The Relationships between the Characteristics of Pedestrian and the Increase of Facilitation of Sidewalk

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Abstract. This research aims to know the characteristics of the pedestrians along the Braga route and to see the relationship between the characteristics of the pedestrians with the hope of increasing the pedestrians along the Braga Street in Bandung. Data was collected by means of data and analysis by method of analysis of distribution and cluster analysis. The results of this research show that the main facilities expected to be improved for the pedestrians along Braga Street are the availability of park area. It happen because Braga Street does not have a special area for parking, the parking area or even the parking area.

1. Introduction
The growth of transportation facilities in Bandung City continues to increase along with the population growth. To reduce congestion due to the impact of the growth of transportation facilities, the city of Bandung began promoting walking activities, which are a basic means of transportation and can be done for everyone. To encourage walking activities, the Bandung City Government began to fix the infrastructure of the city, one of which was the improvement of pedestrian paths (sidewalks) and maintenance of complete pedestrian facilities. One of them is along Braga Street.

Braga Street became the root of the development process of Bandung, where at that time the Governor of Central Java Herman Willem Daendels (1808-1811) built a posted highway (Grote Postweg) from Anyer to Panarukan. Since the Dutch era, Braga Street has been used as the street of Protocol in Bandung City. Therefore, Braga Street is very popular in Bandung since it was founded in the colonial era and became one of the most favorite street in Bandung [1]. The activity and mobility of pedestrians along Braga Street are quite high. This is because Braga Street provides One-Stop Holiday travel concepts, ranging from shopping tours, culinary tours, family tours, to historical tours that are mostly carried out by domestic and foreign tourists. Pedestrian mobility is increasing in areas where photographs provide more facilities for pedestrians, such as availability of places in the office, strong material for walking, availability of road lighting in the day, accessibility to building functions, seating / rest, safety, value, along with crossing roads [2], the width of road and sidewalks, shade (canopy, trees) and the height of building[3]. In order to increase the comfort of the pedestrians, the track must continue without any elements that can disconnect, with the result that its make an uninterrupted coordination networks [4], sidewalk facilities (toilets and other utilities), crossing lines [5], and availability of parking area and disability facilities [6]. Whereas to provide safety for pedestrians, sidewalks, and walkways must be separated from the highway [7]. Most pedestrians along Braga Street, walking with friends to
enjoy the building in the style of colonial architecture [1]. Everyone who travels from one place to another on foot will be supported by pedestrian elements that are friendly to pedestrians [8].

To support tourism activities and the high mobility of pedestrians along Braga Street, consider the adequate facilities. The facilities provided must be based on the characteristics of pedestrian activity. Therefore, this study aims to see the characteristics of the Pedestrian along the Braga Street and to know the relationship between characteristics of the pedestrians with the hope of increasing the pedestrian along the Braga Street in Bandung.

2. Methods
The research was explanatory [9] used quantitative method [10]. The explanation was used to explore and search sidewalk facilities expected by pedestrians along Braga Street to be improved.

2.1 Data Collecting Method
The Intercept technique was used as a technique in data collection, using an open questionnaire survey along Braga Street. The survey was conducted from May-June 2018. Braga Street was divided into 3 roads segments, the first section began from Jalan Perintis Kemerdekaan to Lembong road with the number of respondents as many as 50 respondents, the second section began from Lembong road to Jalan Naripan with 200 respondents, the third section started from Jalan Naripan to Jalan Asia Afrika with a total of 50 respondents. The sampling map can be seen in. The number of all respondents was 300 respondents who were all selected by convenience sampling [11].

2.2 Data Analysis Method
To find out what characteristics and facilities are expected by pedestrians, a questionnaire with open questions was made [11]. Among them was the question of age, with whom walking along Braga Street, the purpose of walking on Braga Street, activities carried out while walking along Braga Street and what sidewalk facilities are expected by pedestrians to be improved.

Distribution analysis was conducted to identify the characteristics of pedestrians, in this case, age, gender, with whom and facilities expected by pedestrians to be improved. Whereas cluster analysis was carried out to see the relationship between activities carried out by pedestrians and what sidewalk facilities are expected by pedestrians to be improved and the close relationship between whom they walk and the increase in sidewalk facilities expected by pedestrians.

3. Results and Discussions
In this section, the results of data collection and discussion of the results of data collection will be explained. The section describing the results of data collection will discuss the sociodemographic conditions and characteristics of the results of the answers of respondents. Then in the discussion section on the results of data collection, it will explain about the results of data collection with several factors that influence it, so the conclusion is pedestrian characteristics and patterns of relationships between pedestrian characteristics in the hope of increasing pedestrian facilities along Braga Street.

3.1 Results
Based on the respondents’ social demographic conditions. Respondents are the final age group of teens with an age range of 18 to 25 years. Respondents aged 20 years were the age group of respondents who dominated, with a percentage of 37%, followed by the age group of 19 years, with a percentage of 22%, age 21 years with a percentage of 19%, age 18 years with 11%, age 22 years with percentage 7 %, age 25 years with a percentage of 3%, and ages 23 and 24 years with a percentage of 1%.

Most of the respondents were male, with 74% and 26% female. Most respondents walked along Braga Street with their friends, with a percentage of 61%, followed by pedestrians who walked with their families by 11%, pedestrians who walked alone 4%, and pedestrians who walked along accompanied by business partners with a percentage of 3 %. The full results can be seen in Figure 1.
Based on the results of distribution analysis, it was found that Parking lot is one of the facilities that pedestrians are expected to increase, with a percentage of 18%, followed by seating facilities (15%), sidewalk width (12%), sidewalk material (11%), garbage bins (9%), 9% lighting, disabled facilities and street vendors (5%), sidewalk design (4%), shade trees and cleanliness (3%), attractive spots, utilities and crossing lines, 2% each. The full results can be seen in Figure 2.

Figure 1. Respondents Social Demographic.

Based on the results of the cluster analysis, it was found that pedestrians who walked with their families (children, parents or siblings) had a close relationship with the increase in disabled facilities and parking spaces. Pedestrians who walk on their own have a close relationship with improving lighting facilities. Pedestrians who walk with friends have a close relationship with improving sidewalk design.

Figure 2. The facilities that should be improved.
facilities and seating or resting places. Whereas pedestrians who walk with business partners have a close relationship with improving cleaning facilities and shade trees. The full results can be seen in Figure 3.

3.2 Discussion
Based on the results of data collection, the results of the study showed that respondents were in the age group of 18-25 years which is a millennial group category, some studies often referred to as young generation (up to the age of 29 years) [12]. This generation group enjoys flexibility [13] and prefers to carry out socialization activities with peers [14]. Walking is one of the pedestrian activities to be able to interact and socialize with friends [15]. The results of this study support the study [1], which revealed that along Braga Street, most pedestrians walked with friends.

Furthermore, the facility that is most expected by pedestrians to be improved along Braga Street is a parking lot [6]. This is because currently, the amount of parking provided along Braga Street is still not fulfilling. Figure 4 shows that even though the parking system uses a parking engine, the parking area still takes the Braga Street shoulder, so the parking lot will be limited and narrow the passing traffic [16] and cause congestion during holidays. While the value-added facilities small to be improved is the crossing line [2], this is because the condition of the current crossing line is already good in facilitating the needs of walking pedestrians. Figure 5 shows the crossing path and the width of the Braga Street that is not so wide (± 8 meters), so pedestrians are easy to cross.
Pedestrians who walk with family are very concerned about disabled-friendly sidewalk facilities [6] to be able to facilitate all family members. This is because family members consist of different ages, ranging from the youngest age (children) to the elderly (grandmother or grandfather). So that friendly facilities are important for the security of all family members. Such as the existence of protection railing is very useful for the elderly as a handle to walk more secure. The difference in material texture that is very useful for blind people as a road guide (Figure 6).
Figure 6. Difflable facilities of Braga Street.

Pedestrians who walk on their own are very concerned about lighting [2], this is related to safety factors when it walks alone [7], especially at night (Figure 7). Pedestrians who walk with friends are very concerned about sidewalk design and seating/resting place [2]. This is because respondents are millennial age groups who are very happy to interact and socialize with their peers [15], so the design of sidewalks and seating/rest can be a facility for interaction [17]. The sidewalk design is also important for pedestrians who walk with friends because a good sidewalk design will be an interesting spot for them to take a photo together, which is the custom of millennial generations today (Figure 8).

While pedestrians who walk with business partners are very concerned about clean sidewalk facilities [2], this is because clean facilities are very important for them to feel comfortable when walking while talking about business.

Figure 7. The lighting of Braga Street.
4. Conclusion
Based on the results of the above research, it can be concluded that the majority of pedestrians with the age group usually walk along Braga Street with friends and really expect an increase in the availability of parking facilities. While the crossing line is a facility that does not need to be upgraded. The results of this study can be used as a reference for the Bandung City government to be able to increase the availability of vehicle parking lots along Braga Street, either by providing parking buildings or rental parking lots. All these facilities are important to pay attention to and improve their quality to support the needs of pedestrian facilities. It is expected that this pedestrian-friendly facility can improve walking mobility in reducing vehicle pollution and maintenance of pavement material along Braga Street. The facility that is most expected by pedestrians to be improved along Braga Street is a parking lot, this is because currently the amount of parking provided along Braga Street is still not fulfilling.

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