



## Inclusive employability and the role of social networks in digital society. A case study on Twitter, Instagram and YouTube

Empleabilidad inclusiva y el papel de las redes sociales en la sociedad digital. Un caso de estudio en Twitter, Instagram y YouTube

A empregabilidade inclusiva e o papel das redes sociais na sociedade digital. Um estudo de caso no Twitter, Instagram e YouTube

Carlos Barroso-Moreno<sup>1\*</sup> 

Miguel del Fresno-García<sup>2\*\*</sup> 

Laura Rayón-Rumayor<sup>1\*\*\*</sup> 

<sup>1</sup> Department of Educational Studies, Complutense University of Madrid, Spain

<sup>2</sup> National Distance Education University, Spain

\* Predoctoral Research Fellow

\*\* Professor

\*\*\* Professor

Received: 22/02/2023; Revised: 13/03/2023; Accepted: 25/05/2023; Published: 21/08/2023

*Translation to English:* Elena Bañares Marivela

*To cite this article:* Barroso-Moreno, Carlos; del Fresno-García, Miguel; & Rayón-Rumayor, Laura. (2023). Inclusive employability and the role of social networks in digital society. A case study on Twitter, Instagram and YouTube. *ICONO 14. Scientific Journal of Communication and Emerging Technologies*, 21(2). <https://doi.org/10.7195/ri14.v21i2.2006>



## Abstract

Social networks as spaces for social participation are relevant to the study of inclusive employability. This research analyses publications on Twitter, Instagram and YouTube related to inclusive employment, especially those associated with people with disabilities. The aim is to identify profiles in relation to employability and disability on these digital platforms through correlations between content, sentiment, gender, influence, time and geographical space addressed from a social and employment perspective. The content collection is carried out using the Twitter API and web scraping techniques between 1 November 2021 and 31 October 2022, with a total of 109.266 publications, of which 13.887 contain keywords related to employment. The research is carried out using a mixed methodology that analyses, quantitatively, the dataset using the Power BI tool and, qualitatively, the most viral posts on each social network. This data analysis makes the invisible of network relationships visible, identifying patterns of content creation and groups of influence. The results show the influence of international days on the number of altruistic publications, and a mercantile utilitarianism of inclusive employability that overshadows non-profit social diffusions. The understanding and visualization of the structure and themes intrinsic to the object of study allow us to promote inclusive employability in a more rational way and to improve communication spaces among critical digital citizens.

**Keywords:** disability; education; digital society; inclusive employability; social listening; social networks

## Resumen

Las redes sociales como espacios de participación social son relevantes para el estudio de la empleabilidad inclusiva. La presente investigación analiza las publicaciones en Twitter, Instagram y YouTube relacionadas con empleo inclusivo, en especial, las asociadas a personas con discapacidad. El objetivo es identificar perfiles en relación con la empleabilidad y la discapacidad en estas plataformas digitales a través de las correlaciones entre el contenido, sentimiento, género, influencia, espacio temporal y geográfico abordado desde la perspectiva social y laboral. La recopilación de contenidos se realiza mediante la API de Twitter y técnicas de «web scraping» entre el 1 de noviembre de 2021 y 31 de octubre de 2022, con un total de 109.266 publicaciones, de las cuales 13.887 contienen palabras clave relacionadas con el empleo. La investigación se desarrolla mediante una metodología mixta que analiza, de forma cuantitativa, el conjunto de datos mediante la herramienta Power BI y, de forma cualitativa, las publicaciones más virales de cada red social. Este análisis de datos permite hacer visible lo invisible de las relaciones en red, identificando patrones de creación de contenidos y grupos de influencia. Los resultados evidencian la influencia de los días internacionales en el número de publicaciones altruistas y un utilitarismo mercantil de la empleabilidad inclusiva que opaca las difusiones sociales sin ánimo de lucro. La comprensión y visualización de la estructura y las temáticas intrínsecas al objeto de estudio permiten fomentar de manera

más racional la empleabilidad inclusiva y mejorar los espacios de comunicación entre la ciudadanía digital crítica.

**Palabras clave:** discapacidad; educación; sociedad digital; empleabilidad inclusiva; escucha social; redes sociales

## Resumo

As redes sociais como espaços de participação social são relevantes para o estudo da empregabilidade inclusiva. Esta investigação analisa publicações no Twitter, Instagram e YouTube relacionadas com o emprego inclusivo, especialmente as associadas a pessoas com deficiência. O objectivo é identificar perfis em relação à empregabilidade e à deficiência nestas plataformas digitais através de correlações entre conteúdo, sentimento, género, influência, tempo e espaço geográfico abordados de uma perspectiva social e de emprego. A recolha de conteúdos é realizada utilizando a API do Twitter e técnicas de raspagem da web entre 1 de Novembro de 2021 e 31 de Outubro de 2022, com um total de 109.266 publicações, das quais 13.887 contêm palavras-chave relacionadas com o emprego. A pesquisa é realizada utilizando uma metodologia mista que analisa, quantitativamente, o conjunto de dados utilizando a ferramenta Power BI e, qualitativamente, os posts mais viris em cada rede social. Esta análise de dados torna visível o invisível das relações de rede, identificando padrões de criação de conteúdos e grupos de influência. Os resultados mostram a influência dos dias internacionais no número de publicações altruísticas, e um utilitarismo mercantilista de empregabilidade inclusiva que ensombra as difusões sociais sem fins lucrativos. A compreensão e visualização da estrutura e temas intrínsecos ao objecto de estudo permitem-nos promover a empregabilidade inclusiva de uma forma mais racional e melhorar os espaços de comunicação entre cidadãos digitais críticos.

**Palavras-chave:** deficiência; educação; sociedade digital; empregabilidade inclusiva; escuta social; redes sociais

## 1. Introduction

People with disabilities experience stigma and discrimination in their desire for ordinary role models, such as having a job, even though they often perform certain jobs more competently than their non-disabled peers (Ali et al., 2011; Harrison et al., 2021). However, the ONCE Foundation's Odismet report (2020) indicates that only 25.8% of people with disabilities of working age are in work, compared to 65.9% of people without disabilities. The wage gap is also evident, the average gross annual salary of a person with a disability is 19,726.8 euros compared to 23,764.8 euros for a non-disabled worker, 16.8% more. There are studies with similar figures for the member states of the European Community, according to Hästbacka et al. (2016) and Izquierdo and Ortega (2020).

Work by Jacob et al. (2022), Kwan (2021), Malhotra & Rowe (2014), Morwane et al. (2021) and Trezzini et al. (2022), among others, identify that the support structures and attitudes of job coaches, employers and co-workers are more determinant variables than personal factors and the effects of disability. However, the need for transformation of structural factors such as public awareness of the work potential of people with disabilities and their rights, more effective employment policies for employers or the transition between school, vocational training and the labour market should not be underestimated (Gupta et al., 2021; Malhotra & Rowe, 2014; Vornholt et al., 2018).

These findings in the field of disability and employment highlight new areas of interest. Emphasising barriers, contextual facilitators, social facilitators and structural factors is consistent with the social model of disability that challenges the medical-rehabilitative approach. This allows disability to be recognised as a social construct rather than a biological deficit reality (Calderón et al., 2016; Barnes, 2019; Calderón & Rascón, 2022). This critical shift in research on disability and employability is relevant because the forms of disability may vary, but the factors that hinder or facilitate socio-occupational inclusion may be similar for people with disabilities (Hästbacka et al., 2016). A relevant approach from which to analyse the role of social networks and inclusive employability. The institutional recognition in the European Commission (2022) of people with disabilities as a workforce and a valuable resource for contributing to society with full rights (Vornholt et al., 2018) also justifies the enquiry into the topic under study.

## **1.1. Social networks and inclusive employability**

From the above-mentioned works, the labour inclusion of people with disabilities recognises the role of social networks as spaces for inclusive employability along three lines of work: Chen et al. (2019), Lin et al. (2018) and Trevisan (2016).

A first line of work analyses the role of disability awareness campaigns (Santoso, 2019; Zayer & Gunes, 2018). In this line, public awareness on social networks is recognised as a decisive factor in removing environmental and social barriers to social inclusion in general and employment in particular. Similarly, the formation of a decisive awareness to eliminate negative stereotypes about competence for occupational and social development is highlighted (Blau & Shamir-Inbal, 2017). And finally, the role of organisations in generating employability opportunities, breaking stereotypes and fostering labour inclusion is emphasised, in particular, how corporate volunteering is a strategy to improve the reputation and commitment of organisations through social responsibility policies (Mañas-Viniegra, 2018).

A second line of work is focused on understanding the value of the visibility of people with disabilities in social networks. Thus, the critical importance of digital platforms to enrich new conceptions and social representations is recognised (Baker-Doyle, 2011; Bowker

& Tuffin, 2002). Networks are understood as significant educational spaces for raising awareness of disability and human rights, as well as for strengthening other ways of looking at and valuing (dis)ability (Calderón & Rascón, 2022).

Finally, a third line of study focuses on analysing social networks as spaces for the construction of resistance and struggles in the face of discrimination and stigma (Kent et al. 2015; Paşcalău-Vrabete et al., 2021; Trevisan, 2016). The value of social networks in reshaping political participation into a more inclusive experience for internet users with disabilities and enhancing their participation in democratic citizenship is recognised. Persons with disabilities and disability advocates are highlighted because of their commitment to combating inequality and acting on behalf of vulnerable groups with a willingness to address inequality by providing visibility, recognition and empowerment (Macdonald et al., 2023; Series, 2020).

However, despite the benefits recognised by previous studies, the pioneering work of Moolenaar et al. (2010) and Mamas et al. (2020) warn about the complex structures of relationships that emerge in social networks and the importance of having analytical procedures that identify the logic of relational structure and content in social networks. Specifically, they point out the need to broaden our understanding of unidentified patterns, to detect who holds the profiles (organisations, media, people or companies) that are susceptible to analysis by means of computer programmes, among other issues. The aim is to make visible what is not obviously visible: the structure of networked relationships on the Internet, generating new knowledge. The complexity of the factors and algorithms involved requires multidisciplinary research teams to achieve interdisciplinary analyses (Cuypers et al., 2020; García-Marín & Serrano-Contreras, 2023). It is also worth noting another problem, the mercantile approach of digital platforms and marketing strategies to disseminate content on social networks with the greatest impact. Meticulous attention to variables such as sentiment, posting times, music, text, video, audio and other aesthetic components (Bhattacharyya, 2022; Quesenberry, 2020; Vargo, 2016) can condition inclusive employability content.

Addressing who holds significant positions of relevance in communication and/or a more influential structural position in social networks is difficult to be intuitively visible due to the complex structures and interests of digital platforms (García-Marín & Serrano-Contreras, 2023). Therefore, this study poses two questions:

- Q1 Who are the profiles and/or groups of influence in the employability community in an inclusive way?
- Q2 Which issues have the highest visibility and interest, and which are relegated to the background?

Answering these concerns will allow us to understand the invisible structure and intrinsic issues around inclusive employability and to improve the spaces for meaningful, fluid, and impactful communication. The importance of the topic under study requires relevant

knowledge about the possibilities of the influence of social networks on the representations and discourses around inclusive and transformative employability.

## 2. Aim and hypotheses

This study has two objectives, with corresponding hypotheses:

- O1. To identify the profiles and groups of influence in relation to the behaviour of inclusive employability on Twitter, Instagram and YouTube in relation to the visibility of disability.
- O2. To analyse and exemplify the most viral topics on these social networks as discursive spaces of power.

The hypotheses are as follows:

- H1. The asymmetrical behaviour by social network shows the mercantile interests that surround the employers, but their visibility allows the social challenges of vulnerable people to be highlighted.
- H2. Social networks in the context of employability are discursive spaces where people with disabilities try to break stereotypes and claim their rights.
- H3. Influence groups overshadow individual publications due to their influence and mastery of communication technologies supported by the algorithms of digital platforms.

## 3. Material and methods

The chosen methodology is a mixed one: quantitative analysis of all the aforementioned social media posts together with qualitative analysis of the most interesting posts to test the hypotheses. A complex social phenomenon, such as the object of study, needs to be approached from different perspectives to understand the meanings of the publications by means of a design that captures a significant volume of data, allows correlating a series of variables and identifying patterns of behaviour. The methodology consists of five phases (Figure 1) and is detailed below:

- Phase 1: Identification of the key words of the education theme together with disability or inclusion. The capture period is from 1 November 2021 to 31 October 2022, completing one year. The collected publications are cross-referenced using a Boolean query to focus on employability with the words: work or employment or employability or work or job or employability.

- Phase 2: Application of the "Social Listening" technique on Twitter, Instagram and YouTube (Johjima et al., 2019; Stewart & Arnold, 2018), using a real-time capture technology of the posts. If they contain the required keywords they are stored in the database with the identifier of each post, otherwise they are discarded. The basis of how Twitter content captures work is the use of its API, for Instagram and YouTube web scraping techniques implemented with a Python script are used. During the aforementioned capture period, 109,266 unique posts are collected.
- Phase 3: Computational and manual database analysis of the 109,266 posts after applying the data cleaning algorithms. This task requires filtering by employability keywords, resulting in 13,887 unique publications. The quantitative-computational sub-phase allows the identification of the number of daily posts, sentiments or number of "likes", among others. The "Text Analysis" techniques generate new variables adapted to the research needs, "tokenisation" is applied to separate words from the content of the publication and words are eliminated from the "stopwords" list to discard pronouns, prepositions and articles, among others (Rodríguez et al., 2021). The qualitative-manual sub-phase is performed by researchers on the ten most viral posts in each social network along with other posts of particular relevance to analyse the content according to the date and time of publication, type of profile (individual, companies, foundations...), irony and, if available, geolocation. The categorisation of publications is done collaboratively among the authors, subject to review by two researchers from the group (Hitchcock & Onwuegbuzie, 2022). The criterion of virality in the measurement of publications varies depending on the study and the peculiarity of each social network (Arora et al., 2019), therefore, the convergence of properties of the networks analysed is the number of "likes".
- Phase 4: Formulation of global statistics and analysis of the publications to add value to the information. The use of the technological tool, Power BI, allows companies to be analysed through dynamic and interactive graphs with free access to the data obtained (Ferrari & Russo, 2016). In addition, graphs are generated to reveal the internal structure of the relationships between hashtags with the social network analysis tool Gephi.

Figure 1. Research flow diagram



Source: Own elaboration.

## 4. Results

According to the data, Twitter is the social network with the highest number of posts and polarisation. On Instagram, the number of publications is lower than on Twitter, but it accumulates a greater number of total "likes" and positive messages about the employability of people with disabilities stand out. On the other hand, the volume on YouTube is low, as the title has to contain the three keywords and one of the three employment-related words.

The database consists of 109,266 publications, broken down as follows: Twitter with 64,353 posts, 58.9% of the total; Instagram with 42,871 posts, 39.24% of the total; YouTube with 2,042 posts, 1.87% of the total. Focusing on employability publications, with at least one keyword, the result is 13,887, 12.70% of the total database. In terms of Twitter, there are 9,264 publications, with a sentiment N= 2,711 positive (29.26%) and N= 1,789 negative (19.31%). Regarding Instagram there are 4,401 publications with sentiment N=2,575 (58.51%) positive and N= 181 (4.11%) negative. Concerning YouTube there are 222 posts with sentiment N=18 (8,11%) positive and N= 6 (2,70%) negative.

The results are available to the scientific community via the business tool Power BI<sup>1</sup>. This allows all researchers to corroborate the information provided from the more than 100,000 pieces of content captured. Another advantage of this tool is that it allows interested parties to interact with the graphs to reproduce the figures presented and even provide new insights for future research. In addition, the publications listed in this article are included in FigShare<sup>2</sup>. In addition, an Excel<sup>3</sup>, a database with all publications related to employability, is made available. This data is the source database for the Power BI visualisations.

### 4.1. Awareness of international days

Figure 2, built with the Power BI business tool, shows an above average number of publications on certain days. The analysis by means of manual sampling on the whole and the visualisation of the word cloud allows us to affirm the relevance of international days for the subject matter under study. Regarding Instagram, the dates corresponding to International Days (ID) or World Days (WD) stand out: Autism Awareness WD, 2 April [PE10]; Disability ID, 3 December [PE8]; Education ID, 24 January [PE9]; Down Syndrome ID, 21 March [PE11]; Worker ID, 1 May [PE12]; Special Education ID, 9 August [PE13]. With regard to Twitter, these dates do not have such a high incidence, although, as shown in Figure 2, the following stand out: Disability DI, 3 December [PE14] and Autism Awareness DM, 2 April [PE15].

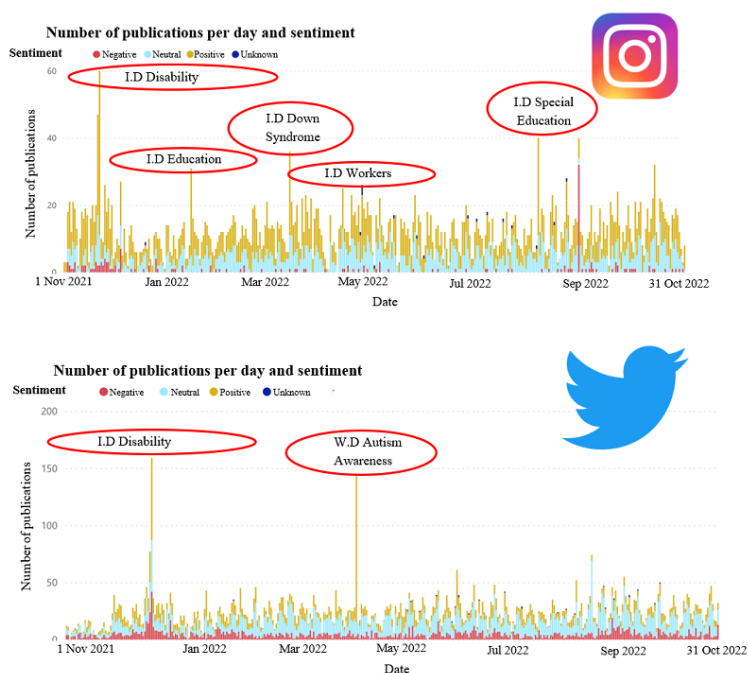
The content analysis shows that Twitter is the most polarised social network based on the sentiments of the posts, with a percentage difference of positive versus negative

sentiments of 10%, on Instagram the figure is 54.40%. These results show that Twitter does not behave with the polarisation that characterises it for other content, as is the case with political issues, with more than 90% of posts being for and against on this social network (Tucker et al., 2018).

Large corporate foundations promote this activism on international days. However, they fail to achieve significant impact. Examples include: Orange Foundation Autism Day, 12.9K followers and 8 likes [PE20]; Telefónica Foundation, 22.1K followers and 11 likes [PE16] and Pharmaceutical Foundations [PE17].

The most significant results are: (I) there is a direct relationship of influence between international days and publications not associated with profiles belonging to the groups of influence, with Instagram standing out; (II) the most viral publications are characterised by positive feelings on the three social networks analysed, with a predominance on Instagram, where people with disabilities carry out work actions in their daily lives that break stereotypes; (III) there is a reduced space on Instagram, where people with disabilities carry out work actions in their daily lives that break stereotypes. (III) There is a reduced space in volume oriented towards denunciation, where stable employment is demanded to guarantee the quality of life of people with disabilities and their rights free of prejudice and stigma [P14]. (IV) International days give visibility to people with disabilities, legitimising the necessary social awareness of the inalienable rights of full employment that demonstrate the vindication and enhancement of their work roles in society, confirming H2.

Figure 2. Timeline of the number of posts associated with sentiment and international days relevant to inclusive employability on Instagram and Twitter



Source: own elaboration in Power BI.

## 4.2. Commodification of social networks

Social networks are understood by the business world as a channel for direct communication with customers and potential customers and, at the same time, as a channel to reinforce the impact and presence of the brand image, which can also offer new business opportunities. The data generated and captured (cookies) on the web allow companies, organisations and institutions to segment different audiences with increasingly personalised advertising. The aim is to increase the sales potential and/or notoriety of products or services by targeting social media users as customers or potential customers. Therefore, having identified their obvious presence, the question is whether the business world modulates its commercial, branding, etc. objectives in social issues or whether its altruism maintains its mercantile vocation.

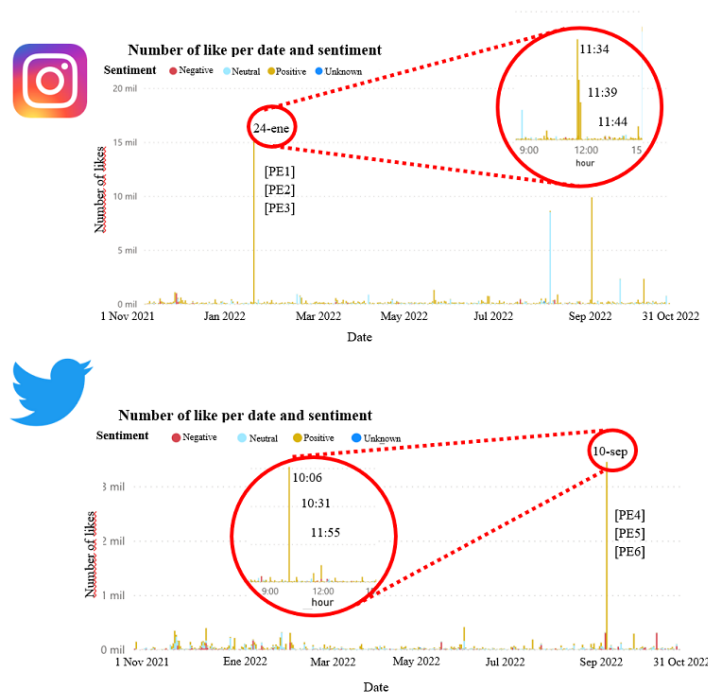
Figure 3 presents the sum of likes on each day associated with the sentiment of the publication. At first glance, there are two main groups of positive posts on both social networks whose dates do not correspond to any international day. Analysing the publications with the highest number of likes, the three publications on Instagram stand out, concentrated on 25 January, published by three different accounts with a large number of followers and with the same content from the McDonald's company [PE1], [PE2]

and [PE3]. On Twitter, there are three publications, dated 10 September, published on three different accounts of the same football club with a large number of followers and similar content from the Real Madrid Foundation [PE4], [PE5] and [PE6]. The Real Madrid Foundation is also located on YouTube, with similar Twitter posts in the same time frame and in reference to its 25 years working for education, cooperation and inclusion.

The number of followers is significant, the six accounts mentioned have: "saber.detodo" 788K followers [PE1]; "asombroso.dato" 286K followers [PE2]; "dato.increible" 384k followers [PE3]; "Real Madrid C.F" 45.9 M followers [PE4]; "Real Madrid Basket" 759.9 K [PE5]; and "Fundación Real Madrid" 403.1 K followers [PE6].

If we analyse the hours of the six publications, it covers a space of less than two hours, a space in which all the information is published on a massive scale. These are marketing strategies to viralise campaign content (Bhattacharyya, 2022; Quesenberry, 2020). Therefore, six different accounts with tens of thousands or millions of followers are evidence of a marketing and communication campaign. McDonald's and the Real Madrid Foundation seek to associate their brands with the object of study in a planned way.

Figure 3. Timeline of the number of likes associated with the sentiment, highlighting the times of the most viral post on Instagram and Twitter



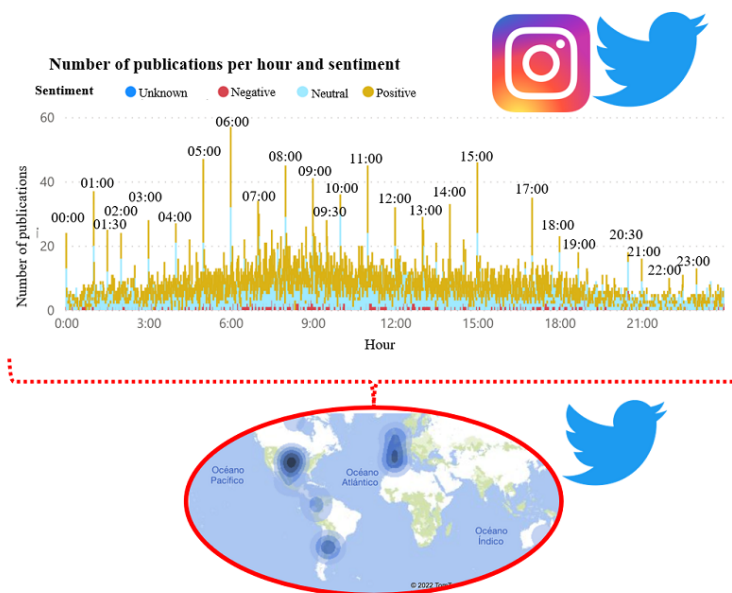
Source: own elaboration in Power BI.

Therefore, the most viral publications are those that come from large companies or institutions. At this point, it is worth asking whether this is a one-off or constant act in the

social theme of the object of study. To answer this question, Figure 4 is generated, which represents the number of publications per hour and the geolocation of Twitter publications (N= 1,901). The analysis per minute shows the frequency of publication in exact hours, which mostly corresponds to groups of influence: Mapfre [PE25] at 7:00, Banco Sabadell [PE24] at 9:00, Fundación Orange [PE20] 11:00, among many other examples. This practice is used by government institutions, as evidenced by the Panamanian Minister of Education [PE26]. This strategy of dissemination at a specific time is made possible by the use of social network management tools with scheduled times for publication and dissemination at exact times in a coordinated manner.

Another aspect to highlight in Figure 4 is the geolocations in the heat map that are concentrated in the most developed countries. 21.88% in the USA, 14.47% in Spain, 11.94% in Argentina, 10.31% in the UK, followed by Australia, Canada, Italy and Norway with much lower percentages. And with tiny percentages, with a couple of publications with the keywords, we find countries where the struggle for basic rights is a constant for the general population, some of these countries are Afghanistan [PE27], Thailand [PE28] or India [PE29]. In this percentage, groups and associations that stand out in the streets demanding employability rights for people with disabilities or vulnerability.

Figure 4. Timeline of the number of posts associated with the sentiment, highlighting the times of the most viral post on Instagram and Twitter



Source: own elaboration in Power BI.

The ONCE publication does not achieve any kind of virality [PE21], although it supports the employability of people with disabilities through training, technological accessibility and inclusive education. Something similar happens with the Red Cross, which is close

to vulnerable people with a broad social and territorial participation to provide a comprehensive response to these people. The official results of the Red Cross in 2022 show that 1.5 million people are assisted in search of employment. However, this volume of people assisted does not have an impact on the virality of the NGO's social networks, with an average number of likes of less than one hundred in the three networks [PE22], [PE23]. This imbalance between people served and low virality can be consulted using Power BI, which the Red Cross makes available to the public at the following link: <https://bit.ly/3ISYwoj>.

The conclusions of the analysis in Figure 4 and 5 show that: (I) the most viral publications are generated by influential groups linked to the economic or business sector; (II) marketing, communication and branding strategies are present in the promotion of employability in relation to inclusion and disability; (III) programmed dissemination of content from companies or institutions is very present in volume in the social media; (IV) however, the organisations that are most influential in the economic or business sector have a high level of virality in the social media; and (V) the organisations that are most influential in the economic or business sector have a high level of virality in the social media. (IV) However, non-profit organisations or altruistic individuals do not follow marketing patterns for their broadcasts, relegated to the background. (V) The debate on the relationship between inclusion education and/or disability, focusing on inclusive employability, is generated in developed countries such as the United States and some member countries of the European Union.

These results confirm H1, by showing the presence of the commercial interests of companies through their exposure in social media with publications oriented towards marketing, communication and branding. Similarly, H3 is confirmed by analysing the virality of the publications linked to the business environment given the number of followers they have, the attractive visual content and the recommendations of the algorithms of the social platforms. The latter hypothesis is more significant, as more commercial communication can have the effect of obscuring the visibility and visibility of other groups, organisations or altruistic projects.

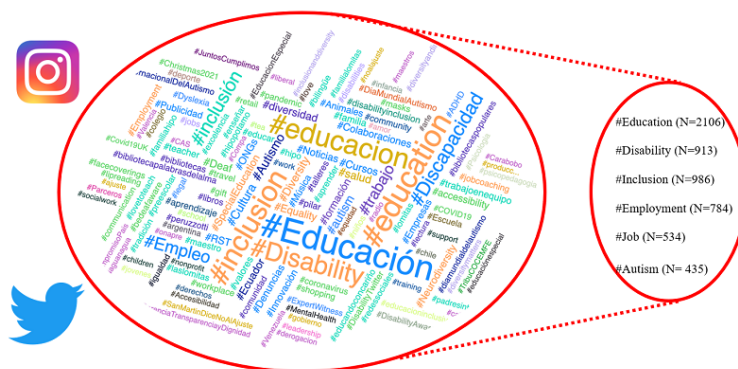
### **4.3. Internal structure of meaning**

Graphs make it possible to represent the relationships between hashtags in the whole database by linking hashtags (nodes) in the publication with lines (links) to other identical hashtags in different publications. The most influential topics are identified in the network as nodes with greater centrality and size, because they are the thematic axes defined by keywords that contain multiple relationships. In contrast, isolated or dispersed themes are found in the outer part of the network with a reduced node size. The graphs depicted in Figure 6 are created with Gephi, an open source software (<https://gephi.org>) for interactive visualisation of complex relationship systems that reveals the internal structure of the data and determines hidden relationships.

Figure 6 represents, on the left hand side, the graph constructed with the complete database. The most viral post on Twitter corresponds to the Federal Deputy of Mexico [PE35] with 1.6M followers. On Instagram, a father with a son diagnosed with grade I Autism has 105K followers and 336,869 likes [PE34]. The graph hashtags #education, #inclusion and #autism stand out. The graph filtered with one of the keywords employment, work or employability highlights the publications presented above in relation to the commodification of networks [PE1] and [PE4]. These results are logical given that the nodes are constructed on the basis of the keywords used for content retrieval. Thus, as seen in Figure 5 in word cloud, the volumetrics of the nodes are #education (N= 25459), #education (N= 9809), #disability (N= 7070), #disability (N= 8566), #inclusion (N=6892), #inclusion (N=13141). As well as the filters for #employment (N=444), #job (N=218), #work (N=638), #work (N=321), #employability (N=19) and #employability (N=7).

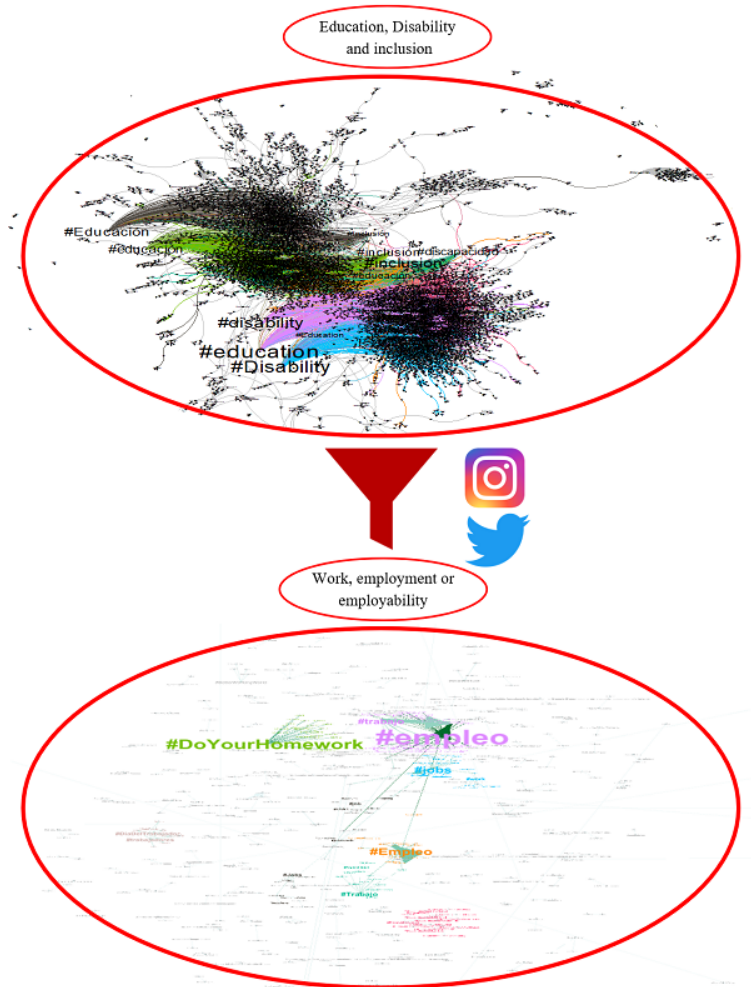
With this overview, the Spanish hashtag #education is most closely related to #inclusion. Looking at the most frequently used hashtags #DoYourHomework, it is evident that it is a hashtag that defines activism across the world to foster an inclusive environment for children with disabilities. Using this hashtag, large organisations such as the International Disability Alliance (IDA) encourage the collection of information in the workplace for further analysis with an inclusive perspective [PE32]; Down Syndrome associations call on political leaders for inclusive education [PE33] or even school teachers in Kenya echoing this movement [PE30] and [PE31]. This hashtag, in turn, is significantly connected to the #transformingEducation hashtag. These results show that (I) the use of viral hashtags makes it possible to disseminate issues and promote profiles that remain in the background, and (II) at the same time, to link these less viral profiles with profiles related to their social issues and interests.

Figure 5. Word cloud composed of hashtags on Instagram and Twitter



Source: own elaboration in Power BI.

Figure 6. Hashtag graphs on Instagram and Twitter in Spanish and English with the keywords education, disability and inclusion, filtered again by work, employment or employability



Source: own elaboration in Gephi.

## 5. Discussion and conclusions

The results of the research show an asymmetrical and differentiated behaviour between publications on social media originating from altruistic organisations or groups and corporate ones, with a significantly greater reach and notoriety in the latter for inclusive employability (O1). The influence on the number of publications on international days reverses this trend and shows the importance of educating in effective and efficient communication techniques to know how to give visibility to the demands of more vulnerable or altruistic groups. The vision of the number of likes clearly reflects how influential groups overshadow organisations or altruistic individuals who proactively claim rights for inclusive employment (H3). Therefore, it is important to have the knowledge and

skills of communication techniques to effectively carry out dissemination strategies that make publications visible with premeditated actions such as the use of viral hashtags and sharing. This would contribute to raising awareness among citizens and employers about the full employment rights of people with disabilities (Gupta et al., 2021; Hästbacka et al., 2016; Vornholt et al., 2018).

One of the key questions is whether international days are relevant for the visibility they provide or whether they are a sign of awareness of the algorithms of digital platforms. The question is: invisible or invisibilised? Altruistic publications have hardly any impact on the rest of the days. However, more commercial publications have great virality (H1), supported by the financial capacity of companies to develop corporate or institutional communication. One of the factors is the large number of followers they attract over time, with commercial strategies (e.g. "follow us and get a 10% discount...") and attractive multimedia content, etc. Corporate and institutional advantage is also based, along with marketing strategies, on their ability to disseminate content and participate in the public sphere with a constant degree of sentiment that generates loyalty (Quesenberry, 2020; Vargo, 2016). Another relevant factor is the role played by platform algorithms, which privilege and encourage advertising-based recommendations to users. Keep in mind that the objective is to increase exposure on the network, which generates a constant circle of virality, called the crystal algorithm (Barroso-Moreno et al., 2023). Consequently, the number of publications by people with disabilities interested in breaking stereotypes and claiming their rights show their presence on the network, but they have serious difficulties in conquering social networks as viral discursive spaces. H2 is partly denied, because their publications do have a presence on the networks, but they do not achieve virality. The exception to this scenario are international days, where this situation is reversed.

This is relevant because it compromises the role of social networks as sustaining spaces for inclusive employability, as reviewed in the theoretical framework. The results obtained do not clearly support the idea that the presence of people with disabilities in the networks analysed can enrich new social conceptions and representations (Baker-Doyle, 2011). Nor do the results obtained allow us to state with full guarantees that social networks can reconfigure political participation in these spaces in favour of a fight against discrimination (Paşcalău-Vrabete et al., 2021; Macdonald et al., 2023; Series, 2020). This study shows that awareness-raising campaigns have a strong impact on business profiles and their associated themes such as promoting inclusive employment, adapted jobs or making their social projects visible (O2). It would be interesting to further investigate to what extent these campaigns are a decisive factor in removing environmental and social barriers, in line with the authors Santoso (2019) and Zayer & Gunes (2018).

The data analysed show the significant impact of companies on the notoriety and virality of the network, overshadowing non-profit social diffusions (H3). The two possible solutions to reverse the situation are changes in the recommendation algorithms of digital platforms (García-Marín & Serrano-Contreras, 2023) and/or the education of digital citizenship. The latter is the most viable for raising awareness of online inequality (Calderón

& Rascón, 2022) and what strategies are available to them to reverse it. This will lead to altruistic organisations and individuals, along with greater professionalism and knowledge of collective interpersonal communication, becoming more visible. The generosity, effort and commitment of those less visible on social media who participate in and support inclusive employability could be a driver of change. One might ask whether business engagement based on legitimate but marketable interests contributes to fulfilling inclusive and quality employment. The results show the power of influence to reach more people, which can foster awareness of the social and labour rights of people with disabilities (Santoso, 2019; Zayer & Gunes, 2018) and an organisational culture of genuine social responsibility (Mañas-Viniegra, 2018). In any case, potential tactical alliances, such as meeting points between non-profit organisations and the private sector, should not be ruled out.

This study demonstrates the complex structures and interests that emerge in social networks for the content under study (Barroso-Moreno et al., 2023) and which, therefore, compromise the altruism and vindication of collectives and individuals who fight for inclusive employability, especially for people with other abilities.

## Authors' contributions

**Carlos Barroso Moreno:** Conceptualization, Formal analysis, Investigation, Methodology, Resources, Validation, Visualization, Software, Writing- original draft and Writing- review and editing. **Miguel del Fresno García:** Conceptualization, Formal analysis, Investigation, Methodology, Resources, Supervision, Software and Writing-review and editing. **Laura Rayón Rumayor:** Investigation, Methodology, Resources, Writing-original draft, and Writing- review and editing. All authors have read and accepted the published version of the manuscript. Conflicts of interest: The authors declare that they have no conflicts of interest.

## Funding

Action funded by the Community of Madrid through the Multiannual Agreement with the Complutense University of Madrid in its Excellence Programme for university teaching staff, within the framework of the V PRICIT (Regional Plan for Scientific Research and Technological Innovation).

## References

- Arora, Anuja; Bansal, Shivam; Kandpal, Chandrashekhar; Aswani, Reema; & Dwivedi, Yogesh. (2019). Measuring social media influencer index-insights from Facebook, Twitter and Instagram. *Journal of retailing and consumer services*, 49, 86-101. <https://doi.org/10.1016/j.jretconser.2019.03.012>
- Ali, Mohammad; Schur, Lisa; & Blanck, Peter. (2011). What types of jobs do people with disabilities want?. *Journal occupational rehabilitation*, 21, 199–210. <https://doi.org/10.1007/s10926-010-9266-0>
- Baker-Doyle, Kira. (2011). *The networked teacher: How new teachers build social networks for professional support*. Teachers College Press.
- Barnes Colin. (2019). Understanding the social model of disability: Past, present and future. In Watson, Nick, Roulstone Alan, Thomas Carol (Eds.). *The Routledge handbook of disability studies* pp. 14–31. Routledge.
- Barroso-Moreno, Carlos; Rayon-Rumayor, Laura; & Bautista García-Vera, Antonio. (2023). Big Data and Business Intelligence on Twitter and Instagram for digital inclusion. *Comunicar*, 74, 49-60. <https://doi.org/10.3916/C74-2023-04>
- Bhattacharyya, Som-Sekhar. (2022). Monetization of customer futures through machine learning and artificial intelligence based persuasive technologies. *Journal of science and technology policy management*, ahead-of-print. <https://doi.org/10.1108/JSTPM-09-2021-0136>
- Blau, Ina, & Shamir-Inbal, Tamar (2017). Digital competences and long-term ICT integration in school culture: The perspective of elementary school leaders. *Education and Information Technologies*, 22(3), 769–787. <https://doi.org/10.1007/s10639-015-9456-7>
- Bowker, Natilene, & Tuffin, Keith. (2002). Disability discourses for online identities. *Disability & Society*, 17(3), 327–344. <https://doi.org/10.1080/09687590220139883>
- Calderón, Ignacio; Calderón-Almendros, Juan-Miguel; & Rascón, María-Teresa. (2016). De la identidad del ser a la pedagogía de la diferencia. Teoría De La Educación. *Revista Interuniversitaria*, 28(1), 45–60. <https://doi.org/10.14201/teoredu20162814560>
- Calderón, Ignacio; & Rascón, María-Teresa. (2022). Hilando luchas por el derecho a la educación: narrativas colectivas y personales para la inclusión desde el modelo social de la discapacidad. *Pedagogía Social: Revista Interuniversitaria*, 41, 43-54. [http://www.doi.org/10.7179/PSRI\\_2022.41.03](http://www.doi.org/10.7179/PSRI_2022.41.03)
- Chen, Jing; Lin, Tzu-Jung; Justice, Laura; & Brook, Sawyer. (2019). The social networks of children with and without disabilities in early childhood special education classrooms. *Journal of autism and developmental disorders* 49, 2779–2794. <https://doi.org/10.1007/s10803-017-3272-4>
- Cuyper, Ilya; Ertug, Gokhan; Cantwell, John; Akbar, Zaheer; & Kilduff, Martin. (2020). Making connections: Social networks in international business. *Journal of international business studies* 51, 714–736. <https://doi.org/10.1057/s41267-020-00319-9>
- European Commission (Ed.). (2022). Union of equality. Strategy for the rights of persons with disabilities 2021-2030. <https://bit.ly/3wzE4BF>
- Ferrari, Alberto; & Russo, Marco. (2016). *Introducing Microsoft Power BI*. Microsoft Press. <http://bit.ly/3kQZnMr>
- García-Marín, Javier; & Serrano-Contreras, Ignacio-Jesús. (2023). (Un)founded fear towards the algorithm: YouTube recommendations and polarisation. *Comunicar*, 74. <https://doi.org/10.3916/C74-2023-05>

- Gupta, Sukhai; Sukhai, Mahadeo; & Wittich, Walter. (2021). Employment outcomes and experiences of people with seeing disability in Canada: An analysis of the Canadian survey on disability 2017. *Plos One*, 16 (11), 1-17. <https://doi.org/10.1371/journal.pone.0260160>
- Harrison, R.A., Bradshaw, J., Forrester-Jones, R., McCarthy, M. and Smith, S. (2021), Social networks and people with intellectual disabilities: A systematic review. *Journal Applied Research Intellect Disability*, 34, 973-992. <https://doi.org/10.1111/jar.12878>
- Hästbacka, Elisabeth; Nygård, Mikael; & Nyqvist, Fredrica. (2016). Barriers and facilitators to societal participation of people with disabilities: A scoping review of studies concerning European countries. *Alter*, 10(3), 201-220. <https://doi.org/10.1016/j.alter.2016.02.002>
- Hitchcock, John; & Onwuegbuzie, Anthony (Eds.). (2022). *The Routledge handbook for advancing integration in mixed methods research*. Routledge. <https://doi.org/10.4324/9780429432828>
- Izquierdo, Beatriz; & Ortega, María-Teresa. (2020). El logro de empleo decente e inclusivo para las personas con discapacidad. *Opción: Revista de ciencias humanas y sociales*, 93, 101-140. <http://bit.ly/3Hi7gll>
- Jacob, Samuel; Pillay, Jace; Adeoye, Esther; & Oni, Kehinde. (2022). Barriers to employment of people with intellectual disabilities. *Work* 74(1), 207-218. <https://doi.org/10.3233/WOR-211097>
- Johjima, Maki; Sakamoto, Daisuke; Nishiwaki, Yasuto; & Tsuda, Kazuhiko. (2019). A standardization method of individual rating fluctuation in social listening data. *Procedia computer science*, 159, 1321-1328. <https://doi.org/10.1016/j.procs.2019.09.302>
- Kwan, Chi Kin (2021). Helping People with Disabilities in the Workplace: Mezzo-Level Interventions Targeting Corporate. *Culture, Social Work*, 66(4), 339-347. <https://doi.org/10.1093/sw/swab030>
- Kent, Mike; Ellis, Katy; & Goggin, Gerard. (2015). Disability's digital frictions: Activism, technology and politics. *The fibreculture journal*, 26, 7-31. <https://doi.org/10.15307/fcj.26.188.2015>
- Lin, Zhongxuan; Yang, Liu; & Zhang, Zhi'an. (2018). To include, or not to include, that is the question: Disability digital inclusion and exclusion in China. *New Media & Society*, 20(12), 4436-4452. <https://doi.org/10.1177/1461444818774866>
- Macdonald, Diane; Dew, Angela; Fisher, Karen; & Boydell, Katherine. (2023). Claiming space: photovoice, identity, inclusion and the work of disability. *Disability & society*, 38(1), 98-126,. <https://doi.org/10.1080/09687599.2021.1925525>
- Malhotra Ravi & Morgan Rowe. 2014. *Exploring disability identity and disability rights through narratives: Finding a voice of their own*. Routledge.
- Mamas, Christoforos; Schaelli, Giovanna. H.; Daly, Alan J.; Navarro, Henar R.; & Trisokka, Lambri. (2020). Employing social network analysis to examine the social participation of students identified as having special educational needs and disabilities. *International Journal of Disability, Development and Education*, 67(4), 393-408. <http://www.doi.org/10.1080/1034912X.2019.1614153>
- Mañas-Viniegra, Luis. (2018). El voluntariado corporativo en la estrategia de responsabilidad social de las empresas del IBEX 35. *Revista de ciencias de la administración y economía*, 8(16), 19-32. <https://doi.org/10.17163/ret.n16.2018.02>
- Moolenaar, Nienke. M.; Daly, Alan. J.; & Slegers, Peter. J. C. (2010). Occupying the principal position: Examining relationships between transformational leadership, social network position, and schools innovative climate. *Educational Administration Quarterly*, 46(5), 623-670. <https://doi.org/10.1177/0013161X10378689>
- Morwane Elizabeth; Dada Shakila; & Bornman, Juan (2021). Barriers to and facilitators of employment of persons with disabilities in low- and middle-income countries: A scoping review. *Africa Journal Disability*. <https://doi.org/10.4102/ajod.v10i0.833>

- ODISMET. (2020). *La situación de las personas con discapacidad en el mercado laboral. Informe General*. Fundación Once. <http://bit.ly/3H5jtuU>
- Paşcalău-Vrabete, Ana; Crăciun, Catrinel; & Băban, Adriana. (2021). Restricted mobility and unheard voices: perceptions of accessibility and inclusion expressed on Romanian disability-specific blogs and forums. *Disability and rehabilitation*, 43(25), 3680-3687. <https://doi.org/10.1080/09638288.2020.1746842>
- Quesenberry, Keith A. (2020). *Social media strategy: Marketing, advertising, and public relations in the consumer revolution*. Rowman & Littlefield Publishers.
- Rodríguez, Margarita; Gimeno, Francisco-Javier; Cuenca, Pedro-Manuel; Soguero, Cristina; & Rojo, José Luis. (2021). Sentiment analysis of political tweets from the 2019 Spanish elections. *IEEE Access*, 9, 101847-101862, <https://doi.org/10.1109/ACCESS.2021.3097492>
- Santoso, A. D. (2019). *Social media campaigns on disability awareness: A content analysis of official government Twitter accounts*. *Life Span and Disability*, 22(1), 95-112. <https://bit.ly/42jVb2>
- Series, Lucy. (2020). Disability and human rights. In Watson, Nick, Roulstone Alan, Thomas Carol (Eds.). *The Routledge handbook of disability studies*. Routledge.
- Stewart, Margaret; & Arnold, Christa. (2018). Defining social listening: Recognizing an emerging dimension of listening. *International journal of listening*, 32(2), 85-100. <https://doi.org/10.1080/110904018.2017.1330656>
- Trezzini, Bruno; Schüpbach, Sabrina; Schuller Victoria; & Bickenbach, Jerome. (2022). Coping strategies of disabled people facing barriers to their participation in education, vocational training and employment. *Alter*, 16(3), 73-89. <http://bit.ly/3RgkuUp>
- Trevisan, Filippo. (2016). *Disability rights advocacy online: Voice, empowerment and global connectivity*. Routledge. <https://doi.org/10.4324/9781315726489>
- Tucker, Joshua A.; Guess, Andrew; Barbera, Pablo; Vaccari, Cristian; Siegel, Alexandra; Siegel, Alexandra; Sanovich, Sergey; Stukal, Denis; & Nyhan, Brendan. (2018). Social media, political polarization, and political disinformation: A review of the scientific literature. *Hewlett Foundation*. <http://dx.doi.org/10.2139/ssrn.3144139>
- Vargo, Crhis. (2016). Toward a tweet typology: Contributory consumer engagement with brand messages by content type. *Journal of interactive advertising*, 16(2), 157-168. <http://10.1080/15252019.2016.1208125>
- Vornholt, Katharina; Villotti, Patrizia; Muschalla, Beate; Bauer, Jana; Colella, Adrienne; Zijlstra, Fred; Van Ruitenbeek, Gemma; Sjr, Uitdewilligen; & Corbière, Marc. (2018). Disability and employment – overview and highlights. *European journal of work and organizational Psychology*, 27(1), 40-55. <https://doi.org/10.1080/1359432X.2017.1387536>
- Zayer, Majed-Al.; Gunes, Mehmet Hadi. (2018). Exploring visual impairment awareness campaigns on Twitter. *Social network analysis and mining*, 8(40), 1-16 . <https://doi.org/10.1007/s13278-018-0515-0>

## Notes

- 1 <http://bit.ly/3DPTGVM>
- 2 <https://dx.doi.org/10.6084/m9.figshare.22191223>
- 3 <https://dx.doi.org/10.6084/m9.figshare.22044470>