ACCESS TO AND USE OF DEVICES M, O VILES E INTERNET IN CHILDREN, **GIRLS** AND YOUTH 2018-2019

micitt

Access and Use of mobile devices and the Internet in children and youth 2018-2019.

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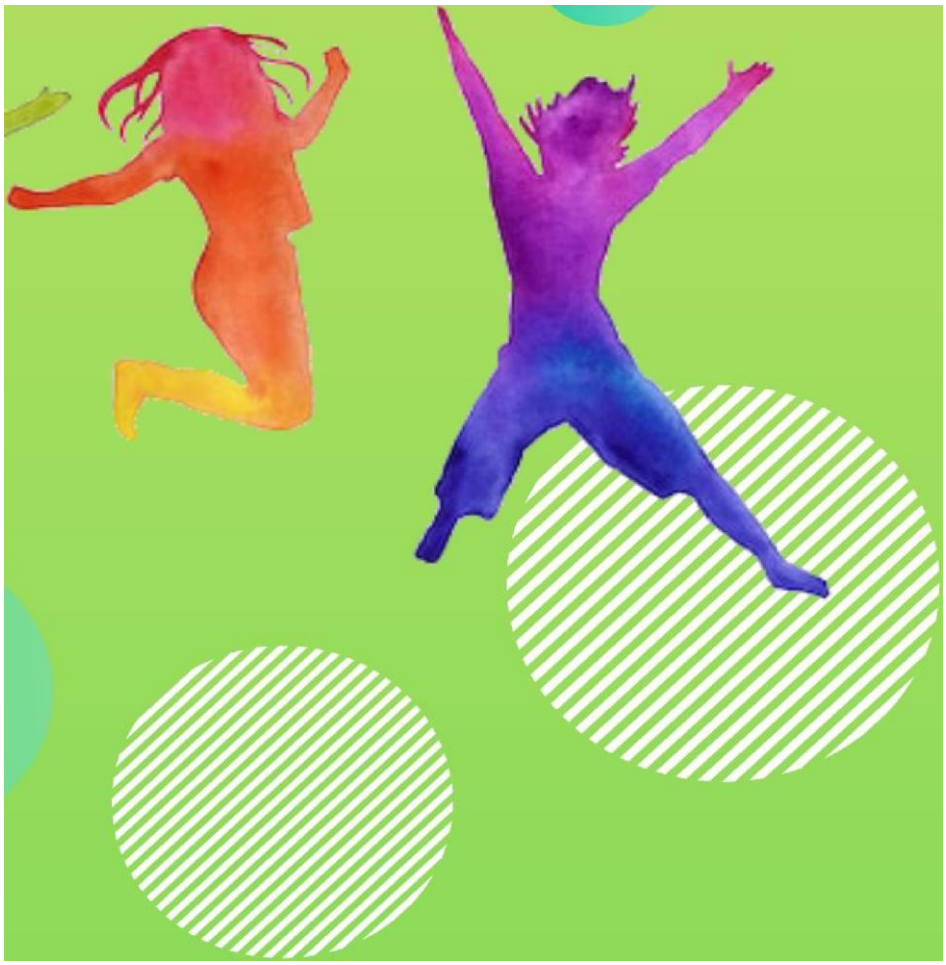
INTRODUCTION”



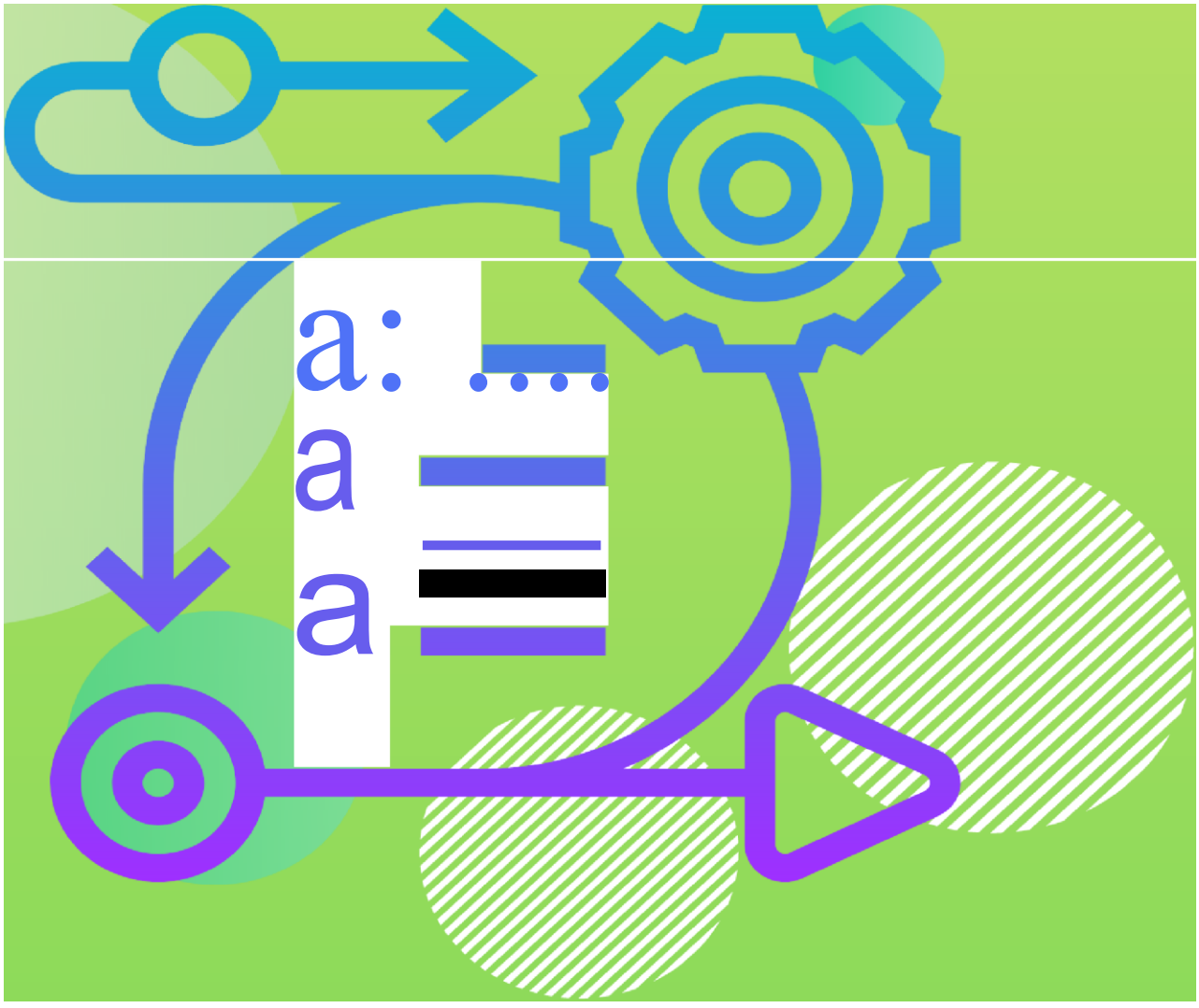
The Ministry of Science, Technology and Telecommunications (MICITT) presents the main results of the Survey Access and Use of Mobile Devices and Internet in Children and Adolescents 2018-2019.

This survey provides information on the access and use that children and adolescents in Costa Rica make of the technological tool of the Internet and mobile devices such as cell phones and tablets. Additionally, it inquires about the computer skills of minors, as well as the risks to which they are exposed in the use of the Internet and access to mobile telephony.

The MICITT, in coordination with the authorities of the Ministry of Public Education of Costa Rica, conducted the interviews in a nationally distributed sample of schools and colleges. The interviews were conducted by consultant Dunia Villalobos, who provided each student interviewed with a tablet containing the questionnaire in digital format. In some of the sessions for the application of the interviews, officials from the Department of Economic Analysis and Telecommunications Markets participated and provided support in relation to certain technical concepts of the questionnaire.

This report is made up of five chapters. The first chapter contains this introduction, followed by the methodological chapter. The third chapter details the results of this study, divided into six sections. The first corresponds to Internet access by students and the reasons why some of them do not have access to this tool. The second section deals with the availability of cell phones among minors. The third section describes the social networks in which the interviewees have an account or profile. The fourth section contains a battery of items on Internet use and includes a scale of use. The list of computer skills and knowledge, which attempts to approximate the level of appropriation of information and communication technologies in this population, and an index of skills and knowledge, are found in the fifth section. The sixth section addresses some of the risks to which children and adolescents are exposed when using the Internet. All the statements or items analyzed were cross-referenced with the domains of the study, namely: dependence of the educational center (public and private), area (urban and rural), type of institution (school and college) and gender (female and male). Finally, the fourth and fifth chapters contain the conclusions and bibliography, respectively.

METHODOLOGY



The main aspects of the methodological design used for data collection are presented below.

Study population

All Costa Rican children and youths or residents of Costa Rica who are enrolled in the national daytime education system of the Ministry of Public Education.

Reporting unit

Costa Rican boy, girl or adolescent or resident between the ages of 8 and 18 who is enrolled in the daytime hours of the National Education System of the Ministry of Public Education.

Sampling frame

The sampling frame was obtained from the Ministry of Public Education for the year 2018. This frame corresponds to the list of schools and colleges containing data on: name of the institution, regional address, circuit, province, canton, district, town, telephone, fax, email, physical address, dependency, zone, total initial enrollment, total students per grade and number of sections per grade.

Sample design

The sample design is stratified by zone, dependency and grade or level. A multistage design is applied, selecting in the first stage the school or college, in the second stage the grade and in the third stage the group or section. This selection follows the PPS (probability proportional to size) methodology, using as a measure of size the total number of students according to the distribution by strata.

Sample size

The final sample size is 1962 effective interviews with students distributed in such a way as to proportionally represent all levels of II cycle, III cycle and diversified education in urban and rural areas.

Recruitment and selection of interviewers and supervisors

The consultant Dunia Villalobos carried out the selection of the personnel based on the experience of the individuals in field work in complex surveys and personal interviews.

Training of interviewers and supervisors

The training of interviewers and supervisors consisted of a working session with field personnel and officials of the Department of Economic Analysis and Telecommunications Markets of the Ministry of Science, Technology and Telecommunications. During the activity, the objective of the study and its scope were explained. An exhaustive review of the questionnaire was carried out and concepts present in the interview were clarified. In addition, a practical exercise on the application of the questionnaire was carried out.

Field work

Four groups were formed for the fieldwork, each composed of two people. The questionnaire was self-administered and tablets were used in which the questionnaire was in digital and automated format. Each student was given a device to complete the survey.

The supervision of the field work was carried out by officials of the Department of Economic Analysis and Telecommunications Markets of the MICITT.

RESULTS

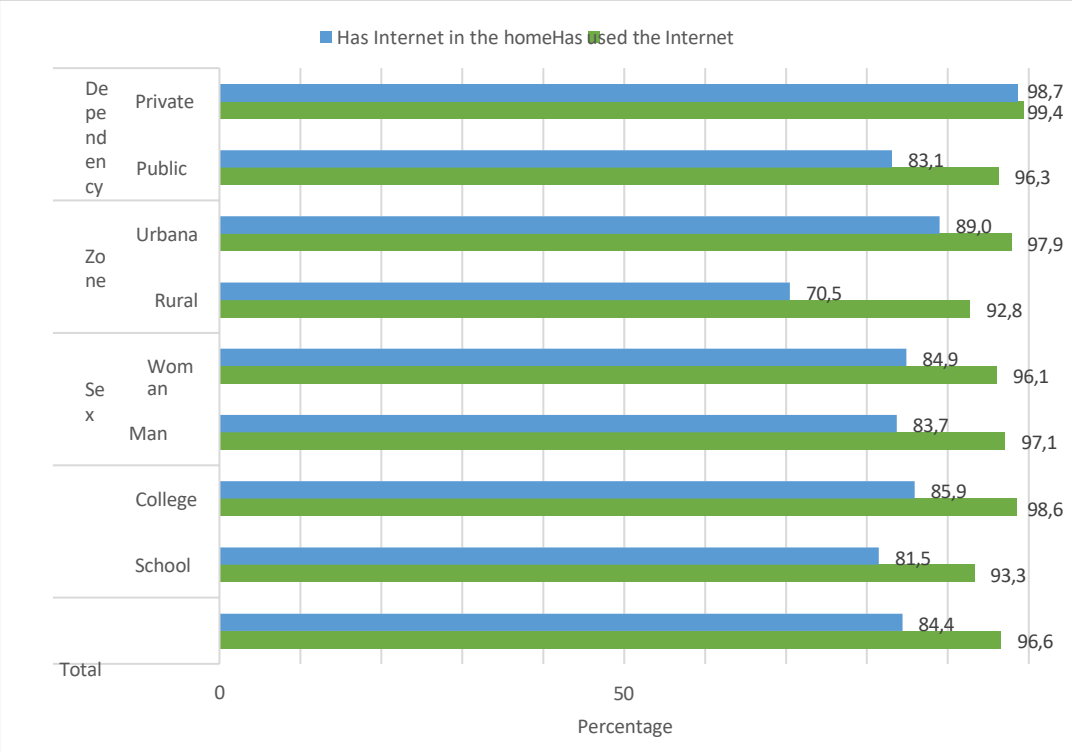
INTERNET ACCESS

A. Students who have used the Internet

Figure 1 shows the data on Internet access and use by students according to study domains. It shows that 96.6% of the students interviewed have used the Internet, with no significant differences between the categories of the study variables.

Regarding Internet access from the student's home, 84.4% have this service; however, there are differences between study domains, with the most notable differences depending on the area of residence and the educational center. Specifically, nearly seven out of ten students residing in rural areas (70.5%) have this technology at home, while among urban students the proportion rises to nine out of ten (89.0%). In addition, according to the type of educational center, there is a 16 percentage point (p.p.) gap in favor of those attending private institutions (98.7%) compared to those students attending public institutions (83.1%) in terms of having Internet at home.

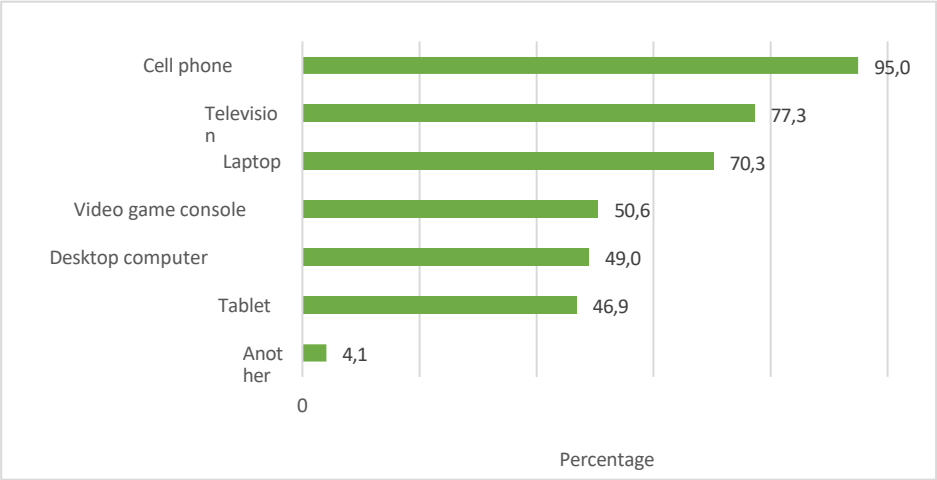
Figure 1: Percentage distribution of students interviewed according to whether they have used the Internet and whether they own the Internet at home. 2018-2019.



Source: MICITT. Survey on Access and Use of Mobile Devices and the Internet in Children and Youth 2018-2019.

Of the students interviewed, 95.0% use the cell phone to access the Internet, 77.3% use the television, and the *laptop* is used by 70.3%. Other devices used are the video game console (50.6%), desktop computer (49.0%) and tablet (46.9%), as shown in Figure 2.

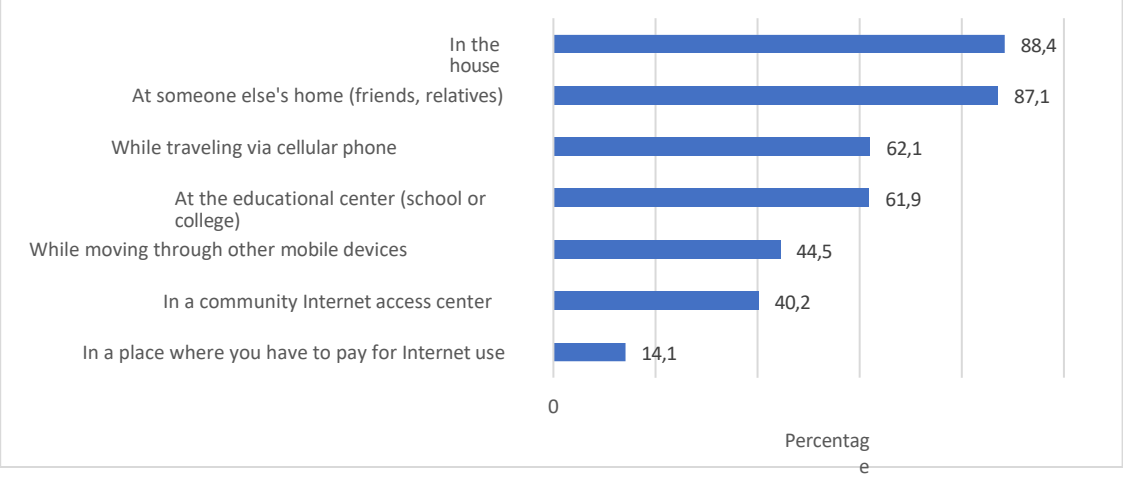
Figure 2: Percentage distribution of interviewed students who have used the Internet according to device used to access the Internet. 2018-2019



Source: MICITT. Survey on Access and Use of Mobile Devices and the Internet in Children and Youth 2018-2019.

Of the places mentioned by the students interviewed for Internet use, the home stands out as the most frequent (88.4%), followed by the home of friends or relatives (87.1%). In addition, six out of ten students use the Internet at school or while traveling by cell phone. Four out of ten do so while traveling, but using mobile devices other than cell phones or in a community center with Internet access.

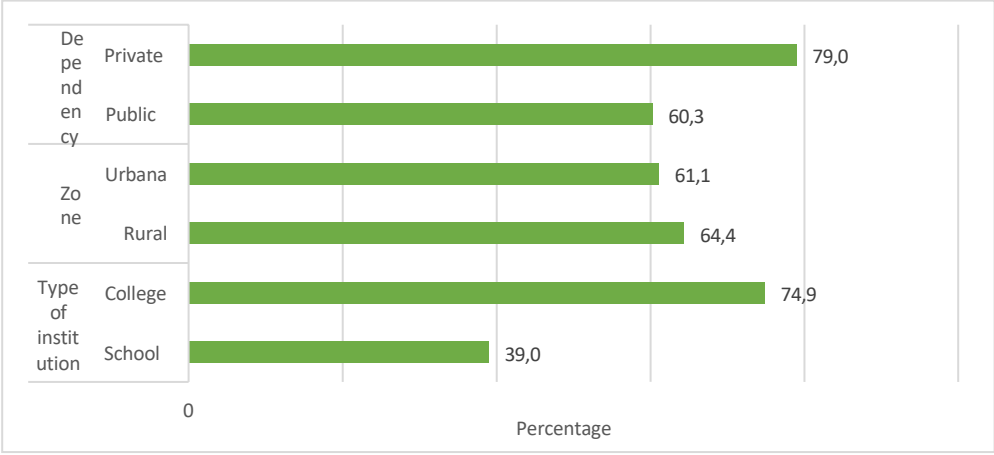
Figure 3: Percentage distribution of interviewed students who have used the Internet according to places where they access the Internet. 2018-2019



Source: MICITT. Survey on Access and Use of Mobile Devices and the Internet in Children and Youth 2018- 2019.

Due to the methodology used for data collection, whose surveys were conducted in educational centers, it is of interest to investigate the availability of the Internet for students in their respective educational centers. Figure 4 shows that the availability of Internet use in the educational center is higher in private institutions (79.0%) and in schools (74.9%). In the case of area, there is a slight difference in favor of educational centers located in rural areas; however, this difference is not significant.

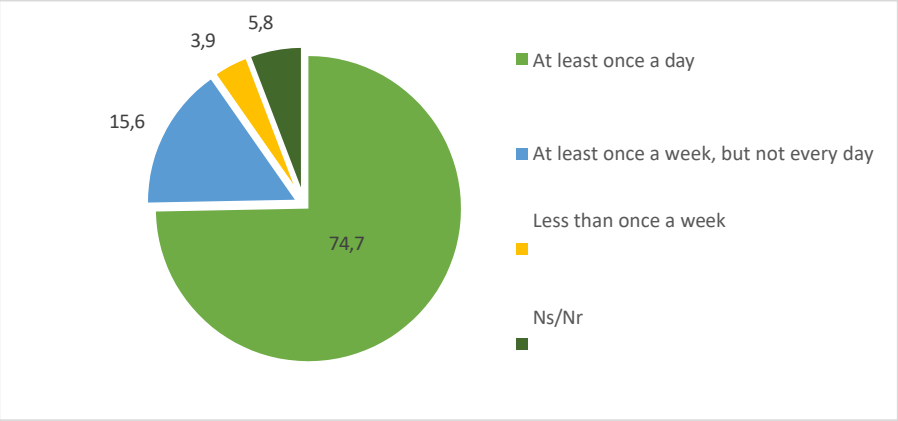
Figure 4: Percentage distribution of interviewed students who have used the Internet and access in the educational center according to dependency, area and type of institution. 2018-2019



Source: MICITT. Survey on Access and Use of Mobile Devices and the Internet in Children and Youth 2018-2019.

74.7% of students who have used the Internet use this tool at least once a day, while 15.6% use it at least once a week, but not every day (Figure 5).

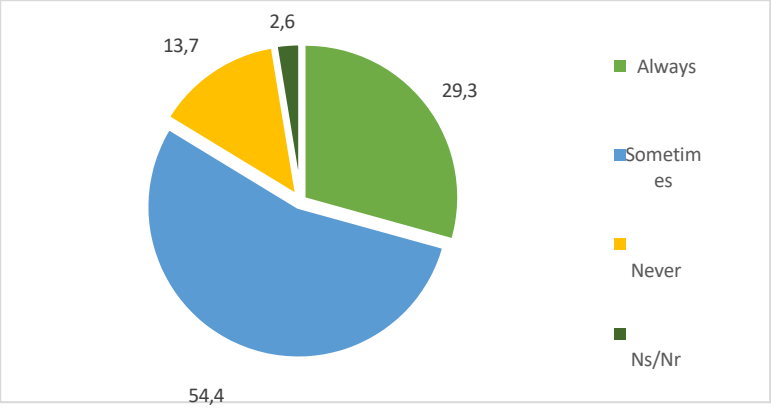
Figure 5: Percentage distribution of students with Internet access according to frequency of use in the last three months. 2018-2019



Source: MICITT. Survey on Access and Use of Mobile Devices and the Internet in Children and Youth 2018-2019.

Several studies have concluded on the importance of the supervision that those responsible for minors should apply regarding the access that minors have to Information and Communication Technologies (Fernández et al., 2015 and Martínez et al., 2015). Among the suggestions put forward, it is mentioned that those responsible should accompany or supervise minors in the use of these tools, and especially when they surf the Internet. For this study, students were asked if when they use the Internet, they do so in a place where an adult can observe what they are doing; the results are shown in Figure 6. 29.3% of the students indicate that they always use the Internet in places where an adult can observe them, 54.4% mention that they are sometimes accompanied, and 13.7% indicate that they never use the Internet in places where adults can see them. This last figure is of special interest, since it could be considered that this is a segment that is more susceptible to possible risks associated with Internet use.

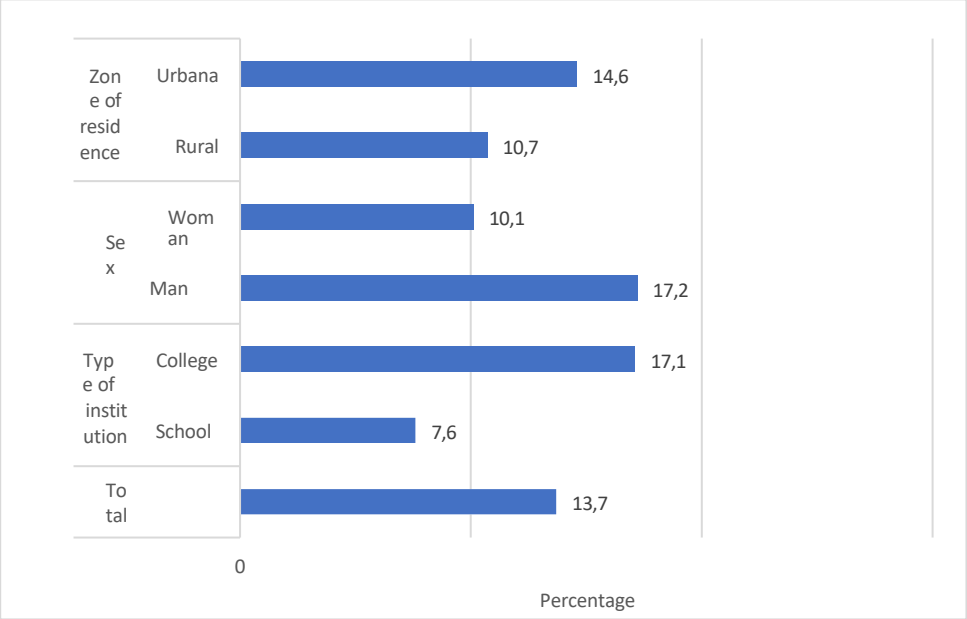
Figure 6: Percentage distribution of students using the Internet by whether they receive supervision when using the Internet. 2018-2019



Source: MICITT. Survey on Access and Use of Mobile Devices and the Internet in Children and Youth 2018-2019.

In line with the above, it is observed that the percentage of students who use the Internet without the supervision of an adult increases for those who attend private educational centers (17.6%) and for male students (17.2%), as detailed in Figure 7.

Figure 7: Percentage distribution of students who always use the Internet without adult supervision. 2018-2019

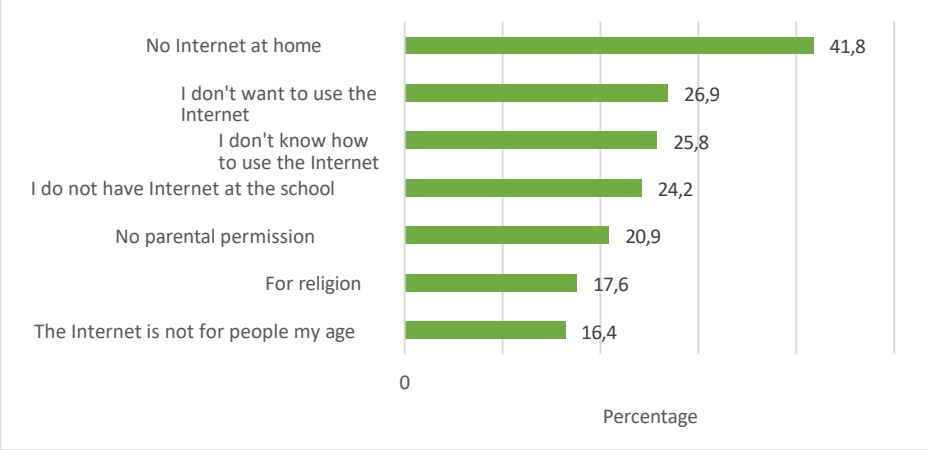


Source: MICITT. Survey on Access and Use of Mobile Devices and the Internet in Children and Youth 2018-2019.

B. Students who have not used the Internet

According to the results shown in Figure 1, approximately 3.4% of the students interviewed have not used the Internet. Although it could be considered that the proportion is small, it is interesting to investigate the reasons why they do not use this tool, and thus be an input for the formulation of public policies that encourage digital literacy. Figure 8 shows that the main reason why these students do not use the Internet is the lack of access to this tool at home (41.8%), followed by the fact that they do not want to use the Internet (26.9%), do not know how to use it (25.8%), do not have Internet at school (24.2%) and lack of permission from their parents (20.9%). These reasons highlight two major obstacles that some students have to using the Internet; the first is access to the Internet both at home and at school, and the second is related to literacy for both students and their parents or guardians.

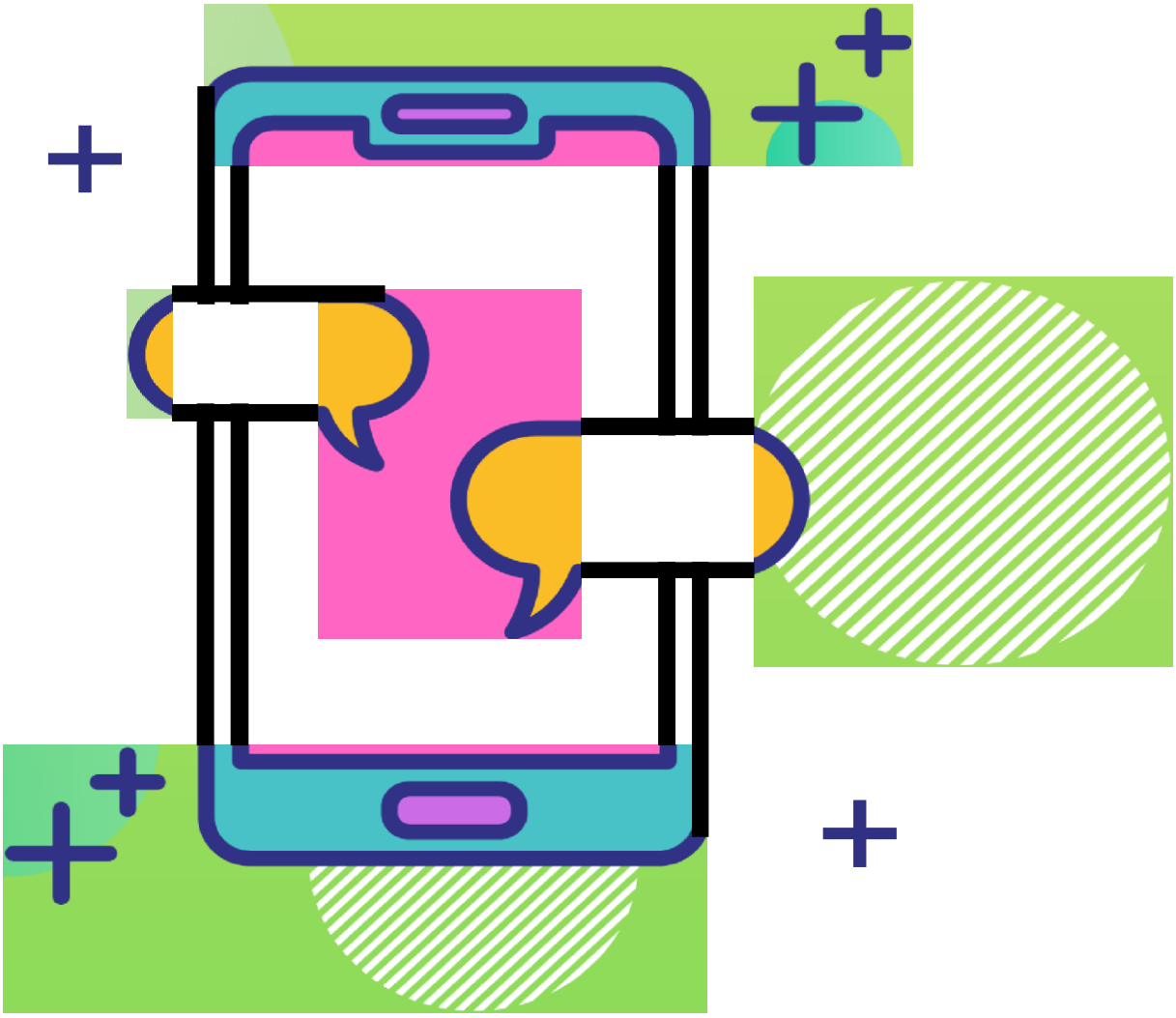
Figure 8: Percentage distribution of interviewed students who do not use the Internet according to reasons for not using it. 2018-2019



Source: MICITT. Survey on Access and Use of Mobile Devices and the Internet in Children and Youth 2018-2019.

II.

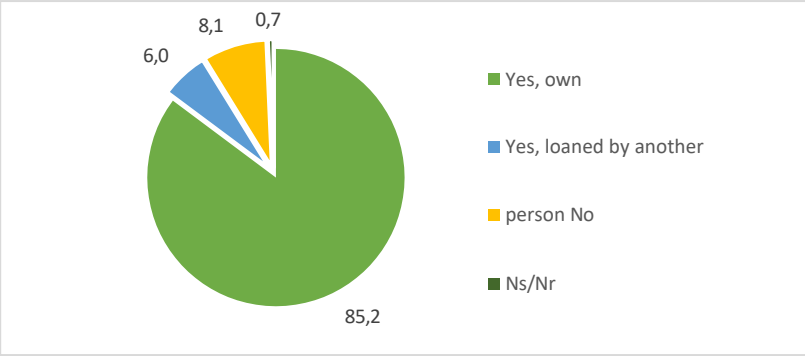
CELLULAR TELEPHONY



Cellular telephony is a technology that is widely used nationally and globally, and several authors have concluded that this device, due to its versatility, is no longer a simple communication instrument, becoming a tool of high use.[1]

In the case of the population under study, 91.2% of the students have a cell phone, either their own (85.2%) or lent by another person (6.0%), as detailed in Figure 9.

Figure 9: Percentage distribution of students interviewed according to cell phone ownership. 2018 - 2019

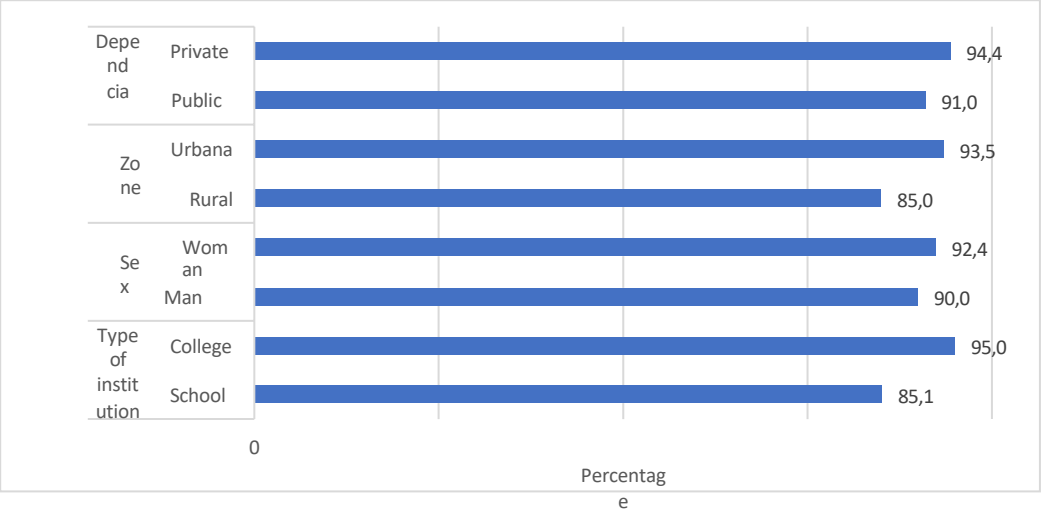


Source: MICITT. Survey on Access and Use of Mobile Devices and the Internet in Children and Youth 2018-2019.

With respect to cell phone ownership by domain of study, a gap of about 10 p.p. is observed between the types of institution, specifically 85.1% of the students who attend school have this device, while 95.0% of those who attend college have it. Another gap observed in Figure 10, is presented according to the area, 93.5% of students in urban areas have a cell phone and in rural areas 85.0% of students have one.

[1] Cellular penetration in Costa Rica in 2018 was 170% (Sutel: 2019).

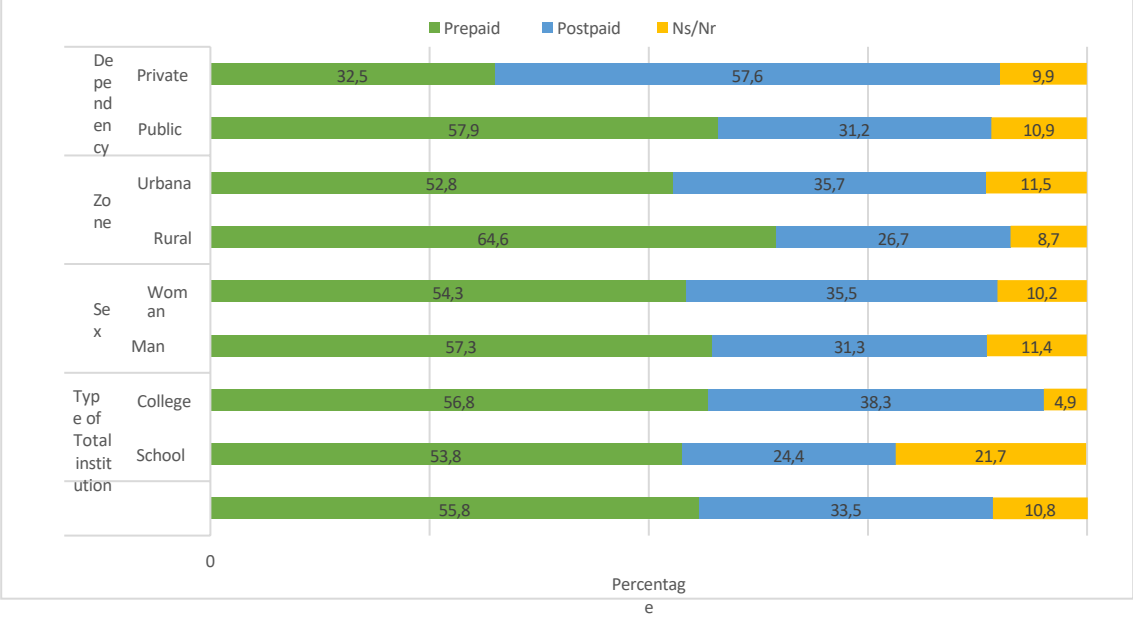
Figure 10: Percentage distribution of interviewed students who own a cell phone according to variables of interest. 2018 - 2019



Source: MICITT. Survey on Access and Use of Mobile Devices and the Internet in Children and Youth 2018-2019.

A total of 55.8% of the students interviewed have a prepaid line on their cell phone, 33.5% have a postpaid line and 10.8% do not know the type of line they have (Figure 11). A particular behavior is observed among students attending private educational centers, since most of them have a postpaid line (57.6%).

Figure 11: Percentage distribution of interviewed students who own a cell phone according to line type and variables of interest. 2018-2019



Source: MICITT. Survey on Access and Use of Mobile Devices and the Internet in Children and Youth 2018-2019.

Nine out of ten students interviewed who own a cell phone have Internet service on their cell phone, while the majority (83.7%) own a *smartphone* (Table 1).

Table 1: Percentage distribution of interviewed students who own a cell phone according to line type and variables of interest. 2018-2019

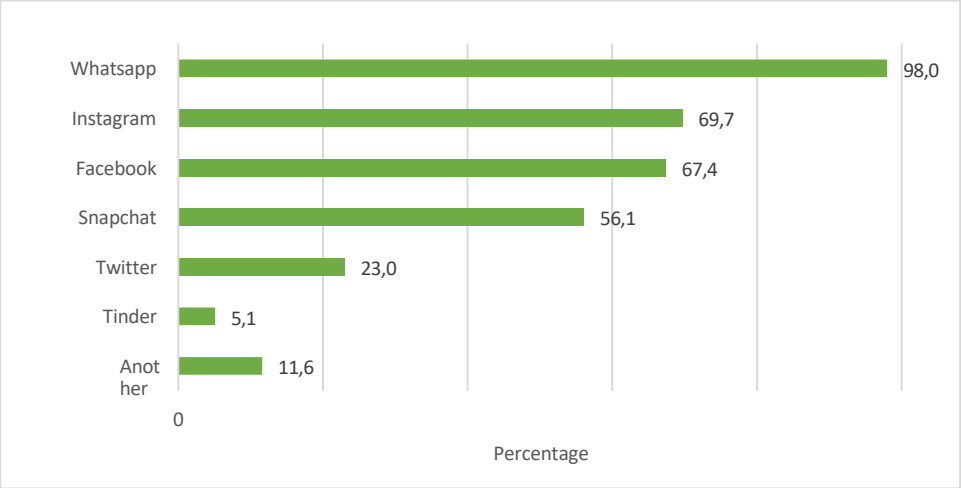
	Percentage
Has Internet on the cell phone	
Yes	90,8
No	8,5
Ns/Nr	0,7
Cell phone type	
Smartphone	83,7
Conventional	8,8
Ns/Nr	7,5

Source: MICITT. Survey on Access and Use of Mobile Devices and the Internet in Children and Youth 2018-2019.

SOCIAL **NETWORKS**

The expansion of social networks as a means of communication, interaction and entertainment is widely recognized (Yubero et al. 2018). Of the students interviewed, 86.2% have a profile in at least one social network, with *WhatsApp* being the most used (98.0%). In second place of use are *Instagram (*69.7%) and *Facebook* (67.4%), followed by *Snapchat* (56.1%), as shown in Figure 12. It is noteworthy that 5.1% claim to have an account on Tinder, despite the fact that the Terms of Use of the application restricts that only those over 18 years of age can have an account.[2]

Figure 12: Percentage distribution of interviewed students according to social networks in which they have a profile or account. 2018-2019

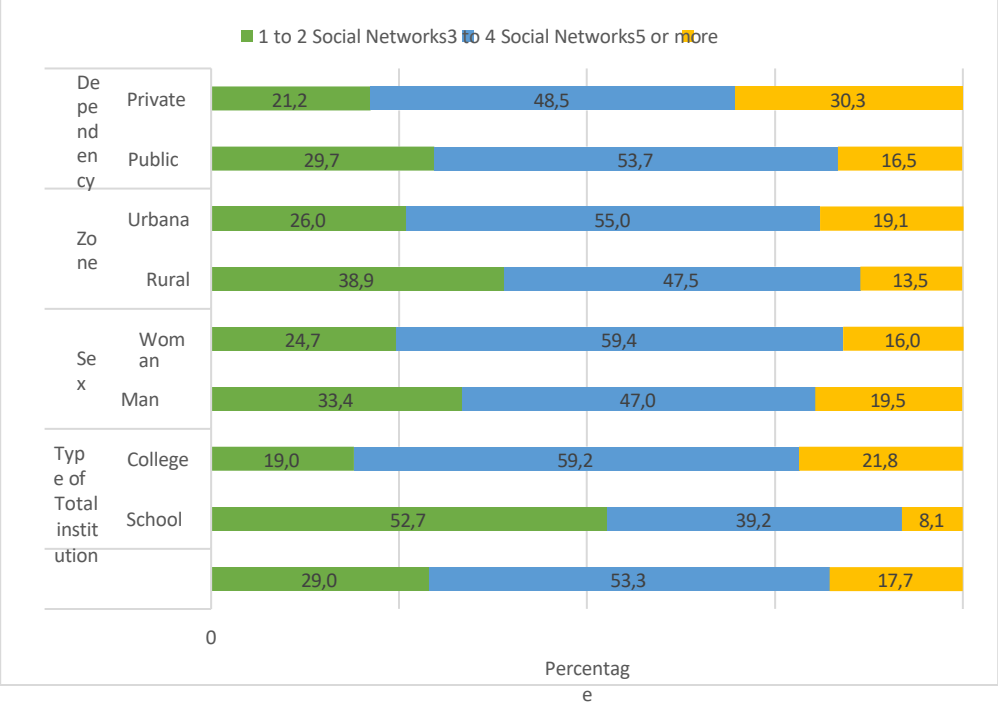


Source: MICITT. Survey on Access and Use of Mobile Devices and the Internet in Children and Youth 2018-2019.

Figure 13 summarizes the number of accounts or profiles that students have in social networks. 53.3% of the students interviewed have accounts or profiles in 3 or 4 social networks. Almost 6 out of 10 college students have 3 or 4 social network accounts or profiles, and a similar proportion is present in female students.

[2] Terms of Use https://policies.tinder.com/terms/intl/es

Figure 13: Percentage distribution of interviewed students according to number of accounts or profiles owned in social networks. 2018-2019



Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth 2018-2019.

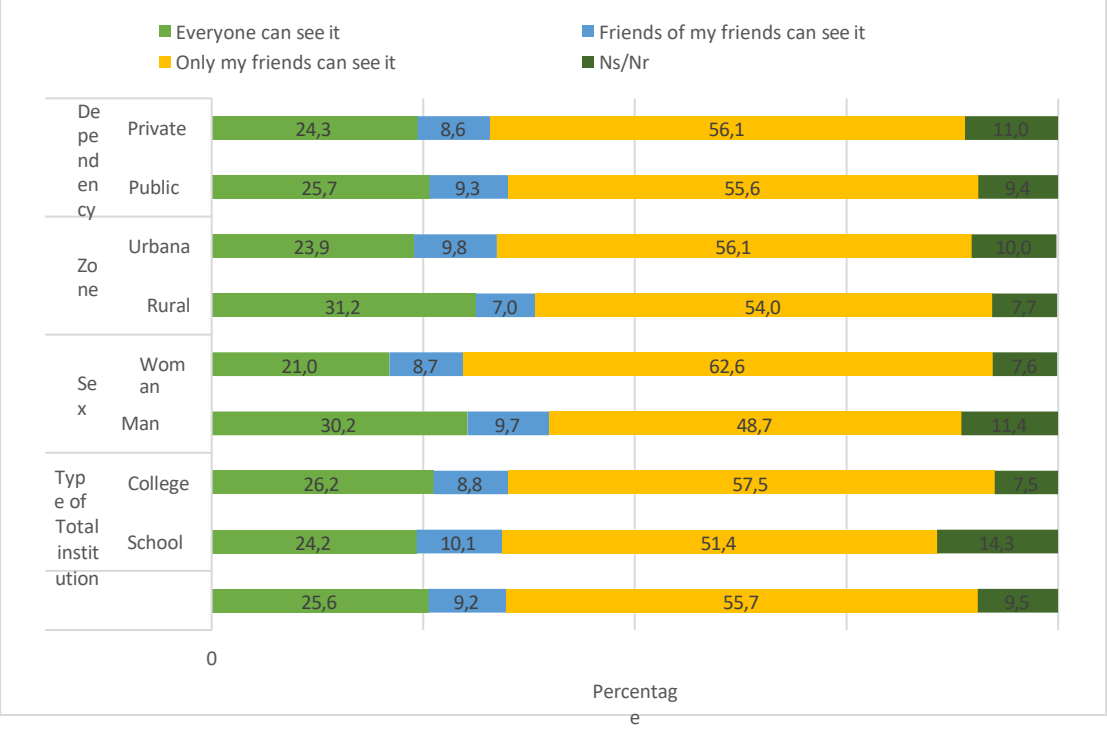
In addition to the social networks shown in Figure 12, the opportunity was taken to ask students about other social networks they use, in order to learn about the preferences of this population. The interviewees mentioned 34 different social networks, although some mentions do not correspond to a social network. In the following image, these other social networks, applications or websites used by students are presented. *Pinterest* and *TikTok* stand out, social networks of high use in the study population. One aspect to highlight is the case of *Brazzers* and *Chepos* which, despite having a very low percentage of mentions, are sites that are not suitable for minors, since the first is known for being a site with pornographic content and the second is a site to make dates with strangers.

Illustration 1: Other social networks, websites or applications used by the students interviewed. 2018-2019

Source: MICITT. Survey on Access and Use of Mobile Devices and the Internet in Children and Youth 2018-2019.

Regarding the type of configuration that students have in their profiles or accounts in social networks, it is observed in Figure 14 that 55.7% state that only friends can see it, this option being the one recommended by digital security experts (Rodriguez and Magdala, 2016). However, about 25% of the students interviewed mention that their accounts or profiles in social networks are unrestricted, i.e. anyone can see it, making them more vulnerable to possible risks of online sexual exploitation, cyberbullying, among other risks. There are differences in the privacy settings of profiles or accounts between men and women. Thus, there is a gap of 14 p.p. greater in female students for the setting "Only my friends can see it" compared to male students. On the other hand, the gap for the configuration "Everyone can see it" is 9 p.p. for male respondents compared to female respondents. This finding could indicate that female students have a more internalized knowledge about the importance of privacy in social networks.

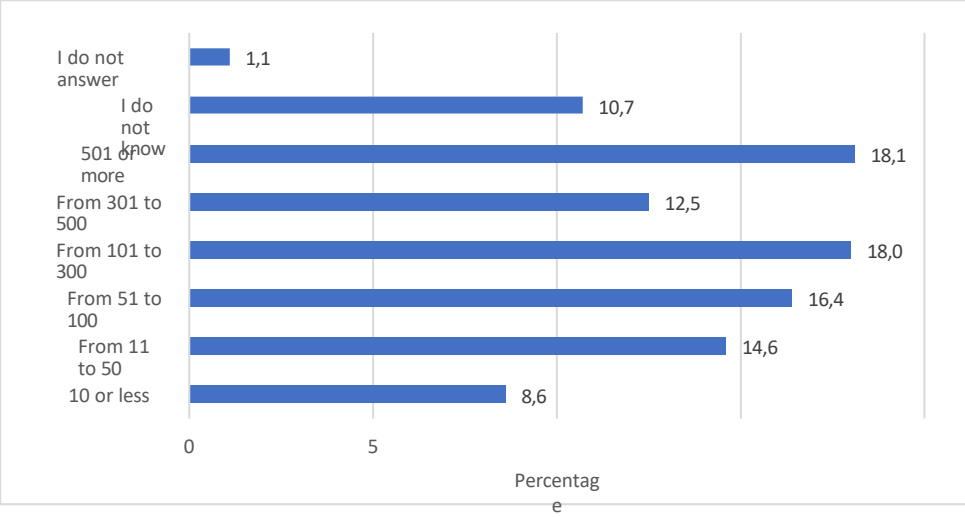
Figure 14: Percentage distribution of interviewed students according to type of profile owned in social networks. 2018-2019



Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth 2018- 2019.

The number of friends or contacts in the social networks of the students interviewed is presented in Figure 15. Two ranges with higher percentages are observed: 18.1% of the students interviewed mention having 500 or more contacts, friends or followers in their social networks and another 18.0% say they have from 101 to 300 contacts, friends or followers.

Figure 15: Percentage distribution of the interviewed students with profile or account in social networks according to ranges of number of friends or contacts in their social networks. 2018-2019



Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth 2018-2019.

USES OF THE INTERNET

This module studies a series of different activities that can be performed on the Internet. In a first analysis, a descriptive tabulation of each of the variables is made, taking into account the different study domains. These activities were elaborated after an exhaustive review of international standards that measure this topic and that use validated constructs. Part of this review is the *Global Kids OnLine* initiative, a research project that has tools for researchers and quantitative guidelines with proposed modules, which have been identified based on a combination of international literature reviews, the work of the *EU Kids Online* and *Global Kids Online* pilot research in Argentina, South Africa, Serbia and the Philippines.

The Internet usage module is also based on the *Kids Online* Costa Rica Survey conducted by the Institute of Psychological Research (IIP) of the University of Costa Rica (UCR) and the Paniamor Foundation.

Using this battery of questions, a scale of Internet uses was constructed, therefore, in a second part, the main results of this scale are described.

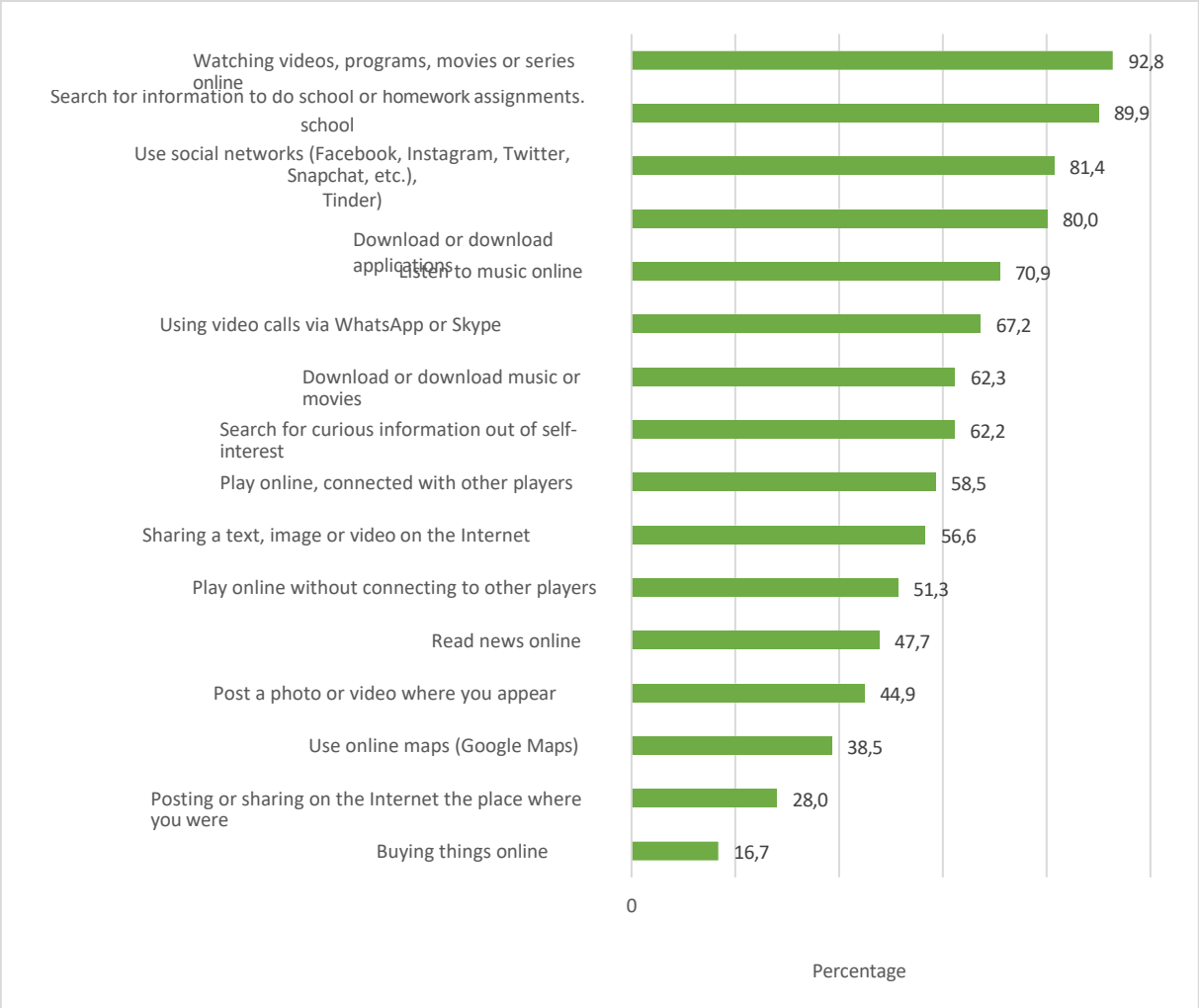
A. Activities using the Internet

According to the results, among the activities most frequently performed by students are: watching videos, programs, movies or series online (92.8%), searching for information to do work or homework (89.9%), using social networks (81.4%) and downloading or downloading applications (80.0%).

It is worth noting that in most of the activities consulted, more than 50% of the students claim to carry them out; these results show that children and adolescents are increasingly connected and the adoption of new information and communication technologies is becoming imminent.

As shown in Figure 16, the activities with the lowest incidence by students correspond to posting or sharing on the Internet the place where they were (28.0%) and buying things on the Internet (16.7%).

Figure 16: Percentage distribution of interviewed students according to activities performed on the Internet. 2018-2019



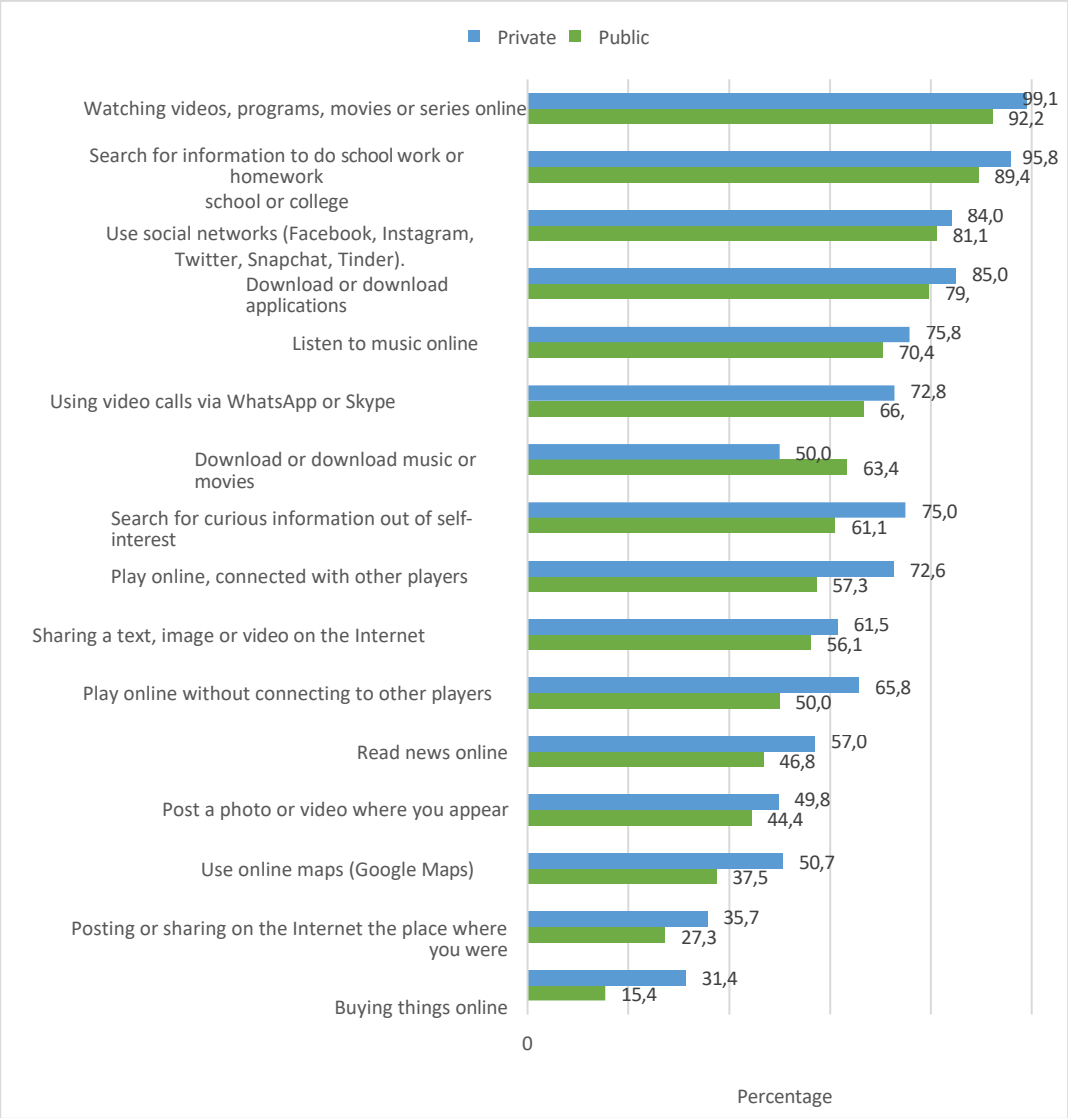
Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth, 2018- 2019.

When observing the behavior of the activities in which the Internet was used by type of institution, there are significant differences between students from public and private institutions. For almost all uses, the percentage is higher in students from private institutions; for example, the use of the Internet to buy things, play online games, search for information to do work or for personal interest, use online maps, among others. The only activity that shows significant differences in favor of students from public institutions corresponds to downloading music or movies.

It is worth noting that there are activities in which there are no significant differences between public and private institutions, such as posting a photo or video where it appears; sharing a text, image or video on the Internet; using video calls; listening to music online;

downloading or downloading applications and using social networks. This means that these activities related to social and entertainment uses are carried out equally among students from public and private institutions. The difference lies in activities related to information and learning, where students from private institutions are more active.

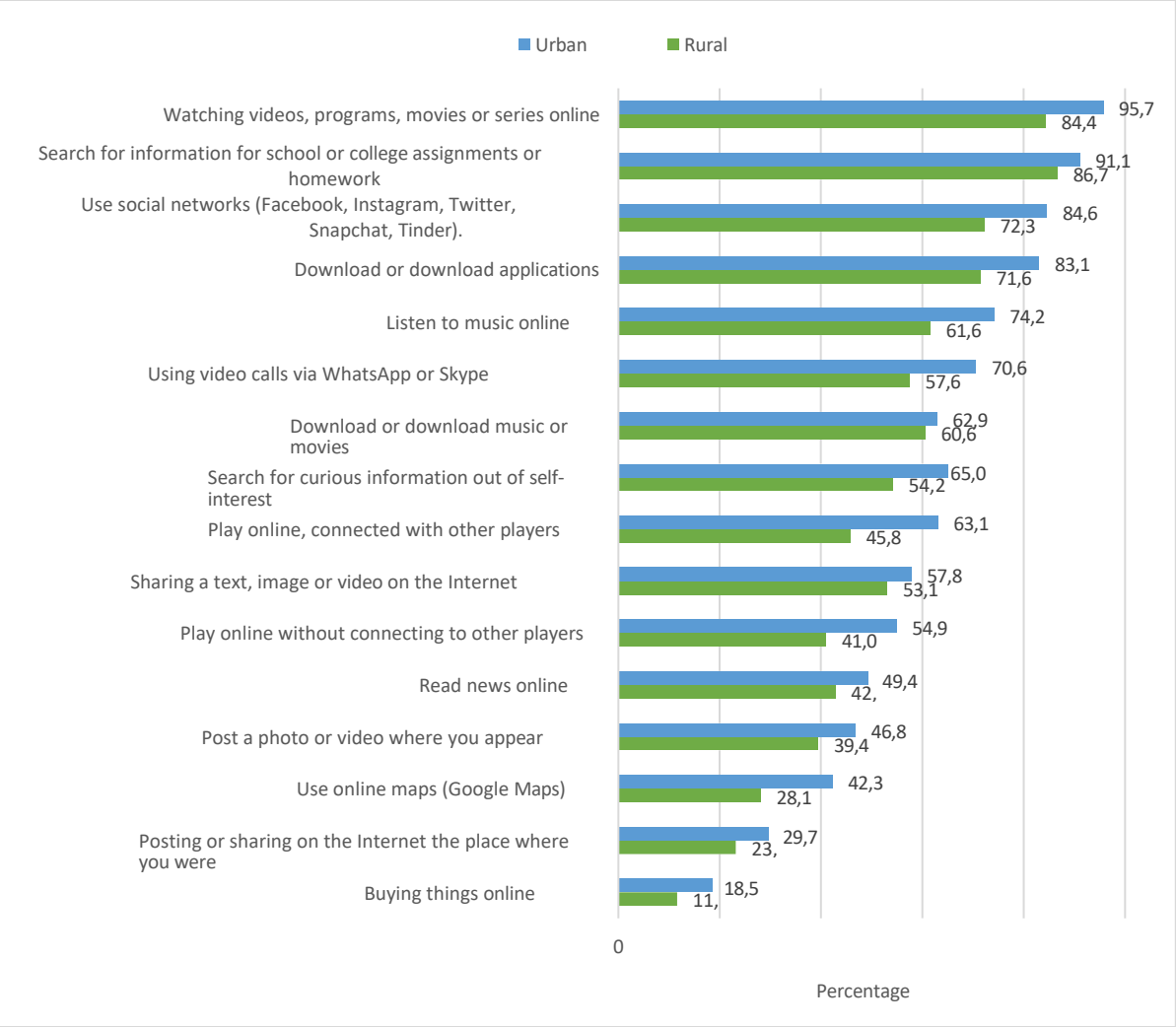
Figure 17: Percentage distribution of interviewed students according to activities performed on the Internet by type of dependency. 2018-2019



Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth, 2018-2019.

Figure 18 shows that students in urban areas have higher usage in all activities and this difference is statistically significant. The only activity that does not show significant differences is downloading music or movies; this activity is performed equally by urban and rural students.

Figure 18: Percentage distribution of students interviewed according to activities performed on the Internet by area. 2018-2019



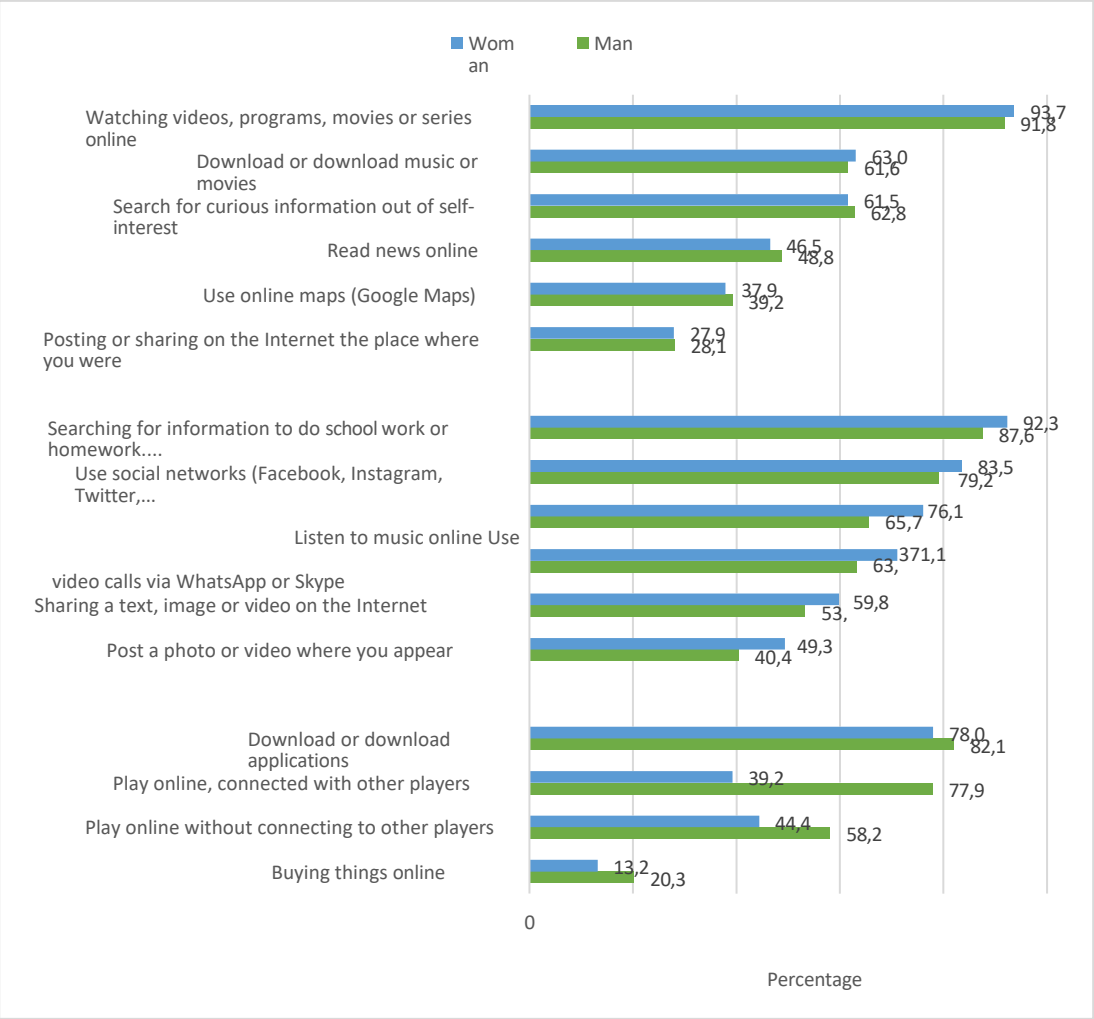
Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth, 2018-2019.

When analyzing the differences between men and women with respect to the activities in which they have used the Internet, there is a particular behavior. For a better visualization, Graph 19 is divided into three blocks; the first block contains the variables in which there is no significant difference between men and women, the second and third blocks contain the variables in which there is a significant difference between men and women, specifically in the second block are the activities that are performed more frequently by women and in the last block are the activities that are performed more frequently by men.

Note that both men and women use the Internet to watch videos, programs, movies or series; download music or movies; search for information; read news;

among others. In the case of women, the activities they perform most frequently include searching for information to do work or homework; using social networks; listening to music; and using video calls. Men, on the other hand, use the Internet more frequently to download applications, play online games and buy goods.

Figure 19: Percentage distribution of interviewed students according to activities performed on the Internet by gender. 2018-2018

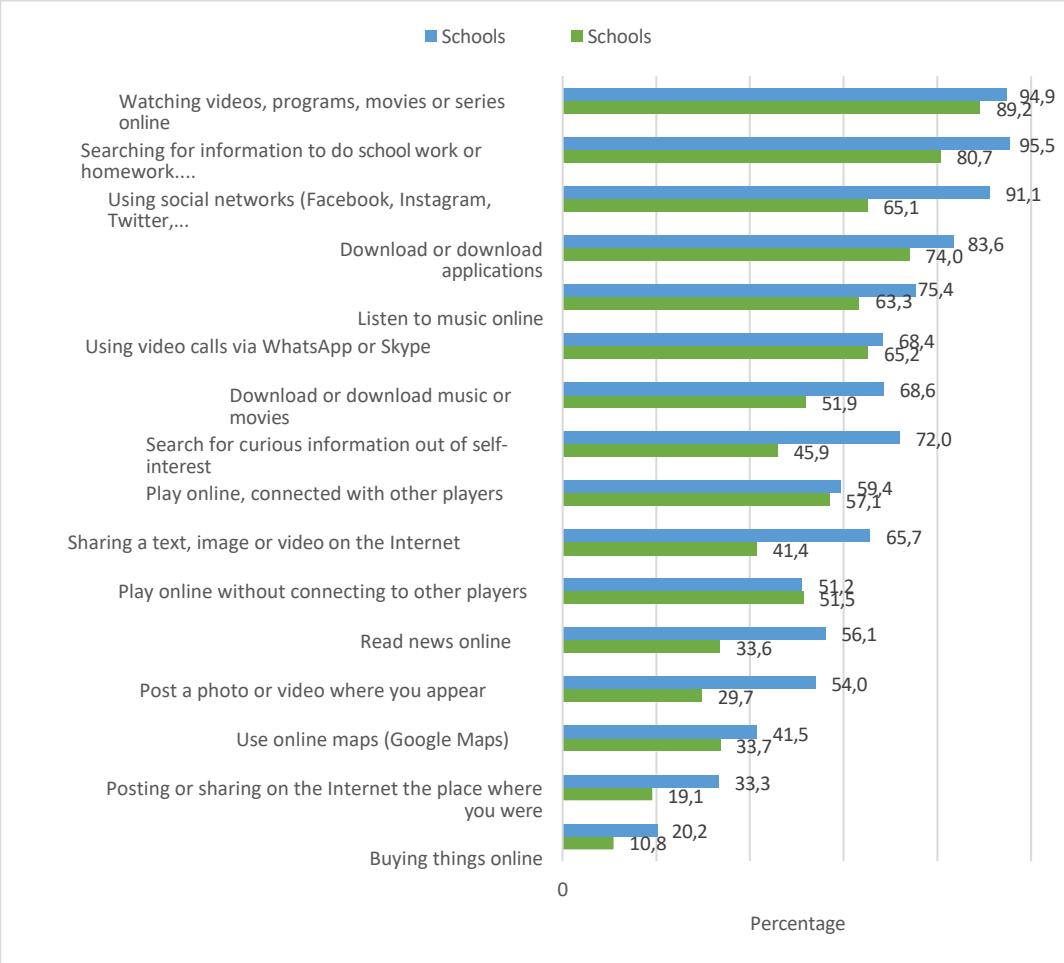


Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth, 2018-2019.

Figure 20 shows the information on the activities carried out, broken down by schools and colleges. For all activities, school students have a higher percentage of use. The only activities that do not show significant differences between school and college students correspond to playing online in connection or not with other players, and the use of

video calls via *WhatsApp* or *Skype*, which means that these activities are carried out equally between school and college students.

Figure 20: Percentage distribution of interviewed students according to activities performed on the Internet by type of institution. 2018-2019



Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth, 2018-2019.

B. Internet Usage Scale

The scale is a composite measure that relates variables of the same nature and is used to measure constructs, in this case the intensity of Internet use will be measured. The idea with the construction of the scale is to simplify the interpretation of the results and to present it in a more summarized way.

The process of constructing the scale begins with the application of the reliability analysis, in order to validate the internal consistency of the instrument and verify the unidimensionality of

the

data. This reliability analysis is carried out through the Cronbach's Alpha measure, whose value ranges between 0 and 1. If the value of Cronbach's Alpha is close to 1, it indicates a greater consistency of the items among themselves; values above 0.7 are considered sufficient to guarantee the reliability of the scale.

The scale of Internet use is constructed by taking into account the sum of all the items. The scale ranges from 0 to 10; the value 0 implies that none of the activities were performed using the Internet and 10 corresponds to the performance of all activities. In the case of the Internet uses scale, the Cronbach's Alpha value obtained is 0.8; therefore, the internal consistency of the items is verified and the scale is calculated.

As can be seen in Table 2, the mean of the scale at the national level is 6.21 and it is observed that students from private institutions have a level on the scale that is significantly higher (6.82) when compared to students from public institutions (6.16), because the mean of this population exceeds the upper limit of the scale at the national level. This result indicates that students from private institutions are doing more activities using the Internet.

Table 2: Mean and confidence intervals of the scale of Internet uses according to study domains. 2018-2019

		Media
Costa Rica		**6,21**
Confidence intervals	**Lower limit**	**6,10**
	Upper limit	**6,32**
Dependency	Public	6,16
	Private	6,82
Zone	Rural	5,44
	Urban	6,49
Sex	Man	6,23
	Woman	6,19
Type of institution	Schools	5,34
	Schools	6,67

Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth, 2018-2019.

In addition, significant differences are also observed by zone. Students from rural areas present a level on the scale of 5.44, which is below the lower limit at the national level (6.10), and students from urban areas (6.49) are above the upper limit; the results show the existence of a very marked geographic gap.

When observing the behavior of the scale by sex, although men have a slightly higher value than women (6.23 and 6.19, respectively), this difference is not significant.

significant. When analyzing the value of the scale by type of institution, there is a mean in schools below the lower limit at the national level and in colleges above the upper limit; the difference between these groups could be explained by the access to devices and the knowledge and ability of older students.

COMPUTER SKILLS AND KNOWLEDGE

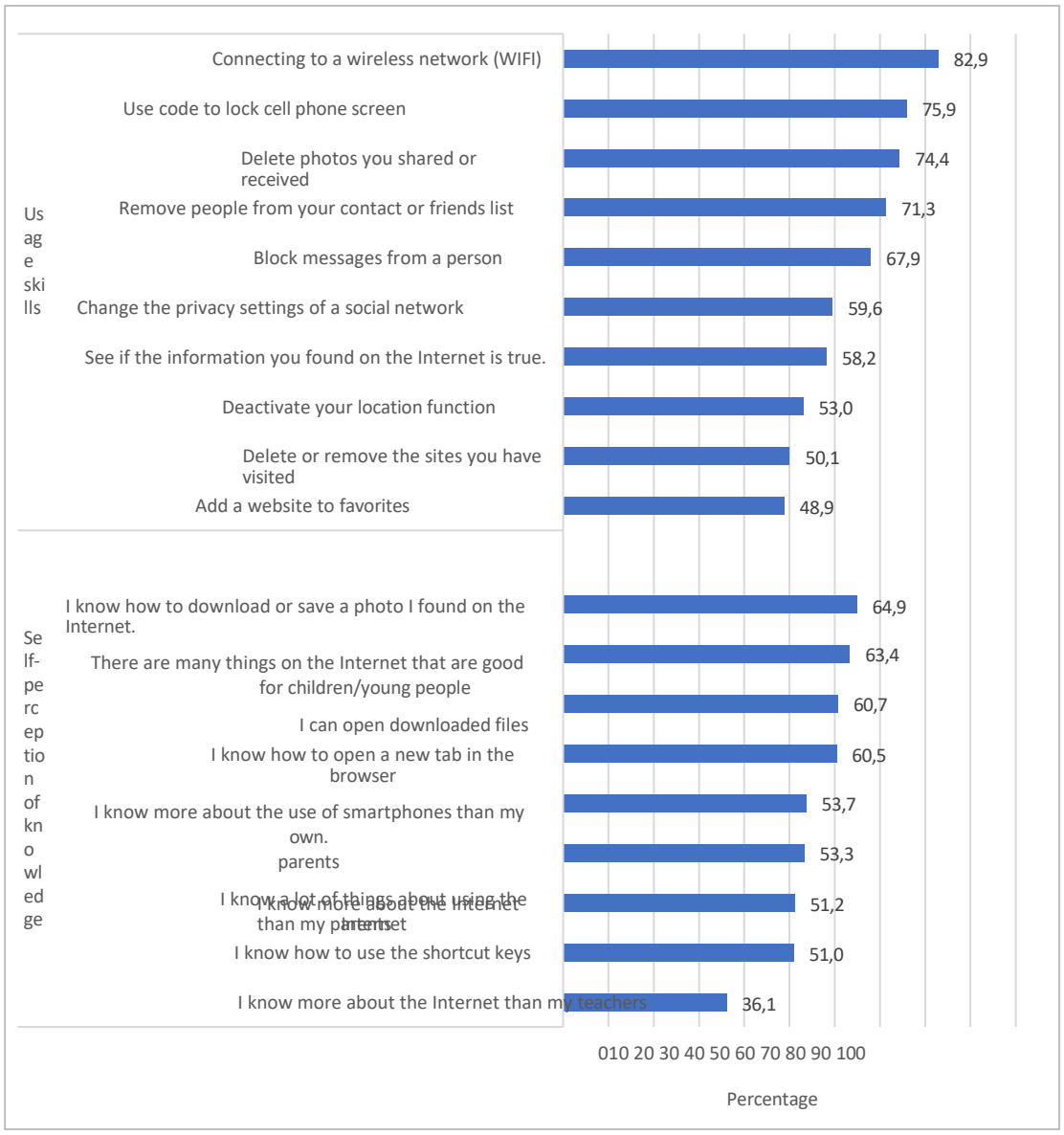
This module includes two blocks of items; one with computer use skills and the other corresponding to the perception of one's own and others' knowledge of computer and Internet issues. The results in this section begin with the descriptive tabulation of the items in both blocks taking into account the study domains. Then, the index of computational skills and knowledge elaborated from the module items is presented.

A. Skills from use y self-perception of computer literacy

Figure 21 shows that in most of the usage skills evaluated, more than 50% of the students interviewed say they possess these skills. Connecting to a wireless network (82.9%); using a code to lock the cell phone screen (75.9%); deleting photos shared or received (74.4%); deleting people from their contact list (71.3%), are the skills most mentioned by the students interviewed. Nearly 60% of the students indicate that they know how to change the privacy settings of a social network, as well as how to verify if the information they found on the Internet is true; however, a considerable percentage of the students interviewed do not know how to perform these actions, which is an important skill for a safe and responsible use of the network.

The second block of the graph shows the items related to the perception of one's own and others' knowledge in the use of technologies. Nearly 50% of children and adolescents agree with the statements about knowing many things about Internet use (53.3%) and knowing more about the Internet than their parents (51.2%). However, when asked if they agree that they know more about the Internet than their teachers, this percentage is lower than the other statements (36.1%). On the other hand, five out of ten students agree with the statement about knowing more about the use of smartphones than their parents.

Figure 21: Percentage distribution of students interviewed according to usage skills and self-perceived knowledge in the use of technology and the Internet. 2018-2019

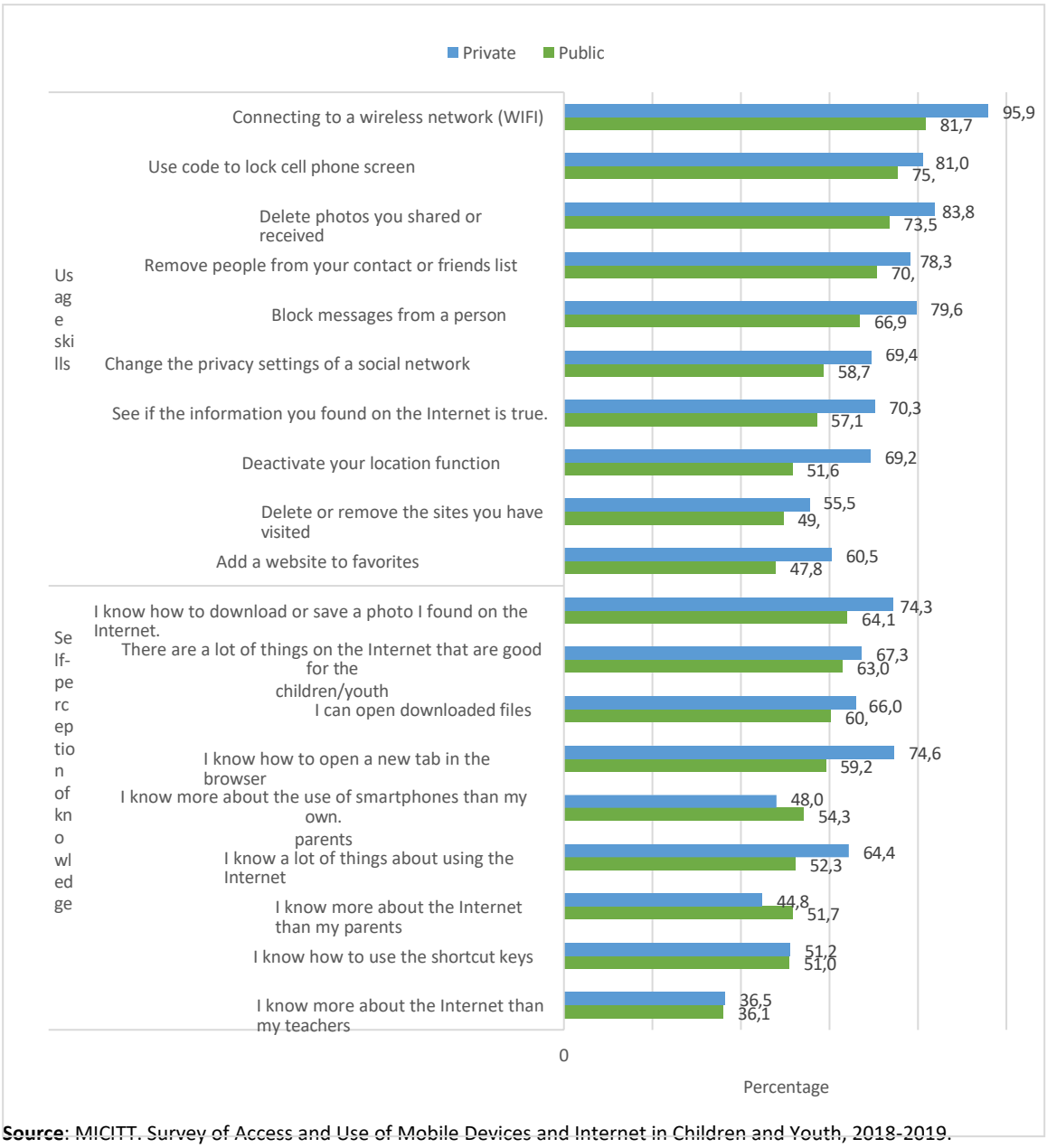


Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth, 2018- 2019.

When analyzing the distribution of the blocks of items by type of dependency, it can be seen that in the skills of use, most of the items present significant differences between public and private institutions; that is, students from private institutions present higher percentages of having this type of skill. Only the actions of deleting the sites visited and using the code for blocking the cell phone, present the same measure between students from public and private institutions.

Similar results were found between students from public and private institutions in the statements associated with the perception of their own and others' knowledge. Students from private institutions present significantly higher percentages in the statements: I know many things about using the Internet, I know how to open a new tab in the browser, and I know how to download or save a photo I found on the Internet.

Figure 22: Percentage distribution of interviewed students according to usage skills and self-perceived knowledge the use of technology and the Internet by type of dependency. 2018- 2019

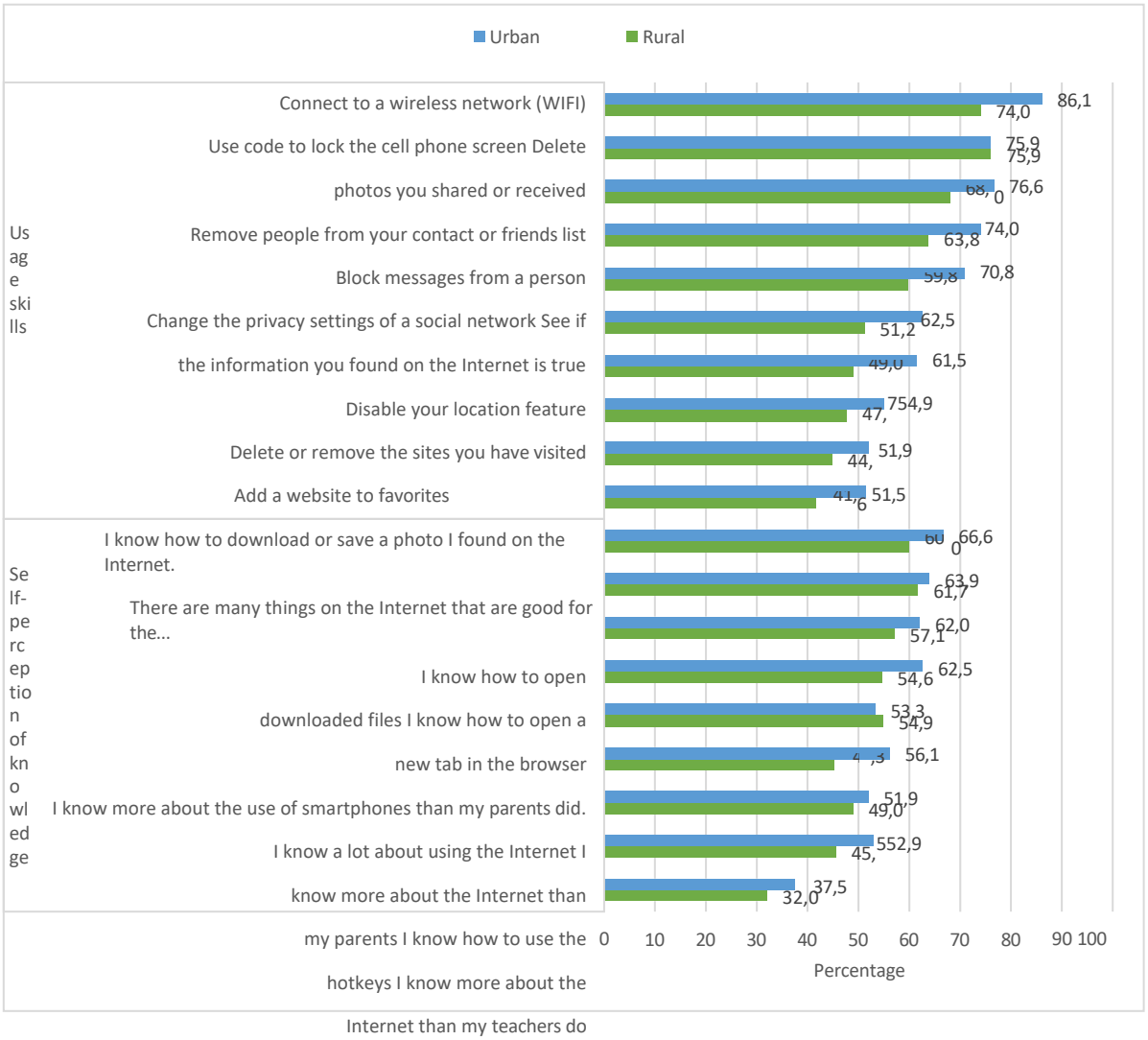


Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth, 2018-2019.

Analyzing by zone (Figure 23), students in urban areas have significantly higher percentages of usage skills than students in rural areas, with the exception of using the code to lock the cell phone screen, whose percentage is equal between urban and rural students (75.9 in both zones). These results show the gap in knowledge and use of these computational tools by geographic zone.

For the items corresponding to the perception of own and others' knowledge in the use of technologies, the statements I know many things about the use of the Internet and I know more about the Internet than teachers are the only ones with a significant difference at the zone level, with a higher percentage obtained in urban areas.

Figure 23: Percentage distribution of students interviewed according to usage skills and self-perceived knowledge of technology and Internet use by zone. 2018-2019

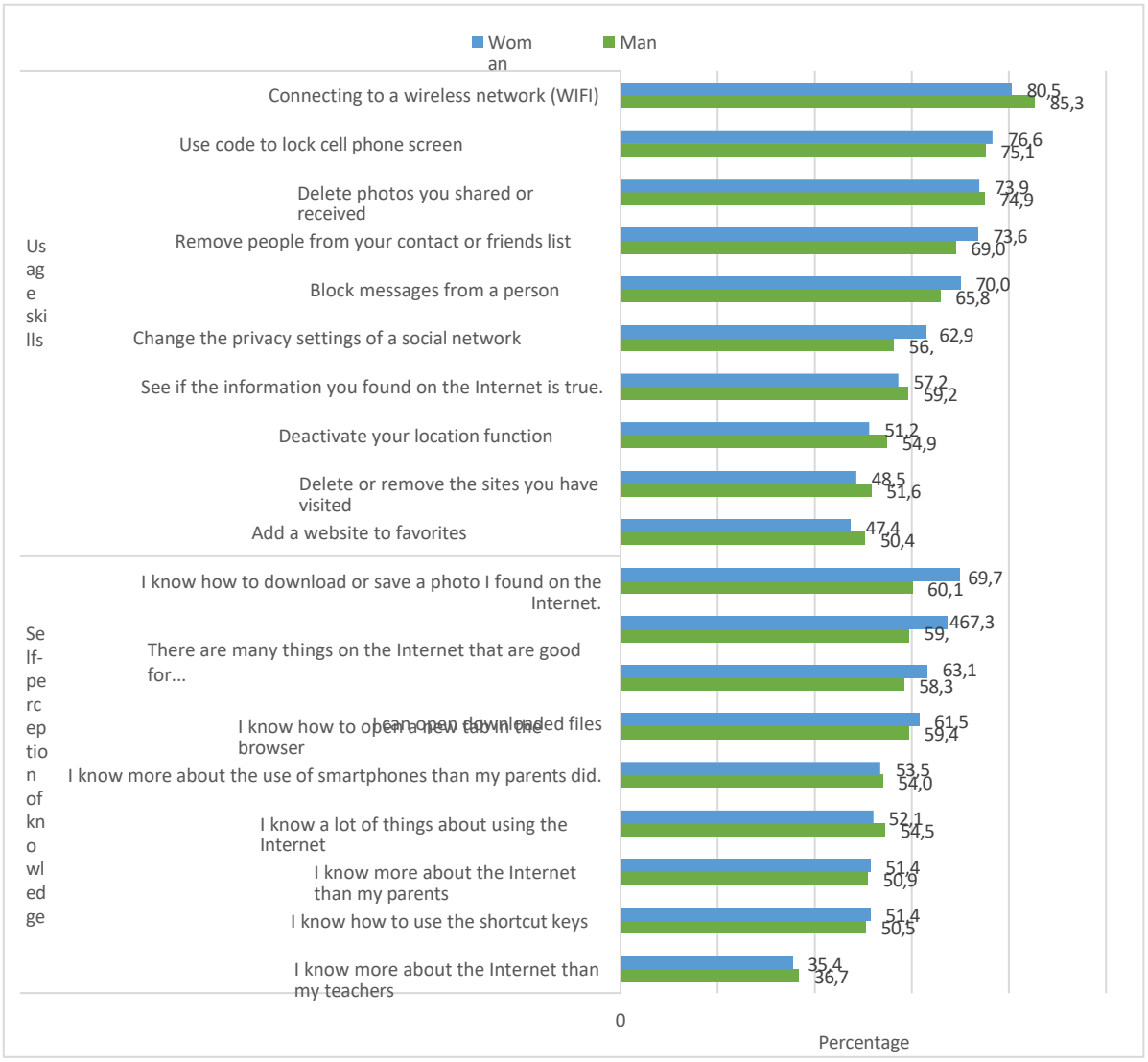


Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth, 2018-2019.

In relation to usage skills according to gender, certain favorable practices are observed towards female students regarding the management of social networks, since they have a significantly higher percentage in the statements: changing the privacy settings of a social network, blocking messages from a person and deleting people from the list of contacts or friends, compared to male students.

With respect to the perception of knowledge of self and others following by sex, there are significant differences in favor of women in the statements: I know how to download a photo I found on the Internet; there are many things on the Internet that are good for children and young people; and I know how to open downloaded files, as can be seen in Figure 24.

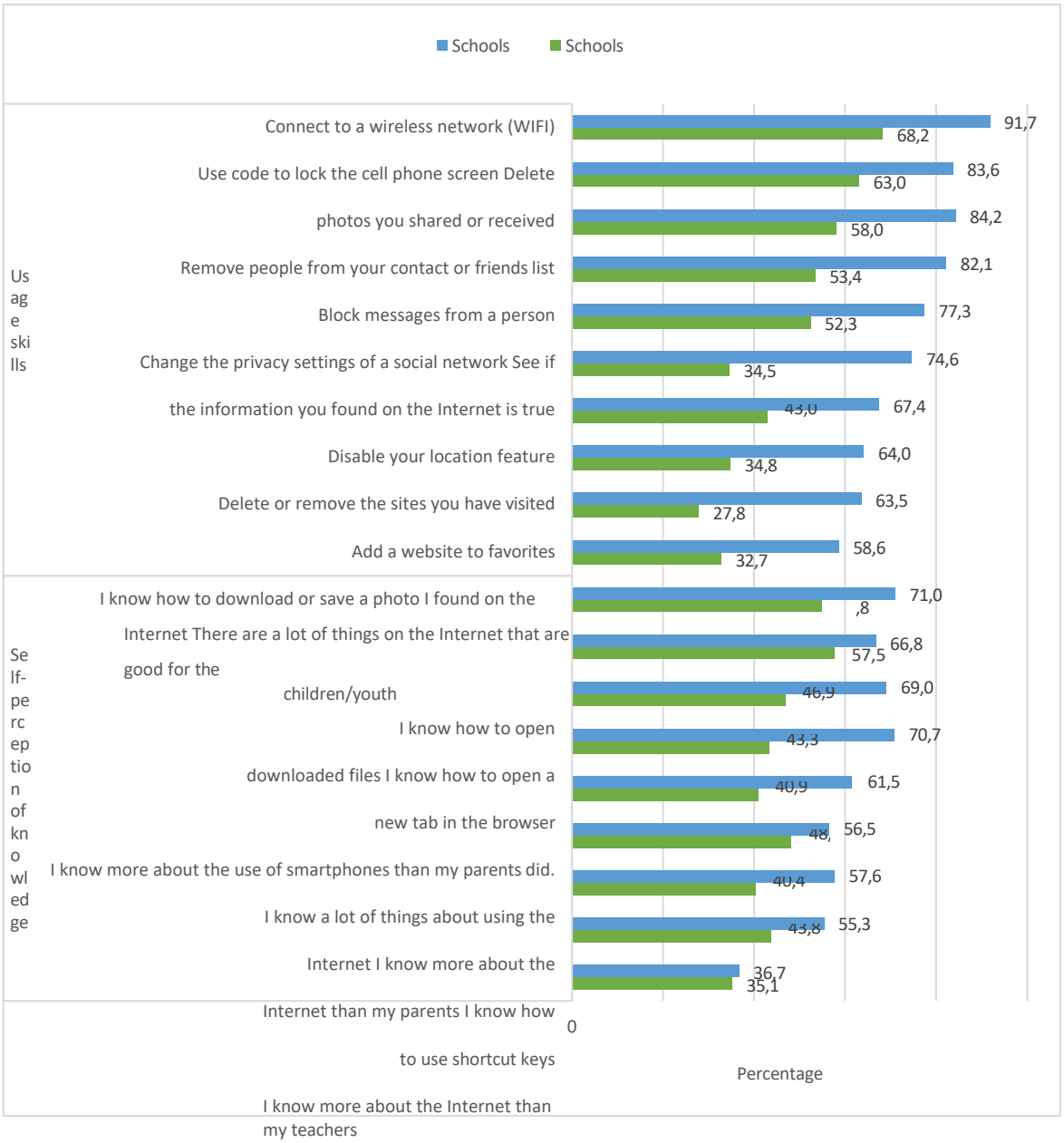
Figure 24: Percentage distribution of students interviewed according to usage skills and self-perceived knowledge of technology and Internet use by gender. 2018-2019



Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth, 2018-2019.

Finally, Figure 27 shows the distribution of the blocks of items between school and college students, showing that in all variables there is a significantly higher difference for college students. This result could be associated with the age of the student; it is to be expected that the older the student, the greater the ability to use and knowledge.

Figure 25: Percentage distribution of interviewed students according to usage skills and self-perceived knowledge by type of institution. 2018-2019



Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth, 2018-2019.

B. Computer skills and knowledge index

For the formulation of the index, we begin with an exploratory factor analysis that gives evidence of the existence of two factors, which were detailed in the descriptive analysis performed previously. For each of the factors, a reliability analysis was performed and a value of 0.8 was obtained for the factor called "computer use skills" and 0.9 for the factor "self-perception of computer knowledge".

Next, the scales corresponding to the aforementioned factors are constructed and then an index is created taking into account both scales. It should be noted that the values of the scales and the index range from 0 to 10, with a value of 0 indicating that none of the skills or computer knowledge is present and 10 indicating the presence of all the skills and knowledge described. Table 3 shows the mean of both scales, the respective confidence interval and the means for the study domains.

In the computational skills scale, it is observed that the mean for public institutions (6.76) is located within the confidence intervals of the national mean (6.70 : 6.98), therefore, there is no evidence of significant differences in this group of students. According to zone, the mean of the scale for rural areas is 6.15, which is below the lower limit of the national parameter (6.70), i.e., the difference is significant. This finding indicates that students in rural areas have lower computational use skills, while students in urban areas have computational use skills that exceed the national average.

By sex of the respondent, the scale does not show differences, since the values are within the limits of the national average. However, by type of institution there are significant differences: the mean of the scale for schools (5.13) is below the lower limit of the national mean (6.70) and that for colleges (7.70) is above the upper limit of the national mean (6.98). This last finding may be associated with the age of the students, under the assumption that the older they are, the greater their computational ability.

Table 3: Mean and confidence intervals of the scales of computer use skills and self-perception on computer knowledge according to study domains. 2018-2019

		Computer usage skills	Self-perception of knowledge computational
Costa Rica		**6,84**	**6,29**
Confidence intervals	**Lower limit**	**6,70**	**6,07**
	Upper limit	**6,98**	**6,51**
Dependency	Public	6,76	6,27
	Private	7,79	6,45
Zone	Rural	6,15	5,99
	Urban	7,09	6,40
Sex	Man	6,89	6,01
	Woman	6,79	6,61
Type of institution	Schools	5,13	5,39
	Schools	7,70	6,76

Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth, 2018-2019.

In the case of the scale of self-perception of computational knowledge, there are notable differences: the mean of the scale in rural areas (5.99) is below the national lower limit (6.07); the mean of female students (6.61) is higher than the upper limit of the national average (6.51), thus differentiating in self-perception and that of others with respect to computational knowledge.

By type of institution, the scale mean for schools (5.39) is lower than the national lower limit value (6.07), while the mean for high school (6.76) exceeds the national upper limit (6.51), reflecting how adolescents perceive themselves to be more computer literate.

Now, continuing with the index of computational skills and knowledge, this index is intended to be a summary measure of the scales: computational use skills and self-perception of computational knowledge. The closer the mean of the index is to 10, the higher the level of computational skills and knowledge.

Table 4 summarizes the results and shows a notable difference in the private educational institutions, since the estimated mean (7.12) is higher than the national average (6.68). Additionally, by type of institution, the mean values for schools (5.39) and colleges (7.32) are outside the limits of the national scale value (6.54 : 6.82); this reflects that college students possess more skills and perceive themselves to be slightly more knowledgeable in computational issues compared to school students.

Table 4: Mean and confidence intervals of the computational skills and knowledge index according to study domains. 2018- 2019

		Media
Costa Rica		**6,68**
Confidence interval	**Lower limit**	**6,54**
	Upper limit	**6,82**
Dependency	Public	6,64
	Private	7,12
Zone	Rural	6,29
	Urban	6,82
Sex	Man	6,61
	Woman	6,76
Type of institution	Schools	5,39
	Schools	7,32

Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth, 2018-2019.

VI.

INTERNET RISKS

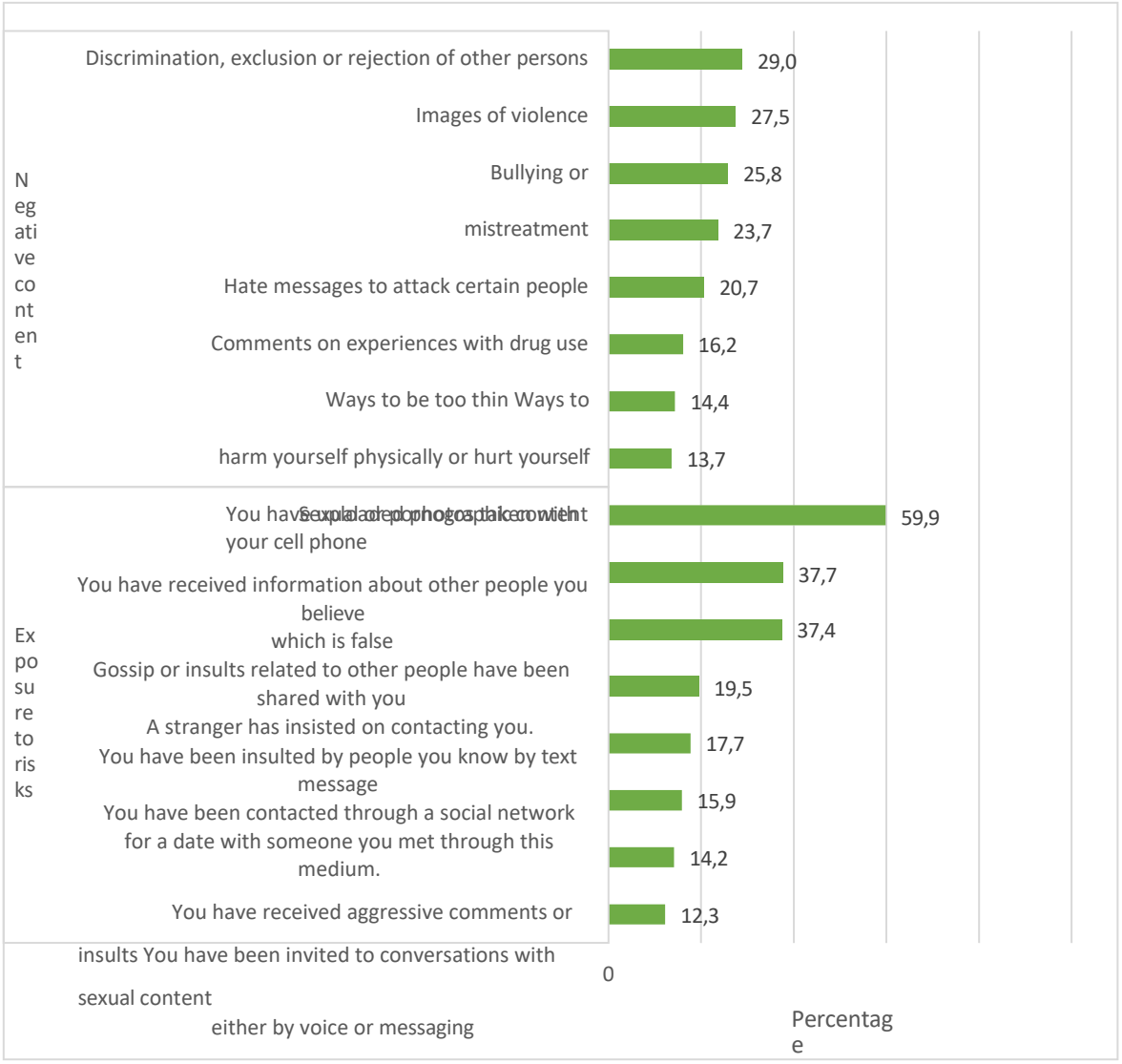
The Internet Risks module includes 16 statements containing situations and examples of violence and discrimination, as well as negative experiences that children and adolescents may have experienced when using the Internet. These statements are divided into two blocks: Negative Content and Internet Risk Exposure. For their respective analysis, we begin with a descriptive exploration crossed with the study domains, and then present the results of the Internet risk index.

A. Negative content and risk exposure on the Internet

Figure 26 shows the statements according to the blocks. Those corresponding to the Negative Content block refer to situations that students may have experienced in the last 6 months on the Internet. Note that almost a third of the students have seen discrimination, exclusion or rejection of other people (29.0%), as well as images of violence (27.5%). A quarter of the students have seen *bullying* or mistreatment (25.8%) and hate messages to attack certain people (23.7%).

It is worth noting that one in five students have seen comments about drug use experiences (20.7%). More than 10% of students have seen on the Internet ways to be very thin, ways to physically harm or hurt themselves, and sexual or pornographic content. These findings are evidence of the exposure children and adolescents have online.

Figure 26: Percentage distribution of the students interviewed according to exposure to negative content and risks on the Internet. 2018-2019



Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth, 2018-2019.

In the second block, corresponding to Exposure to Internet risk, the most common activity among students is uploading photos to the Internet, as six out of ten students have done so. Nearly 40% of the students have received information about other people that they believe to be false and also claim that they have had gossip or insults shared with them about other people.

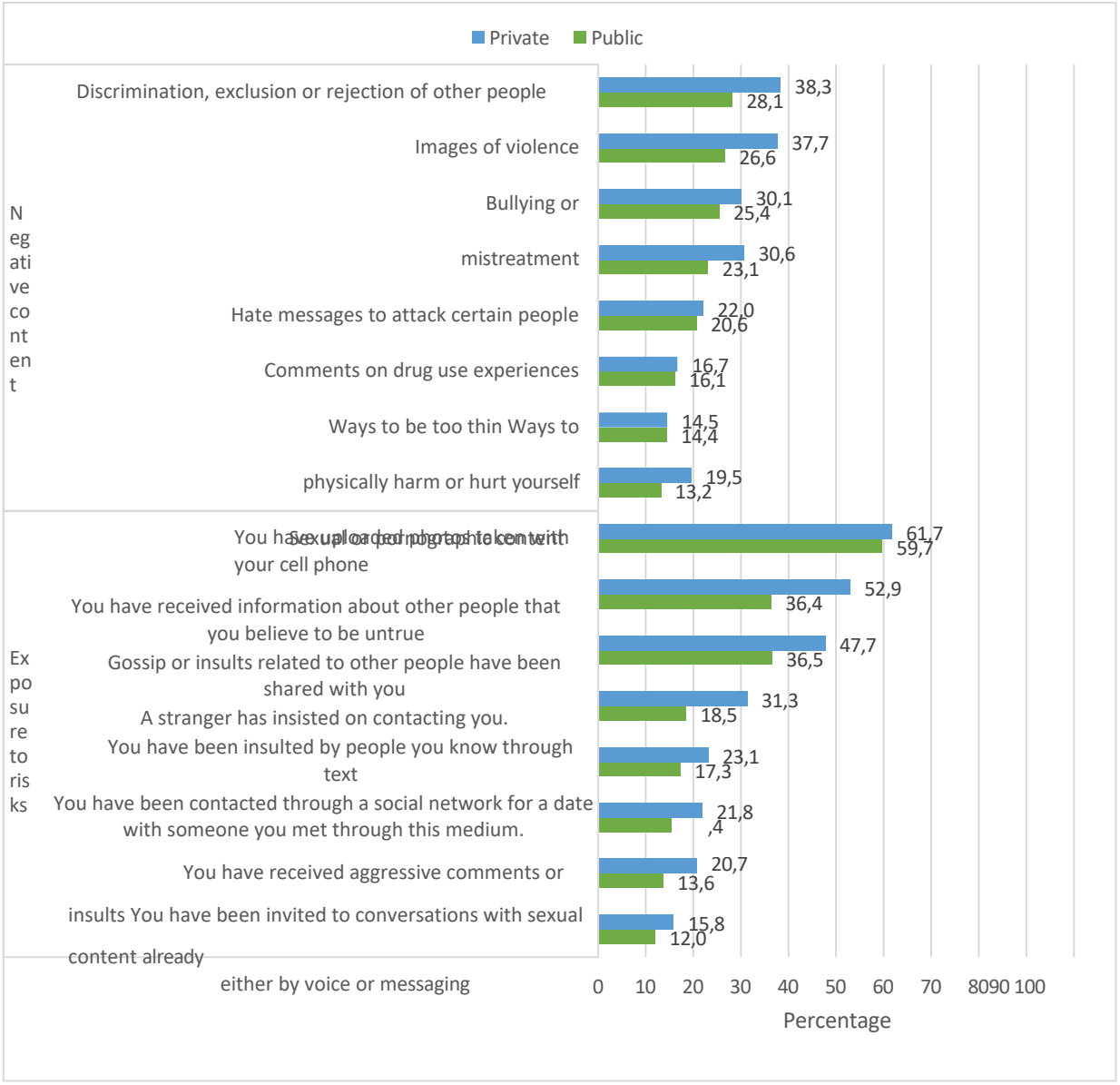
In addition, one in five students say that a stranger has insisted on contacting him or her. 15.9% of students indicate that they have been contacted through a social network for a date and 12.3% of students have been invited to conversations with sexual content.

As can be seen in Figure 27, both the variables related to exposure to negative content and risks present higher percentages in students from private institutions.

Of the items in the negative content block, students from private institutions present a significantly higher incidence in relation to viewing on the Internet content about discrimination, exclusion or rejection of other people (38.3%); images of violence (37.7%); hate messages to attack certain people (30.6%); as well as sexual or pornographic content (19.5%).

In the block of exposure to risk, students from private institutions have a higher incidence. Only the statements of uploading photos taken with the cell phone and inviting conversations with sexual content are presented equally between public and private institutions. All other variables show significantly greater differences in students from private institutions.

Figure 27: Percentage distribution of the students interviewed according to exposure to negative content and risks on the Internet by type of dependency. 2018-2019

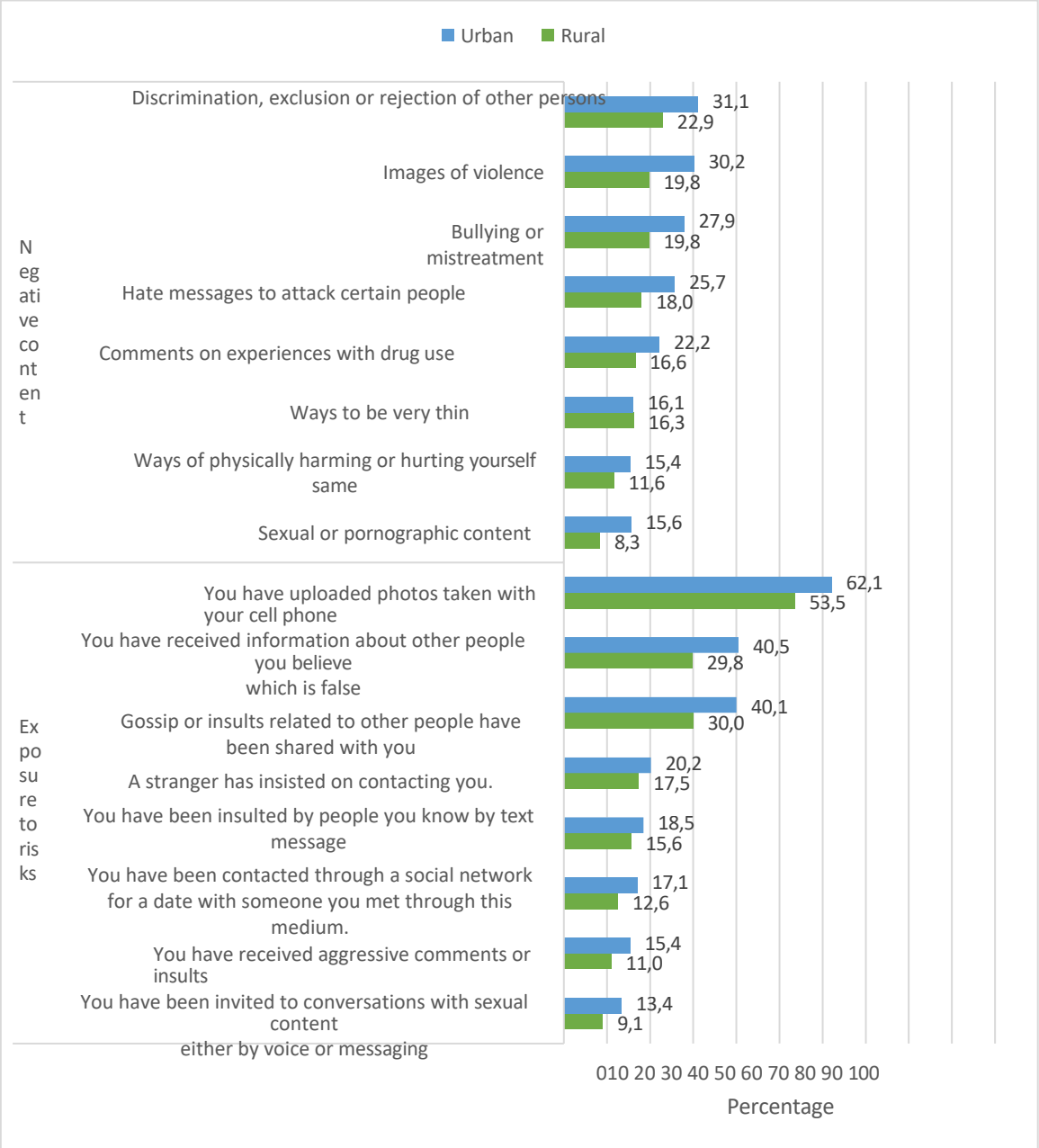


Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth, 2018-2019.

When analyzing the exposure of children and adolescents to negative content, violence, discrimination and risks according to area of residence, there is a higher incidence among students in urban areas. Of the variables related to negative content, only Internet access to information related to ways of being very thin does not show differences between urban and rural students (16.1 and 16.3). With respect to exposure to risks, the variables with the same level of risk between urban and rural areas are related to receiving insults from known people via text messages and to the fact of being

contacted by a stranger to make contact. All the remaining variables show a higher incidence in students from urban institutions.

Figure 28: Percentage distribution of interviewed students according to exposure to negative content and risks on the Internet by area. 2018-2019

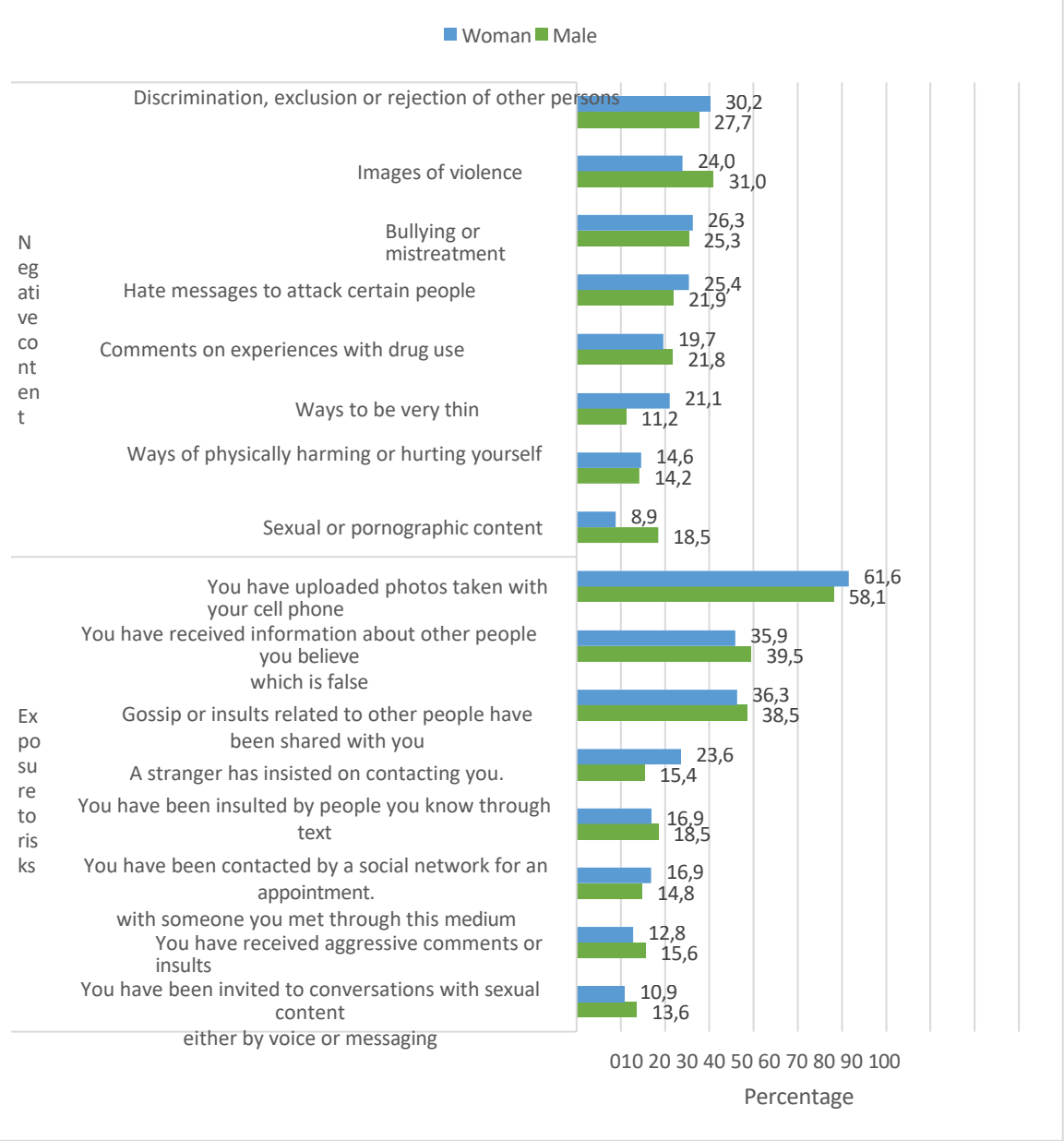


Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth, 2018-2019.

Figure 29 highlights the significant differences between men and women. With respect to activities related to negative content, 21.1% of female students have seen on the Internet ways of being very thin, 10 p.p. higher than male students. On the other hand, a higher percentage of male students have seen sexual or pornographic content, as well as images of violence, than female students.

Exposure to risks also shows significant differences by sex. A higher percentage of female students report that a stranger has insisted on contacting them (23.6%) compared to male students (15.4%). On the other hand, a higher percentage of children and adolescents report having received aggressive comments or insults (15.6%) and mention having been invited to conversations with sexual content either by voice or messages (13.6%).

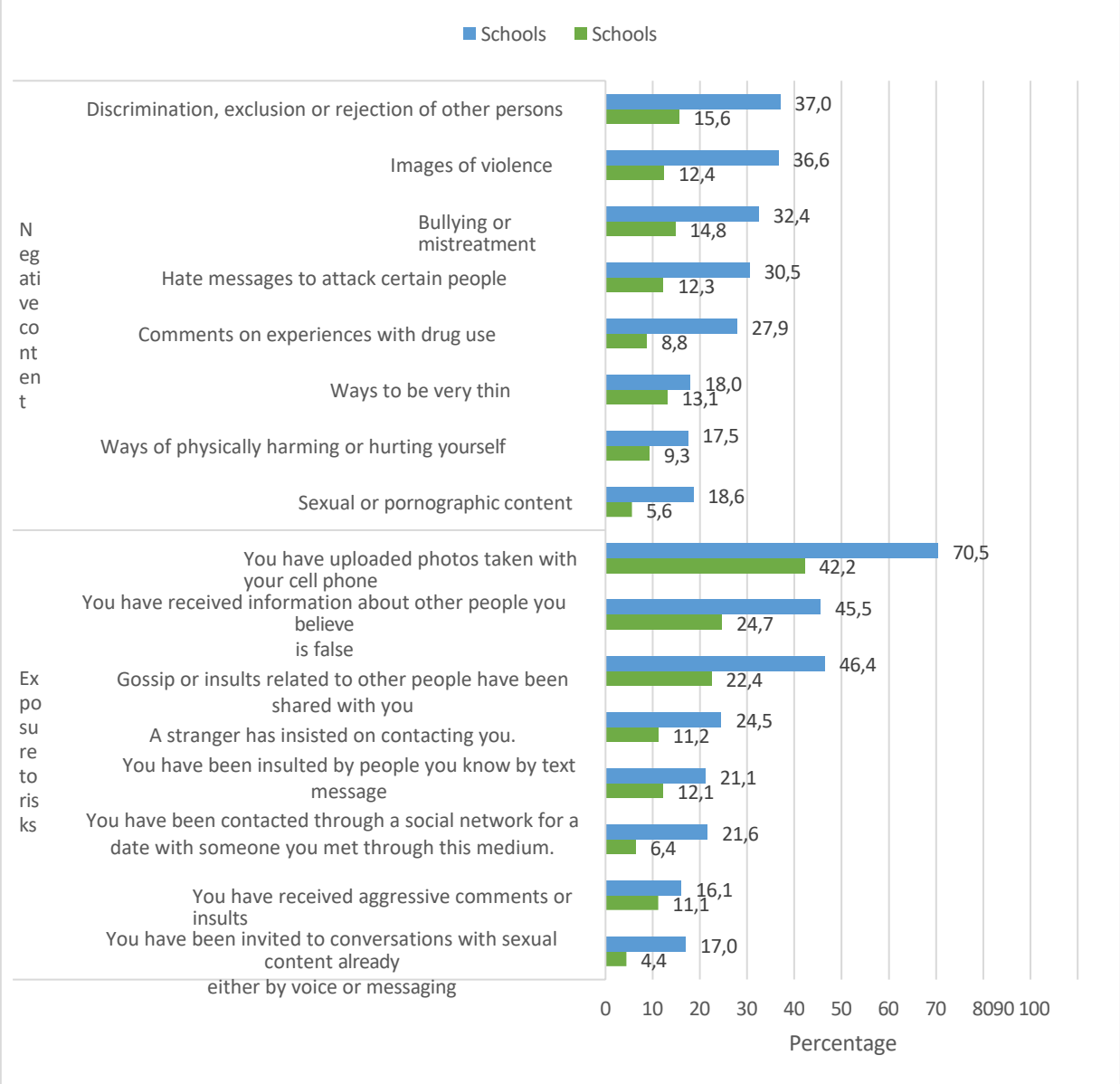
Figure 29: Percentage distribution of interviewed students according to exposure to negative content and risks on the Internet by gender. 2018-2019



Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth, 2018-2019.

Continuing with the analysis of exposure to negative content and risks on the Internet by type of institution, significant differences were found in all the statements evaluated. Thus, college students present higher percentages; this is undoubtedly associated with age, under the premise that the older they are, the greater the access and use of information and communication technologies and therefore the greater the online exposure and risks they run (Figure 30).

Figure 30: Percentage distribution of interviewed students according to exposure to negative content and risks on the Internet by type of institution. 2018-2019



Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth, 2018-2019.

B. Internet Risk Index

As mentioned, this study is based on the *Global Kids OnLine* initiative, in which Costa Rica is one of the participating countries through the Psychological Research Institute of the University of Costa Rica and the Paniamor Foundation.

This Internet risk module was built on the basis of these internationally validated inputs.

Prior to the construction of the index, two scales are constructed: Negative Content and Risk Exposure. Both scales range from 0 to 10, where 0 means no exposure and 10 means maximum exposure. Reliability analysis is performed for each scale and Cronbach's Alpha coefficient is measured. In this case, both scales contain an adequate level of reliability, since the Cronbach's Alpha coefficient obtained is 0.8.

In the scale of negative content, the average for private institutions (2.62) is above the national average (2.13). In addition, important differences are observed between students from urban and rural areas; students from rural areas present a very low value on the scale (1.67), being that their exposure to negative content on the Internet is lower than the national average; the opposite is the case with students from institutions in urban areas (2.30), which present values that exceed the national average.

When analyzing the behavior of the scale by sex, no significant differences are observed. However, there are important differences between school and high school students; high school students present a higher mean (2.72) and above the national average.

Table 5: Mean and confidence intervals of negative content and risk exposure scales according to study domains. 2018-2019

		Content negative	Exposure to risks
Costa Rica		**2,13**	**2,74**
Confidence interval	**Lower limit**	**1,99**	**2,61**
	Upper limit	**2,27**	**2,88**
Dependency	Public	2,08	2,66
	Private	2,62	3,68
Zone	Rural	1,67	2,28
	Urban	2,30	2,91
Sex	Man	2,14	2,76
	Woman	2,11	2,73
Type of institution	Schools	1,11	1,66
	Schools	2,72	3,36

Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth, 2018-2019.

The Exposure to Risks scale presents a similar behavior to the Negative Content scale. The mean of the indicator is higher in students from private institutions (3.68), students from urban areas (2.91) and college students (3.36).

Now, with respect to the results of the Internet risk index, which is composed of the scales described above, it is observed that it behaves in the same way as the scales, students from private institutions (3.12), students from urban areas (2.61) and college students (3.03) present greater risks on the Internet.

Table 6: Mean and confidence intervals of the Internet risk index according to study domains. 2018-2019

		Media
Costa Rica		**2,43**
Confidence interval	**Lower limit**	**2,30**
	Upper limit	**2,55**
Dependency	Public	2,36
	Private	3,12
Zone	Rural	1,95
	Urban	2,61
Sex	Man	2,45
	Woman	2,40
Type of institution	Schools	1,35
	Schools	3,03

Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth, 2018-2019.

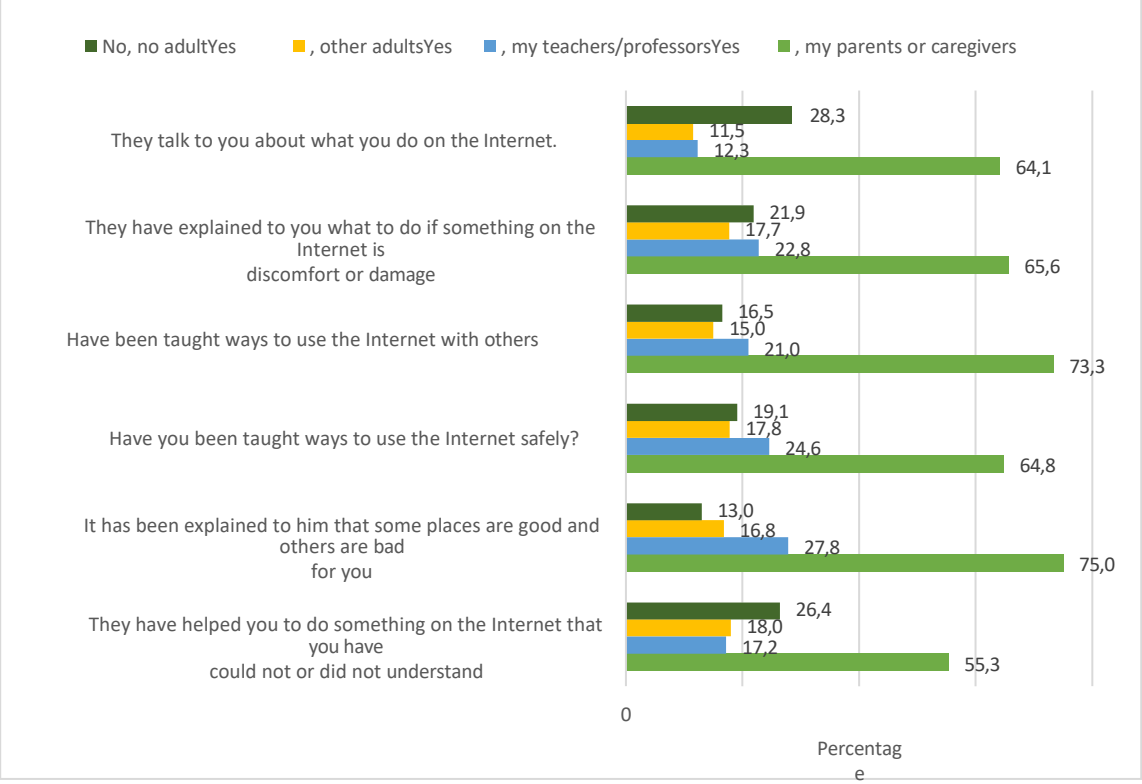
C. Supervision during student use of the Internet

In order to identify risk factors for the student population, a series of items were included in the questionnaire with actions on the use of the Internet for students to mention if they have received any type of supervision or guidance when using this tool.

As presented in Figure 31, for most of the actions evaluated, students mention that they receive some type of adult supervision, either from their parents or guardians, teachers or professors, or other adults. For example, 75% of the students say that their parents
o responsible have explained to him that some (Internet) sites are good and some are bad for him 73.3% say that their parents or guardians have taught them ways to use the Internet with other people.

On the other hand, it is necessary to pay attention to the percentage of students interviewed who mention that they do not receive any type of supervision or accompaniment when using the Internet. Thus, 28.3% of the students mention that no adult has talked to them about what they do on the Internet, and 26.4% indicate that no adult has helped them to do something on the Internet that the student could not or did not understand.

Figure 31: Percentage distribution of interviewed students according to supervision when performing certain actions on the Internet. 2018-2019



Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth 2018-2019.

When analyzing the percentage of students who have not received any type of adult supervision or accompaniment for Internet use according to various variables of interest, the two actions in which students in private schools indicate that no adult accompanies them are: they talk about what the young person is doing on the Internet (34.3%) and they have helped him/her to do something on the Internet that he/she could not do (23.9%). Those who attend public schools coincide with the two actions mentioned above, with percentages of 27.8% and 26.6%, respectively.

In addition, for high school students, male students and rural residents, it is estimated that the percentage of absence in adult accompaniment for the actions

The percentage of women in the study is higher in comparison with their respective counterparts, school, female gender and urban area (Table 7).

Table 7: Percentage distribution of students interviewed that no adult accompanies them in the use of the Internet according to action by dependency, type of institution, gender and area of residence. 2018-2019

	Dependency		Type of Institution		Sex		Area of Residence	
	Public	Private	School	College	Man	Woman	Rural	Urbana
Have they helped you to do something on the Internet that you could not or did not understand?	26,6	23,9		29,6	30,1	22,7	29,8	25,1
It has been explained to you that some sites are good for you and some are bad for you.	13,1	12,3	12,3	13,5	16,1	9,9	13,8	12,8
Have you been taught ways to use the Internet safely?	19,4	15,4	15,8		23,2	14,9	22,5	17,8
Have been taught ways to use the Internet with others	16,6	15,3		17,3	20,6	12,3	21,3	14,7
They have explained to you what to do if something on the Internet makes you uncomfortable or harms you		20,5		22,4		17,7	25,3	20,6
They talk to you about what you do on the Internet.	27,8	34,3	22,1	32,1	34,8	21,9	31,2	27,3

Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth 2018-2019.

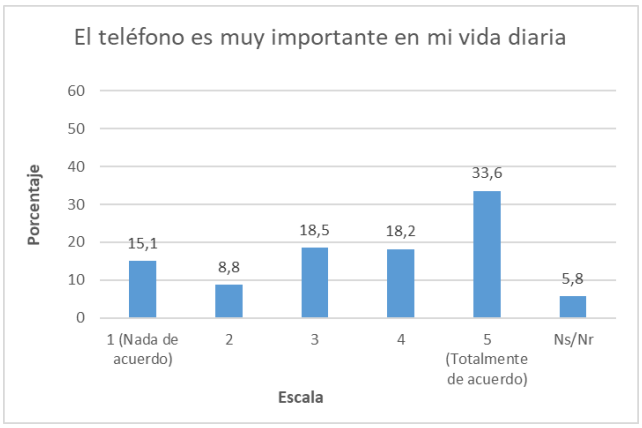
D. Importance of the cell phone in students

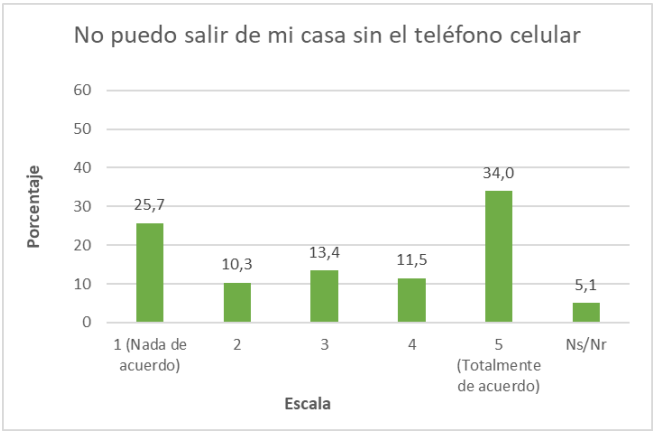
As has been mentioned in other sections of this report, the ease of access to cell phones, together with the series of functionalities that these mobile devices have, makes them widely used by adults, young people and students alike. For this reason, five phrases related to the cell phone and its possible effects on the daily life of young students are included in this research.

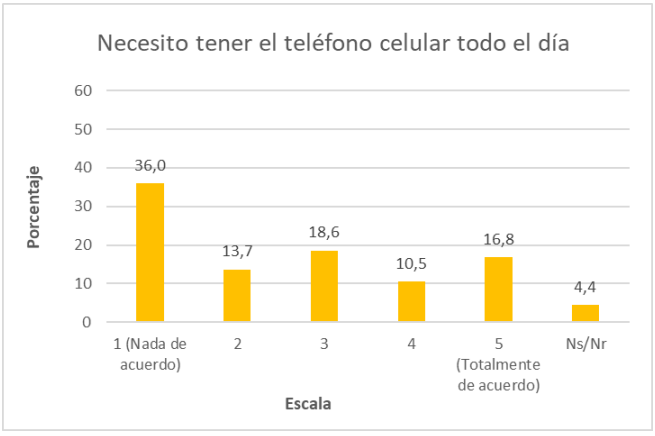
Figure 32 shows the aspects evaluated about the cell phone on a 5-point qualitative scale, from Not at all agree to Strongly agree. It can be seen that half of the respondents stated that they did not agree at all with the statements "If I don't have a cell phone, I feel lost" and "If I don't have a cell phone, I feel anxious about not being able to communicate".

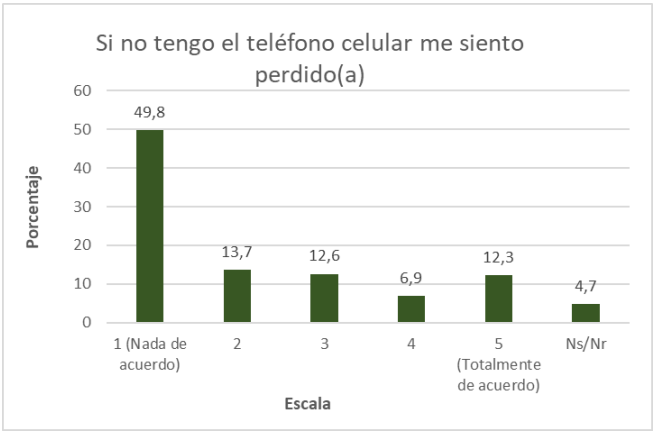
Nearly 34% of respondents said they strongly agreed with the statements "The telephone is very important in my daily life" and "I cannot leave my house without my cell phone".

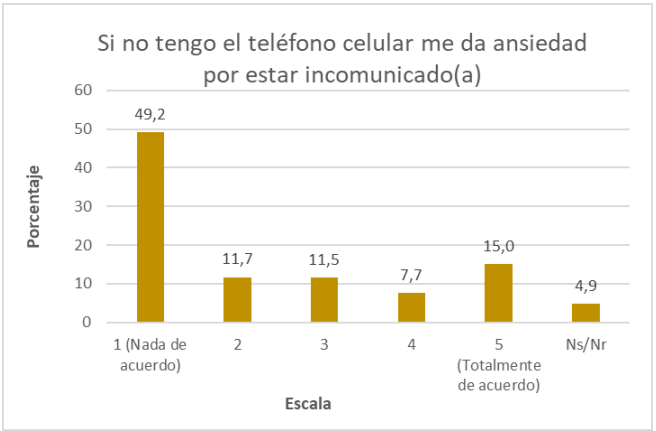
Figure 32: Percentage distribution of students interviewed according to level of agreement with aspects of cell phone 2018 - 2019.







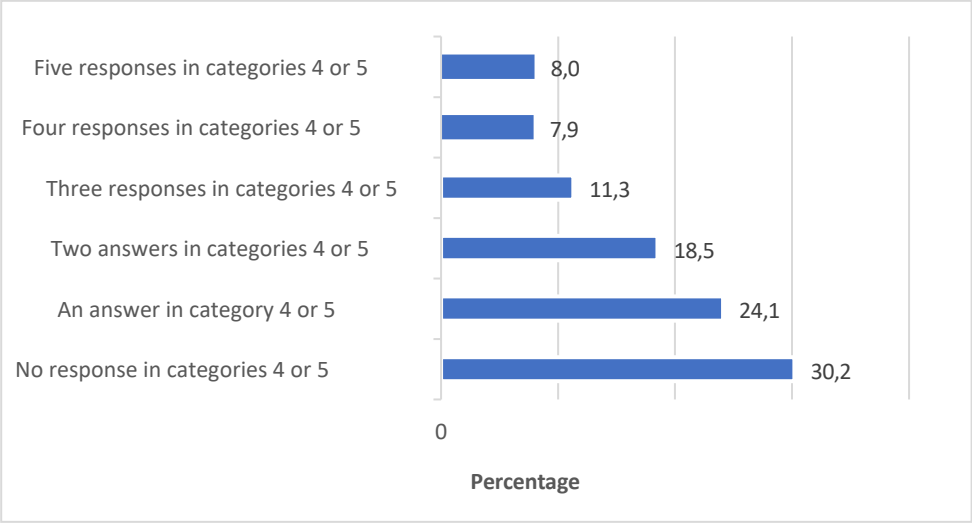




Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth 2018-2019.

In an exploratory exercise of the statements evaluated, we counted the number of responses in options 4 and 5 (Totally agree) that the students gave to the statements. This exercise allows us to have an approximate idea of the level of dependence or addiction that the students interviewed have towards the cell phone. Figure 33 shows the percentage distribution of the students interviewed according to the number of responses given to the statements in categories 4 and 5. It can be seen that 7 out of 10 respondents gave two or fewer responses in these categories: 30.2% None, 24.1% one response and 18.5% two responses. However, it is worth noting that 15.9% of the students interviewed gave only answers in categories 4 and 5 to the statements. This finding could indicate that there is a proportion of the student population that is showing behaviors of dependence or addiction to the cell phone.

Figure 33: Percentage distribution of students interviewed according to number of responses in categories 4 or 5. 2018-2019.



Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth 2018-2019.

Along the same exploratory line, we obtained the average value given by students for each of the statements about the cell phone according to the variables dependence, type of institution, gender and area of residence. These values allow comparisons to be made for each category of variables versus the average value at the national level. For example, for the statement "The telephone is very important in my daily life" the college students interviewed give it a value of 3.87, which is significantly different from the value at the national level. Other comparisons are shown in Table 10.

Table 8: Average evaluation of cell phone aspects according to variables of interest. 2018- 2019

		The telephone is very important in my daily life	I can't leave my house without my cell phone.	I need to have my cell phone on me all day long	If I don't have my cell phone, I feel lost.	If I don't have my cell phone, I feel anxious about being out of communication.
Costa Rica		**3,55**	**3,22**	**2,59**	**2,16**	**2,26**
Confidence interval	Lower limit	3,46	3,13	2,51	2,08	2,18
	Upper limit	3,61	3,3	2,67	2,24	2,34
Dependency	Public	3,53	3,21	2,57	2,16	2,26
	Private	3,63	3,26	2,82	2,17	2,23
Type of Institution	School	2,92	2,7	1,99	1,88	1,98
	College	3,87	3,5	2,92	2,31	2,41
Sex	Man	3,58	3,09	2,53	2,09	2,23
	Woman	3,49	3,35	2,65	2,23	2,28
Zone	Rural	3,44	2,93	2,37	2,01	2,14
	Urban	3,57	3,32	2,66	2,21	2,3

Source: MICITT. Survey of Access and Use of Mobile Devices and Internet in Children and Youth 2018-2019.

CONCLUSIONES

Internet access and use has generated great benefits to the population, but it has also meant a risk for some segments. This research shows that the country's children and adolescents make intensive use of mobile technologies and the Internet both for their school work and for leisure purposes, but they are also exposed to risks and inappropriate content.

Although in Costa Rica there are policies and programs that seek to bring Internet access to the most needy and vulnerable populations, this study shows the existence of other factors that restrict its use, such as limited digital literacy.

Among other findings of this research, more than 80% of students use the Internet to watch videos, programs, movies or series online; search for information to do work or homework; use social networks and download or download applications. The least used activity corresponds to buying things online.

Students from private institutions, when compared to those from public institutions, use the Internet more to buy things; play online games; search for information to do work or for their own interest; use online maps. Activities related to social and entertainment uses are carried out equally among students from public and private institutions; these activities correspond to posting a photo or video where they appear; sharing a text, image or video on the Internet; using video calls; listening to music online; downloading or downloading applications; and using social networks.

Among the main differences by sex, women use the Internet more for searching for information to do work or homework; using social networks; listening to music; and using video calls. On the other hand, men use the Internet in greater proportion to download applications; play online games and buy items.

For all activities, college students, as well as students from urban areas, present higher utilization percentages when compared to school students and students from rural areas, respectively.

The scale of Internet use, which ranges from 0 to 10, presents a national average of 6.2. Students from private institutions, students from urban areas and college students present a value on the scale that exceeds the national average.

With respect to computer use skills, more than 70% of the students interviewed indicate that they know how to connect to a wireless network; know how to use a code to lock the cell phone screen; know how to delete photos they have shared or received; and know how to delete people from their contact list. Regarding the perception of their own and others' knowledge of computer issues, about 50% of the children and adolescents agree with the statements about knowing many things about Internet use and knowing more about the Internet than their parents.

Students from private institutions, as well as students from urban areas, present higher percentages in skills such as deleting photos that they shared or received; deleting photos that they shared or received; deleting photos that they shared or received; deleting photos that they shared or received; and deleting photos that they shared or received.

people on your contact or friends list; block messages from a person; change the privacy settings of a social network; deactivate your location function.

Certain favorable practices are observed regarding the management of social networks by women, since, when compared to men, they indicate that they know more about how to change the privacy settings of a social network, how to block messages from a person and how to remove people from the list of contacts or friends.

The computational skills and knowledge index has a national average of 6.7, the index ranges from 0 to 10. Both students from private institutions and college students have a higher average index than the national average.

However, almost a third of students have seen discrimination, exclusion or rejection of other people on the Internet, as well as images of violence. A quarter of the students have seen *bullying* or mistreatment and hate messages to attack certain people.

One in five students say that a stranger has insisted on making contact with them. Sixteen percent of students indicate that they have been contacted through a social network to invite them to have a face-to-face date with someone they met through this same medium, and 12% of students have been invited to conversations with sexual content.

Both the exposure to negative content on the Internet such as discrimination and violence, and the risk situations in which students have been exposed, are more prevalent in students who belong to a private institution, as well as in students from institutions in urban areas.

Among men and women there are very particular differences. A higher proportion of women have seen on the Internet ways of being very thin and hate messages to attack certain people. A higher percentage of men have seen sexual or pornographic content and images of violence.

The Internet risk index, which ranges from 0 to 10, has a national average of 2.4. Students from private institutions, students from urban areas and college students have a risk index that exceeds the national average. In other words, more access, more computer skills and older age are factors that have an impact on greater exposure to risk in the use of the Internet, so it is necessary to guide minors in terms of safe, productive and meaningful use of the Internet, mainly in terms of strategies and skills to avoid putting themselves at risk or to deal with risk situations.

Finally, it is concluded that the supervision or accompaniment exercised by parents or guardians of children and adolescents in the use of the Internet is an element that should be reinforced, since it is a fundamental aspect for minors to develop the necessary skills and abilities to face risks in terms of Internet use.

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