



UNECE



Google Maps User Reviews Data Collection Method

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0 1

Introduction





0 2

Methodology



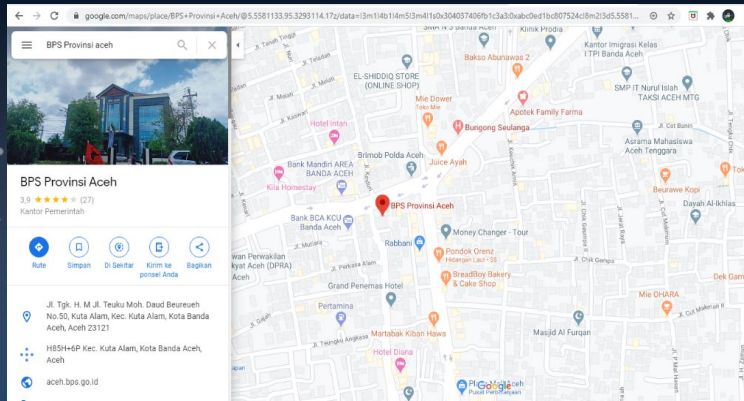
Data Collection Method



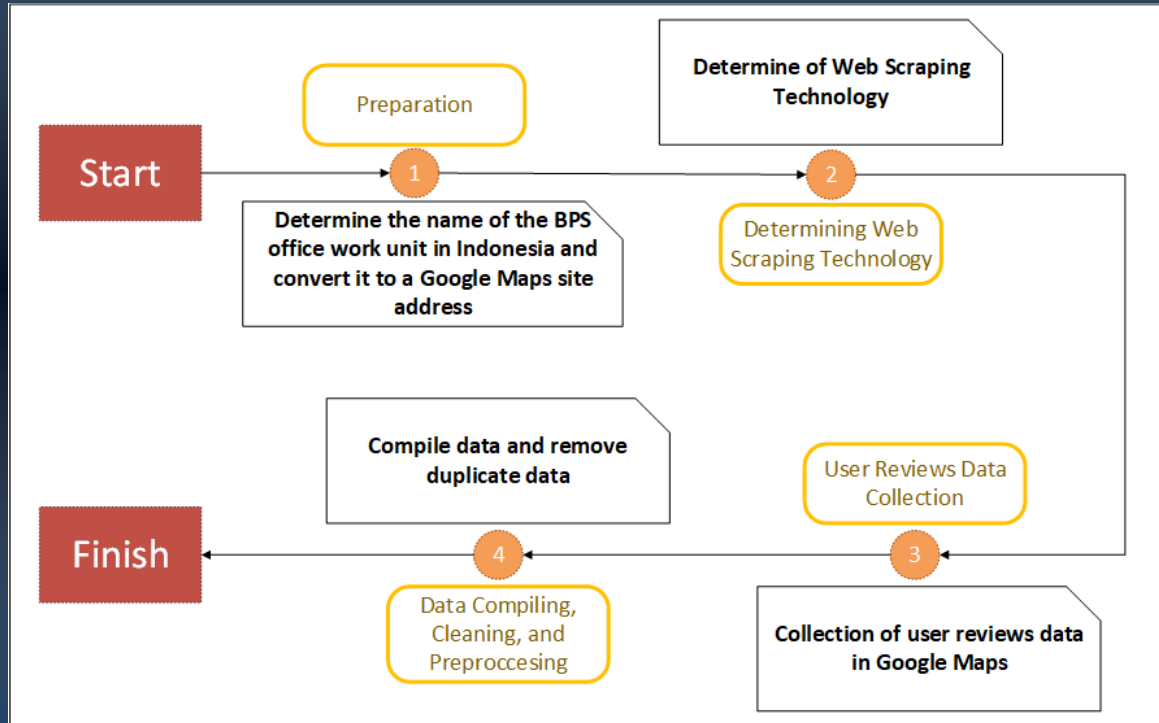
Data Source

Google Maps Website

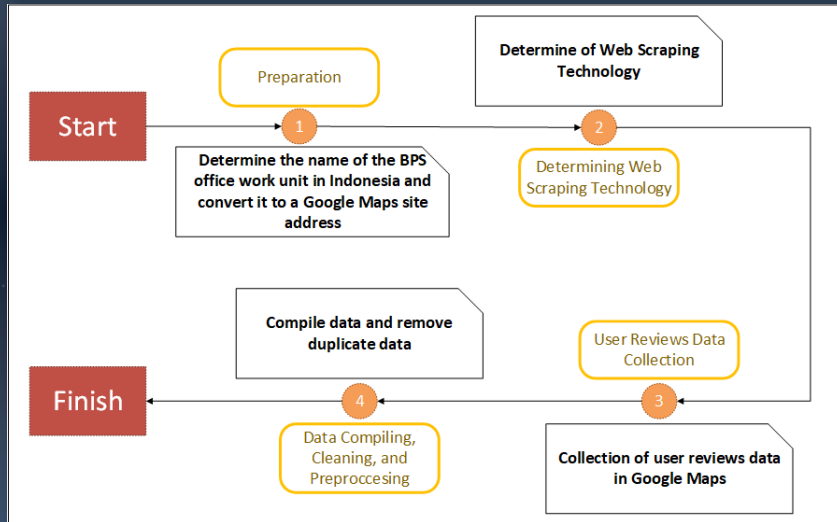
Google Maps is ranked first as top website ranking for Maps in Indonesia and it provides self-contribution visitor's review



Data Collection Method



Data Collection Method



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Preparation

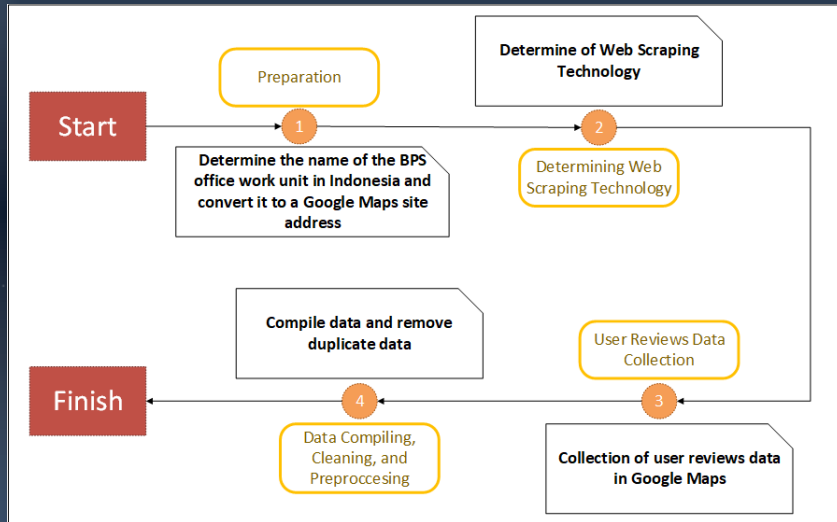
Prepare list of keyword from office's name
[https://www.google.com/maps/search/\[\[keyword\]\]](https://www.google.com/maps/search/[[keyword]])

Example:

<https://www.google.com/maps/search/BPS+Provinsi+Aceh>



Data Collection Method



2

Determination of Web Scraping Technology

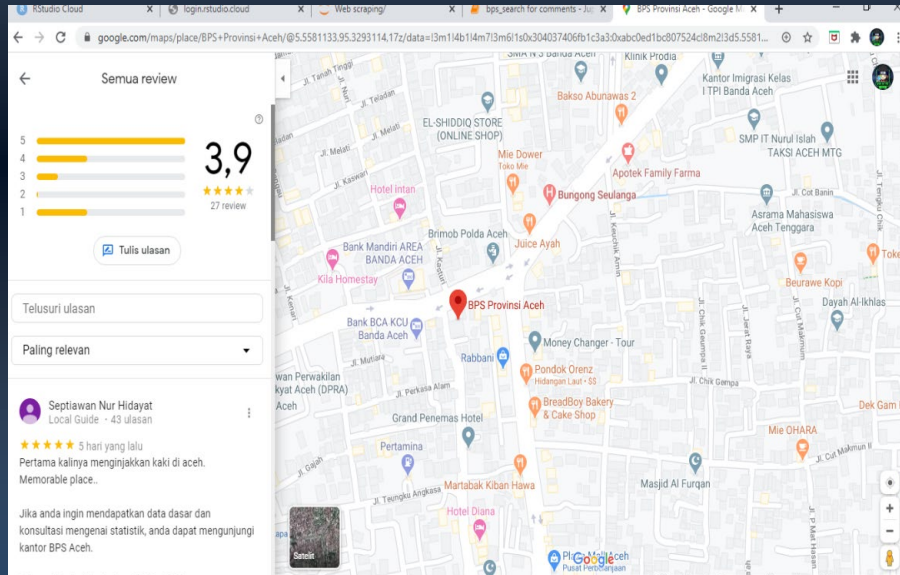
Using web scraping method to fetch review's data from google maps using Python Selenium. By using this technique, the selenium web driver will access every search URL on the Google Maps site, as if each page was accessed by real internet users.

Selenium is used according to HTML structure of google maps that use a lot of java script in their code





User Reviews Data Collecting



Place name
Place address
Visitor reviews
Visitor ratings
Review date

The information above will be collected by marking the position of the HTML structure tag using the Selenium framework in Python. For example, the position of the visitor review is located at `` tag in the HTML CSS structure of this page.



4

Data Compiling, Cleaning, and Preprocessing

Cleaning Process

Jupiter is a gas giant and the biggest planet in the Solar System. It's the fourth-brightest object in the night sky. It was named after the Roman god of the skies and lightning

Change data type each of attributes
Earth is the third planet from the Sun



Remove duplicate places
Despite being red, it's actually a cold place



Translate the review
Using googletans package to translate from Indonesia to English



Reduce Subject and Object of the review
Using Name Entity Recognition (NER)



Data Analysis Method



Descriptive Analysis and Visualization

Descriptive analysis is used to describe the characteristics of numerical data

Sentiment Analysis

Sentiment analysis is used to extract opinions from the review text.





0 4

Results





Summary Data



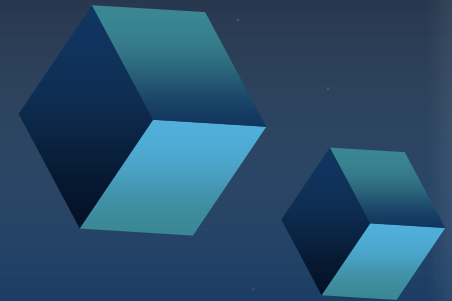
2442 total row of review's data



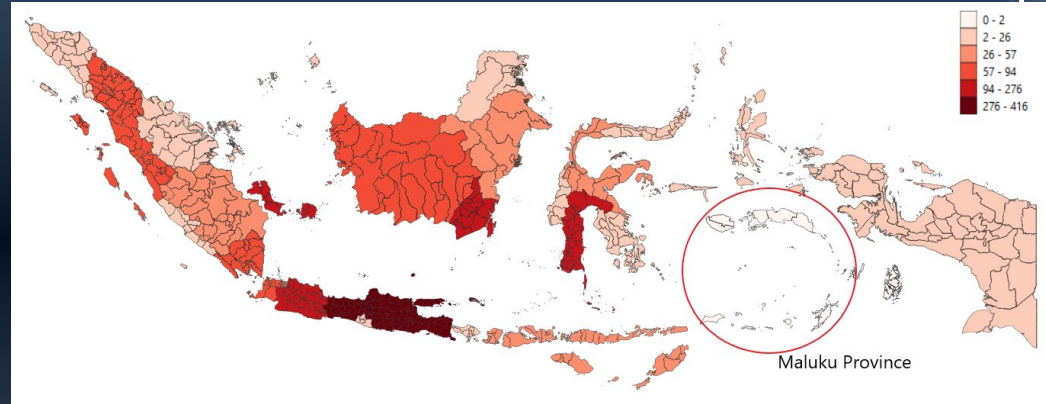
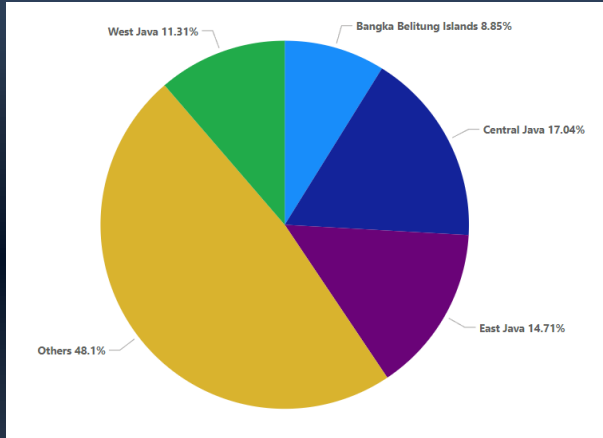
1146 reviews with comments and rating and 1296 with only rating



287/514 of BPS Offices (all level)



Summary Data

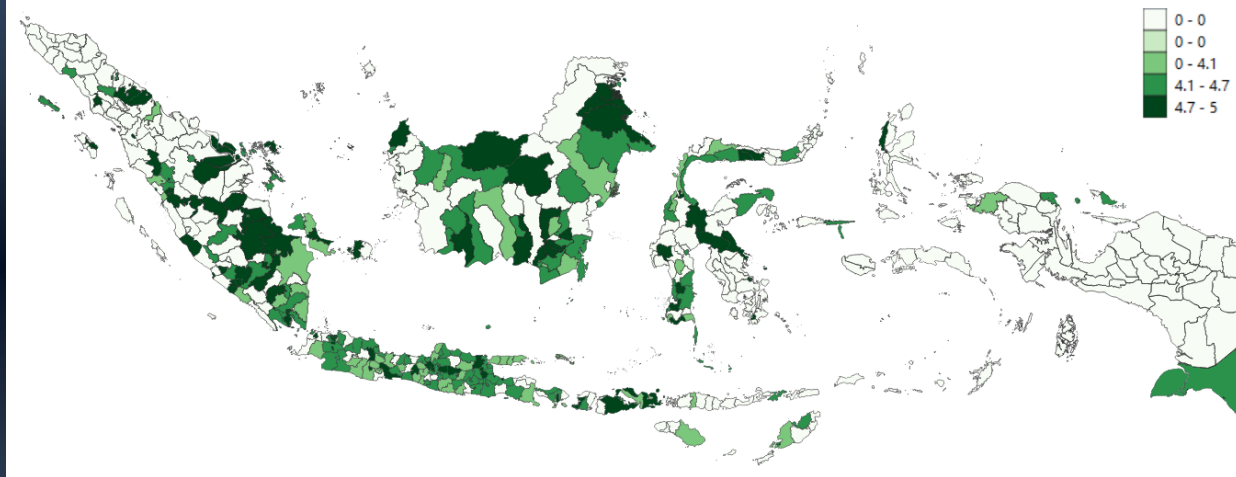


work unit that is most reviewed by visitors is the BPS office located in Java such as Central Java, East Java, and West Java with a percentage of more than 10% of the total Google Maps review data collected. This indicates that people in Java are more likely to give Google Maps reviews than people in other areas.

it can be seen that not all BPS Offices either at province or district level could be collected during scraping process

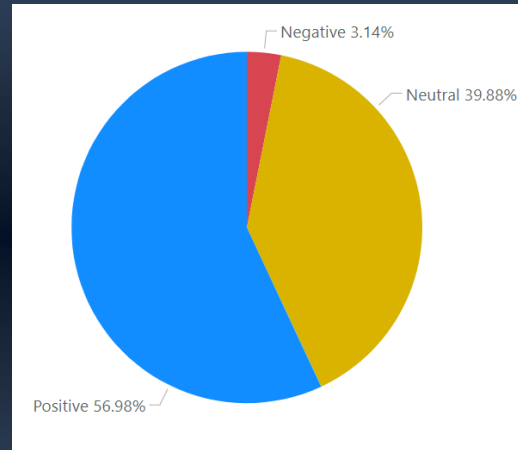


Rating Distribution



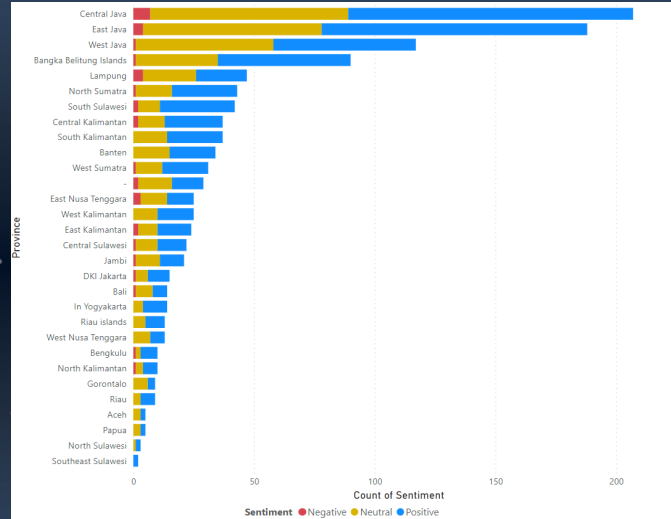
There are 71 BPS office work units that have a perfect rating (5 out of 5), including BPS Belitung Regency in Bangka Belitung Islands Province, BPS Asahan Regency in North Sumatra Province, and BPS Palu City in Central Sulawesi Province. While the BPS office with the lowest rating is BPS Banyu Asin Regency in South Sumatra Province with a score of 2.0 out of 5.0

Sentiment Analysis Result



From 1,146 visitor comments, 653 comments (56.98%) had positive sentiments and only 36 comments (3.14%) had negative sentiments, while the rest had neutral sentiments. This also further shows that the majority of visitors are satisfied with their visit to the BPS office work unit in Indonesia.

Sentiment Analysis Result based on Province regional office



Among them are the Provinces of North Kalimantan, West Nusa Tenggara, Aceh, South Sumatra, East Kalimantan, West Java, and Central Java, with the highest number of negative sentiments in Central Java Province.

Discussion

0 1

visitors not only commented on the statistical data produced by BPS, but also commented on the cleanliness of the office, the location of the office on the road, and the behavior of office employees.

0 2

the results have not been able to cover all BPS office work units in Indonesia (only 287 out of 514 BPS offices).

- this may happen because
- there has been no Google Maps review left by visitors to the work unit.
- BPS office work unit is not found or has not been registered on Google Maps.

0 3

The results of the rating and sentiment analysis carried out also cannot be confirmed, considering that anyone can leave a review on Google Maps, including employees from the district/city office itself. This of course can lead to bias from the analysis carried out.



Conclutions

0 1

There are a total of 2,442 reviews provided by Google Maps users who visited 287 district/city BPS offices in 33 provinces in Indonesia.

0 2

The average rating given by visitors is 4.46 out of 5, with 653 comments with positive sentiment or about 56.98% of the total comments given by visitors.

0 3

There are 71 BPS office work units that have a perfect rating (5 out of 5), with BPS office with the lowest rating is BPS Banyu Asin Regency in South Sumatra Province with a score of 2.0 out of 5.0. The results of data collection can clearly be used as evaluation material by policy makers at the district/city BPS offices because visitor comments contain not only statistical data produced by BPS, but also services and facilities at the BPS office.





Thank You

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