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ICT Kids Online Brazil

SURVEY ON INTERNET USE BY CHILDREN IN BRAZIL

2024

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Brazilian Network Information Center

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2024

Brazilian Internet Steering Committee
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São Paulo
2025

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Foreword

A successor to Arpanet, the Internet was maintained in its first decades by research funds, such as the National Science Foundation (NSF) in the United States, and by the institutions connected to it. Throughout this period—which lasted until the mid-1990s—the Internet was used mainly for the communication of supercomputing centers and universities, without aiming for self-sustainability. With its widespread dissemination more than three decades later, we can say that the Internet has become mature, and is made up of a very complex ecosystem structured on layers of physical infrastructure, connection protocols, and a wide range of applications.

This maturation process, in addition to the search for Internet sustainability, has involved technical challenges of scalability and security, in addition to interaction with political and regulatory bodies. It has gone through many stages and an extensive multisectoral and international effort to define Internet governance arrangements that are capable of balancing diverse interests and guaranteeing stability, interoperability, and expansion. In the Brazilian case, the establishment of multisectoral, democratic, and collaborative governance was solidified with the creation of the Brazilian Internet Steering Committee (CGI.br) and the institutionalization of the Brazilian Network Information Center (NIC.br), which includes Registro.br, responsible since 1989 for registering domain names with the "last name" .br. In this way, it was possible to guarantee not only the Internet governance framework, already defined by Standard 4 of 1995, but also self-sufficiency in the technical management of names and numbers, making it possible to reinvest in the expansion and improvement of the Internet infrastructure in Brazil.

In addition to managing the registration and publication of .br domain names, and allocating autonomous system numbers (ASN) and Internet protocol (IP) addresses in versions 4 and 6, it carries out a number of other actions, all linked to the promotion of fundamental values for the Internet, such as integrity, interoperability, and accessibility.[1] These actions include supporting research centers with funds from Registro.br, holding national and international events, and promoting actions aimed at expanding the infrastructure and protecting users on the Internet, always with the goal of making the Internet increasingly accessible and safe. Another fundamental aspect is CGI.br's role in fostering constant and careful dialogue about the use of the Internet by individuals, enterprises, and the government.

[1] More information at https://principios.cgi.br/sobre

While technological advances bring countless possibilities, it is also true that new challenges need to be faced collectively if the Internet's guiding principles are to be preserved. In recent years, for example, the growing adoption of mobile devices and Artificial Intelligence (AI) technologies by individuals and organizations has brought to the fore issues such as privacy and data protection, the proliferation of false or misleading content, and the potentially harmful excessive use of digital devices by children. Several events promoted by NIC.br in 2024 addressed these issues, enabling multisectoral reflections anchored in data. Some examples are the 15th edition of the Seminar on Privacy and Personal Data Protection,[2] the 9th Symposium on Children and Adolescents on the Internet,[3] and the seminar launching the Brazilian Artificial Intelligence Observatory (OBIA),[4] which operates under NIC.br.[5]

It is also worth highlighting the participation of CGI.br and the collaboration of NIC.br in various G20 initiatives during Brazil's presidency in 2024. To contribute to the debate on the digital economy, the Regional Center for Studies on the Development of the Information Society (Cetic.br)—a department of NIC.br dedicated to the production of indicators and analyses—has been active in the production of three reports on topics considered to be priorities by the G20 that are fundamental to the dialogue on technology and society. These publications had important international organizations as partners: the United Nations Educational, Scientific and Cultural Organization (UNESCO), the International Telecommunication Union (ITU), and the Ministries of Science, Technology and Innovation (MCTI) and Communication (MCom). The first summarizes indicators on the state of AI development in the G20 countries,[6] while the second focuses on the adoption of AI in public services.[7] The third proposes a framework for the international measurement of meaningful connectivity.[8]

Cetic.br|NIC.br is also responsible for a series of other publications that provide a detailed overview of the use of information and communication technologies (ICT) by individuals and organizations in Brazil. In addition to publishing research on ICT adoption in different segments, such as households, enterprises, governments, education, and health, the Center conducts sectoral and cross-cutting studies with a national scope on topics such as meaningful connectivity, AI in health, privacy and data protection, and electronic waste.

In 2025, Cetic.br|NIC.br celebrates two decades of work dedicated to producing reliable indicators and analysis on the use of ICT in Brazil. Over these 20 years, it has established itself as a national and international benchmark in the generation of comparable data, which provides important input for policymaking, the development of academic research,

[2] More information at https://seminarioprivacidade.cgi.br/

[3] More information at https://criancaseadolescentesnainternet.nic.br/

[4] More information at https://seminarioobia.nic.br/

[5] More information at https://obia.nic.br/

[6] More information at https://cetic.br/pt/publicacao/toolkit-for-artificial-intelligence-readiness-and-capacity-assessment/

[7] More information at https://cetic.br/pt/publicacao/mapping-the-development-deployment-and-adoption-of-ai-for-enhanced-public-services-in-the-g20-members/

[8] More information at https://cetic.br/pt/publicacao/universal-and-meaningful-connectivity-a-framework-for-indicators-and-metrics/

and strengthening the multisector debate on digital transformation. Its commitment to methodological rigor and excellence in the production of knowledge has strengthened its position with international organizations, governments, and civil society, making it an important pillar in building a more inclusive and sustainable digital environment.

The publication you have before you is part of this trajectory and reflects the conceptual and methodological knowledge of Cetic.br|NIC.br. In it, you will find essential data and evidence to understand how Brazilian society has been appropriating these technologies over the last two decades, a period marked by significant advances and complex challenges emerging from the digital age. This celebration is not only an institutional milestone, but also an invitation to reflect together on the future of ICT research and the role of data in building policies and strategies for a connected and informed society.

Enjoy your reading!

Demi Getschko
Brazilian Network Information Center - NIC.br

Presentation

Throughout 2024, the Brazilian Internet Steering Committee (CGI.br), in conjunction with the Brazilian Network Information Center (NIC.br), actively participated in national and international debates on the challenges for the governance of the digital environment, reaffirming its commitment to an inclusive and sustainable future for Brazil and the world. In particular, it is worth highlighting the NetMundial+10 Conference,[1] held in April 2024 by CGI.br. The Conference has established itself as a multisectoral platform for dialog on the challenges of Internet governance in a scenario in which digital technologies profoundly transform social, economic, cultural, informational, and political relations. The meeting culminated in the document *NetMundial+10 Multistakeholder Statement: Strengthening Internet governance and digital policy processes*,[2] which has become a reference on global agendas.

Also in 2024, during its presidency of the G20, Brazil took on a leading role in promoting sustainable development, social inclusion, and the reform of global governance. With a focus on reducing inequalities and fighting hunger and poverty, the country promoted debates on the energy transition, climate change, and key issues related to the digital economy. Brazil's chosen priorities in the G20 Digital Economy Working Group (DEWG) also reflect its commitment to a more inclusive and sustainable digital economy, including topics such as meaningful universal connectivity, advancing digital government and digital public infrastructures, promoting information integrity and a more secure digital environment, and Artificial Intelligence (AI) for sustainable development and reducing inequalities.

With the prominent and collaborative work of the Ministries of Science, Technology and Innovation (MCTI), Communications (MCom), Management and Innovation in Public Services (MGI), and the Secretariat for Social Communication (Secom), these priorities were considered strategically, in line with the challenges of the digital economy. NIC.br and CGI.br played an important role in several of these activities, contributing their technical expertise and commitment to multisectoral Internet governance, such as the leadership of the Regional Center for Studies on the Development of the Information Society (Cetic.br), a department of NIC.br, in three publications related to the priority themes.[3]

[1] More information at https://netmundial.br/

[2] The Statement can be accessed at https://netmundial.br/pdf/NETmundial10-MultistakeholderStatement-2024.pdf

[3] Toolkit for Artificial Intelligence Readiness and Capacity Assessment; AI for enhanced public services in the G20 members: Artificial Intelligence for inclusive sustainable development and inequalities reduction; and Universal and meaningful connectivity: A framework for indicators and metrics.

At the same time as the international meetings, the 5th National Conference on Science, Technology and Innovation (CNCTI) was held in Brasilia. The meeting, which was open and participatory, was attended by more than 2,500 representatives from civil society, academia, the technical community, international organizations, and the Brazilian government, representing a space for social dialogue and proposing public policies. On that occasion, the Brazilian Artificial Intelligence Plan (PBIA) was launched,[4] which, under the coordination of the MCTI, aims to realize the Brazilian project of technological autonomy, increasing the competitiveness of the national economy, and stimulating the responsible use of AI. As one of their contributions to the issue, NIC.br and CGI.br organized the 1st Seminar of the Brazilian Artificial Intelligence Observatory (OBIA),[5] an integral part of the PBIA, which plays an essential role in producing and disseminating data and studies on the adoption and use of AI-based systems in the country.

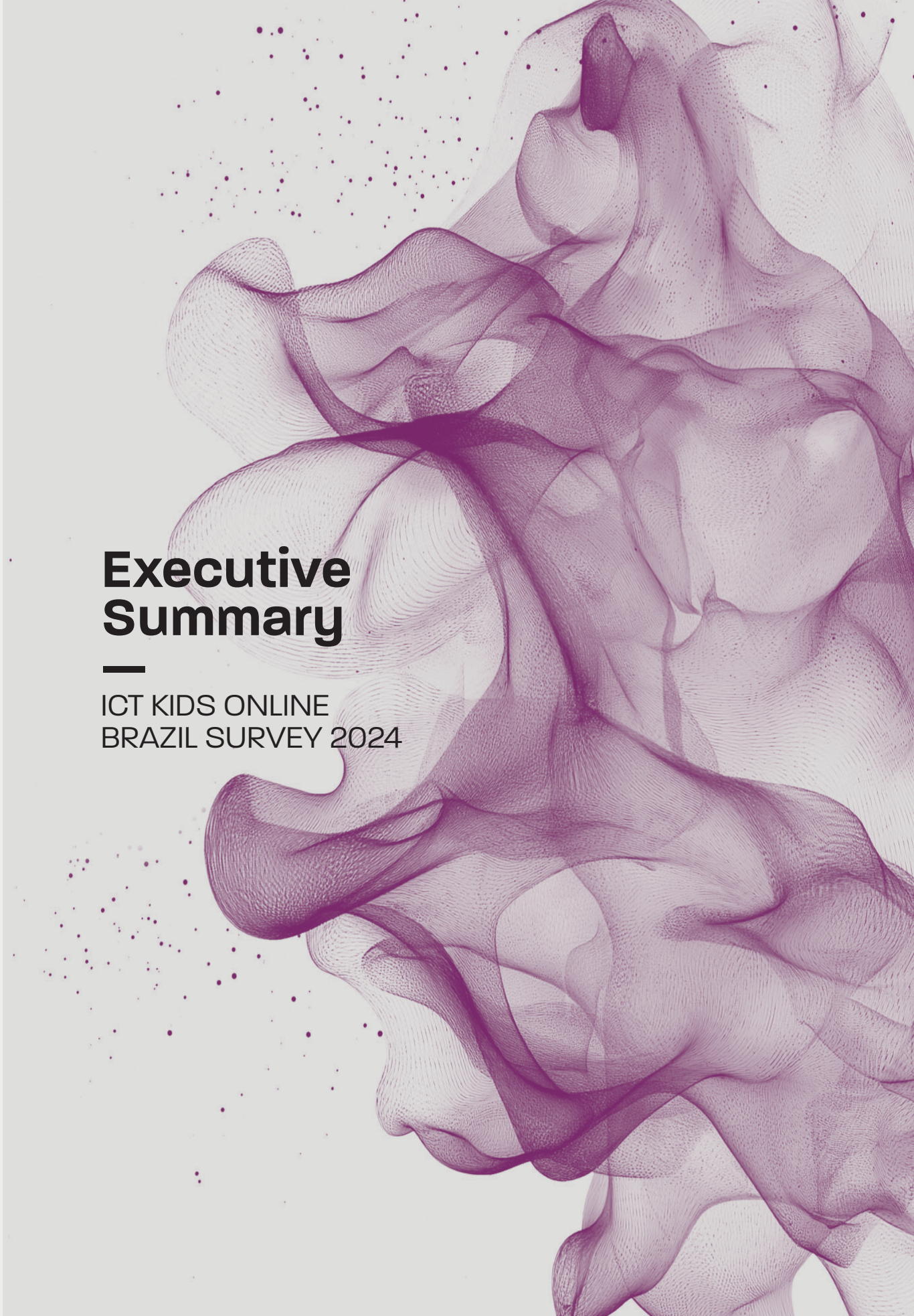
To support these debates and monitor the achievement of the commitments made, the availability of data and indicators is essential to map the socioeconomic implications of the adoption of digital technologies by different sectors of society. With two decades of regular production of reliable and internationally comparable statistical data, as well as dissemination of studies and analyses on the impacts of digital technologies on society, Cetic.br|NIC.br has many reasons to celebrate. Its commitment to excellence and methodological rigor in the production of quality data has ensured recognition and influence among public policymakers and international organizations linked to the ecosystem of indicators and statistics. In addition, Cetic.br|NIC.br maintains ongoing cooperation with civil society, the academic community, national statistical offices, and important international organizations such as the Organisation for Economic Co-operation and Development (OECD), the International Telecommunication Union (ITU), the United Nations Educational, Scientific and Cultural Organization (UNESCO), the United Nations Conference on Trade and Development (UNCTAD), the World Health Organization (WHO), the United Nations Children's Fund (UNICEF), and the United Nations Statistics Division (UNSD).

In this context, and in celebration of the 20th anniversary of Cetic.br|NIC.br, this publication offers valuable inputs for building accessible, relevant, and qualified knowledge, which is essential for informing debates and decisions on the country's digital transformation. Through the production of data and evidence as fundamental pillars, we seek not only to understand the challenges of the present, but also to pave the way for a more equitable and secure future for the next generations.

Renata Vicentini Mielli
Brazilian Internet Steering Committee – CGI.br

[4] More information about PBIA is available at https://www.gov.br/lncc/pt-br/assuntos/noticias/ultimas-noticias-1/plano-brasileiro-de-inteligencia-artificial-pbia-2024-2028

[5] OBIA can be accessed at https://obia.nic.br/



Executive Summary

ICT KIDS ONLINE
BRAZIL SURVEY 2024

Executive Summary
ICT Kids Online Brazil 2024

Since 2012, the ICT Kids Online Brazil survey has been collecting indicators that characterize the access to and use of information and communication technologies (ICT) by individuals 9 to 17 years old in Brazil. The survey also interviews legal guardians about the mediation of Internet use by their children or those under their guardianship.

For the first time, in the 2024 edition, data was collected on the frequency of use and whether children had profiles on digital platforms. Also for the first time, the survey investigated parents' and legal guardians' perceptions of requests for help with Internet use by children, in addition to the adoption of technical resources for parental mediation.

81% OF USERS 9 TO 17 YEARS OLD REPORTED OWNING THEIR OWN MOBILE PHONE

Conditions of Internet access and use

In 2024, around 24,5 million people 9 to 17 years old were Internet users in Brazil (93%). Between 2015 and 2024, there was an increase of eleven percentage points among those who used the Internet every day or almost every day (95% in 2024 and 84% in 2015) and a drop of eight percentage points among those who accessed the Internet at least once a week (3% compared to 11%).

Mobile phones were the main devices used by the population investigated to access the Internet (98%), and they were the only digital devices used by 32% of users in classes DE. In addition, more than 90% of teenagers 15 to 17 years old (93%) and users in classes AB (97%) reported owning their own mobile phones (Table 1).

Internet access via computers by children in class C (40%) was double that reported in classes DE (20%) and approximately half that of classes AB (76%). Disparities between classes were also observed for Internet access via televisions—used by 88% of users in classes AB, 73% of those in class C, and 57% of those in classes DE—and video game consoles, a device used by more than half of users in classes AB (57%) and 10% of users in classes DE.

Regarding locations of access, almost all children accessed the Internet at home (99%). Someone else's houses were the second main location of Internet access (87%). Internet access on the move by users 9 to 17 years old showed significant differences for classes AB (74%), class C (44%), and classes DE (33%). In addition, 59% of adolescents 15 to 17 years old reported access on the move, a proportion that drops to 26% in the case of children 9 to 10 years old. Approximately half of children reported having accessed the Internet at school (51%). There was a significant difference between those 9 to 10 years old (13%) and those 13 to 14 years old (61%) and 15 to 17 years old (81%) who accessed the Internet at school.

Online practices: Participation on digital platforms

The 2024 edition brought new indicators on frequency of use and whether children had profiles to access the main digital platforms. The digital platform most frequently accessed by Internet users 9 to 17 years old was WhatsApp

(71%), followed by YouTube (66%), Instagram (60%), and TikTok (50%).[1]

Younger individuals, 9 to 10 years old (70%) and 11 to 12 years old (71%), were mainly frequent users of YouTube. Those 13 and 14 years old, on the other hand, were mainly frequent users of Instagram (78%) and WhatsApp (73%). For those 15 to 17 years old, WhatsApp (91%) and Instagram (81%) were the most frequently accessed platforms (Chart 1).

Around 83% of Internet users 9 to 17 years old had their own profiles on at least one of the digital platforms investigated; by age group, this proportion was 60% for users 9 to 10 years old, 70% among those 11 to 12 years old, and 93% for those 13 to 14 years old. Among older individuals (15 to 17 years old), almost all (99%) had profiles on at least one digital platform.

Among Internet users 9 to 17 years old, 69% of those who accessed WhatsApp and 63% who accessed Instagram at least once a week reported having their own profiles on these platforms. The highest proportions of those who reported accessing digital platforms at least once a week but not having their own profiles were 38% for YouTube and 15% for TikTok (Chart 2).

Regarding TikTok and Discord, in addition to the differences by age, there was also a difference in the percentage of girls and boys who had profiles on these platforms. The number of girls with profiles on TikTok was higher than that reported by boys (52% and 38%, respectively), unlike Discord, where the number of boys with their own profiles was higher (16% of boys and 1% of girls).

Digital skills

Almost all users 11 to 17 years old (96%) reported it was true or very true that they knew how to download applications, 70% knew how to adjust privacy settings on social networks, and around half (47%) knew how to check how much money was spent on an application.

As for social skills, 82% of these users reported knowing how to remove people from their list of contacts and friends and 73% knew how to report offensive content related to themselves or people they know.

45% OF USERS 11 TO 17 YEARS OLD AGREED THAT THE FIRST POST THEY SEE ON SOCIAL NETWORKS IS THE LAST ONE THAT WAS POSTED BY ONE OF THEIR CONTACTS

Regarding creative skills, for 55% of users 11 to 17 years old, it was true or very true that they knew how to differentiate between sponsored and non-sponsored content online, such as in a social network post or video. The proportion of those who agreed that using hashtags increases the visibility of publications on the Internet was 65%. More than 70% agreed that enterprises pay people to use their products in the videos and content they publish on the Internet (72%). Nearly half of the users agreed that everyone finds the same information when they search for things on the Internet (52%) and that the first result of an Internet search is always the best source of information (50%).

Mediation of Internet use

In 2024, the survey innovated by investigating the use of technical tools by caregivers. Around three in ten Internet users 9 to 17 years old had parents or legal guardians who used resources that block or filter certain types of websites (34%), that filter applications children can download (32%), and that limit the people children can contact via voice calls and messages (32%). For each of the items analyzed, the proportions were around 20% for those 13 to 14 years old and 15 to 17 years old and 40% for those 9 to 10 years old and 11 to 12 years old (Chart 3).

[1] Frequent use includes the scales "Several times a day" or "Every day or almost every day."

TABLE 1

—

Children who have mobile phones, by age and class (2024)

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

9 to 10 years old	67
11 to 12 years old	79
13 to 14 years old	77
15 to 17 years old	93
AB	97
C	80
DE	77

Of the Internet users 11 to 17 years old ...

84%
watched video clips, TV programs, movies, or series online

78%
played online

76%
used social networks

36%
posted texts, images, or videos they created on the Internet

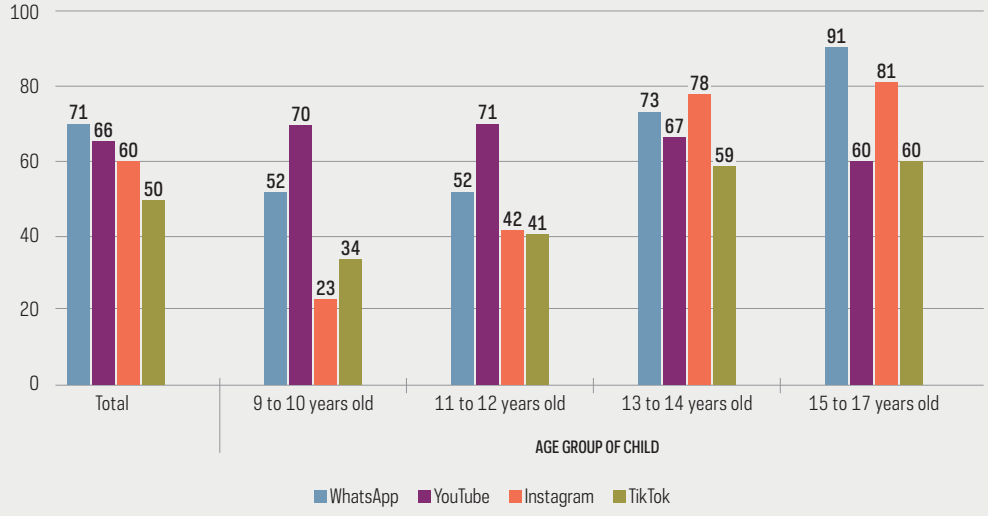
CHART 1

—

Children by frequency* of digital platform use (2024)

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

** "Several times a day" or "Every day or almost every day"*



Around 60% of children 9 to 17 years old had parents or legal guardians who said that the children could watch video clips, TV programs, movies, or series online (68%), use instant messaging (67%), download music or movies on the Internet (66%), and play online (66%) when they were alone. The main activities that children could not perform under any circumstance, according to their parents, were giving personal information to other people on the Internet (81%) and making purchases online (69%).

Survey methodology and access to data

The ICT Kids Online Brazil survey aims to understand how the population 9 to 17 years old uses the Internet and how they deal with the risks and opportunities arising from its use. The survey is based on the conceptual framework defined by the EU Kids Online network,[2] which considers the influence of individual, social, and country contexts on the use of the Internet by children. The data collection period was from March to August 2024. The survey interviewed 2,424 children and 2,424 parentes or legal guardians nationwide. Data was collected through face-to-face interviews using a structured questionnaire. The survey results, including tables of survey proportions, totals, and margins of error, are available at the Cetic.br|NIC.br website (https://cetic.br) and data visualization portal (https://data.cetic.br/). The "Methodological Report" and the "Data Collection Report" can be consulted in both the publication and on the website.

BOX 1

—

REQUESTS FOR GUIDANCE MADE BY CHILDREN ABOUT USING THE INTERNET

For the first time, the survey asked about guardians' perceptions of the frequency of requests for guidance about using the Internet from children. As reported by parents and legal guardians, 44% of users 9 to 17 years old "always" or "almost always" talked about things that bothered or upset them on the Internet, which was the same proportion as those who said that their children "always" or "almost always" asked for help with an online situation they could not solve (Chart 4).

A significant difference was observed in the proportion of girls who "always" talked about things that bothered or upset them (46%), compared to the percentage of boys (28%). The data also revealed a gradual decline in requests for advice and sharing of online experiences as age progresses. Among the youngest, 9 to 10 years old, more than half "always" or "almost always" talked about things that bothered or upset them, asked for help with an online situation they could not solve, or started conversations about what they did online, with a proportion of around a fifth for users 15 to 17 years old.

[2] The European network EU Kids Online originally developed the framework that was followed by the Global Kids Online initiative. For more information on the countries participating in the network in addition to the results of each context, visit the project website: http://globalkidsonline.net/

CHART 2

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Children who used digital platforms at least once a week by whether they had profiles on digital platforms (2024)

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

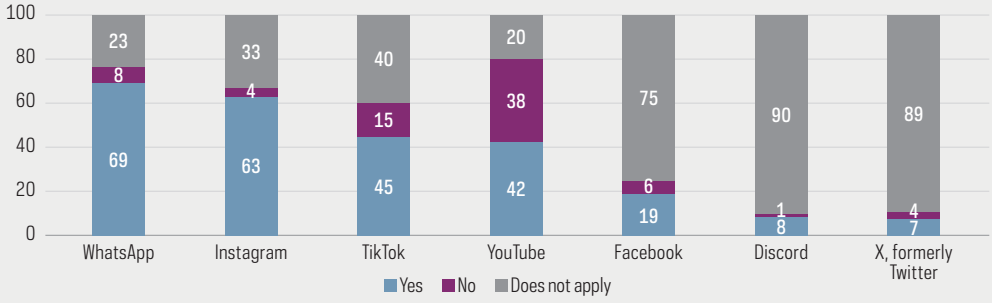

CHART 3

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Technical resource for mediating the use of the Internet by children, as reported by parents or legal guardians (2024)

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

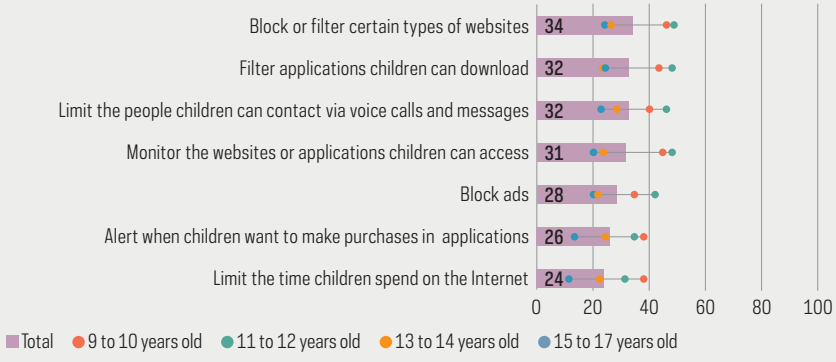

CHART 4

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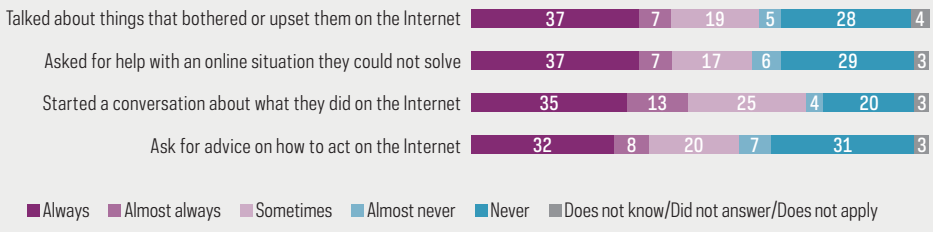
Requests for guidance received about using the Internet by children, as reported by parents or legal guardians (2024)

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



Access the full survey data!

In addition to the results presented in this publication, tables of indicators, questionnaires, information on how to access the microdata, and the presentation of the results of the launch event are available on the Cetic.br|NIC.br website, as well as other publications on the topic of the survey.

The tables of results (https://cetic.br/en/pesquisa/kids-online/indicadores/), available for download in Portuguese, English, and Spanish, present the statistics produced, including information on the data collected and cross-referencing for the variables investigated in the study. The information available in the tables follows the example below:

Code and indicator name

Population to which the results refer

A4 - CHILDREN BY FREQUENCY OF INTERNET USE

Total number of Internet users from 9 to 17 years old

PERCENTAGE (%)		MORE THAN ONCE A DAY	AT LEAST ONCE A DAY	AT LEAST ONCE A WEEK	AT LEAST ONCE A MONTH	LESS THAN ONCE A MONTH
TOTAL		85	10	3	1	0
AREA	Urban	87	9	2	1	0
	Rural	76	13	8	2	0
REGION	Southeast	91	6	1	1	0
	Northeast	83	12	3	1	1
	South	83	11	5	0	0
	North	73	17	7	1	1
	Center-West	84	13	2	1	0
SOCIAL CLASS	AB	95	5	1	0	0
	C	85	10	3	1	0
	DE	83	12	3	1	1

Indicator responses

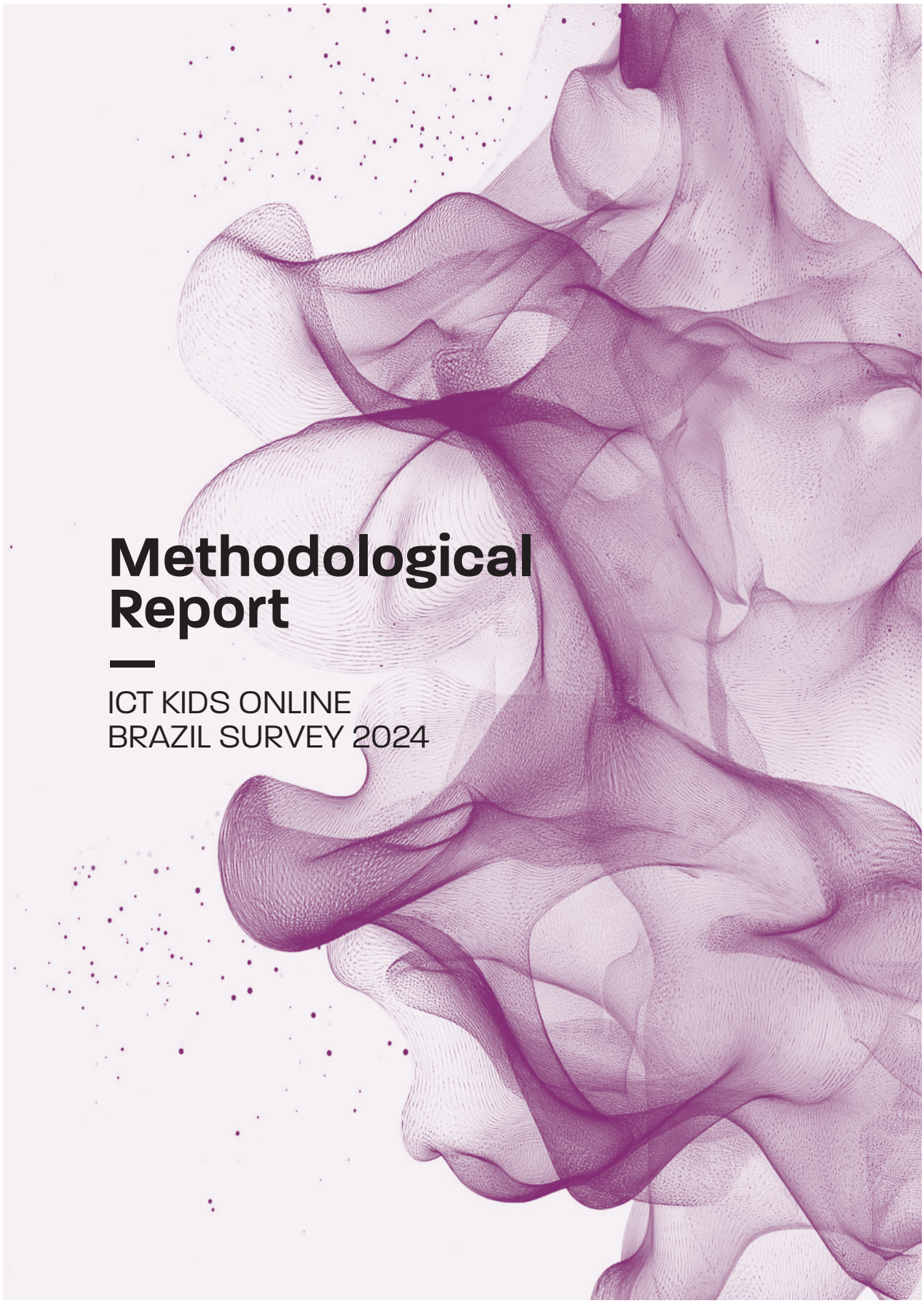
Results tabulation cut-outs: total (population as a whole) and characteristics of analysis (region, age group, etc.), different in each survey

Results: can be in % or totals

Source: Brazilian Network Information Center. (2024).
Survey on Internet use by children in Brazil: ICT Kids Online Brazil 2024 [Tables].

How to reference the tables of indicators

This publication is also available in Portuguese on the Cetic.br|NIC.br website.



Methodological Report

ICT KIDS ONLINE
BRAZIL SURVEY 2024

Methodological Report
ICT Kids Online Brazil 2024

The Brazilian Internet Steering Committee (CGI.br), through the Regional Center for Studies on the Development of the Information Society (Cetic.br), a department of the Brazilian Network Information Center (NIC.br), presents the methodology of the ICT Kids Online Brazil survey.

The ICT Kids Online Brazil survey has its data collection process incorporated to the field operation of the ICT Households survey. Thus, the two surveys share the method for selecting respondents, which is described in detail in the sampling plan section. Even though the data was collected jointly, the results of the two surveys are disclosed in specific reports for each audience.

Survey objectives

The main objective of the ICT Kids Online Brazil survey is to understand how the population aged 9 to 17 years uses the Internet and how they deal with risks and opportunities related to its use.

The specific objectives are:

- to produce estimates on Internet access by children, as well as to investigate the profile of non-Internet users;
- to understand how children access and use the Internet and how they perceive the content accessed, as well as online risks and opportunities;
- to outline the experiences, concerns, and actions of parents and legal guardians regarding their children's use of the Internet.

The methodology of the survey is aligned with the conceptual framework developed by the academic network EU Kids Online (Livingstone et al., 2015), enabling the production of comparative studies on the theme.

Concepts and definitions

CENSUS ENUMERATION AREA

According to the Brazilian Institute of Geography and Statistics (IBGE) definition for the Population Census, a census enumeration area covers the smallest territorial unit consisting of a contiguous area with known physical boundaries, located in an urban or rural area, of a scale suitable for data collection. The combination of census enumeration areas in a country represents the entire national territory.

AREA

A household may be urban or rural, according to where it is located, based on the legislation in force for the Population Census. Urban status applies to cities (municipal centers), villages (district centers) and isolated urban areas. Rural status applies to all areas outside those limits.

LEVEL OF EDUCATION

This concept refers to the level of education that the individual was attending or had attended, even if they had not completed the entire cycle. For data collection purposes, level of education was divided into 20 subcategories, ranging from "did not attend school" up to "PhD".

MONTHLY FAMILY INCOME

Monthly family income is defined as the sum of the income of all members of the household, including the respondent. For purposes of data publication, six income levels were established, starting at the monthly minimum wage (MW) as defined by the Brazilian Federal Government. The first level refers to households with a total income of up to one MW, while the sixth level refers to households with income of over ten MW:

- up to one MW;
- more than one MW up to two MW;
- more than two MW up to three MW;
- more than three MW up to five MW;
- more than five MW up to ten MW;
- more than ten MW.

SOCIAL CLASS

The most precise term to designate this concept would be "economic class". However, this survey has referred to it as "social class" in the tables and analyses. The economic classification was based on the Brazilian Criteria for Economic Classification (Brazilian Criteria), as defined by the Brazilian Association of Research Companies (Abep, 2015). This classification is based on ownership of durable goods for household consumption and level of education of the head of the household. Ownership of durable goods is based on a scoring system that divides households into the following economic classes: A1, A2, B1, B2, C, D, and E. The Brazilian Criteria were updated in 2015, resulting in classifications that are not comparable with the previous edition (Brazilian Criteria 2008). For results published in 2016 and onward, the Brazilian Criteria 2015 were adopted.

ECONOMIC ACTIVITY STATUS

This refers to the economic activity status of respondents 10 years old or older. From a set of four questions, seven classifications were obtained related to respondents' activity status. These alternatives were classified into two categories for analysis, as shown in Table 1.

TABLE 1
–
Classification of economic activity status

Answer alternatives		Status classification
Code	Description	Description
1	Works with pay	In the workforce
2	Works with no pay, i.e., apprentice, assistant, etc	
3	Works, but is on a leave of absence	
4	Attempted to work in the last 30 days	
5	Unemployed and has not looked for a job in the last 30 days	Not in the workforce

PERMANENT PRIVATE HOUSEHOLDS

This refers to a private household located in a unit that serves as a residence (house, apartment, or room). A private household is the residence of a person or a group of people, where the relationship is based on family ties, domestic dependence, or shared living arrangements.

INTERNET USERS

Internet users are considered to be individuals who have used the Internet at least once in the three months prior to the interview, as defined by the International Telecommunication Union (ITU, 2020).

Target population

The survey target population was made up of Brazilian children aged 9 to 17 years, residing in permanent private Brazilian households.

Reference and analysis

The survey's reference and analysis unit consists of children aged 9 to 17 years. For the indicators regarding the population of Internet users, analysis considered the answers provided by the child selected for the survey.

Parents and legal guardians are considered responding units, because they provide information on the selected children. They can be considered a unit of analysis, but they do not represent the overall population of parents or legal guardians residing in permanent private households in Brazil, since the selection of parents and legal guardians depends on the selection of their children.

Domains of interest for analysis and dissemination

For the reference and analysis units, the results are reported for domains defined based on the variables and levels described below.

For the variables related to households:

- **area:** corresponds to the definition of census enumeration areas, according to IBGE criteria, considered rural or urban;
- **region:** corresponds to the regional division of Brazil, according to IBGE criteria, into the macro-regions Center-West, Northeast, North, Southeast and South;
- **family income:** corresponds to the division of the total income of the households or residents into ranges of MW. These ranges are the following: up to one MW, more than one MW up to two MW, more than two MW up to three MW, more than three MW;
- **social class:** corresponds to the division into AB, C and DE, in accordance with the Brazilian Criteria.

Regarding variables concerning individuals, the following characteristics were added to the domains mentioned above:

- **sex of child:** corresponds to the division into male or female;
- **level of education of parents and legal guardians:** corresponds to the divisions of illiterate/preschool, Elementary Education, Secondary Education, and Tertiary Education;
- **age group of child:** corresponds to the divisions of 9 to 10 years old, 11 to 12 years old, 13 to 14 years old, and 15 to 17 years old.

Data collection instrument

INFORMATION ON THE DATA COLLECTION INSTRUMENTS

Data was collected through structured questionnaires with closed questions and predefined answers (single or multiple-choice answers). Children answered two different questionnaires: one was interviewer-administered (face-to-face interaction) and the other was self-completed. The self-completion questionnaire covered more sensitive subjects and was designed to allow children to answer the questions without interference by others, so as to provide a more comfortable environment for the respondents. Self-completion questionnaires were adapted according to the profile of two age groups: One version was targeted to children aged 9 to 10 years, and the other to children aged 11 to 17 years.

In addition to the questionnaires designed for children, the survey included a separate questionnaire for parents and legal guardians.

For more information about the questionnaires, see the section "Data collection instruments" in the "Data Collection Report".

Sampling plan

SURVEY FRAME AND SOURCES OF INFORMATION

Data from the IBGE 2010 Population Census was used for the sample design of the ICT Households and the ICT Kids Online Brazil surveys. In order to increase sample effectiveness, the reference survey frame was modified to create intramunicipal geographic units (also considering urban/rural status) that were made up of pairs of census enumeration areas, which are called primary sampling units (PSU). Thus, the selection of a PSU is equivalent to selecting about one pair of census enumeration areas.

The census enumeration areas were paired to make up the new PSU considering variables of status (urban/rural) and average monthly nominal income of people 10 years old or older, within each municipality.[1]

This process results in aggregates of one, two, or three census enumeration areas, dividing the basis of census enumeration areas approximately in half.

SAMPLE SIZE DETERMINATION

Sample size considered the optimization of resources and quality required for presenting the results of the ICT Households and ICT Kids Online Brazil surveys, according to the proposed objectives. The following sections concern the sample designed for collecting data for both surveys.

SAMPLE DESIGN CRITERIA

The sampling plan used to obtain the sample of census enumeration areas can be described as stratified three-stage cluster sampling. The probabilistic sample consisted of three stages: selection of PSU, selection of households, and selection of residents.

SAMPLE STRATIFICATIONN

The stratification of the probabilistic sample was based on the following steps.

- Twenty-six geographic strata were defined, matching the federative units.
- The Federal District was considered a separate stratum (a federative unit with different characteristics from the others).
- Within each of the 26 geographic strata, strata of municipality groups were defined:
    - The capital cities of all the federative units were included in the sample (26 strata) — self-representative municipalities.
    - For nine states, metropolitan region strata were defined: Pará, Ceará, Pernambuco, Bahia, Minas Gerais, Rio de Janeiro, São Paulo, Paraná and Rio Grande do Sul.
    - All other census enumeration areas, belonging to the other municipalities of the federative units (26), were separated into two strata: rural area and urban area.

[1] The detailed algorithm was given by: 1) ordering the census enumeration areas by municipality, status (urban/rural), and average monthly nominal income of people 10 years old or older (either with or without income); 2) numbering the records within the municipality and status in ascending order, thus creating the variable RBA_009; 3) counting census enumeration areas within each MUNICIPALITY-STATUS set, creating the variable NUMSC; 4) dividing the total obtained in item 3 by two, thus creating the variable DIV; 5) creating a new PARMUN with one of the following values: a) RBA_009 if RBA_009⩽DIV; b) DIV if (RBA_009-DIV)>DIV; or c) RBA_009-DIV if RBA_009>DIV.

The primary sampling units, altogether, were divided into 88 strata: 27 capital cities, nine metropolitan regions and 52 PSU strata according to federative unit and household area or status (urban/rural).

SAMPLE ALLOCATION

The sample allocation adhered to parameters related to costs and the quality expected from indicators. In total, approximately 1,080 PSU or 2,160 census enumeration areas were selected throughout the entire national territory, and within each, data was to be collected from 15 households, corresponding to a sample of 32,400 households. The PSU sample allocation, considering the 88 strata, was defined as follows:

- 40 PSU per federative unit (26) and 40 PSU in the Federal District;
- 10 PSU in capital cities;
- if the federative unit has a metropolitan region stratum, 10 PSU among the other municipalities in the metropolitan region and 20 PSU among the remaining municipalities in the federative unit, being 14 urban and 6 rural;
- if the federative unit does not have a metropolitan region stratum, 30 PSU among the other municipalities, being 24 urban and 6 rural.

SAMPLE SELECTION

SELECTION OF PSU

The sampling units were selected with probabilities proportional to the square root of the number of permanent private households in each PSU, according to the 2010 Population Census, using Pareto's method of probability proportional size (Freitas & Antonaci, 2014; Rosén, 2000). The size was modified within each stratum of the selection to reduce the variability of the probability of selection in each PSU:

- If the number of permanent private households in the PSU is lower than the 5% percentile, a size equivalent to the 5% percentile is adopted.
- If the number of permanent private households in the PSU is equal to or greater than the 5% percentile and lower than or equal to the 95% percentile, the size observed is adopted.
- If the number of permanent private households in the PSU is greater than the 95% percentile, a size equivalent to the 95% percentile is adopted.

SELECTION OF HOUSEHOLDS AND RESPONDENTS

Permanent private households within each PSU were selected using simple random sampling. In the first stage, the interviewers listed all the households in the PSU (approximately two census enumeration areas) to obtain a complete and updated record. After updating the number of households per PSU selected, 30 households per PSU were randomly chosen to be visited for interviews.

All the households in the sample needed to answer the ICT Households questionnaire — Module A: Access to information and communication technologies in the household.

To determine which survey should be administered in the household (ICT Households — Individuals or ICT Kids Online Brazil), all the residents in each household were listed and the survey was selected as follows:

1. When there were no residents in the 9 to 17 age group, the ICT Households interview was conducted with a resident 18 years old or older randomly selected from among the household's residents.
2. When there were residents in the 9 to 17 age group, a random number was generated between 0 and 1, and:
    a. If the number generated was smaller than or equal to 0.54, the interview for the ICT Kids Online Brazil survey was conducted with a resident 9 to 17 years old, randomly selected among the household's residents in this age group, and with the person responsible for this selected resident.
    b If the number generated was greater than 0.54 and equal to or less than 0.89, the ICT Households survey interview was conducted with a resident 10 to 17 years old, randomly selected among the household's residents in this age group.
        - In households selected for the ICT Households survey (with a resident 10 to 17 years old) that only had 9-year-old residents, in addition to members 18 years old or older, the ICT Households survey was conducted with a randomly selected resident 18 years old or older.
    c. If the number generated was greater than 0.89, the interview for the ICT Households survey was conducted with a resident 18 years old or older randomly selected from the residents of the household in this age group.

The selection of respondents in each household selected to answer the questionnaire was done after listing the residents.

Data collection procedures

DATA COLLECTION METHOD

Data collection was conducted using computer-assisted personal interviewing (CAPI), which consists of having a questionnaire programmed in a software system for tablets and administered by interviewers in face-to-face interaction.

Data processing

WEIGHTING PROCEDURES

The selection process for each household and resident, as described above, established an initial selection probability for each PSU. Based on the data collection results, nonresponse corrections were made for each step of the selection process. These steps are described below.

WEIGHTING OF PSU

Each PSU has a selection probability, as described in the "Selection of PSU" section. The inverse of this selection probability corresponds to the basic weight of each selected PSU. During data collection, no answers may be collected from households for a PSU. In this case, nonresponse is adjusted considering that the nonresponse is random within the stratum. The correction of the weights of the responding PSU by stratum is given by Formula 1.

FORMULA 1

$$w_{ih}^{r} = w_{ih} \times \frac{\sum_{h=1}^{H} w_{ih}}{\sum_{h=1}^{H} w_{ih} \times I_{h}^{r}}$$

w_{ih}^{r} is the weight of PSU i in stratum h adjusted for nonresponse

w_{ih} is the base weight of the sampling design of PSU i in stratum h

I_{h}^{r} is an indicating variable that is assigned value 1 if PSU i in stratum h had at least one responding household and 0, otherwise

WEIGHTING OF HOUSEHOLDS IN THE PSU

Similar to the weighting of PSU, each household also has an initial selection probability. This probability is defined as the ratio between 15 (number of households that are selected per census enumeration area) and the number of eligible households in each census enumeration area making up the PSU.

The first factor for calculating the weight of households corresponded to the estimated total of eligible households in the census enumeration area. Permanent private households with residents qualified to answer the surveys were considered eligible (only households with individuals unable to communicate in Portuguese, or where there were other conditions that prevented the survey from being conducted, were excluded), according to Formula 2.

FORMULA 2

$$E_{jih} = d_{jih} \times \frac{d^{E}_{jih}}{d^{A}_{jih}}$$

E_{jih} is the estimated total number of eligible households in census enumeration area j in PSU i in stratum h

d^{E}_{jih} is the total number of eligible households approached in census enumeration area j in PSU i in stratum h

d^{A}_{jih} is the total number of households contacted in census enumeration area j in PSU i in stratum h

d_{jih} is the total number of households listed in census enumeration area j in PSU i in stratum h

The second factor corresponded to the total number of eligible households in which the survey was effectively administered in the census enumeration area. The weight of each household in a census enumeration area is given by Formula 3.

FORMULA 3

$$w_{jih} = \frac{E_{jih}}{\sum_{k=1}^{15} I^{r}_{kjih}}$$

w_{jih} is the weight of the households in census enumeration area j in PSU i in stratum h adjusted for nonresponse in the census enumeration area

E_{jih} is the estimated total number of eligible households in census enumeration area j in PSU i in stratum h

I^{r}_{kjih} is an indicating variable that is assigned value 1 if household k in census enumeration area j in PSU i in stratum h answered the interview and 0, otherwise

As with the PSU, some of the households selected will refuse to participate in the survey. In some cases, a census enumeration area of a PSU may have no responding households. Thus, the nonresponse of the census enumeration area within the PSU must be adjusted.

Nonresponse for the households within the PSU is adjusted after calculating the weights of the households in the census enumeration area, as presented above. This adjustment is carried out with Formula 4.

FORMULA 4

$$w^{r}_{jih} = w_{jih} \times \frac{SC_{ih}}{\sum_{j=1}^{SC_{ih}} I^{r}_{ih}}$$

w^{r}_{jih} is the weight of the households in census enumeration area j in PSU i in stratum h adjusted for nonresponse in the PSU

w_{jih} is the weight of the households in census enumeration area j in PSU i in stratum h adjusted for nonresponse in the census enumeration area

SC_{ih} is the total number of census enumeration areas making up PSU i in stratum h

I^{r}_{ih} is an indicating variable that is assigned value 1 if census enumeration area j in PSU i in stratum h had at least one responding household and 0, otherwise

The final weight of each household, adjusted for nonresponse, is given by:

$$w^{d}_{jih} = w^{r}_{ih} \times w^{r}_{jih}$$

CALIBRATION OF HOUSEHOLDS

Based on the household weight adjusted for nonresponse (w^{d}_{jih}) these weights are calibrated to known totals for households and the general population, obtained from estimates in the most recent Continuous National Household Sample Survey (Pnad Contínua) available (IBGE, 2023).

The calibration method considers the characteristics of households and population totals separately. The method used is the iterative proportional update (IPU) (Ye et al., 2009). This algorithm makes it possible to establish equal weights for the people living in the same household, respecting marginal household and population totals. The methodology is applied to the set of residents who make up the sample and are listed in the household roster, with all residents initially receiving the same calculated household weight w^{d}_{jih}.

The characteristics used in the calibration are listed below.

For households:

- federative unit (2021 to 2024);
- area (rural or urban);
- household size (1, 2, 3, 4, 5, and 6 or more people).

For individuals:

- macro-region;
- area (rural or urban);
- sex;
- age group (0 to 2 years old, 3 to 5 years old, 6 to 8 years old, 9 years old, 10 to 15 years old, 16 to 24 years old, 25 to 34 years old, 35 to 44 years old, 45 to 59 years old, 60 years old or older).

As a result, a final weight is obtained for each household, given by w^{c}_{jih}, which is the weight of households in census enumeration area in PSU in stratum adjusted for nonresponse and calibrated for household population and individual population totals.

The weights are calibrated using the *mlfit*[2] package of the free statistical software R.

[2] See https://cran.r-project.org/web/packages/mlfit/

WEIGHTING OF RESPONDENTS IN EACH HOUSEHOLD

In each selected household, the ICT Kids Online Brazil survey was applied according to the composition of the household and a random survey and respondent selection process. The basic weight of each respondent in the survey is calculated with Formula 5.

Residents 9 to 17 years old

FORMULA 5

$$w^{T}_{l/kjih} = \frac{1}{0{,}54} \times P^{T}_{kjih}$$

$w^{T}_{l/kjih}$ is the weight of the respondent 9 to 17 years old in household k in census enumeration area j in PSU i in stratum h

P^{T}_{kjih} is the number of people in the 9 to 17 age group in household k in census enumeration area j in PSU i in stratum h

The weight of the parent or legal guardian is the same as that of the child aged 9 to 17 years, since this person is not selected, but is considered the resident that best knows the selected child's daily routine.

FINAL WEIGHT OF EACH RESPONDENT

The final weight of each individual interviewed in the survey was obtained by multiplying the weights obtained in each step of the weighting process.

Weight of the respondent to the ICT Kids Online Brazil survey (residents 9 to 17 years old):

$$w_{lkjih} = w^{c}_{jih} \times w^{T}_{l/kjih}$$

CALIBRATION OF THE WEIGHT OF EACH RESPONDENT

The weights of the interviews were calibrated to reflect certain known and accurately estimated population counts obtained from the most recent Continuous Pnad survey, as it is also done for households. This procedure, in addition to correction for nonresponse, sought to correct biases associated with nonresponse of specific groups in the population.

The variables considered for calibration of the weights of individuals in the ICT Kids Online Brazil survey were: sex, age group (four categories: 9 to 10 years, 11 and 12 years, 13 and 14 years, 15 to 17 years), household area (urban or rural) and region (North, Northeast, Southeast, South and Center-West).

The calibration of the weights was implemented using the calibration function of the survey library (Lumley, 2010), available in the free statistical software R.

SAMPLING ERRORS

Estimates of margins of error took into account the sampling plan set for the survey. The replication method was used for the individuals who responded to the survey, using the as.svrepdesign function in the R survey package. In this method, 200 weights are generated, which correspond to 200 samples with replacement of the original sample, following the same design (stratified and conglomerate).

The replication method was also used to estimate margins of error for the households responding to the survey. In this case, as the calibration process is not available in the R survey package, replicas were generated based on the population using the following algorithm:

1. 200 replicas were generated with weights only adjusted for nonresponse, leaving the base with 201 weights.
2. For the weight adjusted for non-response with all respondents (original weight), the calibration was made for total households and people (IPU).
3. For the 200 replicate weights generated, calibrations were made for the 200 replicate weights available in the Continuous Pnad.

The result is a household database with 201 weights: the weight that provides precise estimates and 200 replicate weights used to calculate the errors of the precise estimates. This adjustment methodology is described in Opsomer and Erciulescu (2021).

From the estimated variances, we opted to disclose errors expressed as the margin of error of the sample. For publication, margins of error were calculated at a 95% confidence level. Thus, if the survey were repeated several times, 19 times out of 20, the range would include the true population value.

Other values derived from this variability are usually presented, such as standard deviation, coefficient of variation, and confidence interval.

The margin of error is calculated by multiplying the standard error (square root of the variance) by 1.96 (sample distribution value, which corresponds to the chosen significance level of 95%). These calculations were made for each variable in all tables. Therefore, all indicator tables have margins of error related to each estimate presented in each cell of the table.

Data dissemination

The results of this survey are presented according to the variables described in the item "Domains of interest for analysis and dissemination."

In some results, rounding caused the sum of partial categories to be different from 100% for single-answer questions. The sum of frequencies in multiple-answer questions usually exceeds 100%. It is worth mentioning that, in the tables of results, hyphens (-) are used to represent nonresponse. Furthermore, since the results are presented without decimal places, cells with zero value mean that there was an answer to the item, but it was explicitly greater than zero and lower than one.

The results of this survey are published online and made available on the website (https://www.cetic.br/) and on the data visualization portal of Cetic.br|NIC.br (https://data.cetic.br/). The tables of proportions, totals, and margins of error for each indicator are available for download in Portuguese, English, and Spanish. More information on the documentation, metadata, and microdata databases of the survey are available on the microdata webpage (https://www.cetic.br/microdados/).

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Data Collection Report

ICT KIDS ONLINE
BRAZIL SURVEY 2024

Data Collection Report
ICT Kids Online Brazil Survey 2024

The Brazilian Internet Steering Committee (CGI.br), through the Regional Center for Studies on the Development of the Information Society (Cetic. br), of the Brazilian Network Information Center (NIC.br), presents the "Data Collection Report" of the ICT Kids Online Brazil 2024 survey. The objective of this report is to provide information about specific characteristics of this edition of the survey, including changes made to data collection instruments, sample allocation, and response rates.

The complete survey methodology, including the objectives, main concepts, definitions, and characteristics of the sampling plan, are described in the "Methodological Report", available in this publication.

Sample allocation

Sample allocation, as described in the "Methodological Report", is based on the selection of 40 primary sampling units per federative unit. For the 2024 collection, the response rates for the 2023 survey were analyzed, and to mitigate a fall in these rates for some locations, complementary census enumeration areas were incorporated into the original sample.[1] Table 1 presents the number of census enumeration areas and households planned for selection per federative unit for the sample selected for ICT Households 2024 survey.

[1] Complementary census enumeration areas were added for the following states: Ceará, Minas Gerais, Rio de Janeiro, Paraná and Rio Grande do Sul.

TABLE 1

—

Sample allocation by federative unit

Federative unit	Census enumeration areas	Households
Acre	83	1 245
Alagoas	85	1 275
Amapá	83	1 245
Amazonas	89	1 335
Bahia	81	1 215
Ceará	100	1 500
Espírito Santo	83	1 245
Federal District	80	1 200
Goiás	83	1 245
Maranhão	84	1 260
Mato Grosso	82	1 230
Mato Grosso do Sul	85	1 275
Minas Gerais	92	1 380
Pará	83	1 245
Paraíba	81	1 215
Paraná	90	1 350
Pernambuco	82	1 230
Piauí	87	1 305
Rio de Janeiro	112	1 680
Rio Grande do Norte	85	1 275
Rio Grande do Sul	104	1 560
Rondônia	87	1 305
Roraima	95	1 425
Santa Catarina	83	1 245
São Paulo	96	1 440
Sergipe	86	1 290
Tocantins	88	1 320
Total	**2 369**	**35 535**

Data collection instruments

THEMES

In this edition, the ICT Kids Online Brazil survey maintained the rotation system for its thematic modules, adopted since 2017, in its data collection instruments.

In addition to contextual and sociodemographic variables, the questionnaire administered to children in this year's survey also collected indicators through the following thematic modules:

- **Module A:** Access;
- **Module B:** Online activities – opportunities;
- **Module C:** Online activities – communication;
- **Module D:** Internet skills;
- **Module E:** Mediation of Internet use;
- **Module G:** Risks and harm – aggressive/sexual/transversal.

In the questionnaire for parents and legal guardians, indicators were produced through the following thematic modules:

- **Module A:** Access;
- **Module C:** Mediation of Internet use;
- **Module D:** Safe Internet use;
- **Module E:** Requests for guidance on Internet use.
- **Module F:** Requests for mediation for Internet use.

PRETESTS

Pretests were conducted to identify possible problems in the stages of the fieldwork, such as approaching households, selecting the interview on the tablets, and administering the questionnaire. This also helped to evaluate how well the questionnaires flowed and the time needed to administer them.

A total of ten interviews was conducted in households located in the state of São Paulo, such as Itaquaquecetuba, São Paulo, and Praia Grande.

In the 2024 edition, households were approached intentionally for pretests, without prior listing or random selection of households. Initially, the interviewers first certified whether there were any residents between 9 and 17 years old in the households, and if their parents or legal guardians were present, in the different profiles desired for the pretest.

Furthermore, not all visits were conducted as foreseen in the procedure for approaching households on different days and at different times. Interviewers only listed the residents who were present at the time of the approach.

The complete pretest interviews administered to the children and their parents and legal guardians lasted an average of 54 minutes.

CHANGES TO THE DATA COLLECTION INSTRUMENTS

The data collection instruments for the ICT Kids Online Brazil survey underwent some revisions for this edition, primarily due to the module rotation system and the results obtained in the pretests.

In the questionnaire for children, in relation to the 2023 edition of the survey, the module on aggressive and transversal risks was reinserted. The module on social networks has been updated. For the first time, the survey investigated the frequency of use of digital platforms and the ownership of profiles on these platforms. Also for the first time, Discord was included among the platforms used by children.

In the questionnaire for parents and legal guardians, the consumption module collected in odd-numbered years was excluded. For the first time, parents and legal guardians were asked about the use of technical resources to mediate online practices and about their perception of the child's request for guidance on how to use the Internet. In addition, the question about the guidance given by parents was updated, tackling the frequency of the guidance given.

INTERVIEWER TRAINING

The interviews were conducted by a team of trained and supervised interviewers. They underwent basic research training, organizational training, ongoing improvement training, and refresher training. They also underwent specific training for the ICT Kids Online Brazil 2024 survey, which addressed the process of manually and electronically listing census enumeration areas, household selection, choosing the survey to be conducted, approaching the selected households, and properly filling out the data collection instruments. The training also addressed all field procedures and situations, as well as the rules regarding return visits to households.

Interviewers were given three field handbooks, which were available for reference during data collection to ensure the standardization and quality of the work. The first two handbooks provided all the information needed to conduct household listing and selection. The third contained all the information necessary to approach selected households and administer questionnaires.

Data was collected by 258 interviewers and 16 field supervisors.

Data collection procedures

DATA COLLECTION METHOD

Data collection was conducted using computer-assisted personal interviewing (CAPI), which consists of having a questionnaire programmed in a software system for tablets and administered by interviewers in face-to-face interaction. For the self-completion sections, computer-assisted self-interviewing (CASI) was used, in which respondents use a tablet to answer the questions without the interviewer's involvement.

DATA COLLECTION PERIOD

Data collection for the ICT Kids Online Brazil 2024 survey took place between March and August 2024 throughout Brazil.

FIELD PROCEDURES AND CONTROLS

Various measures were taken to ensure the greatest possible standardization of data collection.

The selection of households to be approached for interviews was based on the number of private households found at the time of listing. Up to four visits were made on different days and at different times in an effort to conduct interviews in households, in case of the following situations:

- no member of the household was found;
- no resident was able to receive the interviewer;
- the selected resident was not able to receive the interviewer;
- the selected resident was not at home;
- denial of access by the gatekeeper or administrator (to a gated community or building);
- denial of access to the household.

It was not possible to complete the interviews in some households even after four visits, as in the situations described in Table 2. In some cases, no interviews were conducted in entire census enumeration areas because of issues related to violence, blocked access, weather conditions, and absence of households in the area, among other issues.

TABLE 2

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Final field occurrences by number of cases recorded

Situation	Number of cases	Rate (%)
Interview completed	23 856	67
Residents were not found or were unable to receive the interviewer	2 616	7
The selected respondent or their parent or legal guardian was not at home or was not available	267	1
Refusal by the person selected or the person responsible	1 329	4
The selected respondent was traveling and would be away for longer than the survey period (prolonged absence)	278	1
Household up for rent or sale, or abandoned	1 407	4
Household used for a different purpose (store, school, summer house, etc.)	648	2
Refusal	1 838	5
Denial of access by gatekeeper or another person	1 011	3
Household not approached because of violence	423	1
Household not approached because of access difficulties, such as blocked access, unfavorable weather, etc.	341	1
Household with people who are unqualified (e.g., under 16 years old) or unable to answer the survey (e.g., due to disability or language)	6	0
Other situations	664	2
Non-existent household	851	2

Throughout the data collection period, weekly and biweekly control procedures were carried out. Every week, the number of municipalities visited, listed census enumeration areas and the number of interviews completed were recorded, by type of survey in each ICT stratum and census area. Every two weeks, information about the profile of the households interviewed was verified, such as income and social class; information about the profile of residents, such as sex and age; use of ICT by the selected respondents; the record of situations for households in which interviews were not conducted; and the number of modules answered in each interview.

In general, it was difficult to achieve the desired response rate in some census enumeration areas with specific features, such as areas with a high incidence of violence and those with a large number of gated communities or buildings, where access to the households was more difficult. In these cases, to motivate residents to participate in the survey, letters were sent via the post office to 538 selected households.

VERIFICATION OF INTERVIEWS

To ensure the quality of the data collected, 9,877 interviews were verified, corresponding to 27% of the total planned interviews and 41% of the sample. The verification procedure was carried out by listening to audio recordings of the interviews or, in some cases, through phone calls.

Whenever corrections were needed to the interviews in part or in their entirety, return calls or visits were carried out, depending on the result of the verification.

DATA COLLECTION RESULTS

A total of 23,856 households in 634 municipalities was approached, reaching 67% of the planned sample of 35,535 households. However, during the fieldwork and after counting households by sector, it was observed that the sample represented 33,859 households, and the response rate was calculated based on the result of the total number of households counted in the selected sectors (Table 3). In 21,170 households, interviews were conducted with individuals who were the target population of the ICT Households survey (individuals 10 years old or older). In the other 2,686 households, interviews were conducted relative to the ICT Kids Online Brazil survey, which has been conducted as part of the field operation of the ICT Households survey since 2015.

TABLE 3

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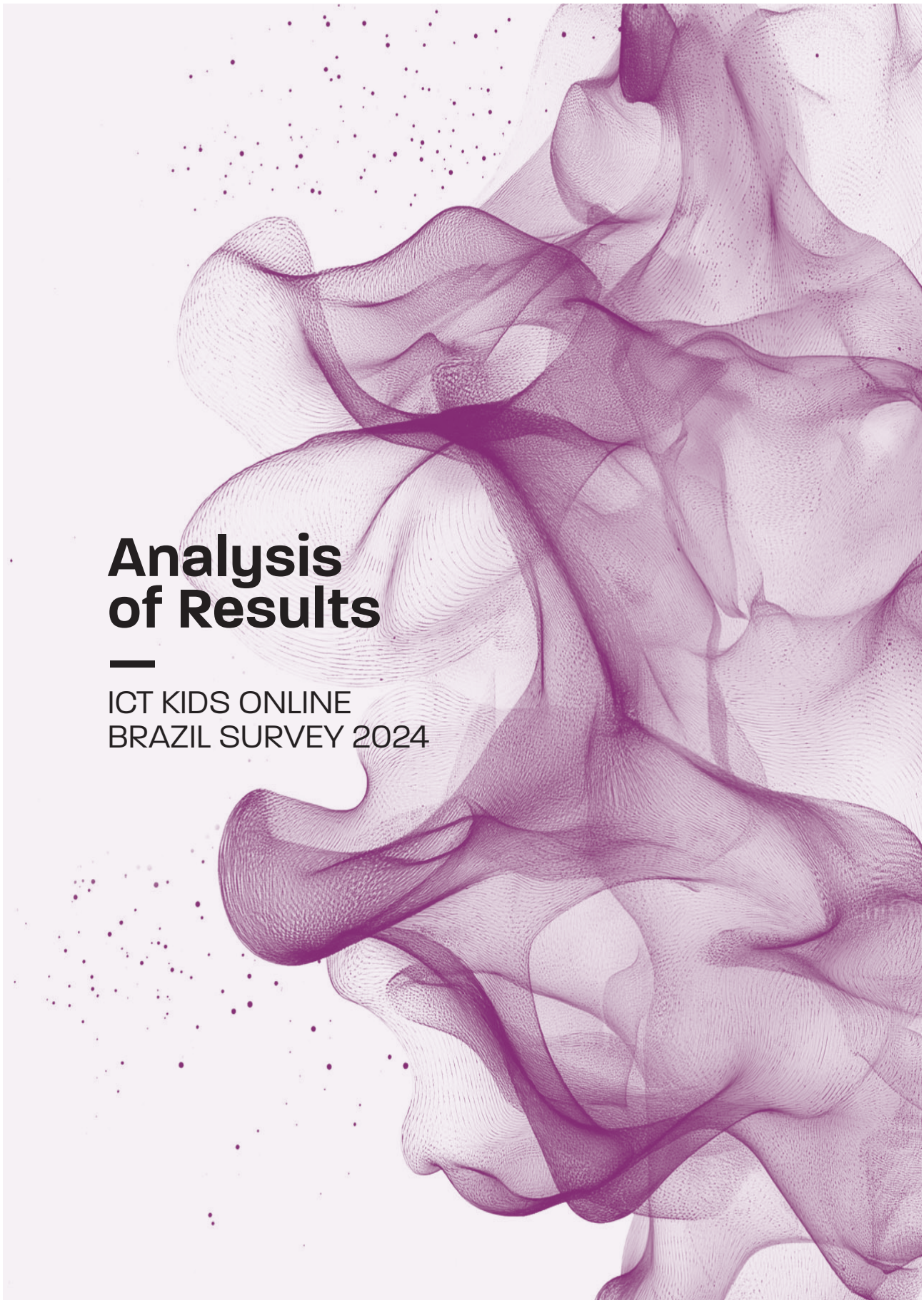
Response rate by federative unit

Federative unit	Response rate (%)
Acre	74
Alagoas	66
Amapá	73
Amazonas	73
Bahia	87
Ceará	56
Federal District	68
Espírito Santo	65
Goiás	68
Maranhão	70
Mato Grosso	68
Mato Grosso do Sul	76
Minas Gerais	54

CONTINUES ▶

Federative unit	Response rate (%)
Pará	62
Paraíba	68
Paraná	59
Pernambuco	73
Piauí	69
Rio de Janeiro	46
Rio Grande do Norte	78
Rio Grande do Sul	53
Rondônia	79
Roraima	69
Santa Catarina	66
São Paulo	53
Sergipe	86
Tocantins	70
Total	**67**



Analysis of Results

ICT KIDS ONLINE
BRAZIL SURVEY 2024

Analysis of Results
ICT Kids Online 2024

Over the last decade, there has been significant growth in the connectivity of children in Brazil. This increase in online participation occurred primarily among users from more vulnerable socioeconomic backgrounds and among younger children. Despite progress in access to information and communication technologies (ICT), the presence of meaningful connectivity is not a reality for most children in the country. Access to quality Internet connection, the availability of mobile data, and access to the Internet through multiple digital devices continue to be prominent among the higher socioeconomic classes.

In the family context, parents and legal guardians have also increased their access to the Internet. Still, they experience the same barriers in terms of data availability, suitable devices, and Internet quality. For children and adults in the household, online opportunities and the possibility of developing digital skills are unequal, depending on Internet access.

In the context of disparities in connectivity, the frequency of Internet use is growing for all social strata. In Brazil and other countries around the world, debates that question the quality of Internet use, especially among children, are gaining momentum. Along with questions about the real enjoyment of online opportunities and the possible impacts on the well-being of this population, mothers, fathers, and other legal guardians are encouraged to adopt measures to limit the excessive and poorly reflective use of the Internet by their children or those under their guardianship.

To address concerns about the use of digital technologies by children, governments in various regions of the world have adopted measures restricting the use of mobile phones and, in some cases, specific digital platforms. In Brazil, the debate about limiting the use of the Internet by students has been going on for some years, while laws banning the use of mobile devices have been adopted by several states and municipalities (Alana, 2024). On January 13, 2025, Law No. 15.100/2025 restricted the use of personal mobile devices by students during classes, recess, and breaks between classes, for all stages of Basic Education throughout the country.

On the one hand, evidence points to the potential benefits of this restriction, especially when associated with digital literacy policies (Rahali et al., 2025). However, the recognition that the risks related to the use of digital technologies are not limited to the school environment has led governments and regulators to call for more rigorous action, with a view to holding accountable enterprises and digital platforms. Among the factors stirring the debate is the monetization of children's engagement, which promotes prolonged and uncritical use of digital products and services, and does not take into account the rights of this population when developing their products. At a time when children's rights are taking center stage in debates in different regions of the world, largely stimulated by the risks involved in the online participation of this population, evidence of the opportunities and risks arising from the use of digital applications and devices is increasingly urgent and necessary.

ICT Kids Online Brazil 2024 is committed to generating periodic data on how children perceive the risks and opportunities in their online interactions to guide evidence-based policies in the national context and contribute internationally to discussions and actions. The survey adopts the multidimensional international framework (Figure 1), which takes into account individual characteristics—such as age, gender, race, and socioeconomic conditions—as well as the influence of national, social, and digital contexts in analyzing the benefits and harms of this population's online participation.

FIGURE 1

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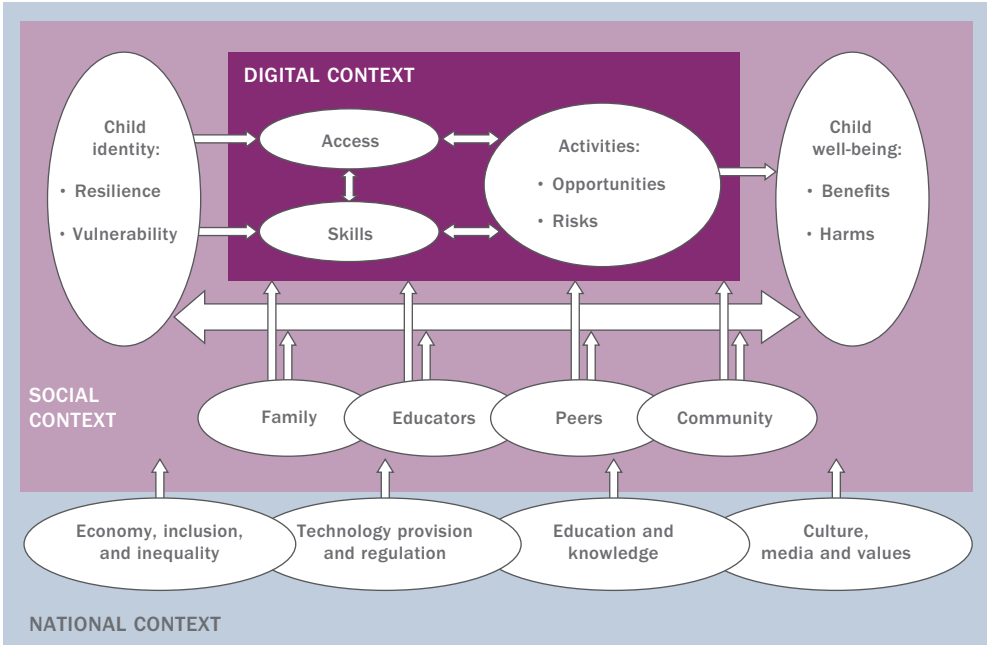
Theoretical framework of the ICT Kids Online survey



Source: adapted from Livingstone et al. (2015).

In this edition of the survey, the digital platforms module has been updated and, for the first time, data has been collected on the frequency of use of digital platforms and whether children have personal profiles on them. Indicators on parental mediation have also been updated. For the first time, the survey investigated the use of technical resources for parental mediation of children's use of the Internet. Also in an unprecedented way, the survey investigated the perceptions of parents and legal guardians about requests made by children for help with Internet use. In addition, frequency scales were adopted for indicators of guidance about using the Internet to improve the quality of the data collected from parents and legal guardians.

This analysis presents the main highlights of the ICT Kids Online Brazil 2024 survey, including indicators collected throughout the survey's historical series and new indicators, organized into the following sections:

- Connectivity and dynamics of use;
- Online activities;
- Digital skills;
- Online risks;
- Mediation of Internet use;
- Final considerations: Agenda for public policies.

Connectivity and dynamics of use

In 2024, 24,5 million people 9 to 17 years old were Internet users in Brazil (93% of this population).[1] Over the last decade, disparities in access among users in different socioeconomic classes have decreased. The difference in user proportion between classes AB (97%) and classes DE (91%) was eight percentage points in 2024. This gap was almost twice as large in 2015 (97% in classes AB, compared to 51% in DE). As has been observed for children, the gaps in Internet access have been decreasing among their parents and legal guardians. Almost all users 9 to 17 years old had parents and legal guardians who were Internet users (92%). Between 2015 and 2024, the proportion of parents and legal guardians with access to the Internet rose from 75% to 96% in class C and from 41% to 87% in classes DE. Considering the education level of parents and legal guardians, the proportion of users who had a complete primary education increased from 29% to 84% in the same period.

The frequency of Internet access by children has also increased over the years (Chart 1). Between 2015 and 2024, there was an increase of around eleven percentage points among those who used the Internet every day or almost every day (95% in 2024 and 85% in 2015) and a drop of eight percentage points among those who accessed the Internet at least once a week (3%, compared to 11% in 2015). In 2024, less than 1% of users accessed the Internet once a month or less.

[1] Internet users are those who accessed the Internet at least once in the three months prior to the survey.

CHART 1

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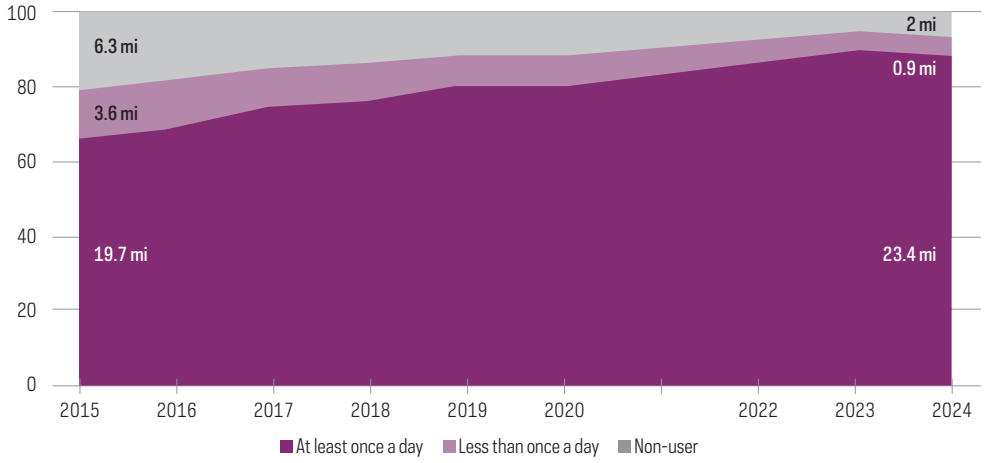
Children who were Internet users (2015–2024)

Total number of children 9 to 17 years old (%)



Although Internet access has expanded in the country, 1,4 million individuals 9 to 17 years old reported not having accessed the Internet in the three months prior to the survey, and about 492 thousand had never been online. In addition to universal access, guaranteeing meaningful connectivity for all users is a challenge for digital inclusion in the country. The following data highlights the disparities present in the conditions of Internet access for children from different socioeconomic backgrounds.

CONDITIONS OF INTERNET ACCESS

Almost all children accessed the Internet at home (99%) and had parents and legal guardians who also accessed the Internet at home (98%) in 2024. Someone else's homes were the second main place of access for children (87%) and their parents and legal guardians (71%).

Significant differences were observed for Internet access on the move by users 9 to 17 years old in classes AB (74%), in relation to those from class C (44%) and DE (33%), and for parents and legal guardians in classes AB (86%) and C (74%) compared to those in classes DE (46%). Around three out of five adolescents 15 to 17 years old reported access on the move (59%), a proportion that dropped to 26% in the case of children 9 to 10 years old.

Approximately half of the children reported having accessed the Internet in schools (51%). There was a significant difference between those 9 to 10 years old (13%) and those 13 to 14 (61%) and 15 to 17 years old (81%) who accessed the Internet in schools, indicating greater use with age.[2]

[2] The data collection for the ICT Kids Online Brazil 2024 survey was conducted from March to August 2024, therefore, before the implementation of Law No. 15.100/2025, which restricts the use of mobile phones in schools.

In the case of parents and legal guardians, work was the place of Internet access with the greatest disparities between socioeconomic classes. The proportions were 88% for classes AB, 60% for classes C, and 35% for classes DE.

Although access by children was predominantly at home, mobile phones were the devices most used by this population (98%). The widespread use of mobile devices in all age groups complexifies the development of parental mediation strategies. Monitoring and verifying the online practices of children can be even more challenging when they have their own devices (Restano et al., 2023). In Brazil, 81% of children 9 to 17 years old reported owning their own mobile phones. The proportions were higher among adolescents and users in higher socioeconomic classes. More than 90% of users in classes AB (97%) or those between 15 and 17 years old (93%) reported owning mobile phones. These proportions were 67% for users 9 and 10 years old and 77% for those in classes DE.

Internet access through computers has decreased over the years, with a drop of 27 percentage points between 2015 (64%) and 2024 (37%) (Chart 2). The lower the socioeconomic class, the lower the use of the devices. Computer access by children in class C (40%) was double that reported in classes DE (20%) and approximately half that of classes AB (76%) in 2024.

BOX

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ICT STATISTICS FOR CHILDREN AGED 0–8 YEARS

The historical series of the ICT Kids Online Brazil surveys shows that children are accessing the Internet for the first time at increasingly younger ages. The proportion of children 9 to 17 years old who reported that their first Internet access took place before the age of 8 rose from 17% in 2015 to 31% in 2024. In this context, the demand for data on Internet access by children under 9 has grown. To fill the gap in specific data for this age group, the Regional Center for Studies on the Development of the Information Society (Cetic.br) launched the report *ICT statistics for children aged 0 to 8* (*Estatísticas TIC para crianças de 0 a 8 anos de idade*) with unpublished data on Internet access, mobile phone ownership, and computer use for the population up to 8 years old[3] (Brazilian Internet Steering Committee [CGI.br], 2025).

As observed for the total population in Brazil aged 10 years or older (Brazilian Network Information Center [NIC.br], 2024), the proportions of Internet users and mobile phone owners among children under 8 years old have also increased in the last decade. From 2015 to 2024, the proportion of Internet users 6 to 8 years old doubled (from 41% to 82%). Among users 3 to 5 years old, this increase was 45 percentage points (from 26% to 71%), and among those up to 2 years old, 35 percentage points (from 9% to 44%).

As for children who owned mobile phones, the proportion of those 6 to 8 years old doubled in the same period (from 18% to 36%). Among children 3 to 5 years old, the increase was 14 percentage points (from 6% to 20% in 2015 compared to 2024).

As with the country's overall population, there was a drop in computer use in the analyzed age groups. Between 2015 and 2024, there was a decrease from 39% to 26% among children 6 to 8 years old, and for those 3 to 5 years old, it went from 26% to 17%.

[3] The publication of the indicators was made possible by updating the weighting and estimation procedures of the ICT Households and ICT Kids Online Brazil surveys. The surveys' "Methodological Report" and "Data Collection Report" can be accessed on the surveys' microdata page on the Cetic.br|NIC.br website.

Disparities between socioeconomic statuses have also been observed for Internet access via televisions. However, unlike for computers, there has been an upward trend for Internet access on televisions (69% in 2024, compared to 11% in 2015). Although the growth curve from 2015 to 2024 was steep for all classes, the increase was greater for classes AB (88% vs. 20% in 2015), compared to class C (73% vs. 10%) and classes DE (57% vs. 2%).

Video game consoles were used to access the Internet by more than half of children in classes AB (57%). However, among users in classes C (15%) and DE (10%), access via video game consoles did not reach a sixth of the population.

CHART 2

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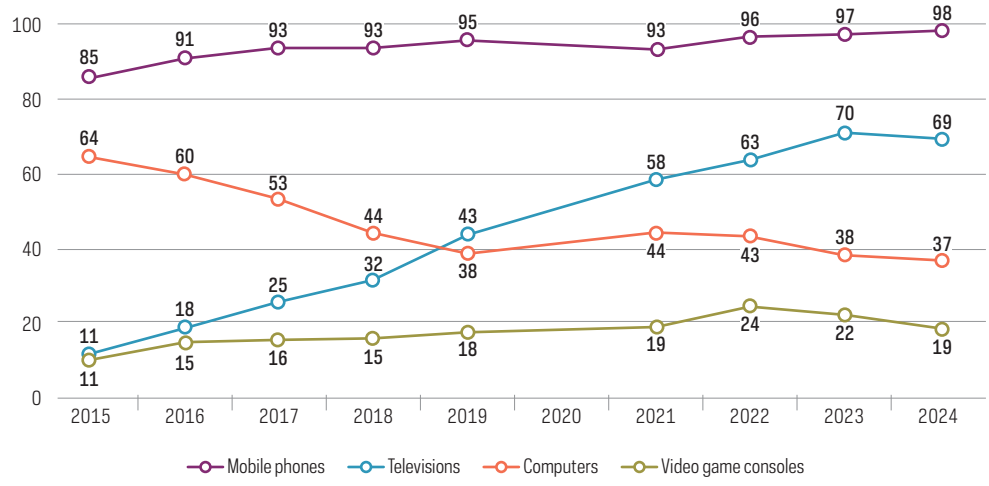
Children by devices used to access the Internet (2015–2024)

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



By 2024, 11% of children reported having accessed the Internet via wearable or smart devices, 8% with personal assistants, and 6% using toys connected to the Internet. If, on the one hand, the use of connected devices creates opportunities to search for information, entertainment, communication, and interaction, on the other hand, children are having their data collected, stored, and used more intensively in profiling actions and for predictive analysis, increasing the risks to their privacy (Mascheroni, 2020).

Although several types of devices were used by the population 9 to 17 years old, 21% of users used mobile phones exclusively to access the Internet, with higher proportions among residents of rural areas (28%) and children in classes DE (32%). On the other hand, users in classes AB were the least likely to use their mobile phones exclusively to access the Internet (2%).

Given this context, monitoring Internet access by children through connected devices is important both from the perspective of digital inclusion and ensuring their safety and privacy. The following sections present indicators related to opportunities, risks, and digital skills collected from users 9 to 17 years old. Highlights of parental mediation data reported by children and by one of their parents or legal guardians are also discussed.

Online activities

The online participation of children expands the possibilities for access to information, producing and sharing content, entertainment, and communication. Although there are many opportunities, not everyone benefits in the same way. In different parts of the world, online entertainment and socializing activities are carried out by a large number of Internet users, especially younger ones. However, involvement in creative, civic, and informational activities is not equally widespread. The literature in the field shows that frequent users with better access tend to carry out more diverse and complex practices (Livingstone et al., 2019).

According to the survey data, playing games online was the activity most performed by users 9 to 10 years old (81%), followed by other multimedia practices such as watching video clips, TV programs, movies, or series online (75%) and listening to music online (75%). Together, these activities can serve as a gateway to digital participation; however, they continued to be carried out in high proportions by older users.

Communication and educational activities were performed by more than half of users 9 to 10 years old, and also tended to be more common among adolescents. Using social media and sending instant messages were the communication activities that showed the greatest differences in performance between users 9 to 10 and 15 to 17 years old (Table 1). Looking up information regarding job opportunities or courses, looking up health information, reading or watching the news, and looking up information for schoolwork or topics that interest them also presented significant differences among younger and older children, as shown in Table 1.

Considering the total population aged 9 to 17 in Brazil, between 2015 and 2024, there was a 14-percentage point increase in the use of social media (from 62% to 76%). The growth was more pronounced in younger age groups: Usage rose from 30% to 47% for those 9 to 10 years old, from 50% to 66% for those 11 to 12 years old, and from 77% to 89% for individuals 13 to 14 years old. Among individuals 15 to 17 years old, the use of social networks rose from 79% to 90% over the same period.

TABLE 1

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Children by activities carried out on the Internet and age group (2024)

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

	Total	9 to 10 years old	11 to 12 years old	13 to 14 years old	15 to 17 years old
Participated in an online campaign or protest	**3**	11	1	0	2
Tried to sell thing on the Internet	**5**	3	2	1	11
Talked about politics or problems in their cities or countries on the Internet	**9**	8	4	10	13
Bought things online	**17**	4	7	17	30
Looked up information on the Internet regarding job opportunities or courses	**26**	4	7	21	54
Looked up information on the Internet regarding what is happening in the place where they live, on their street or neighborhood	**27**	17	20	30	35
Posted or shared their locations on the Internet	**30**	15	19	31	44
Participated in a web page or online group to talk about things they like	**30**	28	19	34	35
Used the Internet to talk to people from other cities, countries, or cultures	**30**	19	20	28	44
Talked using video calls	**31**	21	27	40	32
Posted texts, images or videos they created on the Internet	**36**	25	27	43	44
Looked up health information on the Internet	**36**	18	26	41	51
Shared a text, image or video on the Internet	**42**	29	27	52	53
Downloaded music or movies	**47**	39	28	55	57
Watched live audio or video broadcasts on the Internet	**50**	37	44	54	59
Posted photos or videos on the Internet in which they appeared	**51**	31	31	59	69
Read or watched the news online	**53**	39	40	58	65
Browsed for things to buy or see how much they cost	**62**	49	55	63	74
Searched the Internet for topics that interest them	**71**	54	71	74	80

CONTINUES ▶

► CONCLUSION

	Total	9 to 10 years old	11 to 12 years old	13 to 14 years old	15 to 17 years old
Dowloaded applications	**72**	61	69	76	78
Used social networks	**76**	47	66	89	90
Sent instant messages	**76**	56	59	80	95
Played games online	**78**	81	88	75	73
Watched video clips, TV programs, movies or series online	**84**	75	84	86	87
Looked up information on the Internet for schoolwork	**86**	72	86	87	93
Listened to music online	**86**	75	86	94	88

The frequency of online communication and education practices was also higher for adolescents compared to children. Among users 15 to 17 years old, 76% reported sending instant messages more than once a day. The proportions were 36% among those 11 to 12 years old and 24% for users 9 to 10 years old. Searches on topics of interest were carried out more than once a day by 37% of users 15 to 17 years old and 18% of those 9 to 10 years old. There was no significant difference in the frequency of those who played online for the different age groups.

Although practices like producing and sharing content, civic engagement, and consumption were among the least performed by children, they were more frequent among older users, as shown in Table 1.

Exposure to health topics online occurred through active searches for information—as reported by just over half of users 15 to 17 years old (51%)—or through exposure to content posted on websites and digital platforms. Besides searching for information, the Internet also served as a channel for children to seek emotional support. Although these opportunities are created, if the sources are unsafe and there is no guidance from parents, legal guardians, or professionals, the use of the Internet for health topics can present risks for this population.

Given the potential risks and opportunities associated with using the Internet for health purposes, the ICT Kids Online Brazil survey collects data on health issues seen online and on the search for emotional support by Internet users 11 to 17 years old. Below are the main highlights of this edition.

HEALTH AND WELL-BEING

In 2024, the health content users 11 to 17 years old had the most exposure to was: ways to have a healthy diet, such as information about diets or healthy meals (49%); information about exercise, sports, or getting fit (33%); and information about illnesses, injuries or treatments (29%). Information about their feelings, mental health, mental difficulties, or well-being was seen by 18% of the population. The proportion of users 15 to 17 years old (24%) who had contact with mental health topics was higher than that of those 11 and 12 years old (8%).

Compared to the 2023 edition, there was a nine-percentage point reduction in contact with information about medicines (16% in 2024, compared to 25% in 2023). Similarly, information or discussions about sexuality, such as sexual health or sex education, were less seen than the previous year (15% in 2024 and 23% in 2023).

ICT Kids Online Brazil 2024 also revealed that 41% of children 11 to 17 years old said that the Internet had helped them deal with a health problem, with boys reporting this at a higher proportion than girls (49% against 33%). However, the proportion of girls who reported seeking help when something bad happened or talking about their emotions when they felt sad was higher than that of boys (33% and 26%, respectively). The search for emotional support was also higher among those 15 to 17 years old (38%), compared to users 11 and 12 years old (17%); among Black users (30%), compared to White users (22%); and class C (35%), compared to classes AB (22%).

As highlighted above, using the Internet to deal with health issues is related to exposure to information on specific topics and seeking help, which can take place in online chats or help channels. The difference observed between the indicators shows that girls are more likely to share their emotions with others and boys are more likely to seek information.

Communication and the search for information are among the main motivations for adolescents to participate in digital platforms. In addition, evidence supports that social networks can influence the well-being of adolescents in positive and negative ways, by stimulating conflicting feelings such as inspiration and envy, connection and isolation, and fun and boredom (van der Wal et al., 2024).

Using social networks (90%) and sending instant messages (95%) were communication practices carried out by almost all Internet users 15 to 17 years old and also widely mentioned by users in the other age groups. The strong presence of children on digital platforms increases the concerns of parents and legal guardians, educators, and policymakers about the possible negative impacts on the well-being of this population. In this context, unprecedented indicators on the frequency of use of digital platforms and whether children have personal profiles on the investigated platforms are presented below.

DIGITAL PLATFORMS

The 2024 edition of ICT Kids Online Brazil updated the module on the use of digital platforms and, for the first time, presented indicators on the frequency of use and ownership of personal profiles to access the main digital platforms. The results indicated that WhatsApp was the digital platform most frequently[4] accessed by Internet users 9 to 17 years old in Brazil (71%), followed by YouTube (66%), Instagram (60%), and TikTok (50%), as shown in Chart 3.

Variations in the frequency of use of digital platforms were found according to age group. In the case of younger users 9 to 10 and 11 to 12 years old, use was frequent — i.e., they accessed the platforms "several times a day" or "every day or almost every day" — , especially YouTube (70% and 71%, respectively). The second most frequently used platform was WhatsApp (52% for both age groups). Considering the use of TikTok and Instagram by these age groups, it was observed that 9- and 10-year-olds were frequent users of TikTok (34%), in higher proportions than Instagram (23%). Users 11 to 12 years old frequently accessed Instagram and TikTok, in similar proportions (42% and 41%, respectively). Those 13 to 14 and 15 to 17 years old, on the other hand, were frequent users, mainly of WhatsApp (73% and 91%, respectively) and Instagram (78% and 81%, respectively). The use of TikTok occurred in similar proportions for both age groups (59% for 13 to 14 years old, and 60% for 15 to 17 years old).

CHART 3

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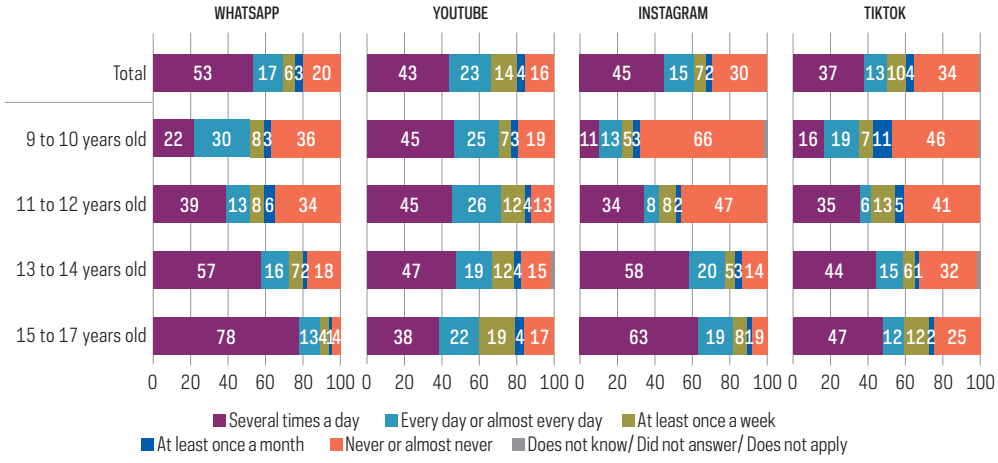
Children by frequency of digital platform use and age group (2024)

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



[4] In line with the Kids Online Chile 2022 survey, frequent use considers the scales "several times a day" or "every day or almost every day."

Children can participate in digital platforms through their personal profiles, third-party profiles, or, in the case of specific platforms, without profiles.[5] The 2024 edition of the survey investigated whether users had personal profiles on digital platforms, among children who reported using them at least once a week.[6]

In 2024, 83% of Internet users 9 to 17 years old had personal profiles on at least one of the digital platforms investigated. The proportions were 60% for 9- to 10-year-olds, 70% for 11- to 12-year-olds, and 93% for 13- to14-year-olds. Among those 15 to 17 years old, almost all (99%) had profiles on at least one digital platform investigated.

Among Internet users 9 to 17 years old, 69% of those who accessed WhatsApp at least once a week reported having personal profiles on the platform. The proportion was also around 60% for Instagram (63%) and about 40% for TikTok (45%) and YouTube (42%). The proportions of those who reported accessing the digital platform at least once a week but did not have their own profile were 38% for YouTube and 15% for TikTok, as shown in Chart 4.

CHART 4

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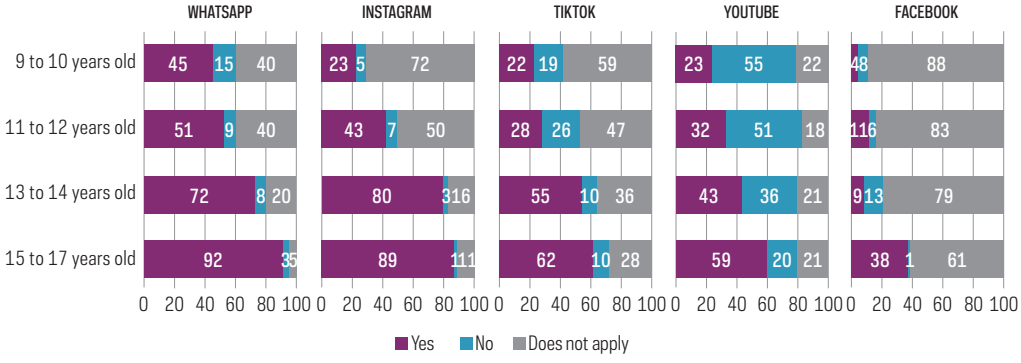
Children by personal profiles on digital platforms and by age group – use at least once a week (2024)

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



[5] Indicators on the use of social networks from the ICT Kids Online Brazil 2022 survey were mentioned in the investigation of potential practices of irregular processing of personal data of children on TikTok, set up by the National Data Protection Authority (ANPD). The ANPD Technical Note of November 2024 is available at: https://www.gov.br/anpd/pt-br/assuntos/noticias/nota-tecnica-50_pub_0153891.pdf

[6] The question "(07) Do you have your own profile on ____?" was answered only by children who selected the alternatives "several times a day," "every day or almost every day," and "at least once a week" in the question "(06) How often do you use ____?" The question 07 did not apply to children who were not Internet users or who accessed the platform "at least once a month" or "never or almost never."

Significant differences in profile ownership on digital platforms were observed between age groups. Almost all Internet users 15 to 17 years old (92%) reported having profiles on WhatsApp, a proportion of 72% for users 13 to 14 years old and just over half among those 11 to 12 years old (51%). The older the users, the higher the proportions of those who had personal profiles on Instagram. Among users 11 to 12 years old, 43% said they had personal profiles on that platform, about double the proportion reported by those 9 to 10 years old (23%) and close to half that of those 13 to 14 years old (80%). The proportion of users 13 to 14 years old with personal profiles on TikTok (55%) was almost double that reported by those 11 to 12 years old.

Although YouTube was the digital platform most frequently used by younger users, having personal profiles on the platform was also lower among users 9 to 10 years old (23%), compared to older users 13 to 14 (43%) and 15 to 17 years old (59%). Concerning X (formerly Twitter), around 15% of users 15 to 17 years old had personal profiles on that platform, a proportion that did not reach 1% among those 9 to 10 years old. Regarding to TikTok and Discord, in addition to the differences by age, there was also a difference in personal profiles between boys and girls. The number of girls with profiles on TikTok was higher than that reported by boys (52% and 38%, respectively), unlike Discord, where the number of boys with their own profiles was higher (16% of boys and 1% of girls).

Although digital platforms promote entertainment and communication and are sources of information, there are many risks associated with being in these spaces, especially for younger users. Research into the online participation of children shows that those with more developed digital skills find it easier to interpret and interact critically with the technical features, content, and social dimensions of digital platforms and are thus better equipped to identify risk situations and manage their safety and privacy (Livingstone, 2014).

The skills investigated in the ICT Kids Online Brazil survey provide information on Internet use in general, and not exclusively on participation in digital platforms. However, many of the skills investigated are necessary for participating in these platforms, especially those related to adjusting privacy settings and the list of contacts or friends, defining what information they should or should not share on the Internet, and differentiating between sponsored and unsponsored content that appears on social media. Below are the results of the digital skills module for the 2024 edition of the survey.

Digital skills

The ICT Kids Online Brazil survey investigates digital skills from the perspective of functionalities related to the use of devices and applications. In addition, it assessed critical aspects necessary for children to participate in online environments responsibly and to manage the content and information they access and share, as well as to manage the relationships they establish in these environments. The items collected in the survey follow the international benchmarks organized by Global Kids Online (GKO, 2019) and the Youth Digital Skills project (Helsper et al., 2020).

In 2024, 77% of Internet users 11 to 17 years old agreed that they knew a lot about the Internet and 64% that they knew more about it than their parents or legal guardians. Considering the age groups, 74% of users 13 to 14 years old and 71% of those 15 to 17 years old agreed that they knew more about the Internet than their parents or legal guardians, a proportion that was 41% for users 11 to 12 years old.

When asked about their operational skills for using the Internet, almost all users 11 to 17 (96%) reported it was true or very true that they knew how to download applications, 70% knew how to adjust privacy settings on social networks, and around half (47%) knew how to check how much money was spent on an application.

As for social skills, 82% of these users reported knowing how to delete people from their list of contacts and friends, 78% knew what personal/third-party images can be shared on the Internet, and 76% knew what information should or should not be shared on the Internet. Social skills also involve knowing how to recognize offensive or discriminatory treatment online and how to report experienced or witnessed situations (Helsper et al., 2020). For 83% of Internet users 11 to 17 years old, it was true or very true that they had the ability to recognize when someone is being bullied on the Internet and 73% know how to report offensive content related to themselves or people they know.

Messaging platforms are one of the main channels for circulating information, and the group dynamics in these environments are correlated with the exposure to, belief in, and sharing of disinformation (Kalogeropoulos & Rossini, 2023). In the context of the widespread circulation of online content, knowing how to check the veracity of the information received, the reliability of the websites, and how to search for websites and information are crucial skills for children to develop critical thinking and a sense of responsibility and to avoid being manipulated or influenced negatively. With regard to this dimension, the survey showed that the proportion of Internet users 11 to 17 years old who reported that it was true or very true that they knew how to choose the best words to search for something on the Internet was 81%. However, the proportions of those who knew how to check if a website is trustworthy or how to find a website they had visited before were 20 percentage points lower (61% for both skills) than those who knew how to search for information. Just over half of the users (55%) reported that they knew how to check whether information found on the Internet is accurate (Chart 5).

CHART 5

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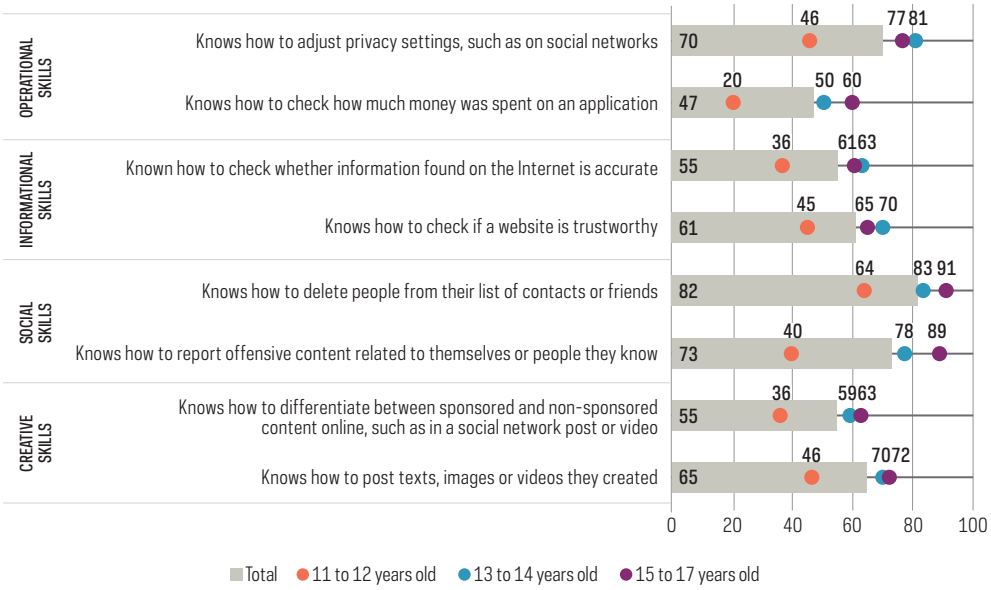
Children, by internet skills and age group (2024)

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



For 55% of users 11 to 17 years old, it was true or very true that they knew how to differentiate between sponsored and non-sponsored content online, such as in a social network post or video. The proportion of those who agreed that using hashtags increases the visibility of publications on the Internet was 65%. More than 70% agreed that enterprises pay people to use their products in the videos and content they publish on the Internet (72%).

The processing of personal data by enterprises that target paid content can affect children's digital experiences (United Nations [UN], 2021). Because they have not fully developed their critical thinking skills (for example, to identify persuasive messages), children are more susceptible to the influence of digital marketing (Rahali & Livingstone, 2022).

Nearly half of the users agreed that everyone finds the same information when they search for things on the Internet (52%) and that the first result of an Internet search is always the best source of information (50%). Among users 11 to 17 years old, 45% agreed that the first post they see on social media is the last one that was posted by one of their contacts. Although most children reported being aware of the presence of advertising on the Internet, the criteria for sorting content, such as algorithmic series that define the relevance of search results, are not always clear to this population.

Online risks

According to the classification of online risks developed by the Children Online: Research and Evidence (CO:RE) project, when participating in digital environments, children can be exposed to content or experience situations of a violent, sexual, or commercial nature. They can also be witnesses or victims, or act in an offensive or discriminatory way. The participation of children on online platforms can also involve risks to their privacy and potentially harmful contracts on the part of providers of digital products and services (Livingstone & Stoilova, 2021). The ICT Kids Online Brazil survey collects data for the different dimensions adopted in the CO:RE model.

FIGURE 2
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CO:RE Online Risk Classification for Children

	Content	Contact	Conduct	Contract
	(Child engages with or is exposed to potentially harmful content)	(Child experiences or is targeted by potentially harmful adult contact)	(Child witnesses, participates in or is a victim of potentially harmful peer conduct)	(Child is party to or exploited by potentially harmful contract)
Aggressive	Violent, gory, graphic, racist, hateful or extremist information and communication	Harassment, stalking, hateful behaviour, unwanted or excessive surveillance	Bullying, hateful or hostile communication or peer activity e.g. trolling, exclusion, shaming	Identity theft, fraud, phishing, scams, hacking, blackmail, security risks
Sexual	Pornography (harmful or ilegal), sexualization of culture, oppressive body image norms	Sexual harassment, sexual grooming, sextortion, the generation and sharing of child sexual abuse material	Sexual harassment, non-consensual sexual messaging, adverse sexual pressures	Trafficking for purposes of sexual exploitation, streaming (paid-for) child sexual abuse
Values	Mis/disinformation, age-inappropriate marketing or user-generated content	Ideological persuasion or manipulation, radicalisation and extremist recruitment	Potentially harmful user communities e.g. self-harm, anti-vaccine, adverse peer pressures	Gambling, filter bubbles, micro-targeting, dark patterns shaping persuasion or purchase
Cross-cutting	Privacy violations (interpersonal, institutional, commercial) Physical and mental health risks (e.g., sedentary lifestyle, excessive screen use, isolation, anxiety) Inequalities and discrimination (in/exclusion, exploiting vulnerability, algorithmic bias/predictive analytics)			

Source: Livingstone & Stoilova (2021).

In view of this, the 2024 edition of the survey presents the main highlights on offensive or discriminatory online situations, exposure to potentially harmful content or contact with strangers, and risks to physical and mental health involving excessive screen time by children.

OFFENSIVE AND DISCRIMINATORY ONLINE SITUATIONS

In 2024, 29% of users between 9 and 17 years old said they had experienced something online that they did not like or felt offended or upset by on the Internet. The proportions were 33% for girls and 26% for boys. Among users 11 to 17 years old who had experienced these situations, 31% stated that they told their parents or legal guardians, 29% told a friend of the same age, 17% told siblings or cousins, 2% told a teacher, and 13% told no one.

The differences between children who had experienced risky situations online and those who reported them to someone may be related to their level of resilience when it comes to using the Internet. Frequent Internet users are more exposed to risky situations. However, they have more developed digital skills and better conditions to avoid the potential harm of these situations. In addition to resilience and digital skills, individual, social, and national contexts also affect the well-being of this population (Vissenberg et al., 2022).

Among users 9 to 17 years old, 12% reported that they had been treated offensively online and 42% reported that they had seen someone discriminated against online. The proportion of Internet users aged 15 to 17 years old who reported offensive treatment was three times higher than that of users 9 and 10 years old (18% and 6%, respectively). The survey investigated the following types of offensive treatment experienced on the Internet among users 11 to 17 years old: receiving offensive messages (7%), being excluded from a group or activity on the Internet (4%), having had offensive messages sent about them for other people to see (3%), and receiving threats (2%). Regarding the type of discrimination they had witnessed, the most cited was color and race (25%), followed by physical appearance (19%) and being poor (14%).

ONLINE CONTACT WITH STRANGERS AND SENSITIVE CONTENT

Older users were the ones who tried to make new friends on the Internet to a greater extent and who added people they had never met to their contact lists the most. Among users 15 to 17, 32% reported that they tried making new friends online, and 17% said they added people they did not know to their contact lists, while the proportions were 19% and 4%, respectively, for those 9 to 10 years old. Adolescents also had more contact with someone on the Internet whom they did not know personally, compared to children. The proportions were 43% for those 15 to 17 years old, 39% for those aged 13 to 14 years old, 18% for those aged 11 to 12 years old, and 9% for those aged 9 to 10 years old. Social media (15%) and instant messaging (14%) were the main means by which users aged 9 to 17 reported having had contact with strangers, followed by online games (9%).

Children may have different perceptions of their privacy and safety from those of their parents or legal guardians. Focused on expanding and strengthening their networks, younger users often do not recognize the potential harm of online contacts and information sharing as well as adults. However, evidence points to positive correlations between online opportunities and risks, since reports of risky situations are more recurrent among those who also report taking greater advantage of online opportunities (Livingstone & Helsper, 2010).

When participating in online environments, children can also be exposed to sensitive content. Ways to get very thin (20%) was the most reported sensitive content by Internet users 11 to 17 years old, followed by violent or bloody scenes (14%), ways to hurt oneself (10%), content about drug use or experiences (7%), and ways to commit suicide (6%).

EXCESSIVE USE

Children's increased use of mobile phones and the Internet has placed concerns about the possible problematic effects of excessive use of the Internet and digital devices on the mental health, personal relationships, and well-being of this population at the center of public debate.

According to a study carried out by DataFolha Brasil (DataFolha, 2024), around 75% of the Brazilian population agreed that children spend too much time on the Internet and social media. The study also found that 92% of Brazilians agreed that it was difficult for children to defend themselves against violence and age-inappropriate content on social networks and that 83% of them have easy access to age-inappropriate content and activities in these environments.

The ICT Kids Online Brazil 2024 survey investigated the perceptions of users 11 to 17 years old about their use of the Internet (Chart 6). Approximately one in five respondents reported trying to spend less time online but they were unsuccessful (24%), while 22% spent less time with family, friends or doing homework because they spent a lot of time on the Internet, and 22% caught themselves browsing the Internet without really being interested in what they were seeing. The proportion of those who felt bad sometimes because they could not be online was 16%, and those who did not eat or sleep because of the Internet, 15%. Although excessive Internet use was reported by a minority of users, a significant number of children have faced challenges in using the Internet responsibly and safely, placing the issue at the center of public debate and the implementation of policies focused on childhood.[7]

[7] Given the centrality of the topic in public debate, the federal government launched, on March 11, 2025, the publication Children, adolescents, and screens: A guide on the use of digital devices (Crianças, adolescentes e telas: guia sobre uso de dispositivos digitais). The guide aims to promote healthy screen use, mitigate risks in the virtual environment, and offer recommendations for parents, legal guardians, and educators on topics such as the impact of screens on mental health, online safety, and cyberbullying. The material, presented by the federal government, was coordinated by the Digital Policy Secretariat of the Secretariat of Social Communication of the Presidency of the Republic (Secom-PR) in collaboration with six ministries—the Civil House of the Presidency, Education, Health, Justice and Public Security, Human Rights and Citizenship, and Social Development, Family, and Fight Against Hunger—as well as civil society. Cetic.br|NIC.br was part of the group that contributed to the development of the guide. Additionally, indicators from the ICT Kids Online Brazil and ICT in Education surveys helped support the publication. The guide can be accessed at https://www.gov.br/secom/pt-br/assuntos/uso-de-telas-por-criancas-e-adolescentes/guia

CHART 6

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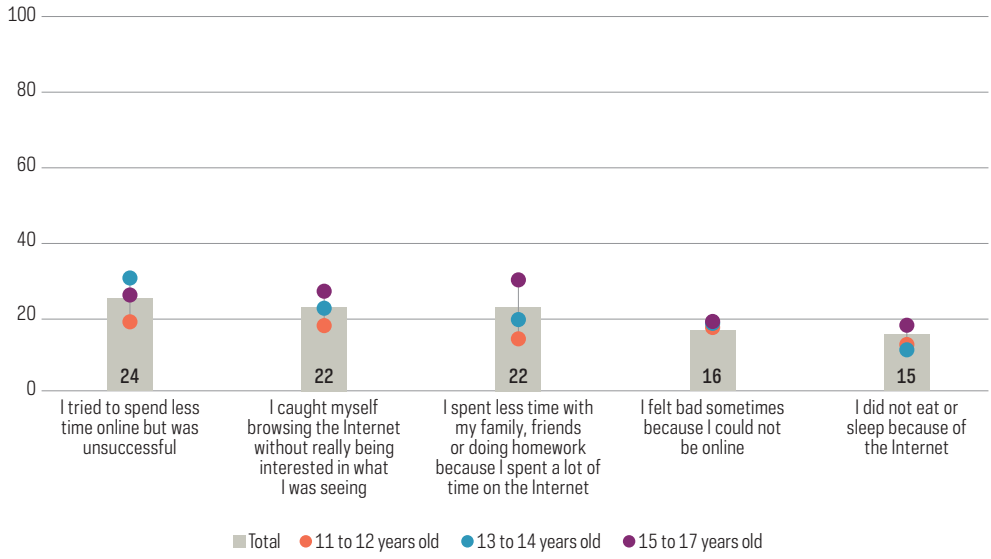
Children by perception of Internet use and age group – excessive use (2024)

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



Significant differences were observed between girls and boys who reported spending less time with family, friends or doing homework because they spent a lot of time on the Internet (29% and 16%, respectively). The proportion of the population in classes AB (40%) who reported trying to spend less time online but were unsuccessful was double that mentioned by those in classes DE (20%).

The Kids Online Chile survey also investigates the perception of children about their use of the Internet and mobile phones in the country. In 2022, 61% of Chilean Internet users 9 to 17 years old reported needing to check their mobile phones to see if anything new had happened, 41% were annoyed at not being able to use their mobile phones because they had no signal or ran out of battery, 34% sometimes used their mobile phones in places or situations they should not, and 28% found it difficult to concentrate or do tasks because of the time they spent on their mobile phones (Centro Investigación Avanzada en Educación [CIAE] et al., 2023).

The data on the perceptions of mobile phone and Internet use by children, observed in Brazil and in other countries, have supported arguments that excessive and passive screen use, related to the predominance of digital platforms designed to monetize engagement, compromises critical and reflective aspects of this audience (Alana, 2024). In this context, policies to restrict the use of mobile phones have become part of the public debate and public policy. In several countries around the world, policies have been implemented to totally or partially ban the use of mobile phones in schools (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2023). In Brazil, Law No. 15.100/2025 restricted the use of mobile phones in classrooms, and during breaks or recess, at all stages of Basic Education. The use of devices is now permitted only for teaching purposes

and with the guidance of teachers, to assist with students' health conditions, and for accessibility and inclusion purposes (Law No. 15.100/2025).[8]

Mitigating the harms caused by children's online participation involves implementing public policies to develop digital skills and citizenship, regulations to create online spaces that take into account the presence of this population, and guidance for parents and legal guardians on the conscious use of the Internet. Considering the role of parents and legal guardians in online benefits for children, the survey collected data on parental mediation, the results of which will be presented below.

Mediation of Internet use

The ICT Kids Online Brazil survey investigates the perceptions of users 9 to 17 years old about parental mediation practices and collects data from one of their parents or legal guardians. For the first time in 2024, the survey asked parents and legal guardians about the use of technological tools to monitor the online activities carried out by children and about the perceptions of parents or legal guardians about requests for guidance made by their children or those under their guardianship on the use of the Internet. In addition, frequency scales were included for each item investigated in the questions about parental guidance.

As in previous editions, the survey explored which activities children are allowed to do alone, accompanied, or not do at all, according to the perceptions of parents and legal guardians and of users 9 to 17 years old (Chart 7). Children reported that they could carry out activities on their own to a greater extent than reported by their parents or legal guardians regarding allowing these activities without supervision.

More than 60% of parents or legal guardians of children 9 to 17 years old had said that they could watch video clips, TV programs, movies or series online (68%), use instant messaging (67%), download music or movies on the Internet (66%) and play online (66%) when they were alone. According to children's perceptions, more than 70% believed they could watch video clips, TV programs, movies or series online (78%), use instant messaging (75%), download music or movies on the Internet (75%), and use social networks (72%) when they were alone.

The biggest differences between the perceptions of children and their parents or legal guardians were regarding being able to use social networks (reported by 57% of parents or legal guardians and 72% of children and) and posting photos or videos on the Internet in which they appear (42% of parents and legal guardians and 62% of children).

Permission to carry out each of the practices investigated on their own tended to be higher among older users: 62% of users 13 to 14 years old had parents or legal guardians

[8] The Minister of Education, Camilo Santana, presented President Luiz Inácio Lula da Silva with some data from the ICT Kids Online Brazil 2024 survey on the use of social networks and the Internet during the meeting in which Bill No. 4.932/2024, that restricts the use of mobile phones in schools, was sanctioned. More information at https://www.correiobraziliense.com.br/euestudante/2025/01/7033600-ministro-da-educacao-defende-proibicao-de-celulares-nas-escolas.html

who allowed them to access social networks, and this proportion was 85% among those 15 to 17 years old. The perceptions of permission to use social networks was also higher among older children (95%).

CHART 7

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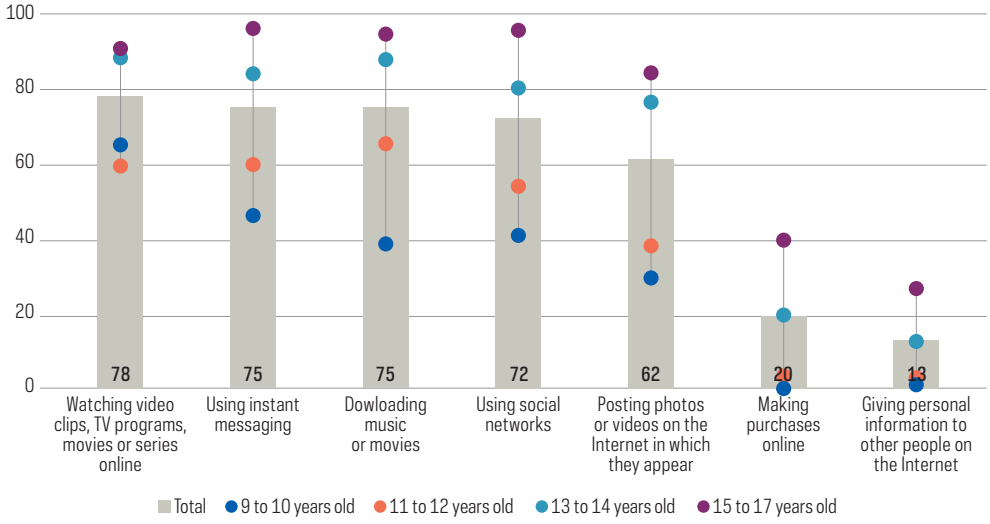
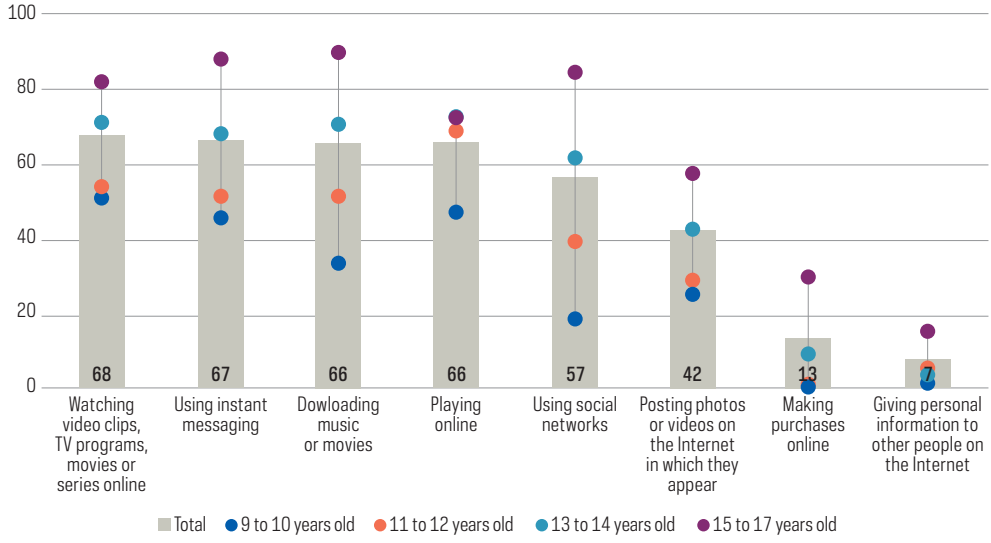
Children by permission to use the Internet (2024)

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

as reported by parents or legal guardians



as reported by children



As reported by parents or legal guardians, the main activities that children could not carry out under any circumstances included giving personal information to other people on the Internet (81%) and making purchases online (69%). As for the perceptions of children, the activities not allowed were the same but reported in smaller proportions: 72% were aware that they could not give personal information to other people on the Internet, and 55% were aware that they were not allowed to make purchases online (55%) under any circumstances.

Unlike permission, which tends to be higher among older children, verification and guidance actions are carried out in higher proportions for users 9 to 10 years old and 11 to 12 years old.

In 2024, for the first time, the survey investigated the use of technical resources by parents and legal guardians to mediate their children's Internet use: Around three in ten Internet users 9 to 17 years old had parents or legal guardians who used resources that block or filter certain types of websites (34%), filter applications children can download (32%), and limit the people children can contact via voice calls and messages (32%). For each of the items analyzed, the proportions were around 40% for those 9 to 10 years old and 11 to 12 years old, and 20% for those 13 to 14 years old and 15 to 17 years old.

CHART 8

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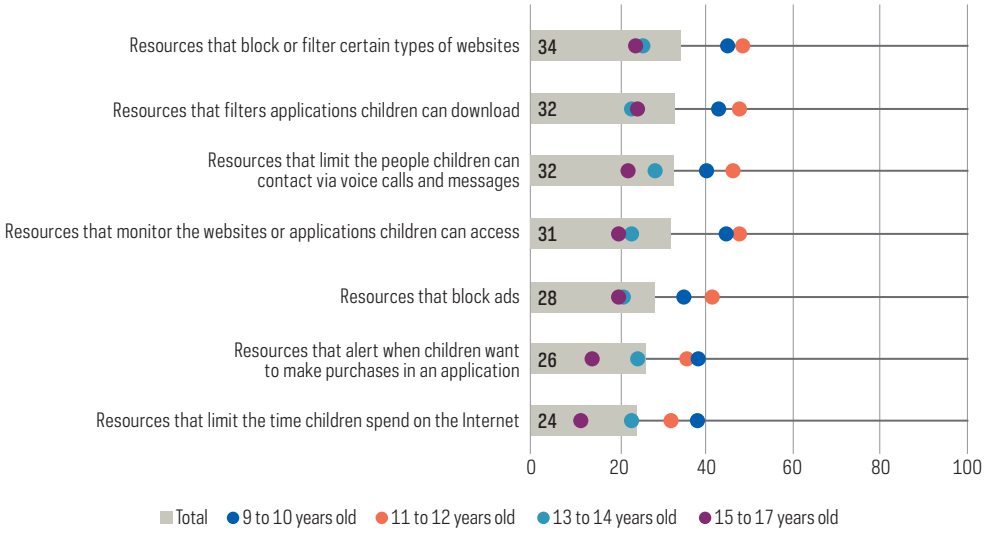
Children by technical mediation for Internet use and age group (2024)

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



Evidence shows that the use of parental controls is associated with children's and their parents or legal guardians' ages, and the digital skills and involvement of parents or legal guardians in the online practices carried out by their children or those under their guardianship. It is known that the effectiveness of using technical resources may be limited if they are the only adopted as for mediation, but they can enhance harm mitigation if included in a more comprehensive set of strategies that also consider the relationships established between parents or legal guardians and children (Stoilova et al., 2023).

Although technical mediation is not a widely adopted strategy among the parents and legal guardians investigated, more than half reported that they checked apps that the children downloaded (67%), friends or contacts added to their social networks (65%), and the history or records of visited websites (60%), albeit without the use of specific technical tools. Similarly, although technical tools to limit the time children spend on the Internet were the least used, 61% of users 9 to 17 years old had parents or legal guardians who said that they "always" or "almost always" checked the children's mobile phones to see what they were doing or who they were talking to (proportions of 80% for users 9 to 10 years old and 40% for those 15 to 17 years old) and 51% established rules for the children's mobile phone use (71% for users 9 to10 years old and 27% for those 15 to 17 years old). The proportion of those who limited the time of children's mobile phone use was 30% (45% for users 9 to 10 years old and 15% for those 15 to 17 years old).

As children get older, they gain more autonomy, and restrictions on online practices and the use of digital devices are reduced. What can also be observed is that actions to guide participation in online environments were less frequently carried out by the parents and legal guardians of older users. About 80% of Internet users 9 to 10 years old had parents or legal guardians who said that they "always" or "almost always" talk about what the child does online (86%) and teach ways to use the Internet safely (83%). Among users 15 to 17 years old, the proportions are 55% and 63%, respectively.

As shown by the historical series of ICT Kids Online Brazil and international Kids Online surveys (GKO, 2019), older users report greater exposure to risky situations. Although the autonomy of adolescents occurs progressively, they have not yet reached full development and should, therefore, be assisted by the mediation of parents and legal guardians.

The 2024 edition also innovated by investigating the perceptions of parents and legal guardians about the frequency of requests for advice on Internet use from children (Chart 9). As reported by parents and legal guardians, 44% of users 9 to 17 years old "always" or "almost always" talked about things that bothered or upset them on the Internet, which was the same proportion as those who said that their children asked for help with an online situation they could not solve. Also, according to parents and legal guardians, 40% of the users "always" or "almost always" asked for advice on how to act on the Internet, 35% "always" started a conversation about what they did on the Internet, and 13% "almost always" did so.

In general, parents and legal guardians noticed that girls asked for more help and shared their online experiences more. A significant difference was observed in the proportion of girls who "always" talked about things that bothered or upset them (46%), compared to the percentage of boys (28%). The data also revealed a gradual reduction in requests for advice and sharing of online experiences as age progresses. Among the youngest, 9 to 10 years old, more than half "always" or "almost always" talked about things that bothered or upset them, asked for help with an online situation they could not solve, or started conversations about what they did online, with a proportion of around a fifth for users 15 to 17 years old.

Digital platforms and other websites can facilitate the search for emotional support by adolescents, whether due to material issues (such as availability, accessibility, and cost) or psychological factors — especially regarding privacy when seeking help on sensitive topics (Cartreine et al., 2010; Suler, 2004). However, there are risks associated with the treatment of these issues issues from an informal perspective, at the expense of seeking assistance from responsible adults or specialized and professional help (Chan et al., 2017).

CHART 9

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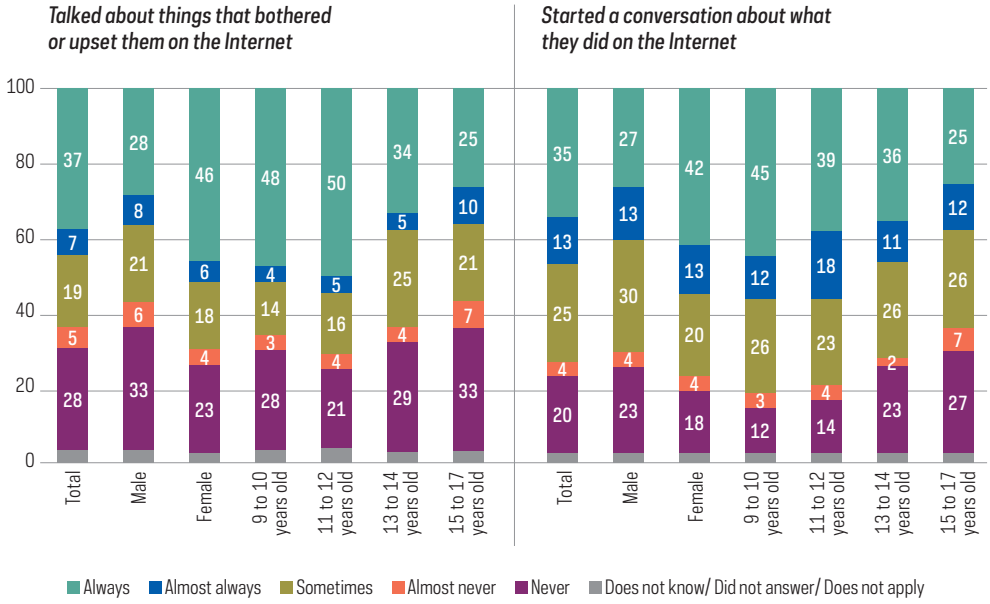
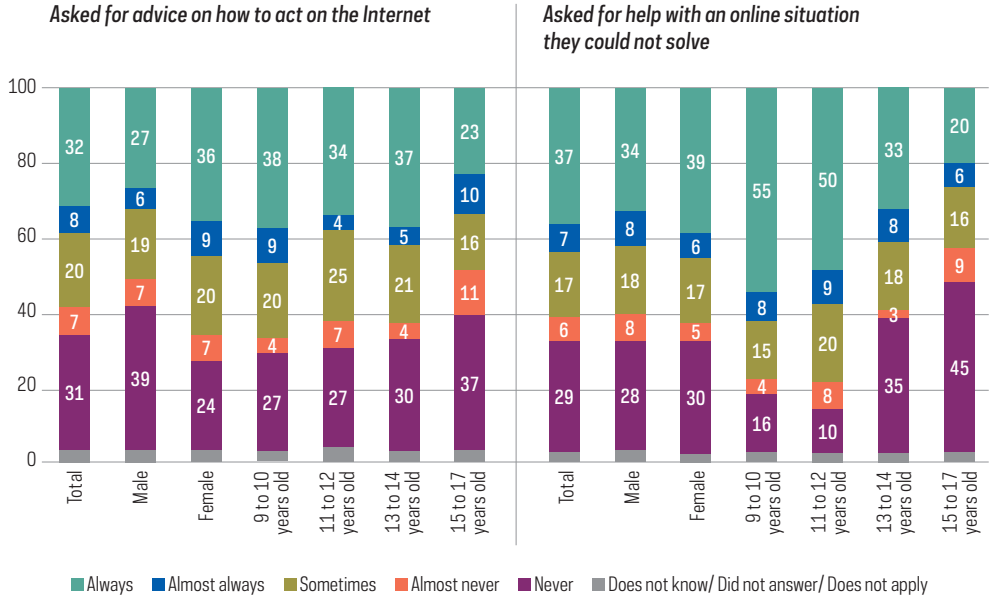
Children by requests for guidance received about using the Internet, as reported by their parents or legal guardians (2024)

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





As shown above, the propensity of children to start conversations about their practices, doubts, and upsets online decreased with age, as reported by their parents and legal guardians. Similarly, guidance initiated by parents and legal guardians was directed in greater proportion to younger users.

Ensuring the protection of children in digital spaces is the responsibility of States, enterprises, and parents and legal guardians. General Comment No. 25 of the UN Committee on the Rights of the Child (CRC) reinforces the importance of States parties including mothers, fathers, and caregivers in digital literacy policies that inform parents and legal guardians about how technology can support children's rights and guide them on how to respond to online risks (UN, 2021). Evidence on the types of online risks and user profiles contributes to the development of actions and guidelines aimed at both children their parents and legal guardians, ensuring that the rights of children are also provided for in the digital environment.

Final considerations: Agenda for public policies

The results of the ICT Kids Online 2024 survey indicate that almost all children 9 to 17 years old are frequent Internet users in Brazil. Although daily use of the Internet is a reality for 95% of the users, access conditions are not the same for those whose socioeconomic backgrounds are different.

Internet access via mobile phones is prevalent in all age groups and socioeconomic classes. However, for most children in classes DE, access to the Internet is exclusively through mobile devices, which may limit their online opportunities compared to those in classes AB, whose access through computers and other digital devices is greater. In this context, the universalization of Internet access and the promotion of meaningful connectivity are challenges to be overcome so that all children in the country can benefit from online opportunities.

The survey also highlights the high frequency with which children use digital platforms. Although this use may be associated with a greater intensity of engagement in multimedia and communication practices, questions about the uncritical and excessive use of mobile devices and platforms that monetize engagement are dominating the public debate, and reinforcing the concern of families and educators about the real benefits of online participation for this audience, as well as for their health and well-being.

Using the Internet to search for health information, including information about feelings and emotions, and to seek emotional support to deal with uncomfortable situations, are among the online practices carried out by around half of the country's older children. Additionally, the literature points to positive correlations between participation in digital platforms and the excessive screen time, with potential damage to the well-being of children.

Faced with the potential risks associated with problematic and unreflective Internet use, governments in different regions of the world have created laws aimed at restricting mobile device use in schools, such as Law No. 15.100/2025, which restricts mobile phone use in Brazilian schools. Although there is evidence of benefits associated with restriction measures in different regions of the world, future research will allow for monitoring their implementation in the national context.

In a context of increasingly widespread, frequent, and early access to the Internet for children, guaranteeing their fundamental rights involves universal and meaningful access to the Internet, effective strategies for digital education, the development of digital skills, autonomy and critical thinking, and media and information literacy for Internet use. Policies that restrict access to the Internet and mobile phones in a purposeful way and that are focused on promoting educational performance and reflective attitudes in children can be beneficial for their well-being in the digital age. However, the content, contexts, and purposes of accessed information and activities must also be taken into account in public policies, which should support those responsible for mediating with children and make enterprises responsible for developing online environments that respect the different stages of development, privacy, and safety of their users, and that are based on the best interests of children.

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Articles

Protection of children on the Internet: A comparative analysis of social media

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It is essential to comprehensively protect children in the digital environment, especially in the context of the Internet in Brazil. Despite the evolution towards Web 3.0, which enables advanced interactions between people, machines, and devices, much of the content accessed by children is still not user-friendly, sensitive to the specificities of this audience, or promotes their fundamental rights, as established in Article 227 of the Federal Constitution of Brazil (Constitution of the Federative Republic of Brazil, 1988).

This audience has a large online presence. According to the ICT Kids Online Brazil 2024 survey (Brazilian Network Information Center [NIC.br], 2024), 93% of children 9 to 17 years old are Internet users in the country. They are frequent consumers of popular products and services, with 83% reporting they have social media profiles. They also say they use social media several times a day, such as WhatsApp (53%), Instagram (45%), YouTube (43%) and TikTok (37%). It is worth noting that all these digital platforms restrict use by children under 13 in their terms of use.

This article compares two independent studies by the Alana Institute, which evaluated Instagram and TikTok's practices to protect the rights of children in Brazil. Both studies pointed to significant shortcomings in these platforms, particularly in recognizing the intrinsic vulnerability of this audience and the need for adopting effective protective measures.

This text systematizes reflections on frequent violations and differences identified in the analyzed cases, focusing on the Holistic Protection Doctrine. It also compares how different content distribution mechanisms can aggravate rights violations, contributing to the debate on child rights by design in technology development (5Rights Foundation, 2021; Hartung, 2020; Henriques, 2023).

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The recognition of the rights of children in the digital environment

The Holistic Protection Doctrine, which originated in the Convention on the Rights of the Child and was incorporated into the Brazilian legal system with constitutional status, is reflected in Article 227 of the Federal Constitution. It is based on the recognition of the intrinsic vulnerability of children, considering the peculiarities of child development. It imposes a shared responsibility on public and private agents to ensure children's full development, guaranteeing their rights to the fullest extent and without discrimination (Henriques, 2023).

This doctrine establishes that children are entitled to all the rights guaranteed to any human being and that they are subjects of special rights due to the recognition of their condition as developing persons. Therefore, it imposes on everyone—the State, families, society, and enterprises—the obligation to adopt actions to prevent violations and proactive measures to promote the full exercise of their rights.

To make these principles a reality, General Comment No. 14 of the United Nations (UN) Committee on the Rights of the Child (CRC) requires agents to conduct assessments of children's best interests. This procedure aims to identify the impacts of actions or omissions on the rights of this population, supporting decisions in concrete situations (CRC, 2013).

Normative instruments such as General Comment No. 25 of the CRC (2021) and Resolution No. 245/2024 of the National Council for the Rights of Children and Adolescents (Conanda) reinforce this need. These documents highlight the duty of enterprises to prioritize the protection and promotion of the rights of children in the digital environment, including care measures of products by design. They also demand action against abuse and violence and reinforce the obligation to guarantee age-appropriate environments and experiences.

Cases of violation of the rights of Brazilian children: TikTok and Instagram

In Brazil, the high use of social media by children requires the sector responsible for these products and services, one of the most lucrative in the global economy, to implement mechanisms for risk assessment, damage mitigation, and specific protection of this audience. However, large enterprises such as Meta and TikTok have neglected these obligations, as will be analyzed below.

THE CASE OF ONLINE BETTING ON INSTAGRAM: AN OVERVIEW

In June 2024, a study was carried out that revealed the advertising of online casino games aimed at children by child influencers on Instagram.

The study identified nine accounts of children 6 to 17 years old promoting bets on their profiles. Promotion strategies included temporary stories, pinned stories, feed posts, ads in bio, hyperlinks, polls, and reply boxes. In addition to betting, there were private lotteries for cash prizes or items such as smartphones (four profiles), raffles (two profiles), and lotteries linked to the federal lottery (one profile). All the accounts used images of children to promote betting, while four also displayed images of adults, usually family members. Table 1 shows the discursive strategies used in the content classified by frequency of use.

TABLE 1

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Discursive strategies most used by the accounts of child influencers to promote bookmakers

Strategy	Number of accounts
Use of the image of a child to promote illegal content	9
Publishing of low minimum game deposit	7
Exposure to considerable gains	7
Video demo with a successful game	6
Alternation of normal comedy or routine content with content promoting betting	5
Discursive pressure or encouragement to gamble ("It pays a lot", "All it takes to win is for you to play")	4
Video tutorials on how to place bets online	4
Offering money in exchange for registering on a betting platform	3
Use of an adult's image or voice to promote bookmakers	3
Identification of the child as an ambassador for the specific house brand	1
Launching challenges for followers	1
Publishing probability of winning analyses	1
Answering followers' questions about game strategies	1

Source: Alana Institute, 2024a.

These actions can be summarized as commercial exploitation and negligence in adopting corrective measures against rights violations, including designing protection resources. Allowing and enabling such advertisements is manifestly abusive and they are illegal actions because: (i) they are advertisements for products and services characterized as gambling; (ii) they cause damage to the physical and psychological integrity of children; (iii) they promote products and services that are unsuitable for children; (iv) they advertise products and services for children under the age of 12; (v) they cast children as the protagonists of the advertisements, as child digital influencers, without observing the legal

rules regarding artistic child labor; and (vi) they demonstrate the enterprises' negligence in the face of the fact that such advertisements cannot be denounced through their own channels (Alana Institute, 2024a). These violations are detailed in Table 2.

TABLE 2
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Violations identified on the Instagram platform in the complaint against illegal gambling advertising

Category of analysis	Violations identified
Policies	Lack of specific policies to protect child influencers
	Content in English and without translation
	Inadequacy of content policies with Brazilian legislation
	Inadequacy of the Terms of Service with Brazilian legislation, with the absence or inadequacy of specific rules that consider the special needs of this audience
	Encouraging commercial content and partnerships with brands, including on teen protection pages
	Failure to adapt policies to meet the information rights of adolescents and ensure their proper understanding
	Reference to non-existent governance mechanisms and practices
Interface design	Easy account creation for children
	Lack of suitable and intuitive reporting categories
Content moderation	Repeated failure to identify and remove illegal or abusive content

Source: Instituto Alana, 2024a.

In June 2024, the study in question resulted in a complaint to the São Paulo State Public Prosecutor's Office (MPSP) against the company Meta, due to the dissemination of the aforementioned illegal advertisements. The complaint was also forwarded to the National Consumer Secretariat (Senacon) of the Ministry of Justice and Public Security (MJSP).

Both the MPSP and MJSP requested a statement from the enterprise, which responded to the MJSP, stating it does not favor this type of advertising, acknowledging that it is illegal to advertise online betting games to children, and mentioning that its platform is only suitable for people over the age of 13. In September 2024, a new complaint was submitted by the Alana Institute, reporting that, until that date, similar advertisements were still being published on some of the analyzed profiles. In December 2024, the complaint gave rise to a public civil inquiry by the MPSP. At the time of writing this article, no penalties had been imposed by these oversight bodies.

THE CASE OF TIKTOK'S COMPLAINT TO THE ANPD: AN OVERVIEW

Unlike the first case, which focused on analyzing content promoted by children's profiles, the case involving TikTok focused on the platform's recurring violations in the handling of personal data of children (Alana Institute, 2024b) to generate information for the investigation procedure promoted by the ANPD.

The study found that the enterprise collects personal data from children, even when they are not registered on the platform, to create behavioral profiles and enhance its content recommendation system. This practice aims to increase the platform's attractiveness, improve the accuracy of recommendations, and expand its user base (Alana Institute, 2024b), turning engagement into profit.

We also observed the ease of access to the "Para Você"[3] (For You) feed in Brazil, which is widely available via browser or app, with no requirement for registration nor application of policies that inhibit use by children, unlike what happens in the United States or Europe. This ease of access goes against TikTok's own terms of use, which state that children should not access its products or services (Alana Institute, 2024b). Recurring violations are detailed in Table 3.

TABLE 3
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Violations identified on the TikTok platform in the study on the processing of personal data

Category of analysis	Violations identified
Policies	Content in English and without translation
	Inadequacy of content policies with Brazilian legislation
	Inadequacy of the Terms of Service with Brazilian legislation, with the absence or inadequacy of specific rules that consider the special needs of this audience
	Failure to adapt policies to meet the information rights of children and ensure their proper understanding
	Reference to non-existent governance mechanisms and practices
Interface design	Ease of access to the platform without registration, either by browser or application
	Easy account creation for children
	Repetition of algorithmic recommendations in a loop of abusive or illegal content, generated based on the behavioral profile of the child user
Content moderation	Repeated failure to identify and remove illegal or abusive content

Source: Alana Institute, 2024b.

[3] The "For You" feed is the main screen used on the TikTok platform. It features an infinite scroll format displaying continuous personalized videos, with recommendations and video sequences determined by inferred user preference profiles, which are enhanced through the collection of their behavioral data from interactions with the platform or even other applications.

These issues are related to the platform's design choices, which allow easy access for children, and the lack of policies aligned with the Brazilian General Data Protection Law (LGPD) (Law No. 13.709/2018) and the Statute of the Child and Adolescent (ECA) (Law No. 8.069/1990).

Among the examples raised is non-compliance with the transparency and information requirements set out in Article 14, paragraph 6 of the LGPD. The enterprise has shown resistance to acknowledging its obligation to comply, arguing that it is not a platform directed at children, does not process their personal data intentionally, and therefore is not obliged to adopt transparency measures aimed at protecting children and being understood by children, contrary to current legislation.

Non-recognition: Similarities between the two cases

Analyzing the cases reveals a pattern of technical invisibility and omission on the part of the enterprises involved. In both cases, children were not recognized as subjects of rights in the digital environment, resulting in the absence of adequate protective policies in Portuguese adapted to Brazilian legislation or with specific considerations for the needs of developing persons.

Furthermore , there was widespread inadequacy in the distribution of age-appropriate content on both platforms, without proper moderation. In both, it is easy for children to create accounts and consume content that should be restricted. On Instagram, child influencers used stories to promote illegal products. The platform encourages this behavior by fostering partnerships between influencers and brands, without mechanisms to prevent the commercial exploitation of children. On TikTok, the "Para Você" feed, which does not require individuals to sign up, incessantly recommends videos, often containing inappropriate material, without applying a preexisting filter which is available exclusively to registered accounts (Alana Institute, 2024b).

These platforms have been shown to be unprepared to meet the special needs of children, whether due to design flaws and the lack of appropriate terms or effective control and reporting mechanisms.

The form of content distribution: Differences between cases

On Instagram, violations are amplified by the direct use of child influencers' accounts. There is personalization in the figure of the influencers, who can mix comedy and dance videos with illegal content in their profiles.

In contrast, the TikTok study was mainly based on analyzing a global algorithmic distribution model, with a "Para Você" feed designed to catch users' attention through personalized content. This often exacerbates problems such as repetitive exposure to harmful topics based on behavioral analysis to recommend similar content—an effect that characterizes a phenomenon described as a "rabbit hole" (Alana Institute, 2024b).

Commercial exploitation, in this case, occurs due to the absence of personal data protection, as evidenced by the massive use and processing of children's behavioral data to improve TikTok's algorithmic recommendation systems, making the platform even more attractive, assertive, and personalized for an audience that the platform itself claims to limit usage. This same platform has not adopted any effective restrictions or corrective measures when it detects an improper situation of commercial data sharing.

The main interface of each platform also reflects their differences. On Instagram, the analyzed violations involved interactions with temporary and organic content, posted by accounts that reach followers directly. In contrast, the TikTok study revealed that its infinite scrolling system, which does not require following specific profiles, enhances the dissemination of inappropriate content on a large scale, including users not formally signed up.[4]

Final considerations

The analysis of the Instagram and TikTok cases highlights the urgent need to adapt their policies and designs, prioritizing the protection of children. On both platforms, there is systematic insufficiency and programmatic invisibility: their terms of service and policies do not meet Brazilian legal requirements, they neglect the specific needs of this audience, and, implicitly, encourage use and retention behaviors by children—even when they are not the stated target audience—in favor of commercial interests.

General Comment No. 25 recommends that both platforms adopt policies in line with the ECA, the LGPD, and the Consumer Protection Code, including:

- adapting Terms of Use to Brazilian legislation, translated into language that is accessible for children, adolescents, and families, with effective and specific governance practices for this audience;
- implementing effective reporting and content moderation mechanisms that are appropriate to the Brazilian context;
- strengthening age restriction policies, ensuring the creation of appropriate environments for each age group;
- carrying out impact assessment and risk mitigation, considering the best interests of children, based on research into the concrete experience of use in Brazil.

The challenge of protecting children in the digital environment requires enterprises to recognize and prioritize the human and fundamental rights of this audience, fulfilling their shared responsibility for the comprehensive protection of children.

[4] It should be noted, however, that Instagram also has a similar feature for distributing content in short, looping videos, called Reels, based on the analysis of behavioral profiles. The focus of this analysis, however, was to compare different forms of content distribution to understand similarities and differences.

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Measurement of children's screen time: Current challenges and future directions

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Digital media refers to devices or platforms that deliver content via digital signals, such as the Internet, smartphones, tablets, video games, and smart TVs (American Academy of Pediatrics [AAP], 2016). Children's use of digital media has grown significantly (Byrne et al., 2021). An U.S. survey revealed that screen time for children aged 0 to 8 increased from 4% in 2011 to 35% in 2017 (Rideout, 2017), with exposure often beginning during the first two years of life (Kabali et al., 2015). Research involving Brazilian children also supports these findings. For example, the number of children up to six years of age who accessed the Internet in the country increased from 11% in 2015 to 24% in 2023. Currently, 93% of the population aged 9 to 17 in the country uses the Internet, which represents 25 million people (Brazilian Network Information Center [NIC.br], 2024).

Pediatric societies globally have established guidelines for children's digital media use (AAP, 2016; Bozzola et al., 2018; Canadian Paediatric Society [CPS], 2017; World Health Organization [WHO], 2019). These typically recommend limiting screen time (Tadpatrikar et al., 2024). The Brazilian Society of Pediatrics (SBP, 2019), for example, advises against screen exposure before 2 years old and limits screen time to one hour per day for children 2 to 5 years old, under adult supervision.

However, these guidelines are often ignored in Brazil as pointed out by research conducted in recent years. Nobre et al. (2021) conducted a study with 180 children from September 2016 to February 2017 in the countryside of Minas Gerais. The results showed that 94.5% of children 24 to 42 months old were exposed to screens, with 63.3% exceeding 2 hours per day. In turn, Rocha et al. (2021) conducted a population study in the state of Ceará with children aged 0 to 60 months in 2017. According to the study, 69% of

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children up to 60 months surpassed recommended screen time limits. A Portuguese study (Santos et al., 2017) indicates that Portuguese children (n=95) had significantly less screen time than Brazilian children.

Research has also highlighted several negative effects of excessive screen use. Barr et al. (2020) found that children exposed to television at 12 months old scored lower on executive function tests by 4 years old. Madigan et al. (2019) linked higher screen time at 24 and 36 months old to lower global development scores later[6].

Nevertheless, accurately measuring screen time in research is challenging. Surveys, although commonly used, often fail to capture total media use or device overlap, and are subject to reporting bias (Yuan et al., 2019). Most studies rely on parental reporting, which may not provide an accurate reflection of actual media use.

In this context, a scoping review was conducted to describe digital media use in early childhood in Brazil, as well as to identify the instruments used to measure screen time in Brazilian children. The search strategy followed the "Population, Concept, and Context" framework. The keywords used included: (child OR children OR infants OR toddlers OR *criança* OR *crianças* OR *bebês*) AND (screen time OR digital media use OR technology use OR screen use OR smartphone use OR tablet use OR *tempo de tela* OR *uso de mídias digitais* OR *uso de tecnologias* OR *uso de telas* OR *uso de smartphone* OR *uso de tablet*) AND (Brazil OR *Brasil* OR Brazilian OR *brasileiros* OR *brasileiras*). The databases searched included: MEDLINE, LILACS, Scopus, and PsycINFO, and the searches were conducted between February and May 2024.

The eligibility criteria included empirical studies, articles published in English or Portuguese, done in the last ten years (2014–2024), involving Brazilian children 0 to 6 years old, and focused on digital media use and its effects on development and behavior. The initial sample included 367 articles, with 136 duplicates removed. Two independent reviewers assessed the articles, first by title and then by abstract and full text, resulting in the exclusion of 219 articles. Twelve articles met the eligibility criteria and were included in the review. The instruments used to measure screen time were analyzed, and data on questions, measurement strategies, and how time was quantified were compiled in an Excel spreadsheet, along with descriptive data such as title, year, and authorship.

Analysis

The most frequently mentioned device in screen time measurement tools was TVs (n=11), followed by smartphones (n=8), video games (n=8), tablets/iPads (n=7), and computers (n=6). Fewer studies included DVDs (n= 3) and general videos (n=2). Only Campos et al. (2023) explored alternative exposures, such as streaming platforms, eBooks, gaming apps, and video calls.

[6] In this study, specifically, the children's communication skills, gross motor coordination, fine motor coordination, problem-solving abilities, and social-personal skills were assessed.

All 12 articles reviewed relied on parental reports to assess children's screen time, primarily using questionnaires. No studies used direct observation or monitoring apps. Only five articles reported psychometric evidence. Frata et al. (2021) validated their 33-question survey with a panel of experts and a pilot group of parents. Gonçalves et al. (2019) reported acceptable intraclass correlation coefficients (ICC) for the instruments used to assess screen time for both parents and children. The authors reported that the ICC for both measures ranged from 0.5 to 0.8, and the daily activity diary demonstrated excellent test-retest reliability (ICC = 0.98). Gonçalves et al. (2022, 2023) study also showed strong reliability (ICC = 0.94), and Martins et al. (2020) reported internal consistency (Cronbach's $\alpha = 0.87$). Seven articles did not report psychometric evidence. Moreover, many lacked sufficient psychometric evidence, increasing the risk of assessment errors and limiting the accuracy of the findings (Byrne et al., 2021). Table 1 summarizes the findings.

TABLE 1

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Description of the instruments used to assess screen time

Study name	Instrument	Evidence of validity and reliability
Impact of the COVID-19 pandemic on the use of screens in early childhood (Brito et al., 2023)	Qualitative study. Guiding question: "In your opinion, what is the impact of the COVID-19 pandemic on children's screen use?"	Not reported.
Predictors of screen exposure among infants under 2 years of age during the COVID-19 pandemic (Campos et al., 2023)	Adapted from Rideout and Robb (2020), with questions translated and adapted to Brazilian Portuguese.	Not reported.
Predictors for screen time exposure among children between 3 and 5 years old in Southern Brazil (Frata et al., 2021)	The questions addressed total screen time (TV, computer, and tablet/smartphone) in hours per day of the week. For example: "How many hours does the child watch television?" (response options were "Less than 1 hour", "1 hour", "2 hours", "3 hours", "4 hours", "5 hours", and "others") and "How many days per week?" (options: "1 day", "2 days", "3 days", "4 days", "5 days", "6 days", and "7 days"). Total screen time was the sum of time spent watching TV, using a computer, tablet, or smartphone.	The instrument was validated by a panel of three experts based on the criteria of scope, clarity, and relevance. Additionally, before its application, a pilot study was conducted with a group of five parents to verify its applicability and clarity. Subsequently, the instrument was adjusted and sent back to the same group of experts and parents before reaching its final version.
Screen time: Implications for early childhood cognitive development (Gastaud et al., 2023)	Questions to the child's caregiver about how many hours per day the child spent watching cartoons or movies on a cell phone, tablet, and television.	Not reported.

CONTINUES ▶

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Study name	Instrument	Evidence of validity and reliability
Parental influences on screen time and weight status among preschool children from Brazil: A cross-sectional study (Gonçalves et al., 2019)	Adapted from He et al. (2010). Guiding question: "How many hours does your child usually spend watching television or videos and playing computer and video games?". Screen time during the week and on weekends was evaluated separately. The response options were: < 1 hour, 1 to 2 hours, and ⩾ 3 hours.	The child's screen time items showed satisfactory ICC ranging from 0.5 to 0.8. It also demonstrated excellent test-retest reliability (ICC = 0.98).
Adherence to 24-hour movement guidelines among rural Brazilian preschool children: Associations with parenting practices (Gonçalves et al., 2022)	Adapted from items from the Australian Infant Feeding Activity and Nutrition Trial (InFANT) (Hesketh et al., 2013); translated and culturally adapted for use in Brazilian families (Gonçalves et al., 2021). Parents reported their children's screen time on a typical weekday and weekend day based on various digital media devices, including watching TV programs, DVDs, using computers, playing on electronic gaming systems (such as Nintendo DS, PlayStation, Xbox), and using smartphones, iPads, or tablets.	In a Brazilian preschool sample, the measure exhibited strong test-retest reliability (ICC = 0.94). It also presented validity evidence based on its relationship with external measures based on sedentary time measured by devices (rho = 0.26, $p < 0.05$), total movement (rho = -0.41, $p < 0.05$), and energetic play (rho = -0.37, $p < 0.05$).
Parental influences on physical activity and screen time among preschool children from low-income families in Brazil (Gonçalves et al., 2023)	Instrument adapted from InFANT (Hesketh et al., 2013) translated and culturally adapted for use in Brazilian families (Gonçalves et al., 2021).	In the sample, the measure showed strong test-retest reliability (ICC = 0.94).
Cross-sectional and prospective associations between screen time and childhood neurodevelopment in two Brazilian cohorts born 11 years apart (Leão et al., 2024)	Caregivers reported the amount of time the child spent watching TV, playing video games, and using computers, tablets, and smartphones in the morning, afternoon, and evening on a typical day.	Not reported.
Consumption of ultra-processed foods and screen exposure of preschoolers living in a region of high social vulnerability in São Paulo, Brazil (Leite et al., 2022)	Two questions about screen exposure were asked. The first question asked if the child usually eats while watching television or engaging in another activity to stay distracted (yes or no). The second question asked about the average time the child spends watching television or interacting with screens each day (the options were: no television, 30 minutes, 1 hour, 2 hours, 3 hours, or more).	Not reported.

► CONCLUSION

Study name	Instrument	Evidence of validity and reliability
Adherence to 24-hour movement guidelines in low-income Brazilian preschoolers and associations with demographic correlates (Martins et al., 2020)	Questions were "How many hours during a weekday does your child usually watch TV or use a computer, smartphone, or electronic games?" and "How many hours during a weekend day does your child usually watch TV or use a computer, smartphone, or electronic games?"	The questions were asked separately for weekdays and weekends. Internal consistency was assessed using Cronbach's alpha ($\alpha = 0.87$).
Screen time and early childhood development in Ceará, Brazil: A population-based study (Rocha et al., 2021)	To assess children's screen time exposure, caregivers were asked to enumerate the total time children spent watching television, using cell phones or tablets, or playing video games during a typical day. They also assessed the time spent on TV and interactive media exposure. The questions were "How many hours per day does * watch TV?" "How many hours per day does * spend on the Internet?" "How many hours per day does * spend on touchscreen electronic devices?" and "How many hours per day does * spend on electronic games (computer/cell phone/video games)?"	Not reported.
COVID-19 and children's screen time in Ceará, Brazil: A repeated cross-sectional survey (Rocha et al., 2022)	Adapted from previous research (Cristia & Seidl, 2015; Radesky et al., 2015). The question used in the interview was "How many hours per day does the child watch TV?", adjusted with the child's name.	Not reported.

Discussion

This study aimed to analyze instruments that measure children's screen time. Research indicates that excessive digital media use may negatively affect child development and behavior (Nobre et al., 2021; Rocha et al., 2021). Therefore, accurate assessments are crucial for understanding the complexities of screen time. This article advances the investigation of screen time assessment instruments while addressing challenges and suggesting future directions.

Measuring children's screen time presents several challenges. Barr et al. (2020) identified issues such as capturing short access intervals, understanding content, and integrating various sources. Parent-reported instruments are commonly used, offering advantages in cost and feasibility (DuBay & Watson, 2019). However, parents often underestimate their children's screen time (Yuan et al., 2019).

The Comprehensive Assessment of Family Media Exposure (CAFE) Consortium developed three key instruments: the Media Assessment Questionnaire (MAQ), the Time-Use Diary (TUD), and the Chronicle (Barr et al., 2020). These instruments are used together in studies of children's digital media use.

The MAQ evaluates parental attitudes, family environment, and screen exposure levels. This parent-reported questionnaire consists of 74 items covering device usage and sociodemographic factors. It also provides relevant information about content and context of use, particularly regarding early exposure to screens and parents' media use. Completing this tool takes 20 to 30 minutes.

The TUD contributes to the CAFE Consortium's comprehensive assessment of children's screen use. This instrument provides an overview of the child's daily routine within the family and the context of media exposure. A unique feature of the TUD is its focus on longer time intervals. It is a diary documenting the child's activities throughout the day, capturing the context and content of digital media use. Parents fill it out online, categorizing daily tasks into ten areas: sleep, media use, indoor play, outdoor play, travel, meals, hygiene, childcare, household routines, and others. Specific questions about screen use are included in each category. In the general media category, questions pertain to content accessed by children and co-viewing, which refers to joint exposure of parents and caregivers to the same digital content (Barr et al., 2020).

The Chronicle is a mobile device sensing app that tracks short intervals of device usage. The data accessed includes frequency, duration, and time of use, as well as the types of apps and their status. The app can monitor variations in content accessed throughout the day. To access this data, the user must grant specific permissions. Notably, the app is currently only available for Android devices (Barr et al., 2020). Although this strategy is effective, it overlooks the time children spend watching television and can be constrained by limited research funding in middle-income and low-income countries.

Other questionnaires, unrelated to the CAFE Consortium, are also important for a comprehensive investigation of screen time and have some psychometric support for use in Brazil, such as the SCREENS Questionnaire (SCREENS-Q). This standardized parent-report questionnaire verifies the multiple uses and habits of screen time, digital media environments, and the plausible proximal correlates of this practice in children 6-10 years old, based on a socio-ecological model. The instrument has six domains: 1) screen media environment; 2) child's screen media use; 3) digital media use context; 4) early exposure; 5) parents' perception of the child's media use; and 6) parents' media use. The SCREENS-Q contains 92 items and demonstrated satisfactory internal consistency (Klakk et al., 2020).

Other instruments that assess constructs related to screen time and have psychometric evidence for the Brazilian context can be utilized. For example, the Problematic Media Use (PMU) instrument, designed to assess harmful media use in children 4 to 11 years old, has 27 items and can indicate screen dependency. These items were constructed based on criteria characterizing "Internet gaming disorder", as per the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR) (American Psychiatric Association [APA],2023). Sample items include: "It is difficult for my child to stop using screens," "My child's screen media use causes problems for the family," and "My child loses sleep due to screen use." This instrument has demonstrated convergent validity and satisfactory internal consistency. It has also been adapted for the Brazilian context (Carvalho, 2024), and a shorter version with 9 items is available (Domoff et al., 2019).

The Internet Addiction Test (IAT) is another relevant complementary instrument for assessing Internet use. This self-report questionnaire consists of 20 items, answered on a 5-point Likert scale. Higher scores indicate greater addiction. It evaluates the impact of excessive Internet use on various life areas, such as social life, daily routines, and emotions. The assessment encompasses six domains: salience, excessive use, neglect of duties, anticipation, lack of control, and neglect of social life. These domains address significant aspects, such as the prominence of the Internet in an individual's life and the expectation of being online. Sample items include: "Do you prefer spending more time online than going out with others?" and "Do you feel depressed, moody, or nervous when offline, and does this feeling go away when you're back online?" The instrument has demonstrated convergent validity and acceptable consistency (Conti et al., 2012; Widyanto & McMurran, 2004).

McDaniel & Radesky (2018) utilized a tool to measure technology interference in parent-child relationships during daily routines—the Technology Device Interference Scale (TDIS). Using a typical day as a reference, the scale assesses the frequency of interruptions in interpersonal relationships caused by various devices. The six items include cellphones/smartphones, televisions, computers, tablets, iPods, and video game consoles. Respondents indicate the frequency of interruption for each device on a seven-point scale, where zero indicates no interruption and six indicates more than 20 interruptions. The authors anticipated variability in responses due to this count-based measure. The internal consistency, measured by Cronbach's alpha, ranged from 0.69 to 0.82 over time points.

Another effective strategy for more accurate assessments involves using apps in screen time research. Minuku and Moment can be used on Android and iOS devices, respectively, and have proven important for passive monitoring of mobile digital media use. The Minuku app collects data on screen status (on/off), the last app used in the foreground, and the last use date and time. Moment, which is available for iOS devices, estimates daily usage and screen unlock frequency. In this app, users must send screenshots to identify the usage time of each app. A study on parental screen time found high acceptance of these apps (Yuan et al., 2019). However, it also noted limitations, such as missing data in Minuku due to specific device configurations. Regarding Moment, lower data collection feasibility was observed, as participants had to take screenshots and export the data to researchers.

Conclusions

In summary, the importance of integrating data from various sources to obtain comprehensive assessments of screen time is emphasized. Utilizing standardized and complementary instruments, along with passive monitoring, can provide more accurate and realistic data. It is essential that research in this field adequately details instruments used to assess the use of digital media. It is also critical to present the methodological basis and item details and provide psychometric evidence. Additionally, the authors advocate for journal editors and reviewers to ensure that these descriptions meet the criteria for reliable research results. Finally, new psychometric studies on screen time instruments are recommended to enhance the precision assessment of this use.

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Digital education is a constant effort: Reflections on parental mediation in children's use of social media

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The early use of the Internet by children in Brazil highlights the urgent need for parental mediation practices suited to the digital context. According to the ICT Kids Online Brazil 2024 survey, 89% of Brazilian children between 9 and 10 years old already have access to the Internet, which reflects the growing digitalization of childhood in the country. In addition, 60% of these children have profiles on at least one digital platform, with WhatsApp, YouTube, and TikTok being the most popular among this audience (Brazilian Network Information Center [NIC.br], 2024). It is important to note that most social media platforms set a minimum age of 13 for their users, demonstrating a mismatch between the rules and the reality of use.

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Given that Internet access occurs predominantly in family environments, such as one's own home or that of close relatives, parental mediation becomes key in promoting healthy and safe use of digital technologies. Digital education, therefore, should be seen as a continuous process, ranging from the introduction to technological tools to the development of critical skills that enable conscious browsing and the reduction of potential risks (Restano et al., 2023).

This article discusses the role of parental mediation in children's use of social media, looking at different styles and their implications for emotional and social development in childhood. Our aim is to provide an overview of the most effective mediation practices, promoting reflections that can support parents, educators, and professionals in properly guiding young people in the digital environment.

The role of parental mediation

Parental mediation is the set of practices and strategies used by parents to guide their children's use of digital media. In the literature, it is commonly categorized into three main styles: active mediation, restrictive mediation, and co-use. Each style has its own characteristics and different impacts on the behavior and well-being of children, varying according to the level of interaction and guidance offered by parents.

ACTIVE MEDIATION

Active mediation involves regular discussions between parents or legal guardians and children about the content consumed on social media, promoting the development of critical thinking. Through this style, parents or legal guardians help children to understand and evaluate what they see online. Active mediation is characterized by three main elements:

- **Open dialogue:** Parents or legal guardians who adopt active mediation encourage constant conversations about what children are seeing and doing online, allowing them to share their digital experiences.
- **Education and guidance:** In addition to monitoring, parents or legal guardians teach children to identify inappropriate content, deal with negative interactions, and develop critical thinking skills.
- **Supporting autonomy:** Active mediation tends to respect children's autonomy, promoting a sense of responsibility and self-management in the use of digital media.

This mediation style is associated with a reduction in the negative effects of using social media, such as anxiety and depression, as well as promoting children's general well-being. In addition, active mediation allows children to feel supported and understood, which strengthens the emotional bond with parents or legal guardians and contributes to a safe environment for digital exploration (Beyens et al., 2022; Coyne et al., 2017).

RESTRICTIVE MEDIATION

Restrictive mediation, on the other hand, involves imposing rules and limits on the time children can use social media and the types of content they can access. Common practices of this style include:

- **Establishing time limits:** Parents or legal guardians set specific hours for using the Internet and social media, restricting exposure time.
- **Filtering content:** Parents or legal guardians block or restrict access to certain types of content considered inappropriate or potentially harmful.
- **Direct supervision:** Parents or legal guardians constantly monitor children's online activities, often through parental control software.

Although restrictive mediation can protect children from harmful content and limit usage time, its effectiveness depends directly on how it is implemented. When applied in an authoritarian or inconsistent manner, it can generate feelings of rebellion and resistance and, in some cases, increase problematic use of social media (Beyens et al., 2022). However, when combined with elements of active mediation, restrictive mediation can contribute to a more balanced and safer environment for the use of digital media.

MEDIA CO-USE

Media co-use refers to the joint use of digital media by parents or legal guardians and children, without necessarily involving active discussions about the content consumed. This style of mediation can include:

- **Shared participation:** Parents or legal guardians and their children use social media together, watching videos, playing games, or browsing platforms.
- **Behavioral model:** Parents or legal guardians serve as role models, demonstrating positive and healthy behaviors in the use of digital media.
- **Creating joint memories:** Co-use can strengthen family ties and provide moments of interaction and shared fun.

Although this type of mediation can promote a harmonious family environment and allow parents or legal guardians to better understand their children's digital experiences, its effectiveness depends on the quality of the interactions during co-use. Without active discussions and guidance, co-use alone may not be enough to ensure safe and healthy use of social media (Coyne et al., 2017).

Recent studies on parental mediation

Recent studies reinforce the existence and usefulness of different models of parental mediation and their impact on children's behavior. These studies seek to understand the most efficient mediation practices, taking into account family dynamics and the cultural context in which they are inserted. Below is an overview of the main contributions of some of these studies.

Wang & Chen (2022) identified different models of parental mediation, suggesting practices such as the co-organization of rules of use by parents or legal guardians and children, the direct guidance of parents or legal guardians on concepts related to social media, and their integration into the children's digital world, in order to improve their digital literacy. The study also highlighted the importance of two-way empowerment: Parents or legal guardians and children learn about the digital world together, strengthening dialogue and mutual understanding. The study suggests that in contexts where there is greater family cohesion and dialogue, parental mediation proves to be more effective than an authoritarian ban on the use of social media.

Another relevant study is that by Ren and Zhu (2022), which analyzed parental mediation styles in Chinese families. The researchers identified practices that ranged from authoritarian and overprotective control to more emotionally supportive approaches. The results indicated that both authoritarianism and overprotection are not as effective as the emotional support style, in which parents prioritize supporting their children's needs and wishes through constant and open dialogue. Families who adopted this approach reported a more balanced relationship and a healthier engagement with social media.

Martín-Cárdaba et al. (2024) investigated 800 Spanish children and adolescents between 8 and 16 years old about smartphone ownership, emotional well-being, and parental mediation strategies. The study found that active mediation (discussion of the dangers of the Internet and social media) is effective in reducing negative impacts on children's well-being. However, this effectiveness decreases significantly when the young person has their own electronic device. Restrictive mediation strategies, especially in relation to content, were associated with higher levels of psychological distress and problematic behavior.

A review by Coyne et al. (2017) also reinforced the importance of considering children's individual characteristics when developing parental mediation strategies. For example, children with greater self-regulation difficulties need closer monitoring and additional support from their parents or legal guardians. The research pointed out that the use of social media can strengthen family ties, providing moments of exchange and learning for everyone involved. Thus, by considering the specific context of each family, it is possible to establish a balance between control and support, restriction and co-participation, promoting a more conscious and healthy use of digital tools.

In another literature review, Beyens et al. (2022) reported that active mediation and restrictive monitoring are associated with less problematic use of social media and a lower likelihood of participation in cyberbullying. On the other hand, authoritarian mediation, characterized by rigid control and few opportunities for dialogue, is associated with higher levels of anxiety and depressive symptoms in children.

Based on these studies, effective parental mediation involves flexibility and adaptation to the family context and children's individual characteristics, avoiding authoritarian approaches and opting for a model of co-participation. As discussed above, this is a subject that is constantly updated and requires continuous attention, since the rules and digital tools are always changing. The complexity of the digital environment, however, should not be an obstacle, but an incentive to continue learning through dialogue and emotional support in the family environment.

Parental mediation challenges in the digital age

Parental mediation in the use of social media involves numerous challenges, especially in a constantly changing digital context. New platforms emerge quickly, bringing with them different forms of interaction and new risks, which require parents or legal guardians to keep up-to-date with the digital world. An argument often heard in everyday life is that what happens in the digital environment is less "real" than face-to-face interactions. However, clinical observations and experiences reported by families indicate that the impact of digital interactions is actually quite tangible.

Theorist Pierre Lévy was already discussing the significant changes caused by the digital age in the early 2000s. In this context, it is more appropriate to consider "face-to-face" as the opposite of "digital" rather than "real", since the digital environment generates concrete and measurable consequences in the lives of young people, both socially and emotionally (Lévy, 1996). The challenge for parental mediation is precisely to deal with a space of interaction that, despite being virtual, has direct effects on the mental and physical health of users.

Another major challenge for parental mediation is the constant mutability of the digital environment. As discussed by Lévy, the digital is always being updated. For example, social media change their interfaces and functionalities, new memes and trends emerge, and devices become obsolete and are replaced by new models. This constant transformation makes the digital environment attractive to children, but it also imposes an additional difficulty for adults who are trying to guide them in its use.

Despite the need for constant adaptation, consistency in the application of rules and guidelines is important for the effectiveness of parental mediation. Inconsistent mediation, in which parents or legal guardians apply rules arbitrarily or impose restrictions without clear explanations, can lead to more problematic use of social networks and feelings of frustration in both children and their parents or legal guardians (Beyens et al., 2022). Consistency, combined with clear expectations and communication, is fundamental for children to understand the limits and reasons behind the rules established, contributing to the internalization of these norms and the adoption of more responsible behavior when using digital media.

In short, the challenge for parental mediation lies in balancing supervision and support, providing a digital environment that is both safe and stimulating. It is important that parents or legal guardians understand that digital technologies, with all their novelties and complexities, require constant learning on the part of everyone involved. This means that parents or legal guardians, educators, and health professionals can work together to promote the conscious and positive use of these technologies. This need for a balance between supervision and support in parental mediation highlights the importance of understanding the digital environment, not only as a functional space, but also as a field that requires critical and reflective skills. Parental mediation benefits directly from the promotion of digital literacy, which goes beyond simple technical mastery and allows for a more conscious and safe interaction with technologies.

Digital literacy and alphabetization

As with the process of learning to read and write, there is a conceptual difference between digital literacy and alphabetization. Digital alphabetization refers to basic knowledge of how to use devices and programs, while digital literacy involves a critical and reflective understanding of the use of these technologies and their social, cultural, and ethical implications (Sali et al., 2023).

Digital alphabetization encompasses the mastery of operational skills, such as navigating different interfaces, using applications, and manipulating devices such as smartphones, tablets, and computers. A digitally alphabetized person is able to use the available devices in a functional way, interacting with different software and platforms.

Digital literacy, however, goes beyond basic skills, promoting a deeper level of interaction and reflection. It includes a critical and analytical process about the consumption and production of digital content. For example, when using a social media, it is essential that the user asks questions: "Why am I using this platform?"; "What is the purpose of my posts?"; "How do my online interactions affect my personal life and relationships?". This reflective process aims to empower individuals to use digital technologies more consciously and responsibly.

The differentiation between digital alphabetization and digital literacy is especially relevant to younger generations, such as Generation Z, who grew up immersed in the digital environment (Machado & Souza, 2023). Although these children are highly competent in using devices and applications, they often lack the reflective skills to critically evaluate the content they consume and produce.

To promote effective digital literacy, parents or legal guardians and educators should encourage reflection on the intentions and consequences of using technology. This can be done through guiding questions such as: "What motivates me to share this information online?"; "How can I interact respectfully and constructively in a virtual discussion?"; "What are the impacts of using social media on my mental health and well-being?".

These reflections help young people to develop a more critical and conscious attitude towards the use of the Internet and social media. In addition, proper digital literacy helps prevent problematic behavior, such as digital addiction, cyberbullying, and exposure to inappropriate content.

Finally, it is essential to recognize that digital literacy is a continuous and adaptive process that changes as new technologies and platforms emerge, requiring individuals to constantly update and re-evaluate their digital practices. Parental mediation and collaboration with educational institutions are essential factors in promoting digital literacy that values critical thinking and digital citizenship, preparing new generations for the challenges of the digital world.

Minimizing risks and maximizing benefits

The book *Crianças bem conectadas: como o uso consciente da tecnologia pode se tornar um aliado da família e da escola* (*Well-connected children: How the conscious use of technology can become a family and school ally*) (Restano et al., 2023) discussed different approaches and strategies for the healthy use of digital technologies by children. A central concern of the book was to find accessible language for parents or legal guardians and educators, avoiding the use of excessively technical terms or an overly academic approach. The aim was to provide a practical and understandable guide for the general public, facilitating access to information and promoting the adoption of balanced mediation strategies.

One of the aspects highlighted in the book is the need to adopt a moderate attitude toward the use of technology, avoiding extremes ranging from strict control to complete lack of supervision. In many cases, the zeal of parents or legal guardians, educators, and professionals can lead to more radical approaches, such as a total ban on the use of digital devices or, on the contrary, unrestricted permissiveness. However, such practices are not effective in the long term and can have a negative impact on children's emotional and cognitive development.

In advocating a moderate approach, parents or legal guardians should seek strategies that minimize the risks and maximize the benefits of using digital technologies. This involves considering the specificities of each family, the context in which the child is inserted, and individual characteristics such as age, maturity, and level of understanding of the potential dangers and advantages of the digital environment.

Social media, in particular, play a significant role in the daily exchange of information, opinions, and ideas, and serve as an important means of communication between members of society and their peers. Therefore, their use should be evaluated, not only in terms of exposure time, but also by the quality of interactions and the purpose of these online activities. For example, while time spent "scrolling" through posts in the endless feed of Instagram or TikTok can be considered less productive use, interaction in online communities that share common interests or keeping in touch with friends and family can offer significant emotional and social benefits.

It is crucial that parents or legal guardians and educators encourage a conscious and guided use of social media, promoting frequent dialogue and creating a supportive and open environment. Based on a deeper understanding of the purpose of digital platforms, it is possible to guide children toward use that benefits their school activities, develops new skills, and fosters positive interactions.

Therefore, mediation strategies that prioritize dialogue and a reflective environment, rather than merely prohibitive practices, are indicated as the most effective strategies. This type of approach not only reduces the likelihood of problematic behavior, such as digital addiction and inappropriate use of social media, but also helps children internalize values of responsibility and self-control.

Conclusions

Parental mediation in the use of social media and other digital technologies is an ongoing and adaptive process that must consider both the family context and the individual characteristics of each child. Different styles of mediation—active, restrictive, and co-use—have advantages and disadvantages that vary according to how they are implemented and the specific needs of each family.

Balanced approaches, which promote dialogue and offer emotional support, are more effective in preventing problematic behavior and maximizing the benefits provided by digital tools. Establishing an environment of trust and openness is, therefore, fundamental for children to feel safe in sharing their digital experiences, allowing parents or legal guardians to intervene appropriately and effectively when necessary.

In addition, parental mediation must be flexible and keep up with the constant changes in the digital environment. New platforms, functionalities, and interactions emerge quickly and frequently, which requires continuous updating on the part of parents or legal guardians and educators. Strategies that worked previously can become obsolete or ineffective, requiring adaptation to meet the demands of a constantly changing digital context.

In this context, integrated action between families, schools, and health professionals is essential to ensure healthy and safe development in the digital environment. Collaboration between these agents promotes a support network that helps children develop the competencies needed to navigate the digital world critically and consciously, reducing the risks and maximizing the benefits.

Finally, it is important to emphasize that parental mediation should be seen as an educational and formative process, in which parents or legal guardians and educators not only impose limits but also guide and monitor the use of technology. Through continuous dialogue and the construction of an emotionally supportive environment, it is possible to train digital citizens to be prepared for the challenges of the future and capable of using technological tools responsibly and consciously.

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Opportunities, risks, and harms in digital games[1]

Ivelise Fortim[2]

Playing has always been an intrinsic part of child development, providing not only fun but also opportunities for learning and socializing. With the evolution of technology, the way children play has undergone a revolution, inserting the digital world into this universe of play. Today, digital games are one of the main spaces where playing takes place (Colvert, 2021).

However, playing in digital environments raises a number of concerns for families as well as health and education professionals (Brazilian Society of Pediatrics [SBP], 2023; Fortim, 2020). Topics such as online gaming disorder, addiction, isolation, violence, and interactions between players have drawn the attention of researchers concerning the protection of children's rights in digital games. One example that has generated attention is the hate speech made by players, present in some games and their adjacent platforms (such as Discord or Twitch). This behavior, which may be related to school attacks and violent extremism, has also raised concerns for public policies (Cara, 2023).

According to Colvert (2021), children's play is not just about their behavior, also encompassing a broad ecosystem of actors. The author believes that understanding the phenomenon of play must include the influences of other factors and agents that determine the possibilities of play. These influences are intrinsically linked to social and cultural contexts, as commercial, imaginative, and social practices intertwine bodies, games, and toys, moving through the immediate spaces of children's environments and global multimedia websites and networks, which distribute consumer products over vast distances. Wohlwend (2020, as cited in Colvert, 2021), understands play and playfulness as an interrelationship between three categories of factors: 1) people, encompassing social practices and bodies; 2) products, incorporating artifacts (for example, toys or applications) and networks; and 3) places, situating people and products in immediate

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environments and on global multimedia platforms. The space of play and games is characterized as a social and cultural activity influenced by the materials used (products), the contexts where it happens (places), and the meanings shaped by the participants and their relationships (people). Digital games can be seen as products that are associated with playing, and, in addition to the interests of children, we must take into account that this play is influenced by various stakeholders (e.g., parents, influencers, game developers, researchers, and educators), who are inserted in a complex network of influences (direct and indirect on behavior, community culture, incentive structures, policy effects, and adverse online events) (Colvert, 2021).

Regarding the use of digital games, the ecosystem refers to the complex set of elements, agents, and interactions that make up the industry and community involved in the development, production, distribution, consumption, and culture associated with digital games. This ecosystem involves multiple actors, such as developers, game publishers, distribution platforms, application and digital download stores, retail outlets, digital advertising networks, technology enterprises, etc. (Klimas & Czakon, 2022).

Games also have a specific culture, which can be seen on several gaming-adjacent platforms, such as streaming (live broadcasts of games), online forums and communities, applications that allow in-game chatting in communities (Discord), communities involving electronic sports, and platforms that allow content modification (Jovic et al., 2023). All of these actors can and should be involved in protecting children, since it is understood that this is the responsibility of everyone involved (Faraz et al., 2022).

In this context, digital games have become very important in children's and young people's play, both in Brazil and worldwide, as evidenced by the significant increase in young users and the exponential growth of the industry. In Brazil, as indicated by Nejm et al. (2023), data from the ICT Kids Online Brazil 2021 survey, conducted by the Brazilian Internet Steering Committee (CGI.br, 2022), revealed that in the period between 2015 and 2021 there was an increase of approximately 27 percentage points in the proportion of children between 9 and 17 years old who participate in online games in connection with other players.

Data from the ICT Kids Online 2023 survey showed that 52% of children played online games with other players, 68% of whom were male and 35% female. In addition, 60% of these children were 11 and 12 years old, while 22% reported playing more than once a day (Brazilian Network Information Center [NIC.br], 2023).

This article focuses on identifying the opportunities, risks, and harms that digital games can generate for children, according to the 4 Cs classification, developed in the context of the Children Online: Research and Evidence Knowledge Base (CO:RE) project by Livingstone and Stoilova (2021). The 4 Cs classification is a widely recognized international tool for analyzing the online risks and opportunities faced by children, consolidated as a reference model in this field. This structure was chosen for the analysis due to its ability to synthesize the complexities of the digital environment. In addition to organizing digital phenomena in a clear and didactic way, the classification is fundamental for supporting public policies, educational practices, and online safety strategies, ensuring a balanced approach that promotes not only the protection but also the empowerment of children to enjoy the positive potential of the Internet. The classification made in this article is based on a review of the literature on the subject.

In this classification, opportunities are defined as activities that can generate socialization, entertainment, learning, health, civic participation, and digital citizenship. In relation to risks, these are specific activities or experiences that have the potential for harm, which are unclear in terms of their severity and the results obtained in research. Harm can be considered when there are negative consequences of these activities, whether emotional, physical, or mental (Stoilova et al., 2021). It is known that greater exposure to Internet use and game use can increase the chance of risks, but encountering these situations does not necessarily mean that these risks will produce harm directly (Nejm et al., 2023), as it is necessary to understand the ways in which children can develop resilience online (Vissenberg et al., 2022).

According to the classification (Livingstone & Stoilova, 2021), the risks for children can be divided into the following categories: content, contact, conduct, and contract. However, there are also cross-cutting risks. Content risks refer to engagement with or exposure to potentially harmful content; contact risks are related to experiencing or being the target of harmful contact with adults; conduct risks refer to witnessing, participating in, or being the victim of harmful contact between peers; contract risks are related to exploitation by potentially harmful contracts; and cross-cutting risks are related to one or more of the categories presented. Risks can be related to issues such as aggression, sexuality, or values.

Faraz et al. (2022) brought up some risks of digital games related to content, contact, and conduct. However, the article focuses mainly on Artificial Intelligence (AI) applications for detecting child predators in game chat programs, and on mechanisms that can be developed to contain sexual predators. In addition, they did not list any contract risks arising from games.

Benefits and challenges in the use of digital games

Opportunities, risks, and harms in digital games can be impacted by a series of variables that refer to children's contexts, their access to devices, the types of games they interact with, and their engagement on adjacent platforms. The variables related to the context of children and young people refer to the diversity of children's experiences, which are permeated by gender, age group, social class, race/ethnicity, digital skills, sexuality, regional issues, parental mediation (carried out by parental controls on devices, respect for age rating, active mediation, and monitoring), level of engagement with games (low, moderate, high), in-game behavior, player typology (main interests and goals when playing), and interests, among other factors.

Unequal access to digital games in childhood and youth directly impacts the way children and young people interact with these media. While some young people have extensive access to state-of-the-art consoles, powerful computers, and a variety of gaming devices, others face restrictions in terms of devices due to financial limitations. In general, children in social classes AB own computers (10%) and tablets (12%) in a higher proportion in relation to children in classes C (4% e 6%) and DE (2% e 4%). Exclusive access to the Internet via mobile phone is higher for classes DE (82%) and C (58%), compared

to classes AB (29%) (NIC.br, 2023). Inequalities in terms of Internet access also have an impact on the use of games, given that certain types of games require high bandwidth and low latency to work properly.

Games, their platforms, and devices are other important variables in determining risk and harm. With regard to games, this will depend on factors such as: a) the genre of the game (action, adventure, role-playing, music, dance, open world, etc.); b) whether children play alone or with other players (people on site or with other players online); c) devices used to play (mobile phones, consoles, computers, or portable consoles); d) type of monetization (how real money is used); e) game mechanics (whether players can pause, types of rankings, etc.); f) the purpose of the game (whether for entertainment, education, or both); g) game system and/or platform (console platforms, mobile device platforms, game distribution stores, etc.); h) cooperative versus competitive mode; and i) access to written or voice chat.

Regarding adjacent platforms, these are used or not depending on the type of game chosen. Some types of games and players are more participative in gaming communities on Discord, and participation in these groups partly determines the experience; other players are interested in the professional competitive scene; there are also those who prefer to watch other people play (streamers), either with the aim of improving their performance in the game, or by following influencers just as part of the entertainment.

Opportunities in games

In this brief overview, we can mention some of the opportunities provided by games. These include fun and entertainment, which can be correlated with well-being (Bourgonjon et al., 2016; Hartanto et al., 2021; Johannes et al., 2021), although this well-being is associated with different variables that impact the gaming experience, such as time used, type of game, and interaction with other players (Franceschini et al., 2022; Halbrook et al., 2019).

Educational games offer interactive learning experiences, making the educational process more attractive to children and young people (Martinez et al., 2022; Zeng et al., 2020). Many games stimulate cognitive skills such as logical reasoning, problem-solving, and strategic thinking, contributing to cognitive development (Dale et al., 2020). Strategy games often require time and resource management skills, helping players to develop organizational skills useful in everyday life (Choi et al., 2020; Reynaldo et al., 2021).

Open-world games encourage exploration and autonomous learning, allowing players to discover environments, stories, and mechanics. Games that involve building, designing, or customizing offer players the opportunity to express their creativity and develop artistic and design skills (Blanco-Herrera et al., 2019; Kim & Shute, 2015; Rahimi & Shute, 2021).

Multi-user games provide the opportunity for global social interaction with other players, encouraging virtual friendships and team collaboration. In addition, these games foster the development of authentic friendships (Arbeau et al., 2020). Multi-user games

also encourage cooperation and teamwork, enabling players to learn to collaborate, communicate, and achieve collective goals, as well as to develop empathy and build virtual relationships (Sauter et al., 2020; Tong et al., 2021; Wiederhold, 2021). These relationships are initiated in the game and then maintained in adjacent communities.

The growing popularity of video games has also generated a booming industry, opening doors to employment opportunities in sectors such as game development, streaming, and eSports (Bányai et al., 2020; Newman et al., 2022).

Risks and harms

Based on the literature survey, the following table was created, showing the main risks and harms that can be found in digital games. The list is not intended to be comprehensive but to show the most common risks and harms faced by children.

TABLE 1
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Risks and harms in digital games

	Content	Contact	Conduct	Contract
Online risks	Engaging with or being exposed to potentially harmful content	Experiencing or being the target of harmful contact with an adult	Witnessing, participating in, or being a victim of harmful contact between peers	Being exploited by potentially damaging contracts
Aggressiveness	Toxic behavior (verbal aggression), violent content, bloody images, extremist content	Toxic behavior (verbal harassment), doxxing	Bullying, hostile communication or hate speech (racism, homophobia, xenophobia, misogyny), hacking	Identity theft, fraud, phishing, scams, hacking, blackmail, security risks, malware, spyware, data breaches, pirated games, patches
Sexuality	Access to pornographic advertisements on gaming websites games with sexual content (harmful or illegal)	Sexual harassment, sexual grooming	Toxic behavior (verbal aggression against women and the LGBTQIA+ population), sexual harassment, sexual threats	

CONTINUES ▶

▶ CONCLUSION

	Content	Contact	Conduct	Contract
Values	Access to the ecosystem of influencers and streamers, access to communication platforms for gaming, access to community platforms and forums with inappropriate content	Ideological manipulation, radicalization, and extremist recruitment, recruitment for attacks (digital and face-to-face)	Linking dangerous challenges to game results, virtual or face-to-face attacks, participation in harmful communities	Gambling and sports betting disguised as games, dark patterns, in-game advertising, financial scams, loot boxes, inappropriate purchases, microtransactions, play to earn (cryptocurrencies), *gacha* games, access to external marketplaces
Cross-cutting	Violation of privacy: interpersonal, institutional, or commercial			
	Health: physical and mental health risks, sedentary lifestyle, excessive screen use, isolation, decreased sleep			
	Mental health: Internet gaming disorder (video games), gambling disorder (pathological gambling, betting)			
	Discrimination and inequality: exclusion of women, xenophobia, LGBTQIA+			

Source: prepared by the author. Adapted from Livingstone & Stoilova (2021).

Regarding content risks, there is the issue of exposure to potentially harmful content, verbal violence between players, and extremist images (Robinson & Whittaker, 2021), which can include hate speech and incitement to aggression (Munn, 2023). Access to pornographic advertisements on gaming websites or games with explicit or illegal sexual content is also common (Condis & Morisette, 2023). In addition, the ecosystem of influencers and communication platforms can provide access to inappropriate content that negatively influences young people's values.

Some activities offer both opportunities and risks to children. Online communication between players, for example, while promoting positive contact, can also pose contact and conduct risks. Many online spaces present what is known as toxic and/or disruptive behavior, which refers to various negative actions during the game, including criticism, harassment, teasing, cheating against other players, etc. (Zsila et al., 2022). This behavior also includes hate speech, sexual harassment, misogyny, racism, and xenophobia, as well as hostile and uncivilized behavior on the part of players. Toxicity can lead to a number of negative outcomes, such as impairing players' performance in the game or leading to rumination and abandonment of online games (Liu & Agur, 2023). Certain vulnerable groups, such as women and LGBTQIA+ individuals, can suffer even more detrimental effects from toxic behavior in gaming environments (Kordyaka et al., 2023; Zsila et al., 2022).

Games with online communication also present contact risks, as children can come into contact with adults (or even other children). In addition to the aforementioned risks of hate speech, there may be sexual harassment (Tang et al., 2020), sexual grooming and extortion (O'Brien & Li, 2020), ideological manipulation, radicalization, and extremist recruitment (Deedman, 2023; Kowert et al., 2022; Wells et al., 2023).

Access to platforms of the digital gaming ecosystem must also be considered. Although some digital gaming forums ban words of hate speech or sexual content and incorporate discussions about Internet regulation, it is necessary to verify that some actions relating to games are different from those of social media, such as the use of voice chats, which often may not record the offenses suffered by the players at the time they occur (Heslep & Berge, 2024). In addition, gamer culture should also be considered; this refers to the set of practices, values, behaviors, and forms of expression shared by people involved in the world of electronic games. This culture goes beyond the simple practice of playing games; it includes participating in communities, creating game-related content (such as videos, streams, memes, and mods), consuming derivative products (such as merchandise and events), and experiencing a set of references and narratives that shape gamers' identities (Han et al., 2023).

Regarding conduct risks, behavior in digital games can lead children to witnessing, participating in, or being a victim of harmful contact between peers. Toxic behavior and bullying, as well as the production of hate speech (racism, homophobia, xenophobia, and misogyny) are behaviors exhibited by children (Yang et al., 2024). In general, toxic behavior has well-defined targets, such as that directed at women and the LGBTQIA+ population. This verbal violence is not just about insults, but also includes threats and sexual harassment (Gillin & Signorella, 2023).

Contract risks are also present. There are concerns about player privacy (Keser & Atabey, 2020), equipment security (Adonis & Vadlamudi, 2022), the use of data (Kröger et al., 2023), predatory monetization patterns (Petrovskaya & Zendle, 2022), and monetization that resembles gambling (Uddin, 2021). In terms of cross-cutting risks, there may be physical and mental health risks, such as a sedentary lifestyle (Marker et al., 2022), reduced sleep (Kristensen et al., 2021), and Internet gaming disorder (Gupta et al., 2024; Stevens et al., 2021).

Final considerations

To take advantage of the opportunities, digital games must be a safe place for children. However, the multiplicity of risks present in digital games requires a multisectoral approach to ensuring the safety and well-being of this audience, especially those who are most vulnerable. Raising awareness of the opportunities, risks, and harms associated with digital games is key to building a safer digital environment for them.

It is essential that those involved in the safety of children (families, regulators, educators, and the third sector) are aware of the risks and harms that can exist in these environments. It is also necessary to promote digital education to enable children to use games more effectively. In addition, the gaming industry must take responsibility for its own platforms, which must adopt proactive measures to monitor and remove harmful content, protect players, and prevent abusive behavior. Promoting an inclusive environment, where diversity is respected and valued, is essential to combat the discrimination and inequality that still permeate the digital world.

Finally, a joint effort by society as a whole is needed to create an ecosystem of digital games that favors the healthy and safe development of individuals, allowing them to enjoy the benefits of games without being exposed to the risks.

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List of Abbreviations

AAP — American Academy of Pediatrics

Abep — Brazilian Association of Research Companies

AI — Artificial Intelligence

ANPD — National Data Protection Authority

CAFE — Comprehensive Assessment of Family Media Exposure

CAPI — computer-assisted personal interviewing

CASI —computer-assisted self-interviewing

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

Ciae — Centro de Investigación Avanzada en Educación

CGI.br — Brazilian Internet Steering Committee

CO:RE — Children Online: Research and Evidence

CPS — Canadian Paediatric Society

CRC — Committee on the Rights of the Child

ECA — Statute of the Child and Adolescent

IAT — Internet Addiction Test

IBGE — Brazilian Institute of Geography and Statistics

ICC — intraclass correlation coefficients

ICT — information and communication technologies

InFANT — Australian Infant Feeding Activity and Nutrition Trial

ITU — International Telecommunication Union

LGPD — Brazilian General Data Protection Law

MAQ — Media Assessment Questionnaire

MJSP — Ministry of Justice and Public Security

MPSP — São Paulo State Public Prosecutor's Office

NIC.br — Brazilian Network Information Center

PMU — Problematic Media Use

PSU — primary sampling units

SBP — Brazilian Society of Pediatrics

TDIS — Technology Device Interference Scale

TUD — Time-Use Diary

UN — United Nations

UNESCO — United Nations Educational, Scientific and Cultural Organization

WHO — World Health Organization

unesco
Centre
under the auspices
of UNESCO

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