker: Shachar Kariv, University of California Berkeley (USA)

Short Course I: Recovering Preferences - A Combined Survey and Field Experiment

Speaker: Shachar Kariv, University of California Berkeley (USA)

DAY 2

Panel: Data Production and Governance: Perspectives from International Organizations

Speaker: Marielza Oliveira, UNESCO (France) / Nathan Menton, ITU (Switzerland) / Luis Aranda, OECD (France) / João Pita, IRCAI (Slovenia)

Keynote: Nonprobability survey adjustment based on census data

Speaker: Marcelo Pitta, Cetic.br|NIC.br (Brazil) / Thiago Meireles, Cetic.br|NIC.br (Brazil)

Keynote: Survey Sampling Inference under Mode Effects and Proxy Surveys

Speaker: Danny Pfeffermann, The Hebrew University of Jerusalem (Israel) and University of Southampton (UK)

Short Course II: Data visualization: Making Charts Work

Speaker: Alan Smith, Financial Times (UK)

DAY 3

Session 1: Machine Learning in Official Statistics - Opportunities and Necessary Accompanying Aspects

Speaker: Florian Dumpert, Federal Statistical Office - DESTATIS (Germany)

Session 2: The Artificial Intelligence for Development Analytics - AIDA Platform

Speaker: Gonzalo Gomez, UNDP EIO (USA)

Session 3: Brazilian Observatory on Artificial Intelligence (OBIA)

Speaker: Luiz Alexandre Reali Costa, NIC.br (Brazil) / Paulo Kuester, NIC.br (Brazil) / Veridiana Domingos Cordeiro, IBM - University of São Paulo (Brazil)

Short Course III: Capita Selecta in Multisource Statistics

Speaker: Ton de Waal, Tilburg University (NL)

DAY 4

Short Course IV: Advanced Questionnaire Design with Alternative Methods of Data Collection

Speaker: Pamela Campanelli, The Survey Coach (UK)

Escuela de Transformación Digital e Innovación en América Latina y el Caribe 2023 (School of Digital Transformation and Innovation in Latin America and the Caribbean 2023)

The 2023 edition of the School of Digital Transformation and Innovation in Latin America and the Caribbean was co-organized by the United Nations Economic Commission for Latin America and the Caribbean (UN-ECLAC), the Development Bank of Latin America (CAF), the Regional Center for Studies on the Development of the Information Society (Cetic.br), department of the Brazilian Network Information Center (NIC.br), LACNIC and the Datasphere Initiative, and took place September 11 to 15, 2023 in São Paulo, Brazil.

The 9th edition was organized around four thematic axes: Infrastructure, connectivity, and enabling frameworks in the region; Privacy, cybersecurity, and data governance; Digital transformation and productive systems; and Digital skills. The event brought together prominent specialists, individuals responsible for digital transformation policymaking, and

researchers interested in the role of innovation and digitization for the development of the region, providing a space for learning and dialogue between these experts. The 2023 edition of the Program involved more than 60 participants from 18 countries.



Methodological Support on Data Measurement for Strategic Partners

In 2023, Cetic.br|NIC.br continued to work alongside strategic partners in the area of ICT-related statistics production, data provisioning and sharing, data analysis, and capacity-building on survey methodologies and innovative methods of data collection. Based on a multistakeholder approach, Cetic.br|NIC.br works in close cooperation with partners from relevant areas of government (regulators, national statistical offices, various ministries), academia, research institutes, and international organizations to develop an ICT measurement ecosystem that allows for

the production of sound and updated data for policymaking and research. Cetic.br|NIC.br also provides technical support and capacity-building programs to decision-makers and data producers in Latin America and Portuguese-speaking countries in Africa. Cetic.br|NIC.br is also an active player in the international arena. In recent years Cetic.br|NIC.br has been cooperating with some national statistical offices in Latin America and with UN-ECLAC, UNESCO, ITU, and OECD in the area of measurement, indicators, and survey methodologies.

UNESCO Internet Universality Indicators



The UNESCO Internet Universality Indicators were designed to enable stakeholders to assess Internet development at the country level and offer policy improvement recommendations, all in accordance with UNESCO's ROAM-X principles: R - Human Rights; O - Openness; A - Accessibility to All, and M - Multistakeholder Participation. Cetic.br|NIC.br's contribution to this global project started with the pilot implementation and completion of UNESCO's framework of Internet Universality Indicators (IUI) in Brazil in 2018, after which Brazil was the first country to complete an assessment based on the ROAM-X indicators, led by Cetic.br|NIC.br. Over the following years, the Center continued supporting this initiative by providing guidance to Latin American

countries implementing it, such as Argentina, Paraguay, and Uruguay, as well as peer-reviewing the resulting reports. In 2023, specifically, Cetic.br|NIC.br performed the technical review of the national evaluation based on the ROAM-X indicators of Dominican Republic and Cape Verde.

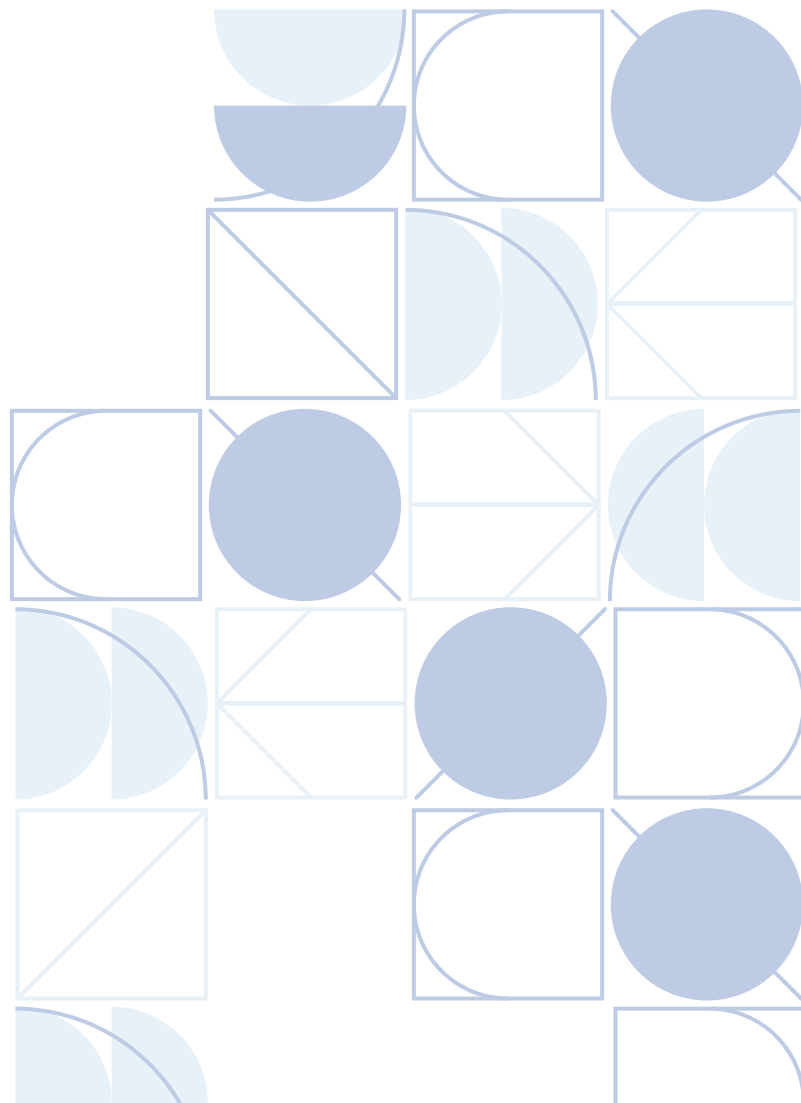
The Center also supported UNESCO in the process of updating the IUI framework. The project included the production of a background report, based on desk research and meetings with partners; a consultation

process that included interviews and online surveys with participant countries; and the production of a draft proposal for updating the indicator's list. The ongoing process of revision is planned to be concluded in 2024.

Throughout 2023, Cetic.br|NIC.br participated in several meetings to disseminate the results of the Brazilian report and support implementation in other countries. Among the main events were WSIS Forum 2023, ICEGOV 2023, and IGF 2023.

Supporting the National Strategy for Online Sexual Exploitation in Costa Rica

Staff from Cetic.br|NIC.br, in partnership with staff from UN-ECLAC, cooperated with the Republic of Costa Rica by analyzing and technically commenting on the indicators and methodological aspects of the work plan for monitoring and evaluating the country's national strategy for prevention of and response to online sexual exploitation and abuse of girls, boys, and adolescents (EASNNAL, its acronym in Spanish). After a series of meetings with staff from the Ministry of Science, Innovation, Technology and Telecommunications (MICITT) and the elaboration of a technical report, a feedback and technical recommendations meeting will be held in early 2024 with the full multistakeholder board of partners for the strategy.



Debating the Challenges of ICT Measurement in International Forums: Sharing Experiences with Data Production

Cetic.br|NIC.br is dedicated to the systematic production of indicators and statistics about ICT access and use in Brazil in various sectors of society. With 19 years of experience, the Center adopts the methodological recommendations established by international organizations that work with the measurement and analysis of ICT statistics, enabling the comparison of its indicators

with those of other countries. Cetic.br|NIC.br also contributes to the development of these recommendations and actively participates in discussions about the indicators. In 2023, the Center participated in discussions held in various national and international forums dedicated to ICT methodologies and indicators, which focused on their review and definition. Some of those events are highlighted below.

Working Group on Measuring E-Commerce and the Digital Economy

Cetic.br|NIC.br has been part of a working group led by the United Nations Conference on Trade and Development (UNCTAD) that aims to promote cooperation in measuring electronic commerce and the digital economy. The 2023 event took place on November 30 and December 1, and participants from several countries presented the advances and challenges of measuring the digital economy, with a special focus on the dissemination of good practices, comparability, and support for developing countries. Alexandre Barbosa was appointed the chair of the meeting.

From December 4th to 8th, UNCTAD also organized "Eweek: Shaping the future of the digital economy". The meeting featured several sessions on the regulatory, political, and economic aspects of technologies related to the digital economy.

Cetic.br|NIC.br participated in two sessions: Alexandre Barbosa presented the results of research on meaningful connectivity in Brazil in the roundtable "Beyond the digital divide: Achieving universal and meaningful connectivity," and Leonardo Melo Lins mediated the roundtable "Measuring the digital economy in Latin America".

More information about the first event can be found on the Eweek website: <https://unctad.org/meeting/unctad-eweek-2023-shaping-future-digital-economy>

More information about the second event can be found on UNCTAD's website: <https://unctad.org/meeting/working-group-measuring-e-commerce-and-digital-economy-fourth-meeting>

Working Party on ICT Indicators for Measurement and Analysis of the Digital Economy (WPMAD), Organisation for Economic Co-operation and Development (OECD)

November - 2023

Cetic.br|NIC.br participated in the Working Party on ICT Indicators for Measurement and Analysis of the Digital Economy (WPMAD), coordinated by OECD, whose 33rd and 34th sessions took place in OECD's headquarters in Paris, April 17-18 and November 20-21, respectively. The 33rd session focused on methodological alternatives for measuring false and misleading content

online and cybersecurity. The 34th session addressed methodological discussions on the revision of occupational statistical standards for measuring ICT, occupations and skills, approaches to measuring the "digital intensity" of industries, and the revision of key definitions and their operationalization, such as the very concept of "e-commerce". Next steps were agreed upon to advance this agenda.

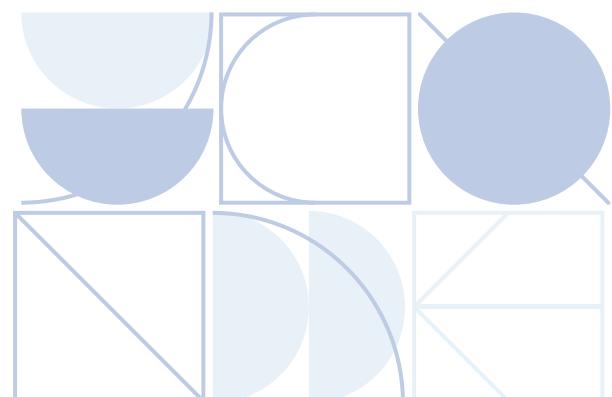
Expert Group on ICT Household Indicators (EGH) and Expert Group on Telecom / ICT Indicators (EGTI), International Telecommunication Union (ITU)

At the 11th meeting of the Expert Group on ICT Household Indicators (EGH) and the 14th meeting of the Expert Group on Telecom/ICT Indicators (EGTI), hosted by the International Telecommunication Union (ITU), members from Cetic.br|NIC.br actively engaged in the assessment and discussions pertaining to the formulation and acceptance of a new

Information and Communication Technology Development Index (IDI). In preparation for the event, Cetic.br|NIC.br contributed significantly by participating in three study groups, namely the Fixed Broadband Denominator Discussion, the IDI Methodological Proposal, and the study of possibilities on measuring over-the-top applications (OTTs).

Expert Group for the Review of the Tier System of the Fifth Global Cybersecurity Index

In 2023, Cetic.br|NIC.br led the subgroup dedicated to creating the tier system for the Global Cybersecurity Index (GCI), conducted by the ITU Study Groups. Members from Cetic.br|NIC.br organized online meetings and contributed with expertise in composite indicators, data dissemination, and the structure of the report.



Accelerating SDGs through ICT

Contributions to the 2030 Agenda



SDG 4

QUALITY EDUCATION

Cetic.br|NIC.br's contribution to SDG 4 (Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all) ranges from producing ICT and education statistical data, to engaging in the development of international frameworks, to supporting policymakers in designing evidence-based ICT policies.

Cetic.br|NIC.br annually carries out the ICT in Education and ICT Kids Online Brazil national surveys, measuring key indicators of access to and use of ICT and digital skills among students, teachers, directors of studies, and school principals. In addition, the ICT Households survey measures digital skills in the general population, following the ITU framework. These sources are capable of providing information about progress on Target 4.4 (Increase skills for employment, including technical and vocational skills), particularly Indicator 4.4.1 (the proportion of youth and adults with ICT skills).

After collaborating in the organization of national consultations with experts, researchers, and policymakers, Cetic.br|NIC.br staff participated in the launch event of the Global Education Monitoring Report 2023 (GEM), held in Montevideo, Uruguay, with a presentation in a panel devoted to the meaningful use of data for public policies. Participation in event panels by Cetic.br|NIC.br staff included the Regional

Forum on Educational Policy organized by IIEP - UNESCO, held online October 3-5, and the ICT Talent Summit, co-organized by the UNESCO Santiago Office and Huawei, held December 4-5 in Bogotá, Colombia.

Furthermore, in 2023, Cetic.br|NIC.br also contributed to advancing discussions about the platformization of education and the use of emerging technologies, such as generative AI, in educational policies. In September, Cetic.br|NIC.br contributed data from the ICT in Education survey to the first edition of Digital Learning Week, promoted by the UNESCO Paris Office.

In 2023, Cetic.br|NIC.br staff also joined the Broadband Commission for Sustainable Development Working Group on Data for Learning, chaired by UNESCO, to discuss the nature of data for learning across three thematic areas: (1) infrastructure and architecture of education data ecosystems; (2) data skills and competency frameworks for life and work; and (3) governance regarding ethics, national sovereignty, and cross-border data flows.

In support of UNESCO's knowledge production, the Center actively collaborated in the translation into Spanish of a key UNESCO publication in the thematic area of AI and Education, namely the study *Guidance for generative AI in education and research*.



SDG 5

GENDER EQUALITY

Within the scope of knowledge production, all surveys conducted by Cetic.br|NIC.br with individuals and professionals allow for disaggregation by gender. In addition, they offer data users access to a wide set of specific indicators on the subject. The topic is highlighted, in particular, in the two household surveys conducted annually by the Center: ICT Households and ICT Kids Online Brazil. Additionally, in 2023, a new research project was designed to identify existing disparities and possible solutions for digital inclusion in Brazil.

Focusing on gender and its intersection with race, the project will aim to inform the planning and implementation of digital inclusion policies and will be completed in 2024.

Cetic.br|NIC.br also adopts gender balance criteria in the integration of panels at events, authors invited to participate in its publications, capacity-building activities, and research teams. Cetic.br|NIC.br's team is made up of 10 men and 14 women. The composition of the Center's team of coordinators also presents gender balance.



SDG 9

INDUSTRY, INNOVATION AND INFRASTRUCTURE

Cetic.br|NIC.br has maintained its core projects and activities supporting relevant action under SDG 9 (Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation). The Center's knowledge production strategies directly contribute to measuring SDG 9 via nationwide surveys on ICT adoption in enterprises, households, and by Internet service providers (ISPs). These surveys are critical to understanding both the supply and demand sides for ICT goods and services in Brazil, which are critical for digital transformation and the development of the digital economy. Cetic.br|NIC.br also participates in international working groups that discuss definitions, concepts, and frameworks for measuring the digital economy, such as those promoted by the Organisation

for Economic Co-operation and Development (OECD), the International Telecommunication Union (ITU), and the United Nations Conference on Trade and Development (UNCTAD). These international efforts are aimed at fostering the production of comparable indicators among countries. Cetic.br|NIC.br's data production activities particularly contribute to monitoring Target 9.c, which focuses on increasing access to ICT and providing universal and affordable access to the Internet in least-developed countries.

In addition, Cetic.br|NIC.br produces regular publications focusing on the innovative use of technologies and the digital transformation. Capacity-building strategies developed by the Center also contribute to raising awareness among policymakers and key actors about emerging issues such as AI, innovative data collection methods, and

alternative data sources such as Big Data. In 2023, Cetic.br|NIC.br also supported ongoing projects involving data collection on emerging technologies (such as AI and the Internet of Things [IoT]) in enterprises, in partnership with the OECD.

The main activities related to SDG 9 carried out during 2023 included: i) the 13th NIC.br Annual Workshop on Survey Methodology, whose theme was “Data production, ecosystem, and governance: Trends, challenges, and opportunities”; ii) the organization of the School of Digital Transformation and Innovation in Latin America and the Caribbean, held in São Paulo, Brazil, September 11-15 in São

Paulo, Brazil in partnership with UN-ECLAC, the Development Bank of Latin America (CAF), the Agency for the Development of E-Government and Information Society and Knowledge (Agesic – Uruguay), and the Datasphere Initiative; and iii) the webinar series “Data Governance and Artificial Intelligence in Mercosur” with the objective of building capacity on data governance for the responsible development of AI and for data use for the public good. The activity was carried out November 13-14 in collaboration with the Datasphere Initiative and counted on the support from the Ministry of Foreign Affairs of Brazil.



SDG 16

PEACE, JUSTICE AND STRONG INSTITUTIONS

Cetic.br|NIC.br’s ICT Electronic Government survey is the contribution to SDG 16 (Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable, and inclusive institutions at all levels). This survey is aimed at measuring the digital transformation in the public administration of Brazilian states and cities, providing key inputs to digital government policies. This survey also includes a module on technologies for urban management that allows for better understanding of the level of adoption of ICT for local services at the municipal level. Cetic.br|NIC.br is actively engaged in international debates on this topic.

In addition, Cetic.br|NIC.br monitors the transformations in the health and education sectors, measuring advances, barriers, and innovations in embracing digital innovations and ICT solutions, all key elements for

advancing SDG 16. The ICT Enterprises survey provides useful inputs for policies promoting innovative ICT solutions in business.

Another contribution to SDG 16 occurs via a massive open online course (MOOC), “Artificial Intelligence (AI) and the Rule of Law,” which is an introductory course engaging judicial operators in a global and timely discussion around AI’s application in and impact on the rule of law. This capacity-building program is structured around six modules. It unpacks the opportunities and risks of the increasing adoption of AI technologies across justice systems and AI’s impact on the administration of justice, particularly concerning human rights and AI ethics and governance issues. The course was developed by UNESCO and The Future Society, with the support of Cetic.br|NIC.br, the National Judicial College, and the Institute of Electrical and Electronics Engineers (IEEE), and was launched in 2022.

Cooperation Networks

In 2023, Cetic.br|NIC.br strengthened its cooperation efforts with government agencies and regional collaboration networks in Latin America and Portuguese-speaking African countries, which made it

possible to promote evidence-based policy design. These efforts, in turn, allow for knowledge exchange, sharing of common frameworks for ICT data collection, and regional comparability.

Cooperation with Portuguese-Speaking African Countries

In September 2023, Cetic.br|NIC.br hosted the visit of a delegation from the National Institute of Information and Communication Technologies (INTIC) of Mozambique, in the context of the IGF Lusophone chapter, held in São Paulo, Brazil. On that occasion, a letter of intention was signed stating the country's interest in receiving technical support from Cetic.br|NIC.br for producing statistics on the use of ICT in Mozambique.

Cetic.br|NIC.br participated in the implementation of the Workshop on Statistical Telecommunications Indicators organized by ITU and held in Cape Verde from November 15-16, targeting regulatory agencies and statistical offices in Portuguese-speaking African Countries (PALOPs).

UN Big Data Regional Hub in Brazil

In 2023, Cetic.br|NIC.br participated as a member of the council and the technical advisory group of the UN Big Data Regional Hub in Brazil, working closely with IBGE, which is a Brazilian National Statistical Office (NSO) and the host of the hub. The hub aims to contribute to advancement in the use of Big Data to improve the production of official statistics, promoting the sharing of knowledge and the development of innovative initiatives in Latin America and the Caribbean. The initiatives planned or already carried out during 2023 were:

- Getting to know what is going on in the region: Use of Big Data in Latin America and the Caribbean – 3rd Consultation.
- Fostering the use of Big Data for official statistics: Festival de Dados.
- Supporting research on the use of Big Data and data science: Using mobile phone data.
- Organizing and hosting seminars and conferences: Workshop on use of Big Data for official statistics: satellite imagery.
- Organizing a series of conferences on relevant issues.

ICT in Health

Cooperation with Ministries of Health in Latin America and the Caribbean, in partnership with the Inter-American Development Bank (IDB)

In addition to regularly producing statistics and publishing reports, Cetic.br|NIC.br contributes to the agenda on ICT in the health sector by participating in working groups devoted to generating methodological frameworks and by implementing capacity-building activities in technical cooperation with Latin American and the Caribbean countries. In April 2023, Cetic.br|NIC.br implemented a workshop at the Ministry of

Health and Social Security of Colombia, in partnership with IADB and the support of PAHO/WHO. Held in Bogotá March 28-29, the workshop focused on building capacity to measure ICT access, use and appropriation by healthcare units and professionals, with the overall goal of supporting the country in producing regionally comparable indicators and using them for decision-making in the health sector.

Cooperation with the World Health Organization for Europe

Cooperation in the field of ICT indicators for the health sector and survey methodologies included further dissemination, among new countries, of the methodological guide *Measurement of Digital Health: Methodological Recommendations and Case Studies*. In February 2023, Cetic.br|NIC.br staff presented the

publication "Monitoring the implementation of digital health" with a focus on the Latin American experience within the webinar series "Decoding Data and Digital Health". Later, in May 2023, the center contributed a speech at the Symposium on the Future of Health Systems in a Digital Era held in Porto, Portugal and organized by WHO Europe.

ICT in Education

Broadband Commission for Sustainable Development

In 2023, Cetic.br|NIC.br staff once again joined the Broadband Commission for Sustainable Development, chaired by UNESCO and the International Telecommunication Union (ITU), to discuss critical topics for the development of educational policies, especially for Basic Education. Based on monthly meetings held since 2022, the Working Group on Data for Learning aimed to discuss the nature of data for learning across three thematic areas: (1) infrastructure and architecture of education data ecosystems; (2) data skills and competency frameworks for life and work; and (3) governance,

regarding ethics, national sovereignty and cross-border data flows. The multi-sectoral data production model and the promotion of indicators on education and digital technologies carried out by Cetic.br|NIC.br were underscored in the report "The Transformative Potential of Data for Learning", a result of consultations with experts held in the working group. The main conclusions of the working group were also presented at the WSIS 2023 Session: The Transformative Potential of Data for Learning, which also included the participation of the Cetic.br|NIC.br team.

ICT and Children

Kids Online Networks

In 2023, in addition to implementing the annual Kids Online Brazil survey and publishing its results, the center co-organized the side event “Kids online, data from the most recent round of the Kids Online survey in Brazil, Costa Rica, Chile, and Uruguay” at the Ministerial of Education, the meeting of authorities from Latin America and the Caribbean countries that will address the impact of the COVID-19 pandemic on the sector. To be held in Santiago, Chile, in January 2024, hosted by UNESCO and the Ministry of Education of Chile, the event was organized in partnership with UN-ECLAC, UNICEF, CAF and the World Bank.

Additionally, Cetic.br|NIC.br collaborates in the implementation of local chapters of UNICEF’s research agenda, such as the Disrupting Harm project, which aims to produce evidence about the scope and nature of online child sexual exploitation and abuse in a group of countries, including Brazil. The project, carried out by ECPAT International, the International Criminal Police Organization (INTERPOL), and UNICEF Innocenti, will be implemented in Brazil by Cetic.br|NIC.br in partnership with the Brazilian Center of Analysis and Planning (CEBRAP).

ICT and Government

16th International Conference on Theory and Practice of Electronic Governance (ICEGOV 2023)

Besides NIC.br and CGI.br support for the 16th ICEGOV, which took place in Belo Horizonte (Brazil) from September 26 to 29, Cetic.br|NIC.br was one of the main organizers of one workshop and two roundtable sessions during the event. On September 26, a workshop organized by Cetic.br|NIC.br and UNESCO Information for All Programme (IFAP), “Enhancing capacity to implement evidence-based assessment and policy improvement in Latin America and the Caribbean,” presented the UNESCO programme, including the methodology and indicators and the best practices, recommendations, and challenges to implementing assessments that lead countries in the region to achieve more democratic, equitable, and inclusive societies. The workshop was conducted by Alexandre Barbosa (Cetic.br|NIC.br), Marielza Oliveira (UNESCO France), Ana Laura Martínez (Cetic.br|NIC.br), Fabio Senne (Cetic.br|NIC.br), Graziella Castello (Cetic.br|NIC.br) and Manuella Maia Ribeiro (Cetic.br|NIC.br).

On September 27, the roundtable session, “Building Information for All (IFAP) through good evidence for advancing digital governance and

development in Latin America and the Caribbean,” focused on presenting the IFAP Strategic Plan 2023-2029 and sharing cases, achievements and next steps in the region. The session was attended by the following panelists: Alexandre Barbosa (Cetic.br|NIC.br), Marielza Oliveira (UNESCO France), Delfina Soares (United Nations University - UNU-EGOV), Elsa Estevez (Universidad Nacional del Sur), Osvaldo Laracuent (ISOC-DO) and Cleide Fernandes (FEBAB/IFLA).

Cetic.br|NIC.br also organized the roundtable session “Measurement and collaboration networks for advancing digital government in Latin America and the Caribbean” on September 28. The panel discussed the main challenges for measuring digital government in the region, highlighting the role of collaborative networks in advancing digital government assessment. Speakers included Maria Alexandra Cunha (FGV-SP), Marcelo Fachina (CAF), Natalia Albañil (IDB and Consultant to the Colombian Presidency) and Manuella Maia Ribeiro (Cetic.br|NIC.br). Ana Laura Martínez (Cetic.br|NIC.br) was responsible for moderating the session.

Dialogue With Stakeholders

ICT is a key cross-cutting technology that impacts multiple sectors and requires the involvement of multiple and diverse stakeholders in the development of knowledge and information societies. Dialogue among these stakeholders can be established in many ways: cooperation agreements between institutions; sharing microdata bases; participation in forums and discussion groups; and meetings to present the indicators produced by the Center. In 2023, there were 17 ongoing cooperation agreements with

government and international organizations, which, in addition to consolidating long-term cooperation and strengthening the Center's relationships with these organizations, allow the establishment of joint activities and the sharing of experiences, data, and methodologies among institutions. Below are some of the important actions carried out by the Center in 2023 that allowed for closer ties with multiple and diverse stakeholders throughout the year, reinforcing its commitment to the dissemination of information and knowledge.

Policy Dimension: Digital Economy

In 2023, Cetic.br|NIC.br continued its involvement in piloting international research projects developed by OECD. One example is the project "Measuring the Internet of Things: Case studies in the Industrial Internet of Things (IIoT)." The objective of the project is to gain a richer understanding of the uses of the Industrial Internet of Things (IIoT) in the manufacturing sector in Brazil and Germany. The study investigates the main IIoT functions used and their related impacts. The full report was published in 2023.

Another project is the "OECD-BCG-INSEAD International Survey of Artificial Intelligence in Enterprises." The objective of the study is to support the design and implementation of a new and exploratory survey of AI in enterprises. The aim of the survey is to explore why medium and large companies in the manufacturing and ICT sectors "do and do not use AI, as well as the policy and institutional conditions needed to increase the use of AI" (OECD, 2021).

Cetic.br|NIC.br makes up part of two Working Groups in the context of the eLAC 2024 Conference, one devoted to Meaningful Connectivity and another to Data Production in Latin America and the Caribbean.

Digital Government

In 2023, strengthening cooperation with the United Nations University Operating Unit on Policy-Driven Electronic Governance (UNU-EGOV), Cetic.br|NIC.br was invited to submit a workshop and two roundtable sessions for the 16th International Conference on Theory and Practice of Electronic Governance (ICEGOV). In the same conference, Manuella Maia Ribeiro, information analyst at Cetic.br|NIC.br, was one of the chairs in Track 7 – Digital governance for the United Nations Sustainable Development Goals. Cetic.br|NIC.br was also invited to be part of the organizing committee, since the 16th edition took place in Belo Horizonte (Brazil).

On September 21, Cetic.br|NIC.br participated in the workshop on developing the new Brazilian National Digital Government Strategy (ENGD). The third meeting took place in all Brazilian regions of the country during the second half of 2023, and was aimed to provide the main principles and goals for a new digital government framework that includes all levels of governments and public organizations in the country. The workshop took place in Rio de Janeiro and included the participation of representatives from the government, enterprises, and civil society organizations of the Southeast region.

ICT in Education

In 2023, Cetic.br|NIC.br participated in national and international forums, contributed to collaboration networks and working groups on technologies and education, and disseminated indicators that were utilized by academic research centers, government institutions, civil society organizations, and international entities in the production of policy briefs, public policies, studies, and initiatives in support of education.

Throughout the year 2023, based on the cooperation agreement established with the Brazilian Ministry of Education, Cetic.br|NIC.br engaged in interministerial meetings, working groups, and collaboration networks to define strategies for the significant expansion of connectivity in Brazilian schools. The National Strategy for Connected Schools, launched in September 2023 with the presence of the Cetic.br|NIC.br team, was one of the main outcomes of these discussions.

Cetic.br|NIC.br was also invited by government institutions and civil society to contribute data and knowledge in the development of projects in the field of monitoring and implementing digital education. Some examples of the Center's team involvement included consultations on digital skills for digital citizenship in education (SaferNet Brasil) and on public policies for digital technology (Open Knowledge Brasil); workshops on digital skills (Anatel), on technologies and digital pedagogies (Itaú Social and the Organization for Economic Cooperation and Development [OECD]), and on educational innovation (UNESCO Santiago Office). In 2023, new meetings were also held to establish a collaboration network for

measuring digital skills among Basic Education students, led by Fundação Telefônica Vivo.

Furthermore, the data from the ICT in Education survey were highlighted in international forums, such as the first edition of Digital Learning Week, promoted by the UNESCO Paris Office. The goal of this event was to discuss the impacts of the digitization of education, as well as the opportunities, challenges, and considerations in the use of emerging technologies such as Artificial Intelligence in decision-making and teaching and learning processes. The multi-sectoral data production model and the promotion of indicators on education and digital technologies carried out by Cetic.br|NIC.br were underscored in the report "The Transformative Potential of Data for Learning," a result of discussions held in the Data for Learning working group of the Broadband Commission.

ICT in Health

In 2020, the Technical Committee (CT) on Digital Health of the National Education and Research Network (RNP) was launched. It aims to be a forum to study the future of applications, products, services, and aspirations in digital health in several areas of research, development, and innovation. Cetic.br|NIC.br was invited to participate in this Committee and has contributed more directly, coordinating the group "Accelerating the training of workers and professionals in digital health practice." In 2023, Cetic.br|NIC.br participated in the development of the report Vision of the Future of Digital Health 2023, which, using the WHO Classification of Digital Health Intervention Methodology, presented the main priorities, challenges and trends for digital health in Brazil.

Cetic.br|NIC.br also participated in the Technical Group for the development of the National Maturity Index for Digital Health, organized by the Information and Digital Health Secretariat of the Brazilian Ministry of Health. Contributions were related to the methodology and data collection instrument, using the experience and indicators of the ICT in Health survey.

Cetic.br|NIC.br established a partnership with the Brazilian Company of Hospital Services (EBSERH), which is responsible for the administration of some of the university hospitals in Brazil that are included in the survey sample. The results were presented at seminars to the EBSERH's technical staff, organized by this institution.

Cetic.br|NIC.br has a cooperation agreement with the National Council of Municipal Health Secretaries (CONASEMS) that aims to expand the dissemination of the results of the ICT in Health survey in municipalities and guarantee that a representative of the Council will serve as a specialist who participates in Cetic.br|NIC.br's expert group meetings for the survey consultations, among other contributions. In 2023, the cooperation contributed to the dissemination of the ICT in Health survey to municipal health secretaries.

Based on the cooperation agreement established with the Brazilian Ministry of Health, Cetic.br|NIC.br contributed to the discussion of the main digital skills needed by health professionals and to the mapping of education and training needs in digital health, based on the objectives established for Priority 5 of the Digital Health Strategy for Brazil 2020-2028 (ESD28): Training in Human Resources.

ICT Enterprises

In 2023, Cetic.br|NIC.br participated in several meetings on the challenges of improving the competitiveness of Brazilian manufacturing, with the aim of generating subsidies for the new industrial policy and led by the Ministry of Development, Industry, Commerce and Services (MDIC). The indicators from the ICT Enterprises survey helped identify needs and establish goals, returning to an annual frequency to monitor the effects of the policy on the digital maturity of Brazilian companies.

Measurement and Data Production for Policymaking

In 2023, Cetic.br|NIC.br implemented actions established by an agreement with the SEADE Foundation - the statistics agency of the government of the State of São Paulo - to share information, improve research methodologies based on technological innovations, and develop joint research and analysis. In 2023 the agency published five analytical studies:

- Access to and uses of the Internet through mobile phones (January 2023)
- Activities carried out on the Internet (May 2023)
- Internet consumption habits (August 2023)
- App consumption habits (September 2023)
- ICT access infrastructure at home, and individual Internet access characteristics (October 2023)

Producing Knowledge about ICT

The production and sharing of knowledge about themes related to knowledge and information societies are the most important lines of action of Cetic.br|NIC.br. In 2023, Cetic.br|NIC.br actively participated in several academic discussion forums, including presenting survey results and data analyses, debating methodological challenges, promoting thematic discussions, and proposing discussion panels with important stakeholders. Relevant events in which the Center participated in 2023 to present and share what the Center is producing are listed below.

Culture and Technologies

- Thematic Axes Program - A Boat Sailing on this Infosea: Algorithms, Cultural Policies, and Artistic Processes (Dean's Office of the University of São Paulo, Institute for Advanced Studies of the University of São Paulo). Panel: Artificial Intelligence and culture: Perspectives for cultural diversity in the digital age. In person and online, São Paulo. May 2023.
- Sesc Cultural Management Course (SESC). Cultural audiences: Digitization and cultural practices on the Internet. In person, São Paulo. June 2023.
- VI Andean Peace Meeting: Artificial Intelligence and Human Rights - Cultural Diversity and Artificial Intelligence (UNESCO Quito Office with representation for Bolivia, Colombia, Ecuador, Venezuela, and Universidad Andina Simón Bolívar). Keynote: Artificial Intelligence and culture: Perspectives for cultural diversity in the digital era. In person and online, Quito. September 2023.

- XII International Seminar on Cultural Policies (Fundação Casa de Rui Barbosa [FCRB] and Ministry of Culture [MinC]). Panel: Use of Artificial Intelligence by cultural institutions. In person and online, Rio de Janeiro. October 2023.

Education and Children

- Workshop and expert meeting: "Skills for Digital Citizenship" (SaferNet Brasil and UK Government). In person, Brasília. February 2023.
- YouTube Connections (Google Brasil and the UNESCO Brazilian Office). Panel: Digital education in practice. In person, São Paulo. March 2023.
- Expert meeting (Open Knowledge Brasil). Launch: Digital Education module of the project "Meu Querido Diário". Online. March 2023.
- Expert meeting (Anatel). Connectivity and digital literacy in Brazil. Online. March 2023.
- Webinar "Artificial Intelligence in the Classroom" (FGV). Online. March 2023.
- Connected Education Seminar (Teletime). Panel: Defining objectives and evaluating results. In person, Brasília. April 2023.
- Meaningful Connectivity: A New Challenge for Brazil Seminar (Anatel and IDB). Panel: The digital skills gap - How to promote digital literacy among the population. In person, Brasília. April 2023.
- Workshop and expert meeting: "How to strengthen the implementation of digital technologies and pedagogies in Brazilian education" (Itaú Social and OECD). Online. July 2023.

- XII Meeting of the Brazilian Association of Educational Evaluation (ABAVE). Panel: Education, digital technologies, and public policies. In person, Campinas. August 2023.
- 19th National Forum of Municipal Education Leaders (Undime). Panel: Contributions of education to the next decade of digital technologies. In person, Cuiabá. August 2023.
- UNESCO Digital Learning Week (UNESCO headquarters). Panel: Norms for Digital Learning Platforms. Presentation: Developing customizable platforms adapted to diverse social and digital contexts of vulnerable populations in Brazil. In person, Paris. September 2023.
- Launch of the National Connected Schools Strategy (MEC and MCom). In person, Brasília. September 2023.
- Webinar: “Transformative Dialogues: Preparing Educators for the Challenges of Digital Citizenship” (SaferNet Brasil and UK Government). Online. October 2023.
- 8th Symposium on Children and Adolescents on the Internet (NIC.br). Panel: Public policies and digital education for children and adolescents. In person, São Paulo. October 2023.
- Online Workshop of Experts in Educational Innovation (OREALC/UNESCO). Online. November 2023.

E-Government

- 6th International Conference on Public Policy (ICPP6). State capacity in technology and adoption of Artificial Intelligence in the Brazilian public sector. In person, Canada. June 2023.
- Evaluation of the Digital Inclusion Policy of the City of São Paulo and SMIT Publication (SMIT). Online. February 2023.
- Cycle of seminars: “Challenges and Opportunities of AI - Sectoral Perspectives” and “AI in the Public

Sector: How to Use Technology to Improve Public Policies” (IEA-USP). Online. September 2023.

- Open Government Data and Artificial Intelligence Workshops (TCMSP). In person, São Paulo. November 2023.
- Innovation Week at the National School of Public Administration (ENAP). Workshop: Public challenges. In person, Brasília. November 2023.

Health and Technologies

- Webinar on Monitoring the Implementation of Digital Health (WHO). Online. February 2023.
- Symposium on Digital Transformation in SUS (Ministry of Health). In person, São Paulo. March 2023.
- 9th International Conference on eDemocracy & eGovernment (ICEDEG). Workshop: Health sector online services, an assessment methodology. Online. April 2023.
- 5G Health Summit (Portal 5G). Panel: Connectivity leveraging patient care. Online. April 2023.
- 1st Nursing Symposium on Digital Health: Strategies for Safe and Quality Care (Coren-SP). Panel: The use of technologies in teaching and pedagogical perspectives. In person and online, São Paulo. April 2023.
- Seminars of the Master’s in Telehealth and Telemedicine (UERJ). Panel: Advances and challenges of digital health in Brazil: The results of the ICT in Health survey. Online. May 2023.
- I Nursing Month and VII Nursing Week (UNIFESP). Panel: Perspectives for nursing in e-healthcare. Online, São Paulo. May 2023
- XXIII Brazilian Symposium on Applied Health Computing (CE-CAS/SBS). Panel: Advances and challenges in digital health in Brazil: The results of the ICT in Health survey. In person, São Paulo. June 2023.

- XXXVII National Congress of Municipal Health Secretariats (CONASEMS). Panel: Digital health world panel. Theme: Digital transformation in the SUS. In person, Goiania. July 2023.
- Second Symposium on the Future of Health Systems in a Digital Era in the European Region (WHO). Panel: Transforming the digital health practice: The critical role of governance, investment and evaluation. Online. September 2023.
- I International Symposium on Digital Transformation in SUS organized by the Ministry of Health. In-person event, São Paulo. October 2023.
- 3rd Seminar: LGPD in Digital Health (OAB SP). Panel: Interoperability and integration: Open health, benefits, risks, and security of security. In person, São Paulo. November 2023.
- Meaningful connectivity: promoting digital skills in Mercosur (Anatel). Panel: Gap digital: os impactos da falta de habilidade digital no exercício da cidadania digital (Digital gap: the impacts of the lack of digital skills on the exercise of digital citizenship). In person, Brasília. November 2023.
- Education that transforms: public policies and training for digital citizenship (SaferNet and British Embassy). Panel: “Conectividade significativa e habilidades digitais: caminhos para a inclusão digital” (Meaningful connectivity and digital skills: paths to digital inclusion). In person, Brasília. November 2023.
- Leveraging Non-Probability Samples and Organic Data for Producing Public Statistics (ISWGHS and Global Network of Data Officers and Statisticians). Online. December 2023.

Households and Digital Inclusion

- WSIS Forum 2023 (ITU, UNESCO, UNCTAD and UNDP). Forum tracks: “Applying Internet Universality ROAM-X framework for WSIS+20 review and Global Digital Compact” and “ICT indicators for monitoring international goals and targets”. In person, Geneva. March 2023.
- Conference: “Digital transformation: Meaningful connectivity and consumer relations in an ever-connected Brazil” (Anatel). In person, Brasília. March 2023.
- Panel: “Meaningful connectivity” (MCom). In person, Brasília. March 2023.
- IV Seminário Governança das Redes (IV Governance of the Networks Seminar) (IRIS). In person, Brasília. September 2023.
- Cocreation workshops for the 6th Plan of Action of the Open Government Partnership (OGP). In person, Brasília. October 2023.

- Conference of the Society for the Advancement of Socio-Economics (SASE). Panel: Gender and innovation. In person, Rio de Janeiro. July 2023.
- School of Digital Transformation and Innovation in Latin America and the Caribbean (UN-ECLAC, CAF, Agesic [Uruguay], the Datasphere Initiative and Cetic.br|NIC.br). Panel: Digital skills: How to conceptualize, how to measure and how to develop. In person, São Paulo. September 2023.

Productivity and the Digital Economy

- Trends and Directions of Innovation and Entrepreneurship in Brazil (SENAC). Online. May 2023.
- 4th Meeting of the Ecommerce Studies Center (FGV). In person, Rio de Janeiro. August 2023.

- Workgroup on Manufacturing Digital Transformation (CNDI). In person, Brasília. October 2023
- Workshop on Digital Transformation Index and new indicators for the ICT Enterprises 2024 survey (MDIC). In person, Brasília. November 2023.

Privacy and Data Protection

- 14th Privacy and Personal Data Protection Seminar (NIC.br). Launch of the podcast: “Ambiente Legal,” hosted by the NIC.br Legal Advisory Team. In person, São Paulo. August 2023.

Quantitative Methodologies and Statistics

- Cetic.br|NIC.br actively participated in the 64th ISI World Statistics Congress (WSC), the preeminent global gathering for statistics. WSC 2023, held in Ottawa, provided a platform for participants to show their research. Cetic.br|NIC.br presented its advancements and outcomes in utilizing web scraping as a source for the production of the ICT Enterprises survey indicators.
- Cetic.br|NIC.br participated in the 6th ESAMP (School on Sampling and Research Methods), a national event held in Brazil, to gather survey statisticians and research methodologists who work mostly with sampling surveys and analysis of complex sampling databases. Cetic.br|NIC.br did three presentations showing advancements: two on the use of non-probability samples; and one on the release of microdata from the ICT Enterprises survey following statistical disclosure methodologies.



Published Papers

Przebilovicz, E., Cunha, M. A., & Ribeiro, M. M. (2023). Decolonizing e-government benchmarking. In D. A. Cid & N. Sabatini (Eds.), *DGO '23 Proceedings of the 24th Annual International Conference on Digital Government Research* (pp. 570-582). Association for Computing Machinery.

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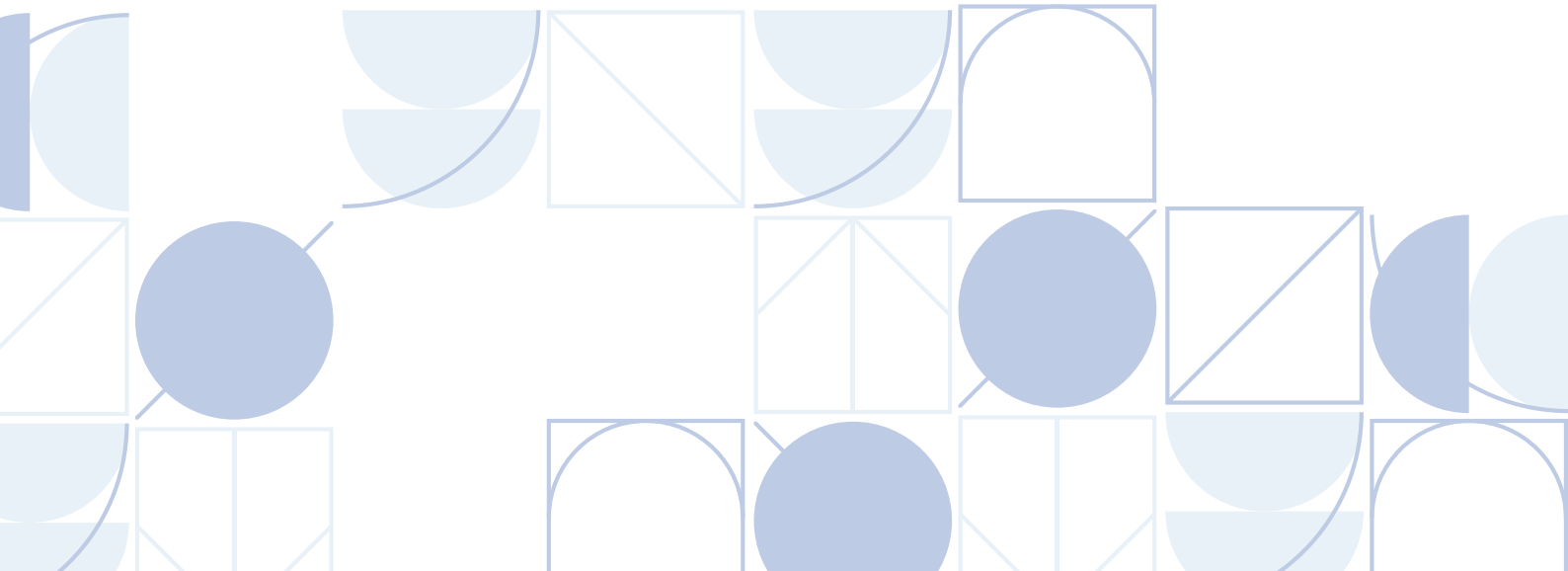
Ribeiro, M. M., Portilho, L., Segatto, C. I., Lins, L. M., & Costa, D. (2023). Conectividade e capacidades locais nos pequenos municípios brasileiros. *Internet & Sociedade*, 4(1), 29-50.

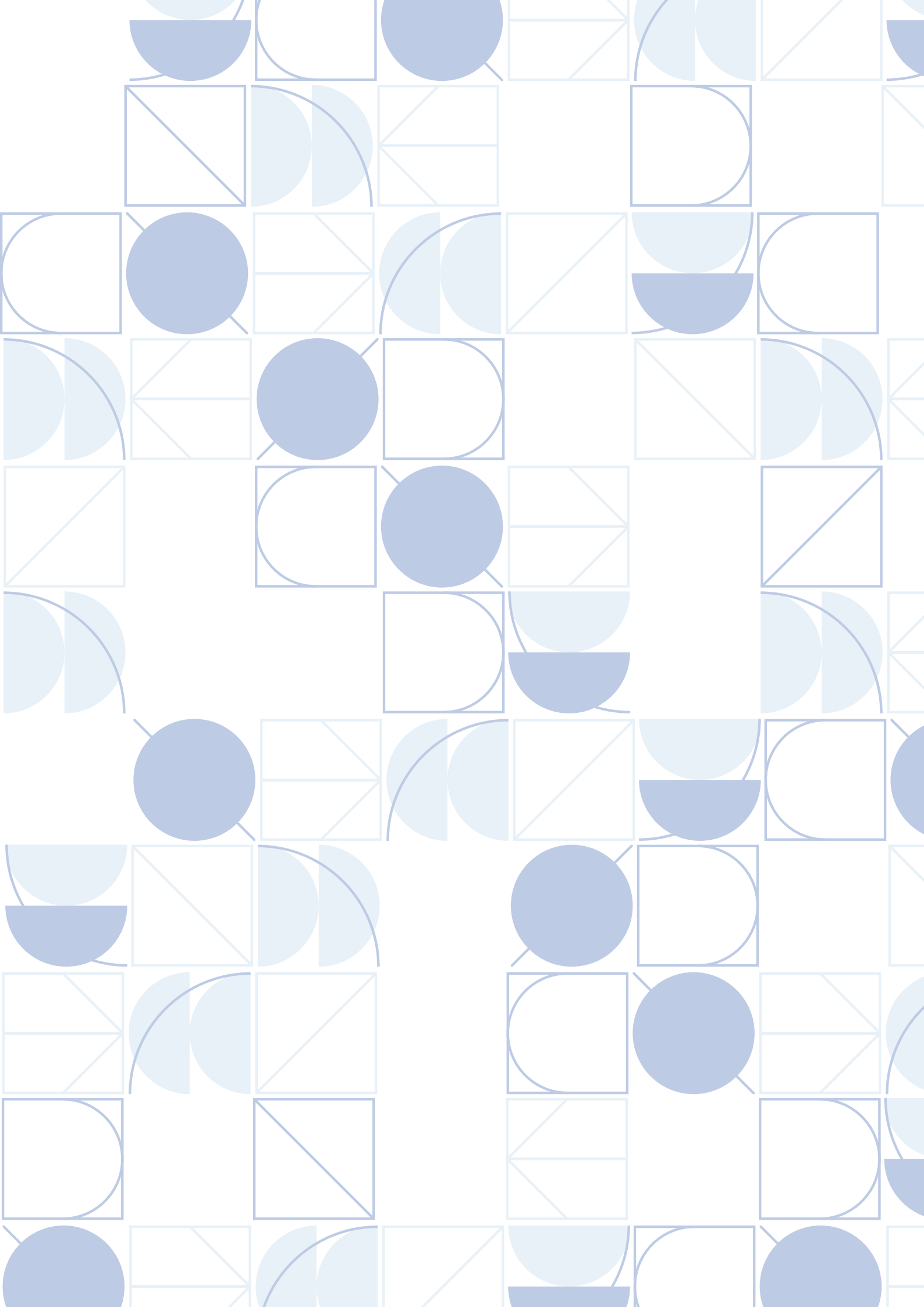
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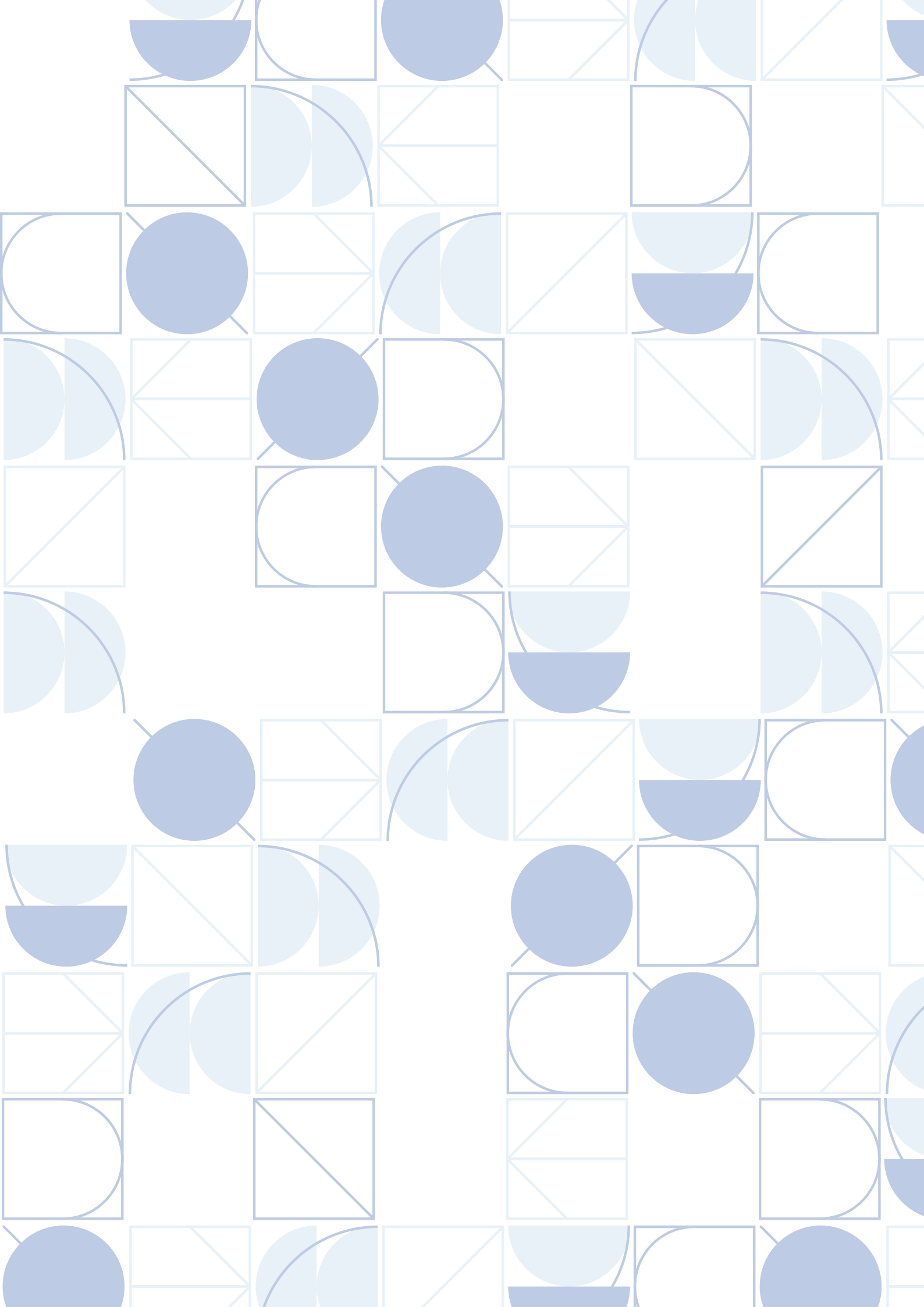
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