

#accessibilityFail: Categorizing Shared Photographs of Physical Accessibility Problems

ABSTRACT

Social media platforms are existing online spaces where users share their daily encounters, providing a large dataset of photographs of inaccessible environments. We analyzed 100 posts from Twitter and Instagram that describe accessibility problems. Our findings suggest these posts are helpful to locate, identify and communicate accessibility problems, and provide design ideas for potential assistive technologies. We suggest design implications using social media posts to improve physical accessibility.

Keywords

Physical accessibility; photography; social media.

1. INTRODUCTION

Inaccessible environments are often obvious to people with disabilities and disability advocates, but may not be as obvious to the general public who do not typically encounter them when navigating physical spaces.

Photographs are useful for learning about accessibility problems. Applications like VizWiz [3] and RemoteLogCam [5] ask users to take accessibility-specific photographs *in situ*, and use those photographs to provide accessible information. Other projects leverage existing datasets of photographs that were not collected for accessibility purposes, like street-level images in Google Street View which were used to evaluate accessibility in the environment [6]. Both sources of photographs offer valuable information about accessibility problems but have limitations. Projects that solicit accessibility-specific photographs often have limited samples, and projects that use general datasets may lack the context needed to identify accessibility problems.

Many social media platforms like Instagram are built specifically around sharing, which allows users an opportunity to document daily experiences and provides a rich source of user-generated data. YouTube videos uploaded by users with motor impairments using touchscreens have given researchers valuable insights into technology design [1]. By examining accessibility-related social media posts, we can learn about everyday accessibility problems.

In this paper we identify three themes in social media posts about accessibility “fails”, problems with accessibility infrastructure. This analysis can be used to inform future projects that leverage social media posts about accessibility.

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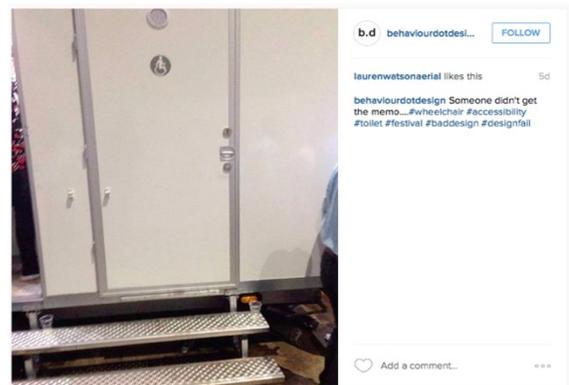


Figure 1: An accessibility problem on Instagram. While the festival had a portable restroom that was marked as “wheelchair accessible”, it was only reachable via a flight of inaccessible stairs.

This photograph was taken by Linda van de Sande of behavior.design, and is used with her permission. [instagram.com/p/BES1nLRsrex/]

2. ACCESSIBILITY FAIL POSTS

We selected a sample of posts from Twitter and Instagram from September 2012 to February 2016 containing photographs and the hashtag #accessibilityFail, a commonly-used term to describe accessibility problems. We used two platforms’ native search function to extract 100 post and image pairs. The posts were then manually screened by two researchers for relevance to our study resulting in 93 posts which were analyzed. A diversity of disabilities was mentioned in the sample, including deafness, visual impairment, and mobility impairment, but the majority of sampled posts (73%) dealt with wheelchair use.

Two researchers performed open coding on the posts during which unclear codes were discussed to reach a consensus. The open coding process resulted in 23 codes. Those codes were then iteratively refined through affinity diagramming [2] into three higher-level themes that describe how people use photographs to document and communicate accessibility issues.

2.1 Details of Accessibility Problems

41 of the 93 posts analyzed *gave details about the accessibility problem pictured* in some way. This theme took multiple forms across the posts: describing the issue seen in the photograph (17 posts); talking about what type of person it impacts (12); including the location of the problem (21); and naming or mentioning the person responsible for the problem or facility (15).

Individual posts could have multiple descriptive features. One Instagram user posted a picture of two clothing racks positioned close together, with the accompanying text:

Irritated with this stupid mall... Can't fit in between the effing racks... They are supposed to leave enough room for wheelchairs and don't! Ugh! #accessibilityfail #Deb

These descriptive details could be useful both to broad audiences as an introduction into this type of accessibility problem and its’

consequences, and to other local wheelchair users who may want to avoid Deb (a junior's clothing shop) until it is made accessible.

2.2 Sharing Experiences and Reactions

29 of the 93 posts analyzed *shared experiences and reactions* around the accessibility problems encountered. Posts categorized within this theme were either user's personal experiences with a problem (11 posts), or emotional reactions to a problem that may have been encountered by themselves or others (26 posts).

Some posts that shared personal experiences. Users self-identified a problem and sometimes used the text to convey strong emotions, such as outrage about accessibility inequality or sadness over the consequences of accessibility problems:

To wheelchair and scooter users, be advised that the @etsyvancover event on today is not accessible. ... The volunteers were sincerely apologetic, but I am still very disappointed having just wasted my morning trekking downtown for this... [emphasis added]

Other users employed humor, snark, or sarcasm in describing accessibility problems. One Instagram user posted a photograph of an unfinished ramp up a flight of stairs with the sarcastic text:

You can manage those last three steps with your wheelchair, right? ...

2.3 Prompting Corrective Action

33 of the 91 posts analyzed *prompted corrective actions or education about accessibility*. Within this theme, we identified three sub-themes that used distinct but complementary approaches to try to persuade others to improve accessibility: requests to report problems, general advocacy, and criticizing or shaming.

Directives for others to *report problems* were the least-common, but most informative posts within this theme. These users utilized their social network not as a passive audience but as active voices who could put pressure on others to resolve problems. This type of 'slacktivism' is a common way people leverage their existing social networks to impact political processes or support pro-social causes [4]. These posts included calls to action – a photograph of a broken cobblestone sidewalk on Instagram included the post:

Taxachusetts. #harvardsquare #accessibilityfail @cambridgepolice Intersection of Bow and DeWolfe on odd side, v. unsafe for persons with mobility and balance issues, in wheelchairs, after dark, strollers, etc. Please advise DPW [Department of Public Works, emphasis added]

The detailed location information in this post could be used to identify street-level accessibility problems, similar to approaches in [6]; the use of an at-message to the local police's Instagram account (“@cambridgepolice”) helps route the request to an appropriate authority who might be able to resolve the problem.

Other posts shared general *accessibility advocacy*. These posts included information about common accessibility problems and solutions, promoted specific causes, or linked to more information outside the photo-sharing platform. Many of these posts used rhetorical tactics in engaging readers to identifying accessibility problems by posting a photograph of an accessibility problem and asking users to comment with the problem's description (e.g., “Can you figure out what's wrong with this picture?”).

Posts in the final sub-theme, *criticizing or shaming*, used their photographs to directly critique places where accessibility was not considered, or was implemented poorly.

This is a perfect example of how meeting minimum building requirements does not make a space #accessible or #inclusive. And in a brand new build from a chain that claims to be socially responsible? ...

Some of these posts also identified the correct way to make things more accessible in their accompanying text.

3. FUTURE WORK

The wide range of accessibility issues and environments highlighted in the images, combined with the descriptive text posted by the users and conversations that they engage in, create a rich dataset of annotated accessibility problems and solutions. Many of these metadata provide information that could be useful for locating problems, or collecting a repository of proposed solutions from people with disabilities or involved in advocacy for broader accessibility. Below we discuss future work we are undertaking to make this dataset more useful.

The intermixing of humor or sarcasm in some of the posts might make automated approaches difficult. Crowdsourced or human-powered accessibility tools might be the most appropriate method for comprehending the information available from each post, and we plan to analyze how crowdsourced annotations compare to the original metadata available with the posts.

The tenor of conversations on Twitter and Instagram were significantly different. In one example in our dataset, a user had posted an image about an accessibility problem at an event on both Twitter and Instagram. On Twitter she received an apology from the organizers with a promise to make things accessible the next year. On Instagram she received support from her friends, as well as a place to complain further about her frustrations. Understanding how users choose what platform to post to and how this might impact the data generated on those platforms is crucial to using this data for accessibility. Further analysis of the conversations that took place in the comments of these posts and platform differences will broaden our understanding of how posts are used to influence accessibility. This data will seed our examination of the feasibility of crowdsourcing to identify and propose solutions to accessibility problems remotely.

4. REFERENCES

- [1] Anthony, L. et al. 2013. Analyzing user-generated youtube videos to understand touchscreen use by people with motor impairments. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (2013), 1223–1232.
- [2] Beyer, H. and Holtzblatt, K. 1997. *Contextual design: defining customer-centered systems*. Elsevier.
- [3] Brady, E. et al. 2013. Visual challenges in the everyday lives of blind people. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (2013), 2117–2126.
- [4] Christensen, H.S. 2011. Political activities on the Internet: Slacktivism or political participation by other means? *First Monday*. 16, 2 (2011).
- [5] Guldenpfennig, F. and Fitzpatrick, G. 2013. A monitoring device as assistive lifestyle technology: combining functional needs with pleasure. *Proceedings of the 4th augmented human international conference*, 190–193.
- [6] Hara, K. et al. 2015. Improving Public Transit Accessibility for Blind Riders by Crowdsourcing Bus Stop Landmark Locations with Google Street View: An Extended Analysis. *ACM Transactions on Accessible Computing (TACCESS)*. 6, 2 (2015), 5.