Passengers’ deviant behavior mapping in train cars: Commuter line Tangerang-Duri

A Zubair¹, H Setiadi² and W Sumadio²

¹Urban Studies Program, School of Strategic and Global Studies, Universitas Indonesia, 4 Salemba Street, Central Jakarta, Indonesia
²Department of Geography, Faculty of Math and Natural Science, Universitas Indonesia, Depok Campus, Depok, Indonesia

E-mail: widyawatihs@gmail.com

Abstract. One of the public transportation choice in Jakarta and the surrounding areas is the Commuter Line (CL). However, this transportation mode is facing many problems related to behavior deviations that carried out by passengers. Even the CL management already has a code of conduct and security guard, passengers tend to break the law. The purpose of this paper is to analyze the passenger’s behavior in the Commuter Line. Individual behavior is observed by using the Place Centered Mapping method. This observation technique aimed to understand how people utilize or accommodate their behavior at a particular time and location in the train cars. This research model is divided into two stages. The first stage is by observation passenger’s behavior for seven days, and each day for ten hours. Besides observation, we also conduct a semi-structured interview to seven key persons. The second stage is examined the passenger’s behavior based on location. Triangulation and spatial analysis are used with several theoretical discussion about where, when and why passengers did deviant behavior. The results showed that the train door cars and the inter-car connection are vulnerable areas for passengers’ deviant behavior. The most common deviant behavior is violating regulations by using space not in accordance with its designation. The least deviant behavior is pickpocket and harassment, even it could happen in every space of the train cars. This deviant behavior occurs mainly because at the peak hour, the number of security guard officers is inadequate compared to the number of passengers.

1. Introduction

Since Commuter Line evolved in 2013, it was considered capable of changing people's behavior to be more 'civilized'. In other words, the conditions of Commuter Line train cars become cleaner, more comfortable and safer. These changes can be seen from the passenger behavior. Changes in passenger behavior were very significant. Nowadays, there are no more passengers who climb to the top of the train cars, there are no buskers, and also food or beverage vendors.

The problem of passenger behavior on the train has been studied by many parties. There were studies that discussed about affordances and adaptations in Commuter Line [1], also about on other changes in individual behavior based on events on the way and more directed to public health [2]. Studies on Commuter Line passenger deviant behavior have also been conducted [3]. However, none of the researchers has mapped the passenger behavior in train cars.
Many researchers have used behavioral mapping to study people’s activities. Cosco [4] has studied and mapped in neighborhood open space, children’s museums, schools and zoos, senior residences was done by Milke [5], meso-scale grocery stores by Larson [6] and hospitals by Bernhardt [7]. In earlier study, Zubair [8] has studied passengers movement in Tangerang Station which becomes a major station in Jakarta’s surrounding cities, especially Tangerang City. The purpose of the study was also to provide an overview of the passenger’s behavior at Tangerang Station. In this study, passengers’ deviant behavior are mapped by observing various time and location characteristics.

This study aims to analyze the spatial pattern of Commuter Line passengers’ behavior in the train cars. This research is very important to be done comprehensively. In order to understand the process of deviant behavior, it can be formed and where the deviant behavior occurs. Knowledge from this study can be used to evaluate the regulations applied in the train cars and how they should be implemented.

2. Literature Review

2.1. Deviant Behavior

Rock [9] explained deviancy was an outcome or process of judgment and evaluation which distinguishes certain forms of behavior as rule-breaking and attached penalties to them. Deviance was not a quality of the act the person commits, but rather a consequence of the application by others of rules and sanctions to an ‘offender’ [10]. The point of view that deviance was a relative matter, that it existed in the eye of the beholder, that was subjectively problematic rather than objectively given, was often exaggerated and vulgarized [11]. Deviant behavior through this approach can be seen from how strong social interaction is carried out between individuals with individuals, individuals with society and society with society. Deviant behavior can also be defined as all actions that deviate (not appropriate) from the norms that applied in the social system and cause the efforts of the authorities to overcome these deviations.

Deviant behavior can also be explained as any behavior that is not appropriate and violates the norms and the law. Therefore, the definition of deviant behavior used in this research is any form of behavior that is not in accordance with the regulations that apply in the Commuter Line train cars and the norms that applied in social life. Deviants in this case are passengers who make deviations based on the above definition.

2.2. Passengers’ Deviant Behaviour in Train Cars

Deviant behavior in the train cars occurs because passengers do not comply with regulations that have been given. Although impressed as a ‘cliché’, this is actually a scourge for urban society behavior in general. Commuter Line has made regulations for passengers both inside the station and inside the train cars, such as passengers are prohibited from eating and drinking, smoking, littering, etc.

The importance of social processes, namely in this case the interaction between Commuter Line passengers that had not been structured or cultured [12]. Urban communities tend to be more individualistic so they can reduce the values of care in using public transportation. This lack of concern among passengers can hamper social processes. This behavior can also make passengers more susceptible to do a deviant behavior while in the train cars. Deviant behaviors in the train cars can be caused by many motives. There were several motives that cause passengers did deviations in the train cars, including service facilities, bandwagon, tolerance, to the destination and efficiency [3]. Some passengers reasoned that service facilities that were not in accordance with their needs had motivated them to deviate. This condition usually happens because the density of passengers has exceeded the maximum limit of train capacity. Some passengers make a deviation just because of the bandwagon, without a clear reason. This was triggered because of curiosity when the mass of other passengers doing the same thing simultaneously. Passengers who conduct deviant behavior feel that there is a common fate among fellow passengers, such as the same fate, place of origin, work and so on so that a sense of
mutual respect emerges, protects, defends, helps even solidarity. This shows that there is a power that cannot be 'touched' and can defeat the applicable regulations.

The desire of passengers to get to their destination in time is very important. Daily activities with a high level of mobility are usually carried out by passengers, thus passengers perform various behaviors to adjust the time in order to meet their needs. Efficiency is demonstrated by passengers who actually have the ability to obey regulations. Lack of supervision makes passengers choose 'fast way' to achieve their desires. Passengers with this motif usually have a high level of train use every day.

3. Research Method

3.1. Place Centered Maps and Setting

The observation method used in this study is Place Centered Maps. Place Centered Maps are used to see how individuals in a particular location / place [13]. This observation technique aims to understand how individuals / groups use, utilize or accommodate their behavior in a particular time and location situation [14]. It should be noted that the researcher must be familiar with the situation of the place or area to be observed and determine the symbols / signs on each behavior that occurs [14]. Thus, sketching a place or setting is required, including a physical element that is expected to affect the passenger's space. This method is used to observe the symptoms, attitudes and behaviors of the passengers.

Thus, a complete picture of (actions, events, deviations, etc.) can be obtained as well as their relationship with other symptoms. The author is involved in using the facilities provided by the station to be able to see and understand the symptoms that exist. In other words, the meaning given will be understood by passengers.

| Time                  | Passengers’ Seat | Standing Area | Circulation Area |
|-----------------------|------------------|---------------|------------------|
|                        | Priority         | Public        | Eat and drink, littering | Sexual abuse, pickpocketing | Stand and sit on the train cars connection, sit on the train floor, lean to train door, sexual abuse, pickpocketing |
| Weekdays              | Priority seat abuse, eat and drink, littering | | | | |
| Peak Hour             | (06.00-09.00 AM & 05.00-08.00 PM) | | | | |
| Off- Peak Hour        | (09.00-12.00 AM & 07.00 – 09.00 PM) | Littering, Priority seat abuse | Littering, eat and drink | Sit on the floor | Sit on the train floor |
| Peak Hour             | (08.00-10.00 AM & 04.00-06.00 PM) | Priority seat abuse, eat and drink, littering | Eat and drink, open train window, | Sexual abuse, sit on the floor | sit on the train floor, lean to train door |
| Off Peak Hour         | (10.00-12.00 AM & 06.00-08.00 PM) | Priority seat abuse, Littering | Eat and drink, littering | Sit on the floor | Stand and sit on the train cars connection, sit on the train floor, block the train door |

Source: Observation, 2019

3.2. Mapping Technique

One type of spatial analysis is overlay. This analysis technique is used in this study to explore the spatial characteristics and spatial attributes of the merging between observational data and spatial design of Commuter Line train cars. In conducting overlay analysis techniques, spatial conclusions were made after going through the process of stacking several spatial attributes [15].
The spaces in question are part of the train cars. According to [16], there are three basic elements in the interior of the train car space, namely public and priority seats, standing area and circulation area as Fig 1 showed below.

Behavior observation settings can be considered the units of analysis in place-centered maps. The choice of the time when observations take place is fundamental because the same place can be used very differently depending on the time of the day. Table 1 shows behavior observation settings by location is divided into public seats, priority seats, standing area and circulation area. Setting by time is divided into weekend and weekdays.

3.3 Analysis
The analysis technique used in this study is the triangulation technique, namely data sources, theories, previous studies, findings and data collection methods used. This technique compares data and also check the interpretation meaning of field findings, use related cases and discard the unstable relationship [17]. Triangulation is used as a model when researchers use two different methods with a view to confirming, cross-validating or corroborating findings in one study [18].

4. Results and Discussions
Based on observations and interviews, the identified forms of deviant behavior can be explained through the Table 2. Based on Table 2, there are eleven deviant behaviors in the Tangerang-Duri Commuter Line train cars. The most common deviant behaviors are priority seats abuse and sitting on the train floor. This form of deviation is found almost every day when observations are made, especially during peak hours. Passengers who make a variety of deviations, ranging from young female passengers, young male passengers, teen passengers, female and male workers, and others. Deviations in the train cars can be analyzed through the characteristics of the space. Train cars can be divided into three basic facilities, namely public and priority seats, standing area and circulation area [16]. For this reason, deviant behavior in the train cars is explained based on each facility as follows.
4.1 Passengers’ Deviant Behavior in Priority and Public Seat

Table 2. Deviant Behavior by Location and Time

| Passenger Deviant Behavior | Location                                | Time            |
|----------------------------|-----------------------------------------|-----------------|
| Eat and drink              | Public and priority seats               | Peak & Off-Peak Hour |
| Sit on the floor           | Circulation area, near in-out access    | Peak & Off-Peak Hour |
| Lean to the train door     | Circulation area                        | Peak & Off-Peak Hour |
| Priority seat abuse        | Priority seats                          | Peak & Off-Peak Hour |
| Block the train door       | Circulation area                        | Peak & Off-Peak Hour |
| Littering                  | Public and priority seats and luggage racks | Peak & Off-Peak Hour |
| Open the train window      | Public seats                            | Peak Hour       |
| Women train cars Abuse     | Women train cars                        | Peak Hour       |
| Pickpocketing              | Public and women train cars             | Peak Hour       |
| Sexual abuse               | Standing area and circulation area      | Peak Hour       |

Source: Observation, 2019

Figure 2. Passengers deviant behavior distribution in Commuter Line Train Cars
Source: Observation, 2019

Every passenger always competes to get a seat. When passengers struggle to get a seat, often found the action of pushing between passengers and even run. This is very unfortunate considering that most passengers who do so can disturb and hurt other passengers.
Figure 2 shows that there are ten distribution points of behavior deviations in the train seat. Based on the results of observations, there has been a deviation of behavior of priority seat abuse in all available priority seat locations. That is, this seat becomes very ‘prone’ in the means of sitting train cars against deviant behavior. In addition, priority seats have a favorable space situation for passengers. The seat can only be used for three to four people, close to the door access and train connections. This means that priority seats have a higher level of accessibility compared to public seats.

4.2 Passengers’ Deviant Behavior in Standing Area
Standing area in the train car is right in front of the public and priority seats. This area usually is marked by the presence of a handgrip attached to the top of the public and priority seats. Standing area is usually used by passengers who do not get a seat in the train car. In standing area found several deviant behaviors such as sitting on the floor using a mat or not, pickpocketing and sexual harassment. The most common deviant behavior is sitting on the floor. The deviant behavior points distribution in the standing area are visualized through Figure 2. Based on the results of observations, there are thirteen points of deviation in standing area of the train cars. The points are spread out almost in all standing area because in general, the point of deviant behaviors in the train cars area very flexible. It really depends on time and location of the passengers.

The most vulnerable standing area to the occurrence of deviant behavior are in front of the priority seats. Like sitting behavior on the floor for example, most of the passengers who carry out this behavior are in standing area close to the priority seats. Although some observations were found by passengers near public seats. In fact, if it is observed in more detail, the standing area in front of the priority seats has a narrower space. Around the area there are also access doors in and out of train cars and train car connections. This means that the area is a node between the entrance and exit doors and train car connections. This area also has a fairly high level of accessibility in the train cars. The occurrence of deviant behaviors in this area can disrupt the flow of passengers who are in the train, especially for those who want to get out and change train.

4.3 Passengers’ Deviant Behavior in Circulation Area
The form of deviant behaviors observed in the circulation area are not so different from standing area. The boundaries of standing and circulation area are close together and in plain view are difficult to distinguish. Some forms of deviant behavior such as sitting on the floor and leaning on the train door, blocking the train door, sitting and standing in a train connection, pickpocketing and sexual abuse. The distribution of deviant behavior points in the circulation area are visualized according to Figure 2. There are approximately thirty points of deviation in the circulation area of the train cars. The points are spread almost in all circulation area. In general, it is very dependent on the position of the passengers and train’s condition and situation. The most susceptible area to deviant behavior is between the entry and exit points of train cars. The most common forms of behavior found in this area are sitting on the floor, verbal harassment and pickpocketing. This area is very vulnerable because passengers are more likely to use the circulation area when standing. In addition, the area near the priority seats and standing area also becomes vulnerable. The circulation area is usually crowded after the public seats and standing area are no longer usable.

4.4 Vulnerable Area of Deviant Behavior
After seeing the pattern of spread of passengers’ deviant behaviors in the Commuter Line train cars, the vulnerable area of deviant behavior distribution can be visualized as shown in Figure 3. The vulnerable area within the Commuter Line train cars can be divided into three hierarchical classes, namely high, medium and low. The division of vulnerability classes can be seen from the form and frequency of passengers’ deviant behavior that have been given an assessment.
In general, almost all parts of train cars are dominated by high vulnerability areas. These areas are mainly at the ends of the train cars and in the circulation area close to the entry and exit of the train. The area of high vulnerability can be interpreted as the place where the most common occurrences of passengers’
deviant behavior with different forms of deviation. For example, the area near the train door become the center of the deviation. In this location, some form of passengers’ deviant behaviors is found, such as not prioritizing passengers who get off, block the train door with both hands and legs, sexual harassment, pickpocketing and sitting on the floor.

Figure 3. Vulnerable area of deviant behavior distribution in Commuter Line Train Cars
Source: Observation, 2019

In addition, the vulnerable area can change at any time. It is also dynamic following the form of deviant behavior found. The medium class vulnerability area is quite hard to be observed because this area is between high and low classes. These areas are a transition area with narrow borders. It is usually found in priority seats and in the circulation area. Low-class vulnerability areas are dominated by public seats and standing areas, especially in the middle of train cars. These areas can be said to be more 'safer' from deviant behavior. The vulnerable area within the train cars should be a top priority spaces especially for security officers. Train security officers' understanding of deviant behavior needs to be improved. The sensitivity of officers can be increased through the placement of appropriate security officers. The addition of security facilities in vulnerable areas need to be considered, mainly in high and medium classes.

5. Conclusion

Previous research discussed passengers’ deviant behavior in the train cars by linking the motives of passengers to behavior. There has been no discussion about the relationship between behavior aspects with spatial aspects. In this study, passengers’ deviant behaviors are related to the train cars spatial aspects. Passengers’ deviant behaviors are observed, reviewed and mapped to see which spaces in the train cars are susceptible to deviant behavior. Further research is suggested to be done more deeply about the shape of the train cars and their relation to deviant behavior. How the space arrangement and regulations are implemented properly to reduce the level of deviation is the next challenge.

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