Science communication on Instagram: uses and strategies from the Chilean praxis

La divulgación científica en Instagram: usos y estrategias desde la praxis chilena

Divulgação científica no Instagram: usos e estratégias da práxis chilena

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ABSTRACT | Both academic research and industry reports show how social networks have penetrated at a fast pace in Latin America. From the challenge of making specialized knowledge accessible to society, this phenomenon is an opportunity to learn how they are being used for scientific journalists working in specialized institutions. This study focuses on the Chilean context, paying special attention to Instagram. Due to its particularities and visual characteristics, this social network is replacing other applications such as Twitter and Facebook as a tool for scientific communication. The perception of the journalists working in scientific institutions and centers and their relationship with Instagram is hereby revealed, and its further analysis is developed based on a questionnaire with open and closed questions, which represents a contribution to the study on the journalistic use of social media. According to the results, 70% of those consulted identify Instagram as the most frequently used application for scientific dissemination on social media, due to its dynamism and visual capabilities to deliver messages. However, although there is a positive assessment of the platform and its importance as a great ally for the dissemination process, there is also a need to focus the messages and apply appropriate graphic criteria for greater effectiveness on posts and more engagement with the audiences.

KEYWORDS: Instagram; science journalism; social media; public communication of science; Chile.

RESUMEN | *Tanto las investigaciones académicas como los informes sectoriales evidencian cómo las redes sociales han penetrado rápidamente en Latinoamérica. Desde el reto que supone hacer accesible el conocimiento especializado a la sociedad, este fenómeno constituye una oportunidad para conocer cómo los periodistas especializados, que trabajan en instituciones o centros científicos, las utilizan para comunicar la ciencia. Este estudio presta especial atención a la plataforma Instagram como herramienta de comunicación científica, la que, por sus particularidades y características visuales, está desbancando a otras aplicaciones como Twitter y Facebook en este ámbito. La investigación revela cuál es la percepción de estos periodistas institucionales y su relación con Instagram en Chile, con base en un cuestionario con preguntas abiertas y cerradas. De acuerdo a los resultados obtenidos, 70% de los consultados sitúa a Instagram como la aplicación usada con mayor frecuencia para la divulgación científica en las redes sociales por su dinamismo y capacidades visuales para entregar los mensajes. No obstante, por más que existe una valoración positiva sobre la plataforma y su importancia como gran aliado para el proceso de difusión, también se advierte la necesidad de poder focalizar los mensajes y aplicar un criterio gráfico adecuado para una mayor efectividad en los posteos y más engagement con las audiencias.*

PALABRAS CLAVE: *Instagram; periodismo científico; redes sociales; comunicación pública de la ciencia; Chile.*

RESUMO | Tanto as investigações acadêmicas como os relatórios setoriais mostram como as redes sociais têm vindo penetrando rapidamente na América Latina. Dado o desafio de tornar os conhecimentos especializados acessíveis à sociedade, este fenômeno constitui uma oportunidade de conhecer como os jornalistas especializados que trabalham em instituições ou centros científicos utilizam as redes para disseminar informações sobre seus setores. Este estudo centra-se no contexto chileno, prestando especial atenção à plataforma Instagram que, devido às suas particularidades e características visuais, está a substituindo outras aplicações tais como Twitter e Facebook como instrumento de comunicação científica. É revelada a percepção dos jornalistas que trabalham em instituições e centros científicos e a sua relação com o Instagram, através duma análise baseada num questionário com perguntas abertas e fechadas. De acordo com os resultados obtidos, 70% dos consultados classificam o Instagram como a aplicação mais frequentemente utilizada para divulgação científica em redes sociais, devido ao seu dinamismo e capacidades visuais para entregar as mensagens. No entanto, por mais que haja uma avaliação positiva da plataforma e da sua importância como grande aliado no processo de disseminação, é também necessário focalizar as mensagens e aplicar critérios gráficos adequados para uma maior eficácia nos posts e uma maior interação com o público.

PALABRAS-CHAVE: Instagram; jornalismo científico; redes sociais; comunicação pública da ciência; Chile.

INTRODUCTION

Although the media and their journalists are the ones who generally disseminate the news that are most consumed in times of health crises (Costa-Sánchez & López-García, 2020), communicators from scientific centers or institutions provide highly relevant information to be able to overcome these difficulties (Gallardo-Vera & Micaletto-Belda, 2018) and seek the most appropriate tools to disseminate them, mainly in a context in which audiences are eager to know more about the topic and its latest developments (Fürst, 2021).

Social networks have revolutionized the consumption and distribution of news (Segado-Boj & Chaparro-Domínguez, 2021) and have become one of the main platforms for communicating science, with users accessing them as sources of information (Dunwoody, 2020). Applications such as Twitter, Facebook, YouTube or Instagram are, for many, the ideal spaces to be informed and thus learn about the most important scientific facts in the world (Igartua et al., 2020). In this regard, Instagram represents one of the applications with the greatest increase in users and, at the same time, one of the most used to disseminate information, due to its interactivity and visibility, among other factors (Seyidov & Artan, 2020).

Social networks have become an integral part of people's daily lives, mainly used to interact, obtain information and share about each user's life (Habibi & Salim, 2021). They have achieved a great penetration in Latin America and play an important role in the relationship that different disciplines, including journalism, have with the audience (Matassi & Boczkowski, 2020). Countries such as Chile, Uruguay and Argentina have a greater number of profiles than the total population in this geographic region (Brodman, 2022). The use of social networks in Latin America is highly influenced by the technological penetration of each country and even by the geographical areas in which they are located, which are fundamental aspects for the growth and accessibility of these applications (Coobis, 2019). However, beyond this circumstance, the access and use of social networks by the Latin American public is high.

In the specific case of Chile, an average of 83% of the population is active on these platforms (Kemp, 2021). Instagram is the dominant network in the 12-35 age group, and about 80% of this population uses it constantly to share their daily life or follow commercial brands of their preference (Cadem, 2019). On the other hand, applications such as Facebook or Twitter are used with a more informative role. This last study shows that young Chileans use Instagram mainly to share, on average, two stories per day, and not so much to publish posts on their profiles. Its users have increased their use by 63% compared to the previous year.

As a result of the high penetration of these applications in Latin America, science communicators and journalists are forced to find the best online platforms that facilitate the transmission, positioning and interaction of their messages (Howell & Brossard, 2019), taking into account that the scientific message conveyed is not lost in the generation of content. In today's globalized world, the Internet is the main platform that attracts people who want to acquire scientific knowledge and therefore contributes to the formation of consumers of scientific content (Harmatiy, 2021). In this context, the Internet represents the editorial center of numerous media and becomes a reactivating factor when it comes to deepening information (Olvera-Lobo & López-Pérez, 2015). Therefore, it is considered as a support for the dissemination of science or technology content that can be transmitted from different platforms (Pont-Sorribes et al., 2013).

According to Matassi and Boczkowski (2020) in Ibero-America, "the novelty of social networks in the region appears mainly in the area of concrete uses or applications, especially in the tourism, education and health sectors" (p. 11), which could be taken as an opportunity for the science sector to use these applications to communicate its content.

Thus, YouTube, as a repository and tool for storing videos, is the main global platform for the reproduction of audiovisual products (Ceci, 2022). Many disseminators have chosen to share their stories and knowledge in this way, receiving thousands of visits (Zaragoza-Tomás & RocaMarín, 2020). However, there are criticisms from specialists, such as Welbourne and Grant (2016), who state that YouTube lacks interaction with users, so it is not possible to achieve a good relationship with its community. Regarding the benefits of Twitter for communicating science, Denia (2021) describes the potential of this tool as a source of scientific dissemination, highlighting its functions at different levels: information, development of communities, possibility of interaction between actors linked to the world of science and the public. She also refers to the impact that can be achieved with the publications shared there.

As for Facebook, although it is considered by the We Are Social platform (Kemp, 2020) as the most popular social network in the world, with more than 2.7 billion active accounts in 2020, it is currently experiencing a crisis and credibility problems, which have led users to trust its content less and share less diverse information (Pont-Sorribes et al., 2019).

Instagram and its use in outreach
Instagram, created in 2010 for mobile phones, has as one of its main objectives "to socialize with friends, followers and people with common interests through direct messages and to interact with the photos and videos posted by followed users"

(Casado Riera & Carbonell, 2018, p. 24). Despite its constant growth, it has not been used mostly for scientific communication purposes (Pavlov et al., 2018), as shown by studies such as that of Alcolea Parra and colleagues (2020), which found that Spanish private universities have few publications related to research or scientific topics. However, due to the audiovisual characteristics of this social network, it can be anointed as one of the favorites for dissemination (Barashkova et al., 2019).

Jarreau and colleagues (2019) believe that for scientific museums, Instagram is certainly relevant, especially for its diversity of audiences, visual orientation and content that allows interaction with and between users. Even this digital world has an ally with the physical world, since it is common for the audience of this social network to spread the content of exhibitions or other scientific experiences when they visit them, thus becoming a window of the experiences generated in these spaces (Budge & Burness, 2017). On the other hand, Sidorenko-Bautista et al. (2021) appreciate what has been done by the Mexican media Pictoline, which, through attractive images and a specific infographic proposal to inform about science, has managed to capture the attention of thousands of followers, especially younger audiences. Meanwhile, Burch (2021) recognizes the potential of Instagram for audiences between 17 and 24 years old to learn information related to climate change.

Another documented benefit of using this social network is the positive interaction achieved with users, especially younger ones, which can mobilize this age group to actively participate in scientific activities (Pavelle & Wilkinson, 2020). Along the same lines, Chomón-Serna and Busto-Salinas (2018) and Caspari (2022) highlight in their studies the positive use of Instagram to enhance the archaeological experience, when users take advantage of the visual focus of the network to interact and post content. There is also evidence that not only journalists, but also members of the scientific community are using this social network to have in-depth conversations about their disciplines (Habibi & Salim, 2021).

It is important to mention the role of social networks during the pandemic, which became one of the main sources of access to information for users around the world (López-Rico et al., 2020). For example, through Instagram, medical centers created prevention guides before COVID-19 (Niknam et al., 2021) or recommendations for the daily life of confinement (Silva et al., 2020).

While the above helps to draw a general picture of the use of Instagram to promote public communication of science, there is a notable lack of initiatives focused on this issue at the institutional level. Journalists, as fundamental

agents of science communication, contribute valuable information through their perception and experience.

In this context, the objective of this work is to contribute to the knowledge of the perception and use that institutional science journalists in Chile have of Instagram as a tool to disseminate the scientific work of the institutions in which they work, through the production of science and technology content. To this end, the following research questions are posed:

RQ1. How do social networks influence the popularization of science from the practice of specialized journalists from science centers in Chile?

RQ2. What role does Instagram play in communication strategies regarding content and engagement formulas with younger audiences?

RQ3. What are the benefits and opportunities for science outreach on Instagram?

RQ4. What recommendations of good practice, in form and content, can we establish for the use of this platform as an information tool?

METHODOLOGY

The research team designed a questionnaire with open and closed questions, taking into account the research carried out by Valderrama (2014) and Vernal-Vilicic and colleagues (2019). This instrument was addressed to professionals in the field, in order to obtain a qualitative and quantitative approach on how they use the profiles of their institutions when communicating scientific actions.
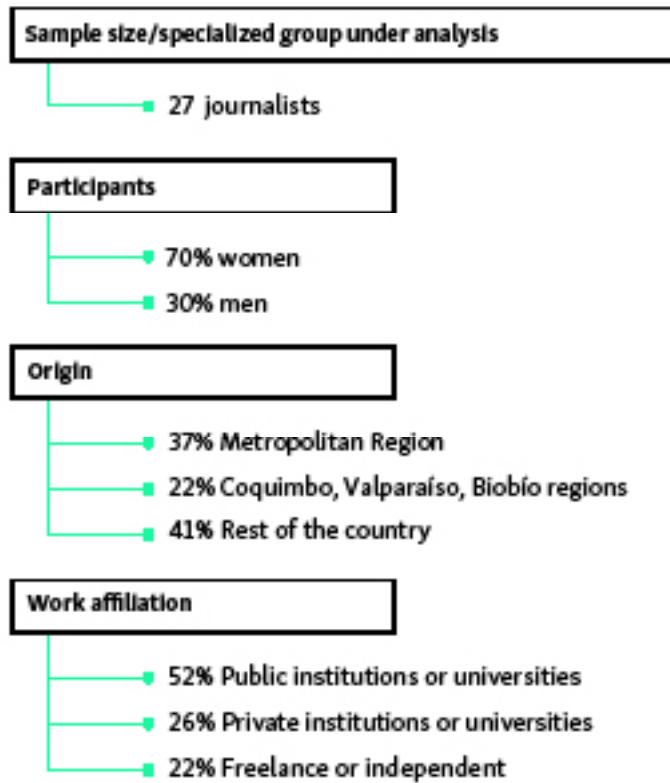
In situations of particular demand for information, such as the current pandemic, institutional and official information is usually a primary source and an invaluable reference by the public (Sierra Rodríguez, 2020), along with the importance of knowing how, from daily practice, these journalists have faced the work of communicating the actions of their centers through Instagram. The questionnaire designed, with a wide battery of closed and open questions that sought to know the assessment of these journalists on social networks and the institutional use they give to Instagram, methodologically approximate it to the semi-structured interview. It was applied during January and February 2021 and sent virtually to the participants. Since the questions are limited to a subset of journalists specific to the field of science and working in institutions, we applied a non-probabilistic sampling known as snowball sampling (Martin-Crespo & Salamanca, 2007; Alloatti, 2014).

We initially invited about twenty institutional journalists working in the field of science to participate, specifically in the Explora projects of the Chilean Ministry of Science, one of the main outreach programs in the country with more than 25 years of experience in bringing science closer to the community (Explora Program, 2022). They were asked if they could encourage other institutional science journalists to participate in the study. The final sample consisted of 27 journalists who work in research centers, universities, or outreach projects, either on a permanent basis or as independent contributors. The sample draws on the experience of professionals with outstanding careers in the field, who have led the communication actions of prestigious institutions and scientific centers in the country. All of them gave their explicit consent to the use of their data in this research.

Approximately 70% of the total number of participants in the study are women (N=19). The vast majority of them work in the Metropolitan Region (37%), which is the main demographic core of the country. These data are very similar to those recorded by Vernal-Vilicic and colleagues (2019) in their study on the perception of training and specialization in science journalism in Chile. It should be noted that the responses were obtained from communicators working in nine of the sixteen regions of Chile. The majority of the respondents work in communication centers and universities with public funding (n=14), and a group of respondents work in private institutions (n=7); in addition, 22% of the respondents work independently or as freelancers in these institutions (figure 1).

The questionnaire (figure 2) includes first of all general information and characterization questions. In addition, a section of questions was created to assess the use of social networks in relation to the use that each specialist makes of them to communicate scientific information on institutional profiles. The evaluation of this item is in Likert scale style, considering numerical response options from 1 to 5 (Matas, 2018), where 1 is no use at all and 5 is constant use.

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┌─────────────────────────────────────────────────┐
│ Sample size/specialized group under analysis     │
└─────────────────────────────────────────────────┘
        └────────■ 27 journalists

┌──────────────────────────┐
│ Participants              │
└──────────────────────────┘
        ├────────■ 70% women
        └────────■ 30% men

┌──────────────────────────┐
│ Origin                    │
└──────────────────────────┘
        ├────────■ 37% Metropolitan Region
        ├────────■ 22% Coquimbo, Valparaíso, Biobío regions
        └────────■ 41% Rest of the country

┌──────────────────────────┐
│ Work affiliation          │
└──────────────────────────┘
        ├────────■ 52% Public institutions or universities
        ├────────■ 26% Private institutions or universities
        └────────■ 22% Freelance or independent
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Figure 1. Study sample characteristics

Source: Own elaboration.

The closed-ended questions related to the perceptions and use of social networks by journalists and communicators, as well as those related to the use of Instagram, were evaluated according to percentage frequencies, which is a numerical value obtained through different divisions and multiplied by 100 (Calero-Morales, 2012).

In the case of open-ended questions, participants' responses were coded according to the number of patterns with the highest frequency, organized by a semantic network, which is a data structure in the form of nodes representing concepts connected by arcs that explain the relationships between the concepts or patterns found (Moreno-Ortiz, 2000; Hernández Sampieri et al., 2010). Participants were identified as respondents 1 to 27.

Figure 2 shows the type of questions in the questionnaire, the section, and the rating scale.

Question	Section	Type of question	Rating scale
1. Where are you from?	Personal information	Open	Statistical characterization
2. Where do you work?	Personal information	Open	Statistical characterization
3. Assessment of your use of social networks	Social network usage assessment	Closed, linear scale	Likert scale
4. Do you use Instagram to disseminate your institution's scientific content?	Social network assessment	Closed, multiple choice	Percentage frequency
5. How many posts - approximately - per week do you publish on this social network?	Instagram	Closed, multiple choice	Percentage frequency
6. In general, what kind of publications do you publish on your institution's Instagram? (You can check more than one)	Social network assessment	Closed, checkbox	Percentage frequency
7. Which of those do you consider to be more accepted by the public? (You can check more than one)	Instagram	Closed, checkbox	Percentage frequency
8. In your experience, what kind of interaction (engagement) on the part of your institutional Instagram users? Check the alternative that is closest to your reality.	Social network assessment	Closed, multiple choice	Percentage frequency
9. Do you use institutional Instagram stories as an outreach platform?	Instagram	Closed, multiple choice	Percentage frequency
10. In relation to the type of publications previously presented, what type of posts do you think brings more scientific information to the community and why? (In the questionnaire, this question is asked after question 7).	Social network assessment	Open	Patterns, semantic network
11. What is most striking about Instagram for disseminating scientific information?	Instagram	Open	Patterns, semantic network
12. What limitations do you see in this platform to spread scientific information?	Social network assessment	Open	Patterns, semantic network
13. What differences do you see between this social network and others such as Facebook, Twitter or YouTube?	Instagram	Open	Patterns, semantic network
14. What advice would you give to journalists and communicators to use this social network (Instagram)?	Social network assessment	Open	Patterns, semantic network

Figure 2. Description of the questionnaire designed for the study

Source: Own elaboration.

RESULTS

The results are presented in three different sections: 1) assessment of social networks, 2) assessment of journalists' and communicators' use of Instagram, and 3) personal assessment of Instagram.

Social networks assessment

70% of the respondents chose Instagram as the most used tool to disseminate the content of the institutions where they work.

In turn, Facebook and Twitter were given 48% of constant and systematic use. As for YouTube, only 11% of respondents indicated that they use this platform constantly. It is worth noting that 96% of respondents did not use TikTok to disseminate scientific information (figure 3).
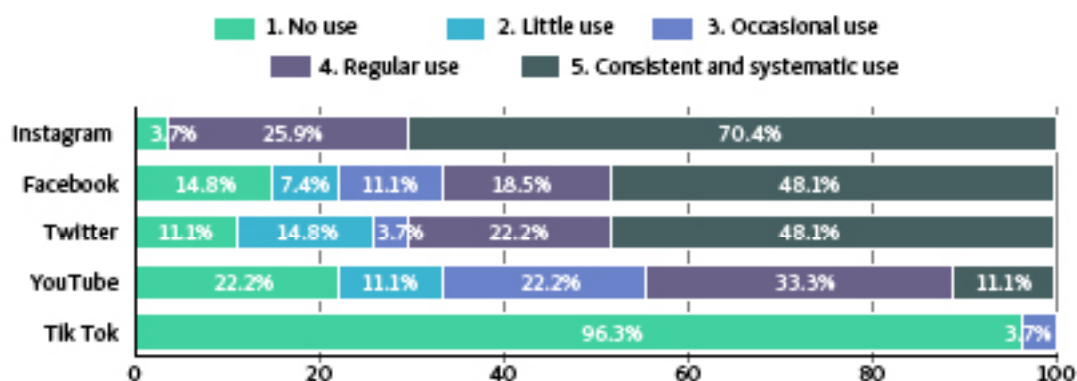

Figure 3. Frequency of use of social networks by journalists and communicators

Source: Own elaboration.

How journalists use Instagram

Publication frequency

50% of respondents claimed to post three posts per week on average on Instagram, with 22% stating that they post five posts per week.

Use of stories

56% of journalists or communicators who responded to the survey said they constantly use Instagram stories as a dissemination platform.

Interaction levels and types of publications

Respondents indicated that although they feel they are communicating positively with their audience, the interaction achieved with all generated posts only reaches 33% of likes and comments, and 59% if we refer only to likes.
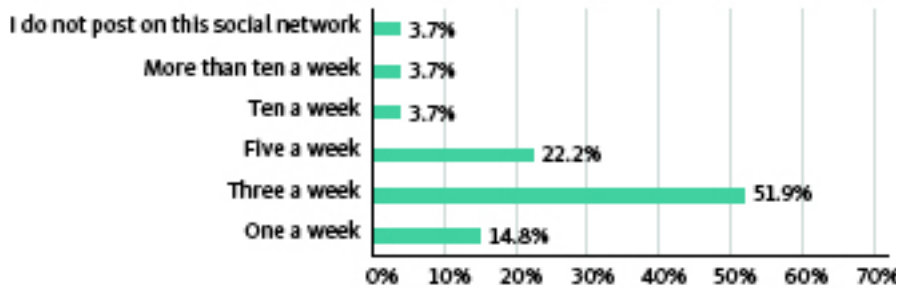
Most of the publications that journalists make on Instagram (77%) refer to the activities of scientific centers or institutions and their daily work. Likewise, 67% of

the participants said that they post about current information, linking what is being done institutionally with what is happening in the city or region where they live. In 59% of the cases, publications are produced with slides and explanatory pictures.
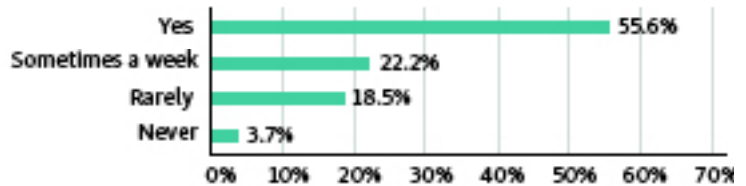
Only 18.5% of respondents said that institutional posts are accepted or liked by users when asked which of these publications could be more accepted by the public. Publications with slides or videos posted on the Instagram feed are the options that receive the highest preference, according to the perceptions of these professionals.

Figure 4 shows a summary of the main responses obtained in this section and the description of the use, topics and periodicity of publication on Instagram.
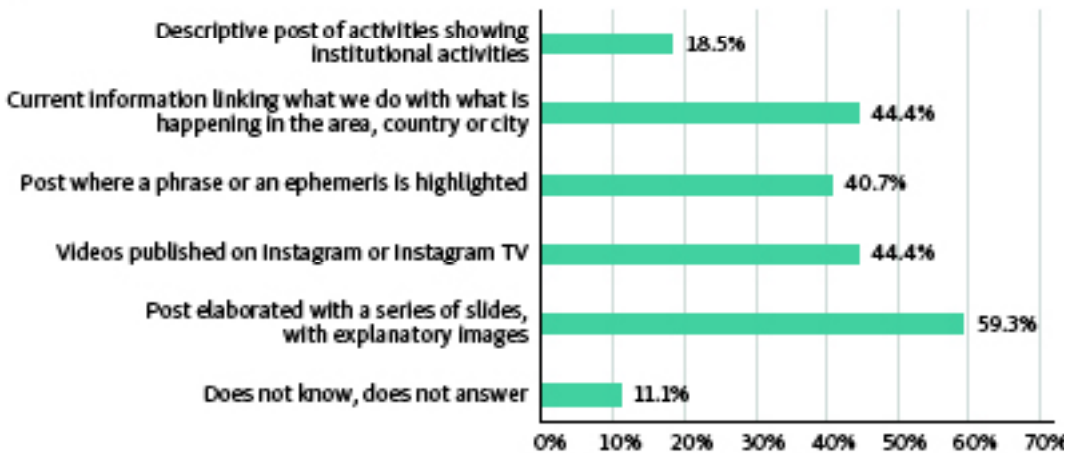
Frequency of publications

I do not post on this social network	3.7%
More than ten a week	3.7%
Ten a week	3.7%
Five a week	22.2%
Three a week	51.9%
One a week	14.8%

Use of stories

Yes	55.6%
Sometimes a week	22.2%
Rarely	18.5%
Never	3.7%

Type of publications

Descriptive post of activities showing institutional activities	18.5%
Current information linking what we do with what is happening in the area, country or city	44.4%
Post where a phrase or an ephemeris is highlighted	40.7%
Videos published on Instagram or Instagram TV	44.4%
Post elaborated with a series of slides, with explanatory images	59.3%
Does not know, does not answer	11.1%

Figure 4. Instagram usage, frequency and type of publication

Source: Own elaboration.

Personal assessment of Instagram

The 27 respondents were asked several open-ended questions about their relationship with Instagram and the benefits that, in their opinion, the use of this platform can bring to scientific dissemination.

The open-ended question about what kind of posts could bring more scientific information to the community and why leads to a series of different answers, but with a common denominator in the vast majority of responses, that these posts should be descriptive. Three patterns of concepts, such as the use of slides in infographic format, short videos, and posts that tell stories or are contingent, were identified in the participants' responses. Here are some of the responses to this open-ended question that partially highlight these characteristics (figure 5).

- Respondent 3: Creating a post with a series of slides or explanatory images is more entertaining and useful content. Followers are more likely to share, so the distribution is greater and the reach is wider.

- Respondent 16: Creating infographics helps a lot because it presents information in a more user-friendly way. Explanatory videos are also very well received, especially when there is a human being talking and it is not just a series of images.

- Respondent 20: Videos or infographics with little text are best. On Instagram, the audience does not read the explanation or wait for a short report of maximum 3 minutes to listen to it. Generally, users are not commenting on what they see.

According to the answers given and the most repeated patterns when analyzing the responses to the question "What is the most important thing about Instagram for the dissemination of scientific information?", participants stated that it is an interactive, massive (reach) and dynamic tool for generating publications. The respondents appreciated that Instagram is their favorite social network to disseminate science because of its visual component, where the image is the center of the message, and its much younger age range. Nevertheless, some criticize its use or the lack of dialogue with the public.

Regarding the latter, when asked about the limitations of this platform for the dissemination of scientific information, the communicators reflected that the main problem was that at the time it was not possible to include external links or share publications. This reduced the possibility of replicating their own information or that of other sites of interest (figure 6).
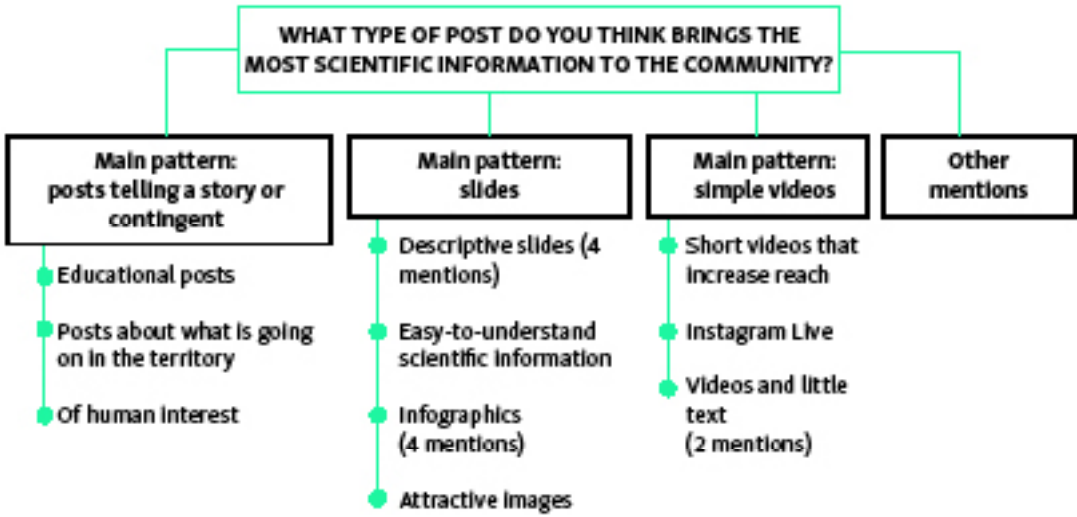
WHAT TYPE OF POST DO YOU THINK BRINGS THE MOST SCIENTIFIC INFORMATION TO THE COMMUNITY?

Main pattern: posts telling a story or contingent
- Educational posts
- Posts about what is going on in the territory
- Of human interest

Main pattern: slides
- Descriptive slides (4 mentions)
- Easy-to-understand scientific information
- Infographics (4 mentions)
- Attractive images

Main pattern: simple videos
- Short videos that increase reach
- Instagram Live
- Videos and little text (2 mentions)

Other mentions

Figure 5. Perceptions of posts that provide more scientific information

Source: Own elaboration.

WHAT ARE THE LIMITATIONS OF THIS PLATFORM FOR DISSEMINATING SCIENTIFIC INFORMATION?

Other comments
- People dedicate little time to it
- Short videos (60 mins)
- None
- Too much information
- Only 2 people Live
- Metrics are not clearly displayed
- Poor text effectiveness
- Difficult to use
- Limitation and strength: must have good graphics (2 mentions)

Main pattern: cannot be shared
- Difficult to reach a wider audience without sharing
- Unable to share feed (2 mentions)
- Unable to link or share to other platforms
- Unable to repost (3 mentions)
- Unable to replicate
- Algorithm prevents you from sharing
- Cannot share Stories
- Live does not allow sharing slides

Main pattern: lack of links
- No links allowed
- Cannot link sources
- Cannot link to stories
- Cannot link to other web pages
- No links, cannot go deeper
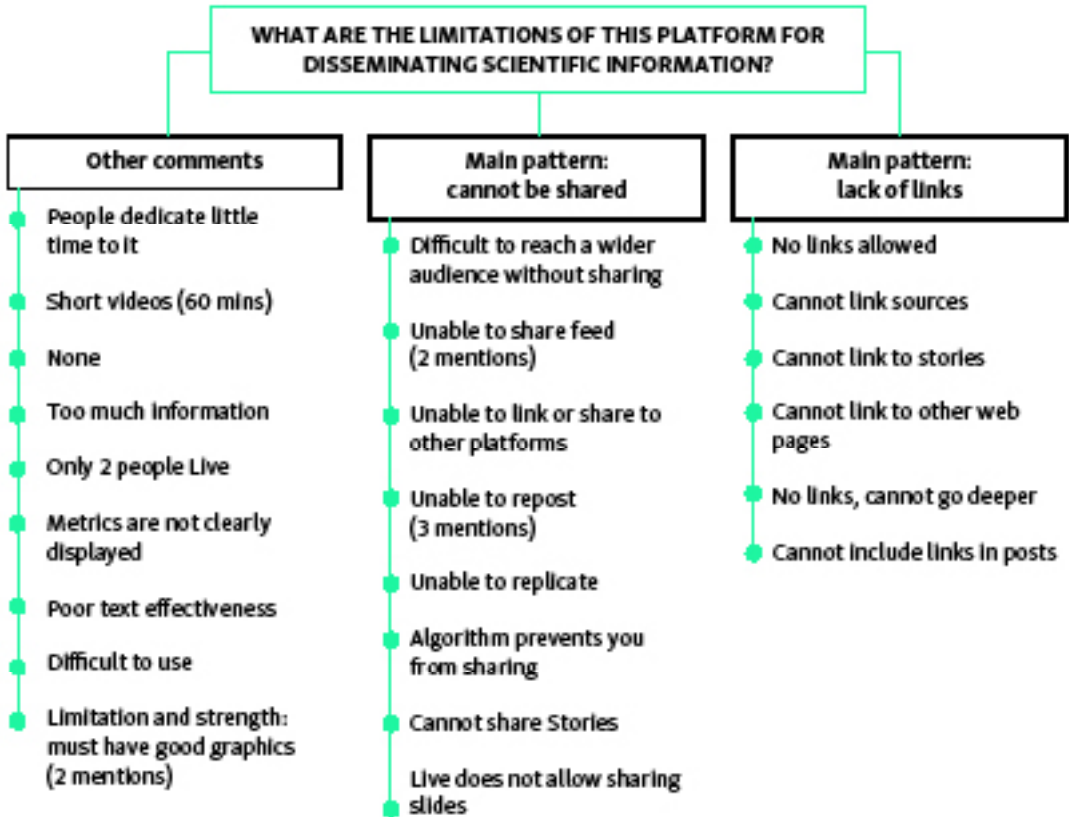- Cannot include links in posts

Figure 6. Perceptions of Instagram's limitations for disseminating scientific information

Source: Own elaboration.

Finally, in response to the open question of what advice can be given to journalists and communicators on how to use this social network, most opinions point to being clear about the objective of the message and using all the graphic and interactive possibilities offered by the platform, balancing the peculiarities of the design, such as the harmony between text and image, as shown by some of these answers.:

- Respondent 3: It is necessary to take advantage of the dynamism of the network, the distribution of information through all applications, such as stories, posts or reels.

- Respondent 15: It is necessary to have an order and a graphic line, always with the target audience in mind. In addition, it is necessary to be constant with the publications, taking care of the quality of the images and interacting with the audiences that speak to us.

- Respondent 19: It is necessary to use eye-catching graphics and quality photos. It is important to focus on the geographic area [in which] you are working and to always have a posting schedule so you know what content will be generated.

- Respondent 20: Infographics should be limited to 5 slides, always using good image quality and balancing color and text.

- Respondent 26: Develop short messages with precise drop-downs. Use crisp, visible fonts in graphics, with a color scheme that is visually appealing.

DISCUSSION AND CONCLUSIONS

Many scientific organizations already consider social networks as one of the main tools to disseminate their activities (Comfort & Hester, 2019). In this regard, several studies have also shown how communicators value social networks as an important ally to carry out their activity, allowing journalists to become disseminators of information (Weiss, 2015), a source to find ideas and know what users think (Weaver & Willnat, 2016), and favoring engagement with the audience, depending on the platform used and the type of content (Davies et al., 2021).

This study answers the first research question by showing that Instagram is the preferred application for communicating institutional and scientific news in Chile. The fact that 70% of respondents have Instagram as their preferred network for disseminating content may also correspond to the fact that this tool, along with Twitter, is one of the most used platforms by Chilean journalists (Mellado Ruiz & Ovando, 2021), and there is a significant penetration for its use.

Thus, Instagram could eventually replace Twitter as the preferred network for scientific dissemination. Several studies have reported the significant influence of Twitter for journalists, as this network is the one that many believe could bring more value to media or communication organizations (Matassi & Boczkowski, 2020). However, this study shows the important value that science journalists from Chilean institutions give to Instagram to show their content.

The use of Instagram by these professionals is increasing (Sidorenko-Bautista, 2021), becoming a source of large audiences for the discipline of journalism. Likewise, the respondents confirm previous studies that state that this network is a more visual, informal platform with multiple functions, focused on multimedia and young people (Jarreau et al., 2019), which makes posting on Instagram allow more connections with the audience than other applications (Martin & MacDonald, 2020), answering research question 3. As much as this network is valued for entertainment and fun, many users use it to search for news (Andi, 2021).

It is not surprising that specialized journalists constantly use Instagram stories to communicate the actions of research center projects. They are increasingly using this type of microformats and are somehow adapting to this type of digital journalism (Vázquez-Herrero et al., 2019). On the other hand, the most viewed part of this social network, to the detriment of static photos in the profile, are the stories (Fondevila-Gascón et al., 2020), so it is important to be able to focus more on the development of publications that incorporate these media.

Although some respondents indicate that this social network does not generate greater dialogue with the public, previous research shows the considerations that must be taken into account when publishing in this application (PI4); for example, in health issues, seeking interaction with the audience and favoring positive tones generate higher levels of interaction in publications (Barklamb et al., 2020.). In addition, due to the nature of the application, the use of hashtags may allow for further dissemination of what has been generated and impact more audiences (Doran et al., 2018). However, studies such as Sidorenko-Bautista and colleagues (2021) recognize that there is no major strategy when it comes to enhancing scientific content with these types of tags.

Other research reflects that the use of videos generates a great interaction with users (Iskandar & Arden, 2016), which is similar to what was raised by Chilean science communicators in this study, showing that descriptive publications or short videos have greater effectiveness. In the same vein, creating videos that speak directly to the camera or posts with messages that appeal to emotions (and not necessarily including scientific content) can help to better connect with audiences (Martin & MacDonald, 2020). Considering these variables as part of a journalist's

social media plan could help to build stronger relationships with users who follow the profiles. It has also been explored how the presence of influencers, celebrities, and science communicators themselves in message delivery can help increase audience interaction (MacKay et al., 2022).

The optimal frequency of posting depends on the contexts in which users are located, their profiles, the style of posting, and the topics covered, among other circumstances (Balan, 2017). However, some literature reports that a post has a greater reach and interaction is ideally developed at times between 6 am and 3 pm, preferably on weekdays (Numanovich & Abbosxonovich, 2020).

Based on the responses obtained in this study, it would be ideal for journalists to be able to use all the graphic and interactive possibilities offered by the platform in each post; however, this is an action that has not yet been sufficiently undertaken by communicators. In contexts as diverse as museums (Jarreau et al., 2019), fashion (Velar-Lera et al., 2020), or university communication (Alcolea Parra et al., 2020), it has been observed that those who manage the accounts do not use the true potential of this social network, which prevents them from making the most of the interaction with the audience. Similarly, the creation of infographics and the appeal of visuals are sufficiently valued by the scientific world to communicate research, emphasizing that they should be interactive, help explain complex ideas, and allow the summary and integration of the most important (Siricharoen, 2013; Li et al., 2018).

On the other hand, according to the results of our study and those that respond to research question 2, although institutional messages and those related to the activities of the organizations are the most predominant, they are not necessarily the most effective or those that generate the most attention. The fact that the publications that might be the most eye-catching are those linked to slides or short videos poses a challenge. In fact, this means that the journalist must improve his or her graphic and design skills, or else these tasks must be assigned to a communication team that has the necessary professional skills to carry out these productions, always bearing in mind that the objective of public communication of science is, for the most part, scientific knowledge and the mastery of the language necessary to communicate it (Rodríguez & Giri, 2021).

It is also important to define the target audience. Although Instagram is a network considered massive by many of the respondents, there is an important group of young users, so it would be ideal to work on topics or message construction with them in mind. Furthermore, given the increase and use of social networks as a result of the coronavirus pandemic (López-Rico et al., 2020), it is crucial to

be able to take advantage of all the tools offered by Instagram to better reach the audience accessing scientific content.

Beyond the results obtained, it is essential to highlight the work of journalists and journalism in bringing science to the general public. Regardless of the platform or social network used, the science journalist has a responsibility to inform and educate society, valuing the importance of scientific activity for human life (Cortiñas-Rovira et al., 2015) and seeking the best channels to achieve scientific literacy among citizens (Vizcaíno-Verdú et al., 2020).

This work represents a first approach to this topic, and the starting point for future research that will contribute to creating a standard for science communication through Instagram. It is also necessary to delve deeper into identifying the best strategies to improve science communication in other social networks - such as TikTok - specifically aimed at journalists and science communicators, including a larger sample of journalists and evaluating other aspects of social networks and their use in times of pandemic for science communication. It is also important to explore aspects related to the engagement sought in this type of platform and the importance of knowing the algorithms of this network to get better responses from users (Davies et al., 2021; Taddicken & Krämer, 2021). An additional opportunity lies in the possibility of developing the analysis with techniques such as digital ethnography or deepening the content analysis of what is generated in the publications and institutional profiles themselves, thus contributing to the exercise of this discipline.

It should be noted that in order to carry out the study, in January and February 2021 -which coincides with the summer vacation period in Chile- the questionnaire designed was sent to a database of Chilean journalists working in scientific institutions, specifically in Explora projects, in order to later reach other professionals working in the same field. Although the volume of responses obtained was smaller than desired, we consider that this does not affect the validity of the results, since they were obtained from a representative sample of professionals, in accordance with the object of study and with the mission of obtaining a first approach to how this type of social networks is used in the exercise of the profession and, specifically, in the institutional field, where each of the participants are journalists who work in leading centers and organizations, with a special handling of social networks, and many with years of experience in their positions.

REFERENCES

Alcolea Parra, M., Rodríguez Barba, D., & Núñez Fernández, V. (2020). El uso corporativo de Instagram en las universidades privadas españolas. Estudio comparativo de 35 universidades (The corporate use of Instagram in spanish private universities. Comparative analysis of thirty-five private universities). *Ámbitos. Revista Internacional de Comunicación*, (47), 109–134. https://doi.org/10.12795/ambitos.2020.i47.06

Alloatti, M. (2014). Una discusión sobre la técnica de bola de nieve a partir de la experiencia de investigación en migraciones internacionales (A discussion of the snowball technique from international migration research experience). In W. Soto Acosta (Coord.), *IV Encuentro Latinoamericano de Metodología de las Ciencias Sociales* (pp. 1–19). Universidad Nacional de Costa Rica. https://bit.ly/3obtZ9S

Andi, S. (2021, June 23). ¿Cómo y por qué accede la audiencia a las noticias en redes sociales? (How and why does the audience access news on social networks?). *Reuters Institute.* https://bit.ly/3OTmXBB

Balan, C. (2017). Does brand posting behaviour influence follower engagement on Instagram? *Proceedings of the International Conference on Business Excellence*, *11*(1), 687–697. https://doi.org/10.1515/picbe-2017-0073

Barashkova, A. L., Vorob'Ev, I. V., Shavaev, A. A., & Zapolskaya, A. N. (2019). New Methods of Science Popularization in the Social Media: Modern Trends and Communications. In *Proceedings of the 2019 IEEE International Conference Quality Management, Transport and Information Security, Information Technologies IT and QM and IS 2019* (pp. 463–465). IEEE. https://doi.org/10.1109/ITQMIS.2019.8928354

Barklamb, A. M., Molenaar, A., Brennan, L., Evans, S., Choong, J., Herron, E., Reid, M., & Mccaffrey, T. A. (2020). Learning the Language of Social Media: A Comparison of Engagement Metrics and Social Media Strategies Used by Food and Nutrition-Related Social Media Accounts. *Nutrients*, *12*(9), 2–23. https://doi.org/10.3390/nu12092839

Brodman, K. (2022). Estas son las redes sociales que utilizan más en América Latina para informarse (These are the social networks most used for information in Latin America). *Factor Nueve.* https://bit.ly/3Ap6O1i

Budge, K. & Burness, A. (2017). Museum objects and Instagram: agency and communication in digital engagement. *Continuum*, *32*(2), 137–150. https://doi.org/10.1080/10304312.2017.1337079

Burch, E. (2021). A Sea Change for Climate Refugees in the South Pacific: How Social Media–Not Journalism–Tells Their Real Story. *Environmental Communication*, *15*(2), 250–263. https://doi.org/10.1080/17524032.2020.1821742

Cadem. (2019). *El Chile que viene: Uso de redes sociales* (The Chile to come: Use of social networks). https://bit.ly/3ORWTqm

Calero-Morales, S. (2012). Analysis the percentage frequency to estimate volleyball's performance. *Revista electrónica de Ciencia y Tecnología en la Cultura Física*, *7*(22), 3–15. https://bit.ly/3TeQjgS

Casado Riera, C. & Carbonell, X. (2018). La influencia de la personalidad en el uso de Instagram (The influence of personality on Instagram use). *Aloma: Revista de Psicologia, Ciències de l'Educació i de l'Esport*, *36*(2), 23–31. https://doi.org/10.51698/aloma.2018.36.2.23-31

Caspari, G. (2022). Instagram as a tool for archaeological science communication. *Digital Applications in Archaeology and Cultural Heritage*, *24*, e00219. https://doi.org/10.1016/j.daach.2022.e00219

Ceci, L. (2022, April 4). YouTube - Statistics & Facts. *Statista*. https://bit.ly/3pHZed8

Chomón-Serna, J. M. & Busto-Salinas, L. (2018). Ciencia y transmedia: binomio para la divulgación científica. El caso de Atapuerca (Science and transmedia: A binomial for scientific dissemination. The Atapuerca case). *Profesional De La Información*, *27*(4), 938–946. https://doi.org/10.3145/epi.2018.jul.22

Comfort, S. E. & Hester, J. B. (2019). Three Dimensions of Social Media Messaging Success by Environmental NGOs. *Environmental Communication*, *13*(3), 281–286. https://doi.org/10.1080/17524032.2019.1579746

Coobis. (2019, October 30). ¿Qué redes sociales consumen más en Latinoamérica? guía completa (Which social networks are most consumed in Latin America? complete guide). https://bit.ly/3QgtkQy

Cortiñas-Rovira, S., Alonso-Marcos, F., Pont-Sorribes, C., & Escribà-Sales, E. (2015). Science journalists' perceptions and attitudes to pseudoscience in Spain. *Public Understanding of Science*, *24*(4), 450–465. https://doi.org/10.1177/0963662514558991

Costa-Sánchez, C. & López-García, X. (2020). Comunicación y crisis del coronavirus en España. Primeras lecciones (Communication and coronavirus crisis in Spain. First lessons). *Profesional De La Información*, *29*(3), 1–14. https://doi.org/10.3145/epi.2020.may.04

Davies, S. R., Franks, S., Roche, J., Schmidt, A. L., Wells, R., & Zollo, F. (2021). The landscape of European science communication. *JCOM*, *20*(3), 1–19. https://doi.org/10.22323/2.20030201

Denia, E. (2021). Twitter como objeto de investigación en comunicación de la ciencia (Twitter as a research tool in science communication). *Revista Mediterranea de Comunicacion*, *12*(1), 289–301. https://doi.org/10.14198/MEDCOM000006

Doran, H., Burdett, H., Butterworth, L., Crawford, T., Cenci, W., Chipampe, N.-J., Crossland, J., Day, N., Grant, M., Heber-Smith, K., Hong, A., Kalra, R., Livingstone-Banks, M., McLusky, S., Miles, S., Owen, D., Reed, M., Stewart, M., & Wright, C. (2018). *What Works? Engaging the Public Through Social Media.* National Co-ordinating Centre for Public Engagement. https://bit.ly/2qXjOb6

Dunwoody, S. (2020). Science Journalism and Pandemic Uncertainty. *Media and Communication*, *8*(2), 471–474. https://doi.org/10.17645/mac.v8i2.3224

Fondevila-Gascón, J.-F., Gutiérrez-Aragón, Ó., Copeiro, M., Villalba-Palacín, V., & Polo-López, M. (2020). Influencia de las historias de Instagram en la atención y emoción según el género (Influence of Instagram stories in attention and emotion depending on gender). *Comunicar*, 63, 41–50. https://doi.org/10.3916/C63-2020-04

Fürst, S. (2021). "Public communication science in times of the Covid-19 crisis": DACH 21 preconference. *Studies in Communication Sciences*, *21*(1), 189–195. https://doi.org/10.24434/j.scoms.2021.01.032

Gallardo-Vera, L. & Micaletto-Belda, J. P. (2018). Hacia una definición de comunicación institucional en situaciones de crisis (The way towards a definition of corporate communication during a crisis). *Revista Observatorio.*, *4*(1), 437–465. https://doi.org/10.20873/uft.2447-4266.2018v4n1p437

Habibi, S. A. & Salim, L. (2021). Static vs. dynamic methods of delivery for science communication: A critical analysis of user engagement with science on social media. *PLoS ONE*, *16*(3), 1–15. https://doi.org/10.1371/journal.pone.0248507

Harmatiy, O. (2021). Science Coverage: What Does the Audience Want and Really Need? Exploring Media Consumption in Ukraine. *Journal of Creative Communications*, *16*(1), 97–112. https://doi.org/10.1177/0973258620981799

Hernández Sampieri, R., Fernández Collado, C., & del Pilar Baptista Lucio, M. (2010). Metodología de la Investigación (5 Ed.) (Research Methodology, 5th Ed.). McGraw Hill.

Howell, E. & Brossard, D. (2019). Science engagement and social media: Communicating across interests, goals, and platforms. In T. Newmann (Ed.), *Theory and Best Practices in Science Communication Training* (pp. 57–70). Routledge. https://doi.org/10.4324/9781351069366

Igartua, J.-J., Ortega-Mohedano, F., & Arcila-Calderón, C. (2020). Communication use in the times of the coronavirus. A cross-cultural study. *Profesional De La Informacion*, *29*(3). https://doi.org/10.3145/epi.2020.may.18

Iskandar, B. P. & Arden, J. (2016). Content Analysis of Food Instagram Account. In *Proceedings of the Sustainable Collaboration in Business, Technology, Information and Innovation (SCBTII)* (pp. 41–45). https://bit.ly/3cZEHh3

Jarreau, P. B., Dahmen, N. S., & Jones, E. (2019). Instagram and the science museum: a missed opportunity for public engagement. *Journal of Science Communication*, *18*(2), 1-22. https://doi.org/10.22323/2.18020206

Kemp, S. (2020, October 20). Social media users pass the 4 billion mark as global adoption soars. *We are Social.* https://bit.ly/3Am7LaL

Kemp, S. (2021, February 11). Digital 2021: Chile. *Data Reportal.* https://bit.ly/3Csc1Ix

Li, N., Brossard, D., Scheufele, D. A., Wilson, P. H., & Rose, K. M. (2018). Communicating data: interactive infographics, scientific data and credibility. *Journal of Science Communication*, *17*(2), 1–20. https://doi.org/10.22323/2.17020206

López-Rico, C. M., González-Esteban, J. L., & Hernández-Martínez, A. (2020). Consumo de información en redes sociales durante la crisis de la COVID-19 en España (Information consumption in social networks during the Covid-19's crisis in Spain). *Revista de Comunicación y Salud*, *10*(2), 461–481.   https://doi.org/10.35669/rcys.2020.10(2).461-481

MacKay, M., Ford, C., Colangeli, T., Gillis, D., McWhirter, J. E., & Papadopoulos, A. (2022). A content analysis of Canadian influencer crisis messages on Instagram and the public's response during COVID-19. *BMC Public Health*, 22, 763. https://doi.org/10.1186/s12889-022-13129-5

Martin-Crespo, M. C. & Salamanca, A. (2007). El muestreo en la investigación cualitativa (Sampling in qualitative research). *Nure Investigación: Revista Científica de enfermería*, 27, 1–4. https://bit.ly/3yQxJ5D

Martin, C. & MacDonald, B. H. (2020). Using interpersonal communication strategies to encourage science conversations on social media. *PLoS ONE, 15*(11), e0241972. https://doi.org/10.1371/journal.pone.0241972

Matas, A. (2018). Diseño del formato de escalas tipo Likert: un estado de la cuestión (Likert-Type Scale Format Design: State of Art). *Revista Electronica de Investigacion Educativa, 20*(1), 38-47. https://bit.ly/3bmsu5J

Matassi, M. & Boczkowski, P. J. (2020). Redes sociales en Iberoamérica. Artículo de revisión (Social media in Ibero-America. Review article). *Profesional de La Información*, 29(1). https://doi.org/10.3145/epi.2020.ene.04

Mellado Ruiz, C. & Ovando, A. (2021). Periodistas y redes sociales en Chile: transformación digital y nuevas formas de visibilidad y creación de identidad (How Chilean Journalists Use Social Media: Digital Transformation and New Forms of Visibility and Identity Creation). *Palabra Clave*, 24(2), 1–26. https://doi.org/10.5294/pacla.2021.24.2.2

Moreno-Ortiz, A. (2000). Diseño e implementación de un lexicón computacional para lexicografía y traducción automática (Design and implementation of a computational lexicon for lexicography and machine translation). *Revista Estudios de Lingüística del Español, 9.* https://bit.ly/3OQoDeP

Niknam, F., Samadbeik, M., Fatehi, F., Shirdel, M., Rezazadeh, M., & Bastani, P. (2021). COVID-19 on Instagram: A content analysis of selected accounts. *Health Policy and Technology*, 10(1), 165–173. https://doi.org/10.1016/j.hlpt.2020.10.016

Numanovich, A. I. & Abbosxonovich, M. A. (2020). The analysis of lands in security zones of high-voltage power lines (power line) on the example of the fergana region. *EPRA International Journal of Multidisciplinary Research (IJMR)*, 6(2), 312–321. https://doi.org/10.36713/epra3977

Olvera-Lobo, M. D. & López-Pérez, L. (2015). Science journalism: the homogenization of information from paper to Internet. *Journal of Science Communication*, 14(3), 1–12. https://doi.org/10.22323/2.14030401

Pavelle, S. & Wilkinson, C. (2020). Into the Digital Wild: Utilizing Twitter, Instagram, YouTube, and Facebook for Effective Science and Environmental Communication. *Frontiers in Communication*, 5, 575122. https://doi.org/10.3389/fcomm.2020.575122

Pavlov, A. K., Meyer, A., Rösel, A., Cohen, L., King, J., Itkin, P., Negrel, J., Gerland, S., Hudson, S. R., Dodd, P. A., De Steur, L., Mathisen, S., Cobbing, N., & Granskog, M. A. (2018). Does Your Lab Use Social Media? Sharing Three Years of Experience in Science Communication. *Bulletin of the American Meteorological Society*, 99(6), 1135–1146. https://doi.org/10.1175/BAMS-D-17-0195.1

Pont-Sorribes, C., Besalú, R., Rovira, E., Castelo, S., & Sánchez, M. (2019). *Análisis de la credibilidad de la información política en el entorno digital (Facebook, WhatsApp, prensa digital y televisión)* (Analysis of the credibility of political information in the digital environment (Facebook, WhatsApp, digital press and television)). YouGov. https://bit.ly/2OjVNGb

Pont-Sorribes, C., Cortiñas Rovira, S., & Di Bonito, I. (2013). Retos y oportunidades para los periodistas científicos en la adopción de las nuevas tecnologías: el caso de España (Challenges and opportunities for science journalists in adopting new technologies: the case of Spain). *Journal of Science Communication*, *12*(3). https://doi.org/10.22323/2.12030205

Programa Explora. (2022). *Quiénes Somos (Who we are).* https://bit.ly/3IIGwLj

Rodríguez, M. & Giri, L. (2021). Desafíos teóricos cruciales para la comunicación pública de la ciencia y la tecnología post pandemia en Iberoamérica (Crucial Theoretical Challenges for Post-Pandemic Public Communication of Science and Technology in Ibero-America). *Revista CTS*, 25–39. https://ri.conicet.gov.ar/handle/11336/138185

Segado-Boj, F. & Chaparro-Domínguez, M. (2021). Compartición de noticias en redes sociales. Difusión selectiva y poder social (Sharing news in social media. Narrowcasting and social power). *Cuadernos.Info*, (50), 45–68. https://doi.org/10.7764/cdi.50.27433

Seyidov, I. & Artan, B. (2020). Insta-worthiness of News in New Media Journalism: How to Understand News Values on Instagram. *Türkiye İletişim Araştırmaları Dergisi*, (36), 186–203. https://doi.org/10.17829/turcom.803352

Sidorenko-Bautista, P., Cabezuelo-Lorenzo, F., & Herranz-de-la-Casa, J.-M. (2021). Instagram como herramienta digital para la comunicación y divulgación científica: el caso mexicano de @pictoline (Instagram as a digital tool for scientific communication and outreach: the Mexican case of @pictoline). *Chasqui. Revista Latinoamericana de Comunicación*, 1*(147)*, 143–162. https://doi.org/10.16921/chasqui.v1i147.4472

Sierra Rodríguez, J. (2020). Periodismo, comunicación institucional y transparencia: aprendizajes de la crisis sanitaria del COVID-19 (Journalism, institutional communication and transparency: lessons from the covid-19 health crisis). *Revista de Comunicación y Salud*, *10*(2), 569–591. https://doi.org/10.35669/rcys.2020.10(2).569-591

Silva, A. G., Batista, T., Giraud, F., Giraud, A., Pinto-Silva, F. E., Barral, J., Guimarães, J. N., & Rumjanek, V. M. (2020). Science communication for the deaf in the pandemic period: absences and pursuit of information. *Journal of Science Communication*, *19*(5), 1–19. https://doi.org/10.22323/2.19050205

Siricharoen, W. V. (2013). Infographics: The New communication Tools in Digital Age. In *Proceedings of The International Conference on E-Technologies and Business on the Web* (pp. 169–174). https://bit.ly/3SwSEnl

Taddicken, M. & Krämer, N. (2021). Public online engagement with science information: on the road to a theoretical framework and a future research agenda. *Journal of Scientific Communication*, 20(3), 1–18. https://doi.org/10.22323/2.20030205

Valderrama, L. (2014). Comunicar la ciencia en Chile: problemas formativos del periodismo y la divulgación científica actual (Communicating science in Chile: formative issues in journalism and science popularization today). In R. Torres (Ed.), *Ciencia y Sociedad en el siglo XXI Estrechando vínculos desde una mirada Franco-Latinoamericana* (Science and Society in the 21st Century Strengthening Links from a French-Latin American Perspective) (pp. 35–49). EchFrancia Ediciones. https://doi.org/10.13140/2.1.4262.2407

Vázquez-Herrero, J., Direito-Rebollal, S., & López-García, X. (2019). Ephemeral Journalism: News Distribution Through Instagram Stories. *Social Media and Society*, 5(4), 1-13. https://doi.org/10.1177/2056305119888657

Velar-Lera, M., Herrera-Damas, S., & González-Aldea, P. (2020). Uso de Instagram para la comunicación de las marcas de moda de lujo (Using Instagram for Communication of Luxury Fashion Brands). *Palabra Clave*, 23(4), e2344. https://doi.org/10.5294/PACLA.2020.23.4.4

Vernal-Vilicic, T., Valderrama, L., Contreras-Ovalle, J., & Arriola, T. (2019). Percepción de la formación y la especialización del periodismo científico en Chile (Perception of training and specialization of scientific journalism in Chile). *Cuadernos.Info*, (45), 213–226. https://doi.org/10.7764/cdi.45.1717

Vizcaíno-Verdú, A., De-Casas-Moreno, P., & Contreras-Pulido, P. (2020). Divulgación científica en YouTube y su credibilidad para docentes universitarios (Scientific dissemination on YouTube and its reliability for university professors). *Educacion XX1*, 23(2), 283–306. https://doi.org/10.5944/educXX1.25750

Weaver, D. H. & Willnat, L. (2016). Changes in U.S. Journalism: How do journalists think about social media? *Journalism Practice*, 10(7), 844–855. https://doi.org/10.1080/17512786.2016.1171162

Weiss, A. S. (2015). The digital and social media journalist: A comparative analysis of journalists in Argentina, Brazil, Colombia, Mexico, and Peru. *International Communication Gazette*, 77(1), 74–101. https://doi.org/10.1177/1748048514556985

Welbourne, D. J. & Grant, W. J. (2016). Science communication on YouTube: Factors that affect channel and video popularity. *Public Understanding of Science*, 25(6), 706–718. https://doi.org/10.1177/0963662515572068

Zaragoza-Tomás, J. C. & Roca-Marín, D. (2020). El movimiento youtuber en la divulgación científica española (The youtuber movement in Spanish scientific dissemination). *Prisma Social*, 31, 212–238. https://bit.ly/3oP4cVi

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