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Ridesharing Drivers and Persons with Disabilities

Earl W. Huff, Jr., Julian Brinkley
School of Computing, Clemson University
earlh@clemson.edu; jbrinkl@clemson.edu

Abstract

Ridesharing services such as Uber and Lyft, have grown to become a viable option for public transportation, especially for persons with disabilities and older adults who otherwise are unable to operate a motor vehicle. These services are often more available and cheaper than traditional transportation options such as buses and taxis. However, recent incidents involving the mistreatment of persons with disabilities and older adults have brought to light a concern about how ridesharing drivers handle the interaction of such vulnerable populations. In the current exploratory study, a sentiment analysis was performed on the comments of current and former ridesharing drivers about their encounters with persons with disabilities and older adults from the Reddit online forum website. Results show that sentiments regarding persons with disabilities and older adults were generally positive. Discussions about encounters with consumers and their service animals were generally negative, however.

Keywords

Ridesharing; People with Disabilities; Sentiment Analysis; Older Adults

Introduction

The Ridesharing Economy

The rise of Vehicle for Hire (VFH) services has played an important part in transforming the public transportation landscape. Once dominated by the use of city-supplied taxis, ridesharing services such as Uber and Lyft have quickly risen to popularity by providing additional taxi-like services in many cities (Jiang et al.). Ridesharing services have given rise to the "sharing economy" and provide lower-cost transportation options through the use of privately-owned vehicles driven by their owners, different from taxis in which drivers utilize company-owned vehicles (Dillahunt et al.; Jiang et al.). From a rider perspective, these services offer increased mobility for a variety of different populations. For example, prior work has shown that ridesharing services can benefit low-income or disadvantaged households by providing greater access to health care (Ahmed et al.; Arcury et al.) and job opportunities. Ridesharing services can also benefit people with vision impairments with prior work supporting the benefit of increased independence and personal mobility (Brewer and Kameswaran; Dillahunt et al.; Kameswaran et al.).

Treatment of Ridesharing Riders

While ridesharing services offer a multitude of benefits for both drivers and consumers, there are concerns that affect its wide usage for certain populations. Earlier studies have indicated that ridesharing drivers may discriminate against riders based on race (Lee et al.; Rayle et al.), gender (Lee et al.) and socioeconomic status (Ge et al.; Stark and Diakopoulos). In recent years, there have been a number of lawsuits filed against ridesharing services for violations of the Americans with Disabilities Act (ADA) by not providing the necessary accessibility options (Devoe; Edelstein; Hawkins; NYETA; Rodriguez; Strochlic; Tang). Additionally, there have

been accusations of denying service to persons with service animals or otherwise committing acts of abuse, such as locking service dogs in the trunk (NYETA; Rodriguez; Strochlic; Tang). This raises questions regarding the attitudes and thoughts ridesharing drivers have towards persons with disabilities and older adults; populations that rely more heavily on others for their transportation needs.

Online Communities and Social Media Analysis

Online communities such as social networking sites (SNS) offer platforms for open conversations among people with similar interests to discuss a myriad of topics. Researchers have found online communities to be a viable resource for mining text data to investigate user behavior (Goh et al.), sentiment or attitude towards a topic or event (Ceron et al.), identifying certain social circles (Hanson et al.) and identifying current trends in the economy (Makazhanov et al.). This process, called text mining, involves pulling data from a webpage (often called 'scraping the web'), storing it in a format for processing, cleaning the text data using one or more techniques in natural language processing (NLP), and performing some form of text analysis on the data.

In the current study, comments from Reddit posts concerning ridesharing drivers' interactions with persons with disabilities and older adults were scraped from the web. We describe a subsequent sentiment analysis to identify the overall sentiments of drivers' thoughts about their encounters.

Method

The current study examines the general sentiment of user comments concerning their experience with persons with disabilities and older adults using sentiment analysis. The sentiments collected will provide an understanding of how ridesharing drivers feel concerning

their interactions with passengers who may require additional assistance; a population that they may not have enough experience or training in servicing.

The study involved scraping 1,291 comments from 42 posts on the Reddit social news and forum website. Posts were found under the 'uberdrivers' and 'lyftdrivers' communities, using search terms such as "disability", "blind", and "elderly". Each post was carefully examined to ensure the topic and comments related to discussions of encounters with persons with disabilities or older adults. Using the Reddit API, posts and accompanying comments were then scraped from the web and organized into a spreadsheet. Three spreadsheets were created, one for each general theme of the posts: Service Animals, Disability, and Elderly.

The data spreadsheets were then cleaned by removing comments "[deleted]", indicating a deleted comment, and emojis. After preprocessing, sentiment analysis was conducted on each spreadsheet of comments using the Python programming language and the Jupyter Notebook platform. Sentiment analysis is a technique in natural language processing (NLP) that extracts and evaluate the social sentiment of a message and tells whether the sentiment is positive, negative or neutral (Gupta). This type of analysis is often used in social media analysis, especially by consumer businesses, to understand the social sentiment of their brand, product or service (Gupta). Every comment in each spreadsheet was given a score that correlates with an underlying sentiment. A score greater than zero has a positive sentiment, a score of less than zero has a negative sentiment and score equal to zero has a neutral sentiment.

Discussions

Results

From the 1,291 comments, 1,283 comments were analyzed across the three spreadsheets, with Service Animals having 606 comments, Disability having 366 comments, and Elderly

having 311 comments. Figure 1 displays the proportions of sentiments for each themed spreadsheet. For Service Animal, 258 (42.6%) of the comments were classified as negative, 241 (39.8%) of the comments were classified as positive, and the remaining 107 comments (17.6%) were neutral. For Disability, 179 (48.9%) comments were positive, 143 (39.1%) comments were negative, and the remaining 44 (12%) comments were neutral. For the Elderly, 135 (43.4%) comments were positive, 120 (38.6%) were negative, and 56 (18%) were neutral.

From the results of the analysis, general sentiment for how people interacted with and talked within the topic of people with disabilities and older adults were positive while the general sentiment of how people talked about the topic of service animals was negative. From the preliminary examination of the Reddit posts concerning service animals, the comments support drivers' unwillingness to accommodate consumers who have service animals such as dogs. Some of the resistance behind accommodating service animals include fear of damage and/or dirtiness of the vehicle interior and potentially the use of deception from riders to bring their pets with them on rides even if they are not registered service animals. Although they may personally object, Lyft's Service Animal Policy requires its drivers to accept them as part of the service or face potential deactivation of their account (Lyft Inc.). Initial examination of Reddit posts concerning interactions with persons with disabilities and older adults, most comments reflected generally positive experiences and lessons learned about their encounters

Limitations

The study focused on understanding the social sentiment of comments pulled from Reddit. While sentiment analysis is a very useful technique for understanding the sentiment of opinions, it does not provide insight into people's intentions nor identifies the context of the

comments. That makes the analysis especially vulnerable to sarcasm and any form of ironic language; they are not treated any differently from other comments.

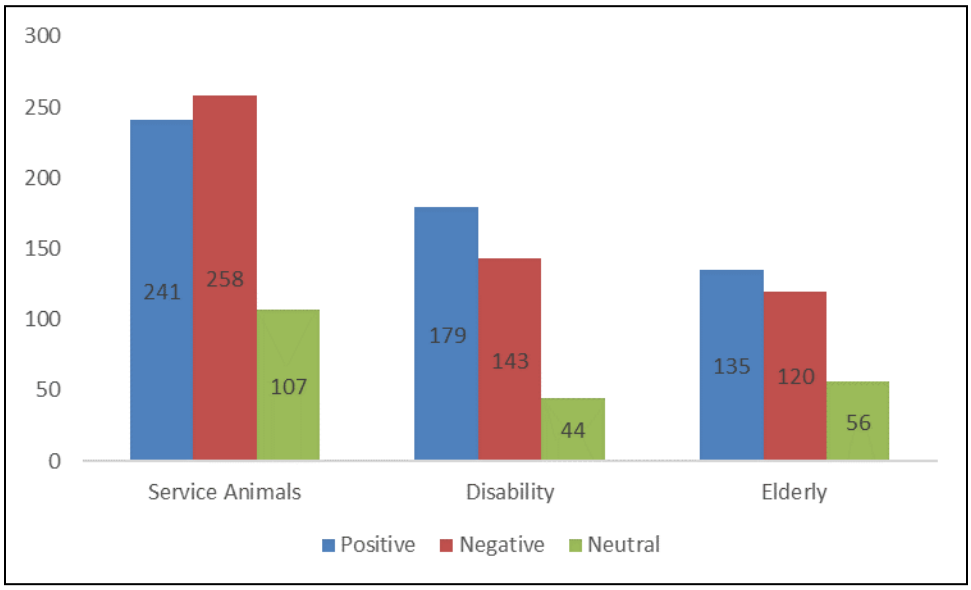

Fig. 1. Sentiment analysis of the three themes of Reddit posts.

Conclusions

The exploratory study looked at the general sentiment of ridesharing drivers' posts and comments about their encounters with persons with disabilities and older adults. This contributes to better understanding the user experience of the ridesharing process and areas of concerns that can potentially affect future mobility options for persons with disabilities and older adults. The next step to extend the current study will be to conduct a qualitative analysis of the collected comments to gain a deeper understanding of the drivers' comments regarding interactions with persons with disabilities and older adults. To augment the analysis of the comments, interviews with current and former ridesharing drivers who have experience servicing the population will also be conducted in conjunction.

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