aman_2021_listen_to_e_scooter_riders_mining_rider_satisfaction_factors_from_app_store_reviews

Year

2021

Author(s)

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Title

Listen to E-scooter riders: Mining rider satisfaction factors from app store reviews

Venue

Transportation Research Part D: Transport and Environment

Topic labeling

Manual

Focus

Secondary

Type of contribution

Established approach

Underlying technique

Manual labeling

Topic labeling parameters

Nr of inspected words: 20

Label generation

After fitting topic models, researchers generally interpret the top-twenty most related words per topic and assign a "descriptive label" to each topic for presentation purposes

human involvement is required to label the topics
Each topic needs a label to illustrate the content of the topic clearly. Labels were tagged, one by one, by a first researcher, then a second, and third researcher verified results (Guo, Yue et al., 2017).

The labeling process was performed using the set of 20 words with the highest probability in each topic. For instance, the Customer Service topic is generally about contacting customer service, as both "customer" and "service" appear as words on the list. Moreover, other words such as "phone", "report", "help" and "reply" are also semantically linked to the act of contacting customer service. Similarly, the frequent appearance of terms such as "price", "expensive", "cheap", and "cent" in a particular topic suggests that this topic is related to Pricing or the monetary value of the service.

Table 1
Topics description.

Topic		Description	Frequent Relevant Words	Example	Gamma
1	Refund	Customers usually ask for a refund of purchased credit, when charges are incorrect, or when service is unsatisfactory or unfulfilled.	Money, account, refund, support, call, multiple, contact, terrible, month, unable, response.	… I tried to get a refund of the unused money they were holding in my account goes by increments of 5 I think but after contacting customer service more than once I was still unsuccessful …	0.292
2	End of trip/ lock	To end the trip, and not to be charged anymore, scooters should be locked. Reviews were often concerned with finding the proper spot, broken devices, and unfamiliarity with the process.	Park, lock, bad, zone, slow, free, wait, spot, push.	…we cruised by finding a parking spot was irritating because the gps wouldn't calibrate to precise spot.	0.206
3	Ease of use	Users usually shared their positive renting and riding experience in their review.	Easy, fast, pretty, system, access, destination, super, smooth, friendly.	easy to set up easier to ride quite fast as well will definitely get some friends to ride.	0.248
4	Unlock/start	To start the trip, users usually first need to scan the barcode and unlock the scooter. Companies usually charge riders even for unlocking the scooter.	Start, unlock, friend, brake, move, die, low, rate, foot, horrible, wrong, expect.	first time using the app the scooter didn't work [..] Tried to start it I immediately cancelled the ride at least [other company] has a much better app you can report broken ones and they [..] wave fees when you cancel within a few seconds of unlocking.	0.206
5	App issues	User complaints described functional errors, feature requests, and app crashes.	Email, sign (in/out), load, login, crash, screen, button, mode.	the app keeps getting stuck on the launch screen I was able to sign in the very first time I installed it but all subsequent times it was stuck on the splash [..] tried reinstalling it but same issue	0.353
6	Payment	Under this topic users usually expressed challenges regarding payments with credit/ debit cards, their account balance, or ask for alternative payment methods, such as PayPal or their preferred credit card.	Pay, card, credit, option, add, payment, worth, balance, update, amount, auto, feature, bank.	please add options to pay with debit card maestro; ban contact PayPal; I do not have a credit card.	0.360
7	Pricing	Customers described their preferences and opinions about pricing and often compare different alternatives.	Time duration (hour, minute, or second), price, expensive, cheap, change, check, cent, top, ridiculous.	i was having so much fun riding these but they raised the prices its 31 cents a minute now unless they change it back to 15 cents, I won't be using these anymore.	0.264
8	Safety (Speed, riding lane)	This topic includes safety concerns related to speeding, riding condition, and riding lanes.	Drive, quick, safe, street, transportation, road, mph (mile per hour), light, sidewalk, fall, license.	scooter slows down to a walking pace in random places it considers pedestrian zones even though they are not busy; why is it illegal to ride on the sidewalk? this seriously endangering riders who are trying to keep up with traffic in the bike lane or on the street or while crossing the street as was the case for me.	0.378
9	Map/Juicer	Map/juicer is a mixed topic related to the app maps used for finding available scooters and juicers. Juicers are contract employees who pick up scooters and charge them at their homes, earning money for each charge. Juicers use a real-time map that identifies ready to charge scooters.	Company, day, map, fix, location, pick, night, drop, close, bring, juicer, respond, reserve.	pp has a frustrating zoom feature if you zoom out too far city view certain pick up and certain drop off locations disappear; you have to tediously zoom in on really confined areas of the map to find chargeable scooters and areas to drop them off …	0.438
10	Battery	Comments discuss battery charge level, which is represented by a bar graph on scooter screens (highly influences ride trip duration).	Battery, charge, delete, error, bar, message, finally, over.	… the battery percentage would be easier than battery points the overall mileage will change based on acceleration and braking so does the battery points but battery percentage will help us to know whether to pick or not [..] [moreover] being able to interchange the battery with our own is always a boon.	0.248
11	Safety (Technical issues)	This topic includes technical issues that contain subtopics such as complaints about scooter parts (tires, brakes, etc.) as well as reports of damages and accidents.	Break, car, hit, tire, dangerous, damage, brake	These things are dangerous; traffic passes you within inches of handlebars; wheels are so small and non-air filled yet have no flex; steering is scary loose; never again do not ride f***ing dangerous	0.27
12	Costumer service	Users often describe their experience with contacting the company via customer service.	Service, customer, phone, week, happen, business, report, hold, receive, product, help, reply.	…worst costumer service [..] was assured I would be receiving a call back regarding a lost item …	0.25

Motivation

Topic modeling

LDA

Topic modeling parameters

Nr of topics: 1 to 30

Nr. of topics

12

Label

Manually assigned single or multi word labels

Label selection

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Label quality evaluation

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Assessors

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Domain

Paper:

Dataset:

Problem statement

In this study, app store reviews from two major micromobility companies are investigated using machine learning techniques to identify the factors that influence rider satisfaction. The Latent Dirichlet Allocation model is applied to over 12,000 rider-generated reviews to identify twelve topics discussed within the reviews. Using logistic regression, the most significant factors influencing rider satisfaction were identified. Moreover, name-centered gender prediction analysis is employed to identify rider gender and then discover differences in review content and factors of satisfaction across gender.

Corpus

Origin: Google Play Store and Apple App Store

Nr. of documents: 12,026

Details:

- Reviews for Lime and Bird
- May 2019 to January 2020

Document

rider-generated reviews consisting of: title, text or review content, rating, date, username, and app version

Pre-processing

- tokenization
- lowercasing
- non-informative terms such as stop words (e.g., "the", "to" or "me"), and common words (e.g., "scooter" or "ride") in addition to numbers and punctuations are removed
- To correct typos, words with minor errors are replaced with the correct ones
- lemmatization
- POS tagging

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@article{aman_2021_listen_to_e_scooter_riders_mining_rider_satisfaction_factors_
from_app_store_reviews,
    abstract = {In this study, app store reviews from two major micromobility
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companies are investigated using machine learning techniques to identify the factors that influence rider satisfaction. The Latent Dirichlet Allocation model is applied to over 12,000 rider-generated reviews to identify twelve topics discussed within the reviews. These topics cover areas such as pricing, safety, customer service, map, refund, payment, app interface, and ease of use, to name a few. Using logistic regression, the most significant factors influencing rider satisfaction were identified. Moreover, name-centered gender prediction analysis is employed to identify rider gender and then discover differences in review content and factors of satisfaction across gender. Results suggest rider satisfaction levels tend to vary across topics and gender. Women were more satisfied with the services and exhibited more positive sentiment than men. Yet, scooter is still a male dominated mode of transportation. Findings contribute to the existing literature by demonstrating the use of app store reviews in a transportation mobility study. The development of a method to assess factors contributing to rider satisfaction offers the ability to evaluate e-scooter rider needs and barriers. An apparent policy opportunity to increase scooter ridership includes an emphasis on contributing factors such as ease of use, safety (speed and riding lane), as well as app issues that showed significant influence on user satisfaction. It is recommended that a policy approach focused on improving rider satisfaction and delivering service improvements incorporate opinion mining as a methodology.},

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