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To cite this article: S L Hanida *et al* 2019 *IOP Conf. Ser.: Earth Environ. Sci.* **313** 012036

View the article online for updates and enhancements.

Mapping Urban Population Behavior in Using Private Transportation at City Center of Semarang

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Abstract

This paper aims to describe the identification of urban society behavior based on gender in using private transportation modes in the City Center of Semarang. The city center is the center of economic growth so that it has a high level of mobility and accessibility, especially in the use of private vehicles. This study uses GIS for Mapping and a quantitative approach to find out the most influential factors. The instrument uses a questionnaire and uses quantitative descriptive analysis techniques. The sample distributed was 100 respondents with an analysis unit, namely land use in the City Center such as trade and service areas, office centers, and government centers. The results of this study indicate that out of 100 research respondents, 66% were female gender. In addition, of the 11 variables used, only 5 variables have relevance; there area age, income, mode of transportation, ownership of the driving license, and commuter costs. From these variables found, one variable that most influences, which is the respondent's age, so it can be concluded that the dominant gender using private vehicles is women with productive age.

Keywords: Transportation, Gender, City Center of Semarang, GIS

1.   Introduction

Gender equality has become a global issue worldwide since the SDGs were echoed. This equality encourages research, especially in relation to equality in activities, one of which is transportation. Some of the most recent debates on gender and transportation are women's mobility rated lower than men [1,2]. Furthermore, previous transportation research [3] revealed gender trends in the choice of use of transportation modes. The results of the study found various factors that have interrelations between variables in general. However, these results received a lack of response, especially in the development of transportation in Indonesia, which triggered similar transportation research by adding a gender component in his research.

Previous studies on gender and transportation have been carried out. Lecompte [4] shows that gender and socio-economic inequality greatly affect transportation accessibility. While other studies initiated by Li [5] focus more on transportation systems in seniors in male and female genders to maintain the quality of life. A similar study from Simicevic [6] also focused on socio-economic conditions and characteristics of major travel (especially parking) for men and women. While research conducted by Su [7] focused more on travel demand in the elderly.

These studies are interesting to study because the aspect of transportation is important to complement a city. Of all the studies that have been carried out, there have been no studies on the characteristics of users of gender-based private transport modes at the center of the city's economic growth. Research in the city center is carried out because the city center functions as an area of economic growth, and has different characteristics and characteristics [6,8,9]. One of the differences is that there are many activities and activities in the city center. This difference is one of the reasons this study was conducted in the Central Business District (CBD) in Semarang City. Other characteristics possessed by the city center are work activities with a high level of heterogeneity. This indicates that work activities do not look at any gender.

This uniqueness brings interest in the substance of transportation research in the city center. This research is important because Indonesia has a different social cultural condition of the population and it is understood that the physical condition of men is considered stronger than women [10]. Furthermore, the identification of gender characteristics for users of private transportation in the city center became the focus of this study.

Semarang City Center is the Golden Triangle Region which also serves as the center of the city's growth. This area has been directed as the business center of Semarang City since 2000. As stipulated in the Regional Spatial Plan (RTRW) of Semarang City in 2011-2031, that the Golden Triangle Area is a City Part (BWK) I. BWK I have a function as a trading area services, mixes and settlements that include Pandanaran street, Pemuda Street, and Gajahmada Street. In addition, the characteristics of the Golden Triangle Region include the existence of a trade center and an institutional office that results in differences in the movement towards the city center [11]. The number of jobs available causes the pull of the movement so that it results in relatively high mobility and movement intensity. On the other hand, this phenomenon causes various problems. These problems include air pollution, traffic density and physical losses, and some disaster in the north area of Semarang City Center [12,13]. Furthermore, this has resulted in not optimal functioning of public transport in the Golden Triangle Region of Semarang City. These reasons underlie the importance of conducting research on the characteristics of users of gender-based private transportation modes in the Golden Triangle Region of Semarang. This topic is interesting because previous research only discussed the characteristics of transportation in general and not gender-based. Based on the importance of this study, this paper aims to answer the characteristics of gender-based users in using private transportation modes.

2.   Data and Methods
2.1.   Mapping of Strategic Area of Semarang
The study area is the Golden Triangle Area of Semarang City which includes Pandanaran Street with locations coordinates 6°59'14.52 "S and 110°25'0.51" E, Gajahmada Street with locations coordinates 6°58'53.90 "S and 110°25'17.48" E, and Pemuda Street with coordinates 6°58'24.76 "S and 110°25'13.22" E (See Figure 1).
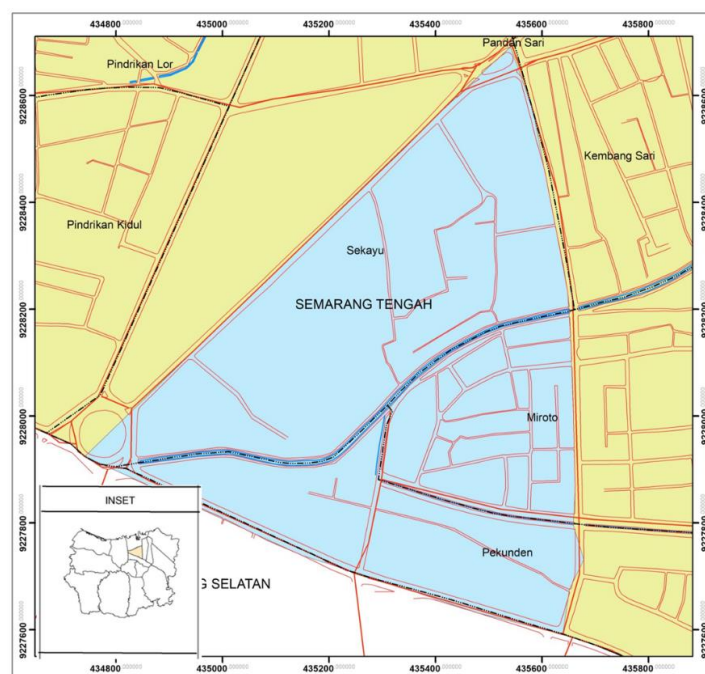

Figure 1. Study Area

2.2. *Sampling Behavior*

This study uses quantitative methods with quantitative descriptive analysis techniques and crosstabs techniques. Determination of the sample location based on the majority of land use that causes trip generation, namely trade and services and offices and government. Sampling uses probability sampling (provides equal opportunities) and is carried out at rest and finished working hours. This probability sampling technique uses disproportionate stratified random sampling because the strata population is not proportional. So that in determining the number of samples need to consider a more representative proportion. The proportion of the number of samples as stated in Table 1.

Table 1. Sampling Proportion

Land use	Sample Proportion	Sample
Office and Government	40%	40
Commerce and Services	60%	60
Total	100%	100

Source: Author's Analysis, 2018

3. Results and Discussion

3.1 Results

The results showed several facts, among others, the movement in the city center was dominated by women. The facts show that 66% of the movement is dominated by female gender and the remaining 34% by men (figure 2a). Likewise, with age, 24% consists of ages 20-24 years, 19% age 30-34 years, 18% age 25-29 years. 12% 35-39 years, 10% 50-54 years, 7% 40-44 years, 5% 55-59 years, 3% 15-19 years, and 2% 45-49 years. So, from the data it is known that the age of the respondents is dominated by the age of 20-24 years with the assumption that the perpetrators of movement in the Golden Triangle Region belong to the categorization of productive age (Figure 2b).

Furthermore, the results of the identification show that 66% of the movement actors are private employees and 14% are National Corporate employees, and 20% are government employees (Figure 2c). Actors' income varied, among others (1) 45% consisted of 2-3.9 million income categories, (2) 28% income category <2 million, (3) 13% consisted of 4-5.9 million income categories, (4) 9% consists of 6-8 million income categories, (5) 5% consists of income categories> 8 million (Figure 2d). The majority of female gender in the study area has revenues of 2-3.9 million per month. While the majority of male gender also has an income of 2-3.9 million per month. So, based on the analysis it can be assumed that the workers in the Golden Triangle Region have a moderate to high category of welfare (Figure 2e).

From these characteristics, the selection of modes also varies. The number of private motorcycles in fulfilling the movement in the Golden Triangle Region is more dominant. In male gender, there are fewer choices of modes of transportation, namely private cars and private motorbikes. While female gender has more choices of modes of transportation such as private motorbikes, motorbike taxi, shuttle, private car and taxi (paratransit mode). Movement is also influenced by modal ownership where 12% of respondents do not have private vehicles. Respondents with this category are all female gender. Thus, the gender of men who were respondents in the study location all had private vehicles. The majority of private vehicle ownership is based on research respondents in the form of 1 motorcycle or 2 motorbikes (Figure 2f).

The use of private vehicles is also triggered by the inadequate quality of public transportation, especially from the supply of modes and timeliness. From the results of the research, 34% felt that public transportation was comfortable. This comfort is seen from the facilities of Air Conditioner in the mode. But as many as 66% felt that using personal transportation was more comfortable (Figure 2g). This convenience can be seen from the aspect of time efficiency that is considered faster to get to the destination. So, from the data it is known that the majority of the research respondents feel more comfortable using private transportation than public transportation. This affects the expenditure. The fact states that 39% of respondents spend around Rp. 5,000-Rp. 10,000 per day. However, there is a difference between the gender of men and women in terms of the amount of progress. In the male gender, the majority spend around Rp.

11,000-Rp. 20,000. While the female gender, has a lower expenditure of expenditure which is around Rp. 5,000-Rp. 10,000 (Figure 2h).
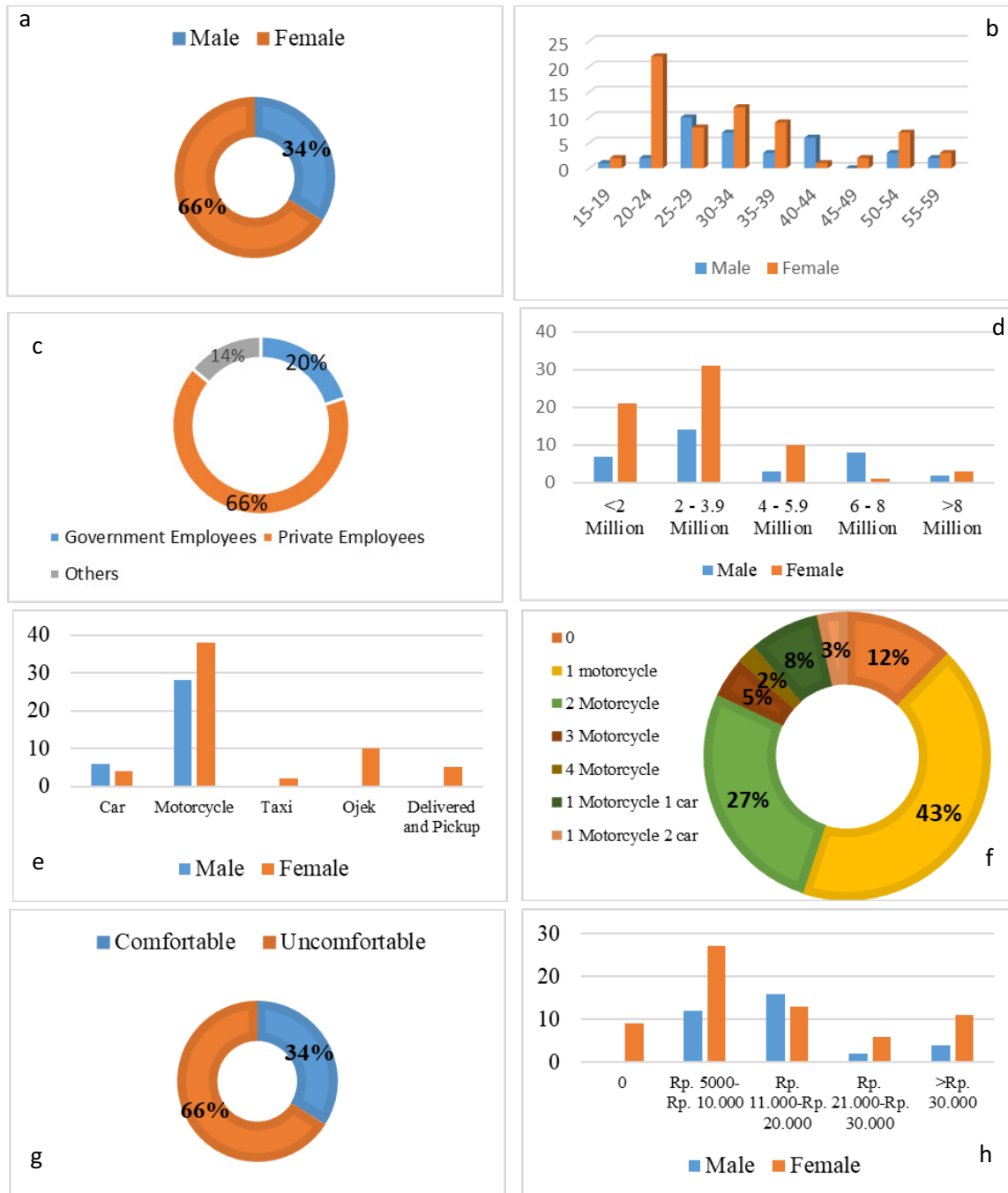

Figure 2. Gender-based behavior in using Private Transportation

3.2 Discussion

This section discusses the results and compare the analyses with previous research. Previous studies show that women's mobility is lower than men [1,2]. This fact was not proven. Research shows that women's gender has a higher level of mobility than men. This is based on the results of the research sample which shows that 66% are female gender actors. The second fact, this study succeeded in proving that women also have the same travel distance as men, which is between 10-20 Km. This is consistent with previous research which mentions the movement of men and women almost in common [2]. Furthermore, the third fact states that more than 80% of men and women choose to use private transportation rather than public transportation. Furthermore, Rangkuti [3] found that there are 8 variables related to travel variables, namely work, modal ownership, gender, allowance, driving license, travel time, frequency of comfort and cost. However, with the addition of the gender component in the study, there were only 5 variables that were related, namely age, income, mode of transportation, driving license, and commuter costs. The addition of the gender component in the research is very influential. It can be seen that this research is able to contribute to previous research.

4.   Conclusion

This study was successful in answering questions about the characteristics of users of gender-based private transportation modes in the City Center of Semarang. The results show that movement in the city center is dominated by women. There are 5 variables that are related, namely age, income, mode of transportation, driving license, and the cost of submission. However, the age variable has the most closely related for gender-based population in using private transportation modes in the Central City of Semarang, so it can be concluded that the dominant gender using private vehicles is women with productive age.

5.   Acknowledgement

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