

Behind the Cyber Curtain

Discrimination within Airbnb's Open-Rating System

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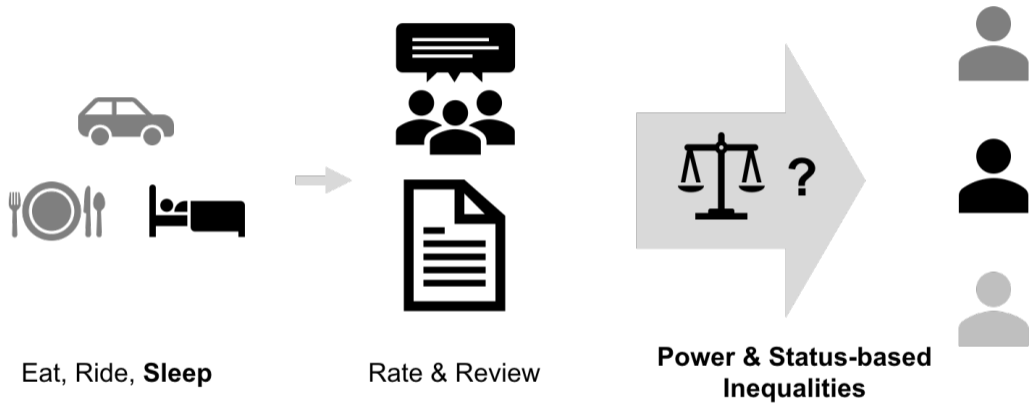
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Introduction



Our Research Questions

- Do hosts with dark skin tones receive lower anonymous ratings than hosts with lighter skin tones?
 - Yes, hosts with the darkest skintones have significantly lower ratings compared to hosts with lighter skintones. (Previous Study)
- **Are these differences reflected in publicly written reviews as well?**
 - anonymous ratings vs. public reviews
 - discrete discrimination (behind the cyber curtain)

Data & Methods

Data

- Airbnb listing/host information from 28 cities scraped in January 2020
- Includes:
 - **Quantitative ratings (Anonymous) & Qualitative reviews (Public)**
 - Listing information (cost, zip code, type of housing, size of space, description, availability, and more)
- Skintone of hosts, which we derive from the hosts' profile pictures on Airbnb (1-5)

Methods

1 Sentiment Analysis

- AFINN score (-5 to 5)
- get sentiment score for each review
- compare with anonymous rating scores

2 Dictionary based topic analysis

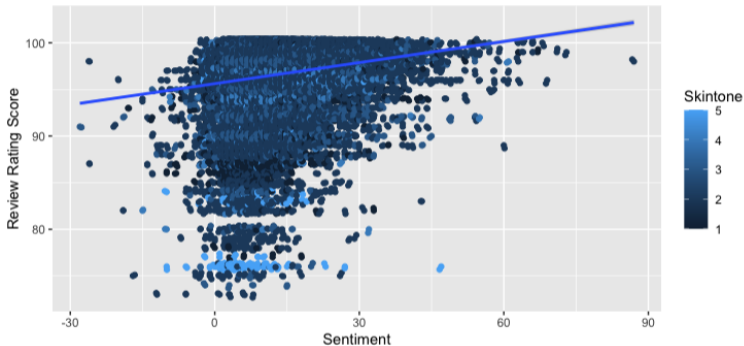
- top negative reviews include: *comfort, communication, cleanliness* (Bridges and Vásquez, 2018)
- most frequent word clusters: *convenience, facility, environment*
- are there differences in the topics that are discussed by skin tones?

Results

Sentiment Analysis Example

- Great little place. Very nice new space. Private. [NAME] had everything I needed set up before I arrived. up to date and nice amenities. Nice shower. Perfect place to sleep and relax between periods of the day exploring the city. Located close to bus lines and plenty of good food within walking distance and close to some great neighborhood bars. (**Sentiment +21, Rating 99, Skintone 1**)
- Entire space like room, kitchen, bathroom smells awful, dirty and muddy. You can see easily lots of mold everywhere even on the wall next to the bed wall bed touches the wall. I have a bad experience at night while the other neighbors held parties on their yards and it stops around 4 am!!! It seems cheap place but it is is totally bad experience for my wife and I. (**Sentiment -10, Rating 76, Skintone 5**)

Sentiment Analysis



- Positions relative to the line shows whether a host is getting a higher/lower rating (anonymous) than the sentiment of the reviews (public)
- Skintone 5 (Darkest) have many points that are below the line

Skintone 5 Reviews

- I loved the location and the shops around the listing, its neat and clean, great customer service, i always received prompt response to questions. Would definitely recommend this listing. (**Sentiment +10, Rating 83, Skintone 5**)
- Great guy good times. Very kind and friendly gentleman. (**Sentiment +10, Rating 77, Skintone 5**)

Topics

```
cleanliness <- c("clean", "dirty", "messy", "smell")
facility <- c("bed", "kitchen", "bathroom", "apartment", "house",
            "amenities", "parking", "tub", "design", "cottage",
            "driveway", "pool")
comfort <- c("uncomfortable", "comfortable", "spacious", "big",
            "small", "loud", "quiet", "hospitality")
communication <- c("responsive", "personable", "host", "cancelled",
                 "unresponsive", "communication", "communicative")
convenience <- c("convenient", "close", "time", "easy", "quick", "distance",
                "parking", "location", "far", "distant", "transportation")
environment <- c("beach", "neighborhood", "location", "walk", "people",
                "restaurant", "street", "downtown", "view")
```

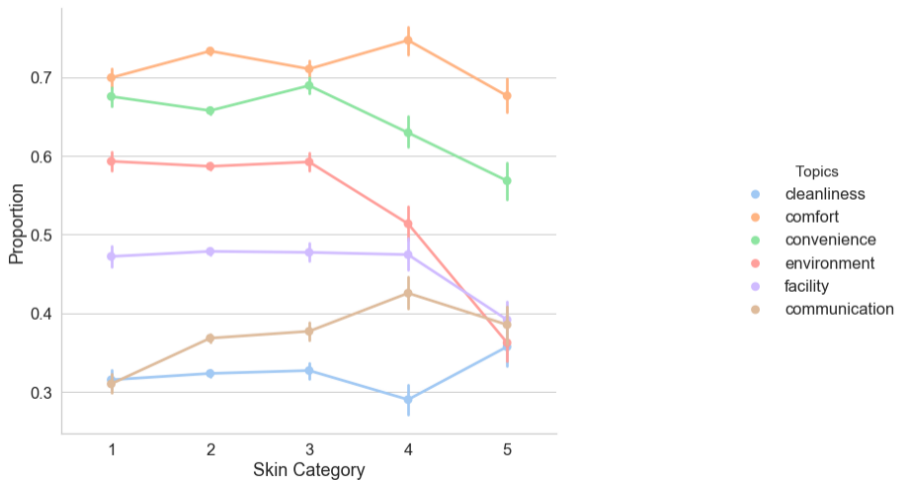
Topic Examples (Skintone 1)

- This place was PERFECT! Great proximity to amazing coffee, great restaurants and fun bars. Also, very **short walk** or uber ride to Pike Place Market and the ferries. It was **super clean**, had coffee ready to go and **all the amenities and items** you would need for your stay. Loved the **view outside** of the windows. I actually enjoyed hearing the hustle and bustle of the city and did not mind the noise outside. Thank you for being such a great host! (Sentiment 30, Rating 100, Skintone 3)
 - Cleanliness
 - Comfort
 - Convenience
 - Environment

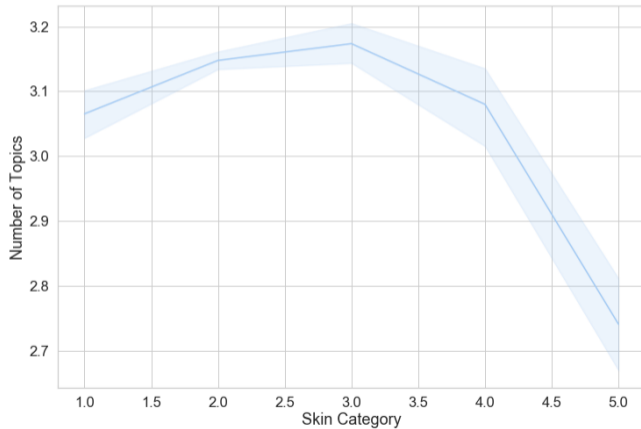
Topic Examples (Skintone 5)

- Entire space like room, kitchen, bathroom **smells** awful, **dirty** and muddy. You can see easily lots of mold everywhere even on the wall next to the bed wall bed touches the wall. I have a bad experience at night while the other neighbors held parties on their yards and it stops around 4 am!!! It seems cheap place but it is is totally bad experience for my wife and I. (Sentiment -10, Rating 76, Skintone 5)
 - Cleanliness

Topics



Number of Topics



Discussion

Summary of Results

- Darker skintone hosts often receive lower rating scores than what the public reviews suggest (compared to lighter skintone hosts)
- For darker skintone hosts, fewer number topics are discussed in the reviews
- For darker skintone hosts, different topics are discussed in the reviews
 - *more* about cleanliness, *less* about convenience, environment, or facility

Discussion

- Discrimination on online platforms
 - Anonymous Ratings vs. Public Reviews
 - Focusing on different aspects based on skintone
- Are there systematic ways in which we can limit discrimination on these platforms?
 - Users? Platform design?

Thank you!