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Lost Space Utilization for Public Activities at Railway Crossing in Mejing and Sedayu Village, Yogyakarta

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Abstract Street and railways crossing is considered as an area prone to accidents, especially crossing areas without safety barriers. However, this vacant space attracts more visitors from its surrounding neighborhood area. At certain hours of the day people uses this space to interact, socialize, play, enjoying afternoon meal, or spend some pastime while train-watching from the rail sides. Street vendors also contribute to the crowding of the area. These space should be manage by public railway company. However in most suburban area, these space has been untouched. On the other hand, the needs for urban public space as a recreational place for people has not been facilitated. Thus careless utilization of lost space at street-railways crossing are commonly found. This phenomenon, creates a sprawl of unplanned-temporary public space. Observing the Mejing and Sedayu crossing, we might see the vibrant activities creates by locals, various type of users, and habitual time used of space.

1. Introduction

Crossing between railway and motorway is referred as *intersection site*. An intersection site is an area that should be free from public activity. This intersection site is a restricted area owned by public railway company. But in the reality, this site has been used for public activities. Two samples of these site are in (1) Mejing Crossing, Gamping, Sleman Regency and (2) Sedayu Crossing, Sedayu, Bantul Regency.

Railway crossing in Mejing and Sedayu, at certain times especially in the afternoon used by the local neighborhood community for recreational purposes. Activities performed mostly by parents accompanying they children. Type of activities ranging from just sitting on the rail side while watching the passing train or taking the afternoon meal, chatting, watching the children taking the odong-odong or mini train or just playing around. In addition, the area is also functioned as a place to enjoy snacks from peddler vendors offering various types of food from meatballs soup, sticky rice balls, steamed dumplings, satay, street rice box, etc. Usually, it start in the afternoon, from 3.00 PM to 7.00 PM, with train-watching as its highlight.





Figure 1 of Space on the Rail Edge in Mejing



Figure 2 of Space on the Rail Edge in Sedayu

Based on the description of activities in the two locations, it can be concluded that public open space is one of the facilities that the community desperately needs. Public open spaces are a place to interact, socialize and also a recreational place. In addition, public open space also has a role in improving the economy. But the problem is the lack of safe and comfortable public open space. The limited availability of open space, makes the community create its own space to interact, socialize as well as recreation places. One example is the activity that occurs in the border area of the crossing rail. The phenomenon of the on-the-go public activity at the border crossing, the research entitled Lost space utilization for public activities at railways crossing in Mejing and Sedayu Village, Yogyakarta.

The problem identified in this study is the absence of the availability of safe and comfortable public spaces to meet the recreational needs of the local community. Which came to the problem restriction are as follows :

1. The research site was conducted at the rail border at the crossing of a railway/road in Mejing and Sedayu.
2. The scope of discussion is: various types of activities performed by locals at the railways site, the point of location / utilization room selected, and the background of users are recorded.

The formulation of the problem in this study is to answer one research question, which is: How is the spatial pattern created by utilization of lost space on the railways site in Mejing and Sedayu Crossing has been formed? Hence, the objectives of this research are as follows:

1. Finding patterns of utilization of public open space on the rail line at the railway/road in Mejing and Sedayu.
2. Propose a recommendations based on this research so that it can be used as a reference for the development of public open spaces.

Hopefully this research benefits to the public would be fulfilled by mean of two main goals :

1. Knowing the effectiveness of the rail border as a public open space.
2. Provide recommendations for utilizing rail borders as safe, comfortable and recreative public open spaces.

2. Literature review and theory

The patterns of activity can be classified into political activities, mass worship, sports, and recreation[1]. While from the results of research conducted by Batubara it was found that the border site of Binjai-Besitang railway parallel to T.A. Hamzah road *became lost space* since August 2003, and subsequently the inactive line was used illegally by the community as a function of housing and shops[2]. The utilization of open space in Alun-Alun Batu was uneven. Utilization of space with high intensity of activity was found in smoking area, fountain area A, fountain area B and *playground*. While space with a low intensity of activity it is located in fountain area D and fountain area E[3].

Based on literature study mention above, there are differences in the results of open space utilization patterns utilized by the community. In previous research, the research site strongly determines

the pattern of utilization of open space, because the activity of space users has its own influence. Definition of space utilization under Law no. 26 of 2007 is an attempt to realize the structure of space and space pattern in accordance with the spatial plan through the preparation and implementation of the program and its financing (article 1 paragraph 14) [4]. The nature of any human activity, especially those in urban areas is usually inseparable from the utilization of space as is the case in the use of public open spaces [5]. The public open space utilization activities patterns have several factors that affect the spatial activity, the users, and the time of the activity [3].

Based on The Minister of Public Works Regulation No. 05/PRT/M/2008, it says that the railway boundary line is a Green Open Space or RTH, whose border has the main function of limiting the interaction between public activities and railways. The width of the railway boundary line on the straight railway is more than 11 m of plants and more than 20 m from the building. And for the railway turn / arch i.e. the deep arch is more than 23 m from the plant and more than 23 m from the building as well as the width of the border on the arch in more than 11m of plants and more than 11 m of the building [6].

Abandoned railways caused by nonactive used of the space or difficulty to access could creates a lost space. Lost space is a destructurezed space in surrounding buildings, part of plazas, or under utilized open spaces or under used by people [7]. In other words, lost space is part or an open space owned by authority, but abandoned and forgotten, thus are illegally used and by local citizen and unplanned [2].

A public open space is a public place where people perform routine and functional activities that bind a community, both the normal routine of daily life and in periodic celebrations. Public open space is a place of interaction between people in a space. Open space is also a shared space where the public can do a variety of activities and is free of charge to enter the area. There are several factors to be aware of in an effort to optimize the use of public open spaces namely:[8]

1. *Use of space*, where different spaces host different functions and activities.
2. *Space form and context*, defined as the physical character of the space. The shape of the space can be characterized by the presence of physical borders as well as interesting objects or focal *points*.

That public space is a complex system that related to all building parts and natural environment which can be accessed freely by public users, including street, plaza, square, natural/green open space, as well as private space which is open to public access [9].

Public open space as an urban planning element should be accommodated:

1. To serve social needs and share its knowledge to the visitors. Local's activities varied from relaxing, playing, strolling, and reading [10].
2. As a node and communication medium to strengthen social bond and to create interaction between various communities [8].

There are eight major rating criteria for public space quality assessments [11]. (Tibbalds, 1993):

1. Mixed activities and function.
2. Public spaces and Exclusive space
3. Pedestrian movement and hospitality
4. Human scale and density
5. Structure, Clarity, and Identity.
6. Order, Safety, and Comfort.
7. City management.
8. Visual property.

These elements interact and support each other by mean the higher these elements rating qualification, the better quality its public space hold.

3. Research Methods

Based on the characteristics of the research objectives to be achieved, this research uses a qualitative approach. The data collecting will be more complete, in-depth, and trustworthy. There will be data that is norm, value, response, habit, mental attitude, and culture embraced by a person or group or group of people. The characteristics of qualitative research, are natural in setting, descriptive, based on inductive process rather than outcomes or products, and essential to value .

Research Framework

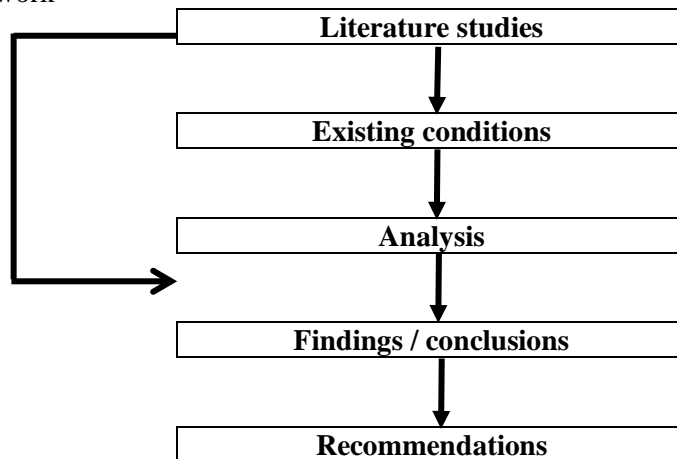


Figure3 Research Framework

The research locus is at Mejing Railway Crossing located in Mejing Village, Ambarketawang Subdistrict, Gamping District, Sleman Regency and Sedayu Railway crossing at Sedayu Village, Agrosari District, both located in the suburban area of Special Region of Yogyakarta, Indonesia.

Data Collection Techniques

Data collection techniques used qualitative methods *with purposive sampling* and prioritizing *perspective emic*, which means to care about the respondent's view, which is how they view and interpretation matters.

Data Analysis Techniques

At the analysis stage, the identified data is presented in the form of matrixs data (in the form of spatial schematics). It is intended to facilitate reading, understanding and interpretation (qualitative). The data on the table is then analyzed based on visual perception theory, break down into 2 interpretation phases. The first interpretation process is directed to get a tendency towards variable in location, and the second phase is the interpretation process is directed to obtain a tendency towards research variables in one location. Here is the research matrix as a reference for observation, interview and behavior mapping guideline in research area:

Table 1 Matrik Research

Theory	Variable	Parameter	Indicator
Use of Space	ACTOR	users of Activities	Goal
		Activities	Age Type Intensity
	TIME	Weekdays	Morning (6.00 - 10.00 am)
		Weekend & Holiday	Afternoon (03.00 - 07.00 pm) Morning (6.00 - 10.00)

Theory	Variable	Parameter	Indicator
Space Pattern	PLACE	Spaces	Afternoon (03.00 - 07.00 am) Types / Functions of Space Relationship
		Space Forming Components	Type Size Layout Relationship

4. Results And Discussions

Visitor Characteristics

Based on surveys conducted by researchers on the activities and patterns of space use for public activities on the rail border, the finding is as follows;

- a. Visitor Characteristics by Gender: 64% are male and the remaining 36% are female. Details of visitors by age can be viewed from the flowchart below:

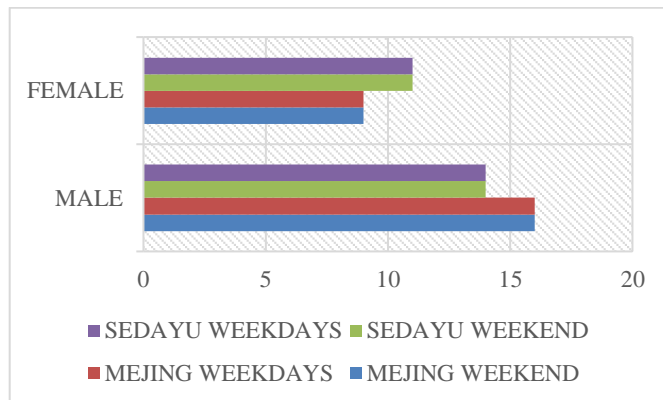


Figure4 of Visitors by Gender

- b. Visitor Characteristics By Age: almost equally distributed, 17-20 year old by 35%, ages 21-30 (25%), followed by 31-40 years old (22%) and ages 41-50 know (15%), a few visitors over the age of 50 (3%).

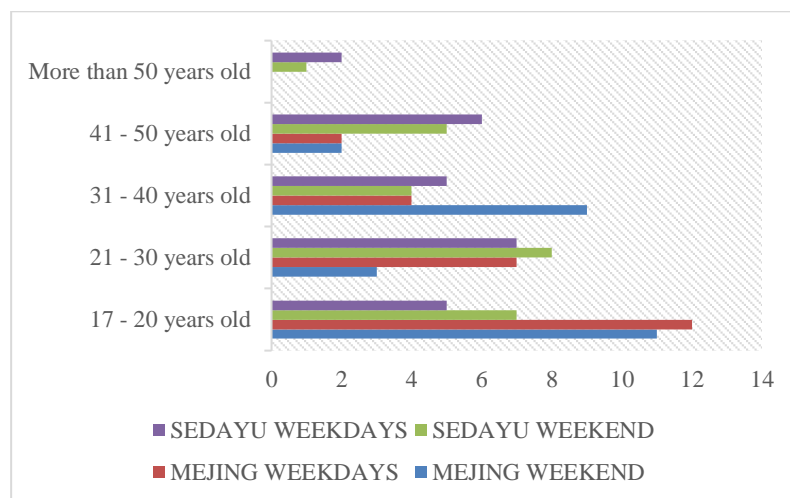


Figure5 of Visitors By Age

c. Visitor Characteristics by Livelihood

Students are the most likely to hang out at railway crossing site in Mejing Village and Sedayu Village (35%), 19% vendors, 14% employees, 13% housewives, 4% entrepreneurs, and 1% retiree. While others reached (14%) it consists of various professions, such as; teachers, farmers and laborers.

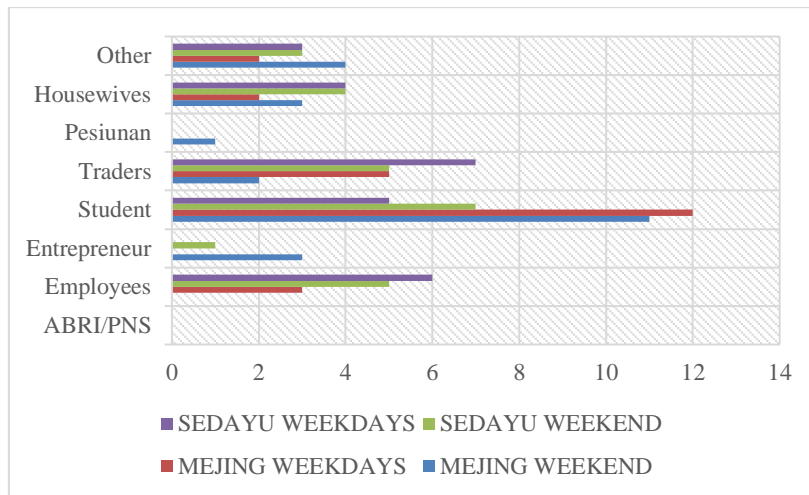


Figure 6 of Visitors By Livelihood

d. Destination Visitors To The Location

Based on the results of the interview there are several destinations from visitors crossing a section of mejing and sedayu railways, among others; watch trains pass by, promise with friends, accompany son or daughter, sell, buy snacks/food or culinary and recreation.

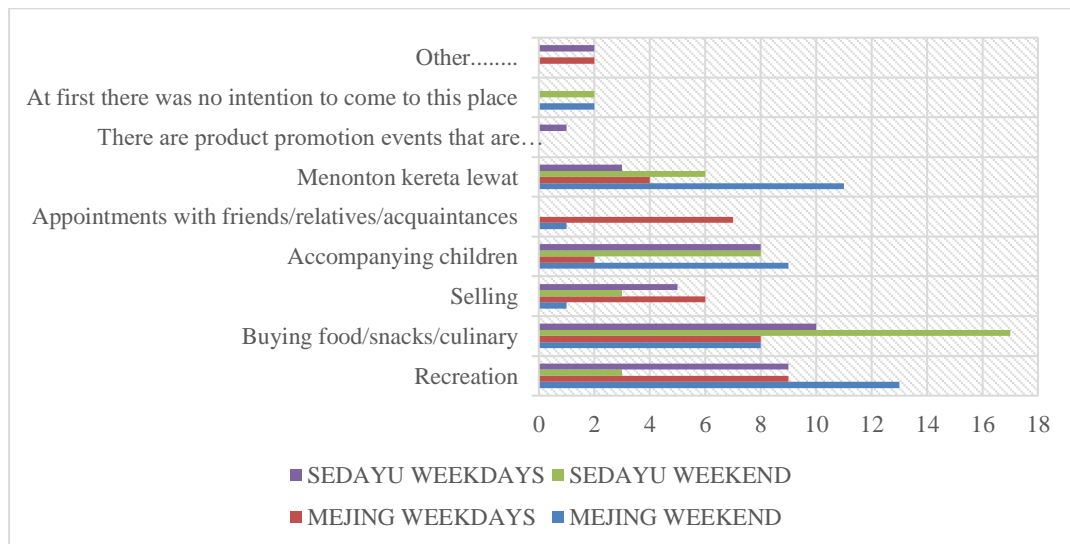


Figure 7 Destinations To Come To The Location

e. The Activities Visitors

The percentage of activities that most visitors do at the crossing of a section of mejing and sedayu railway line is Makan/jajan/minum (29%), sitting while looking at the passing train (25%), chatting with people or friends (12%), feeding the child and waiting for the child to play (9%). While the remaining 15% of other activities, among others; sell, walk around, sit back and take photos of the train.

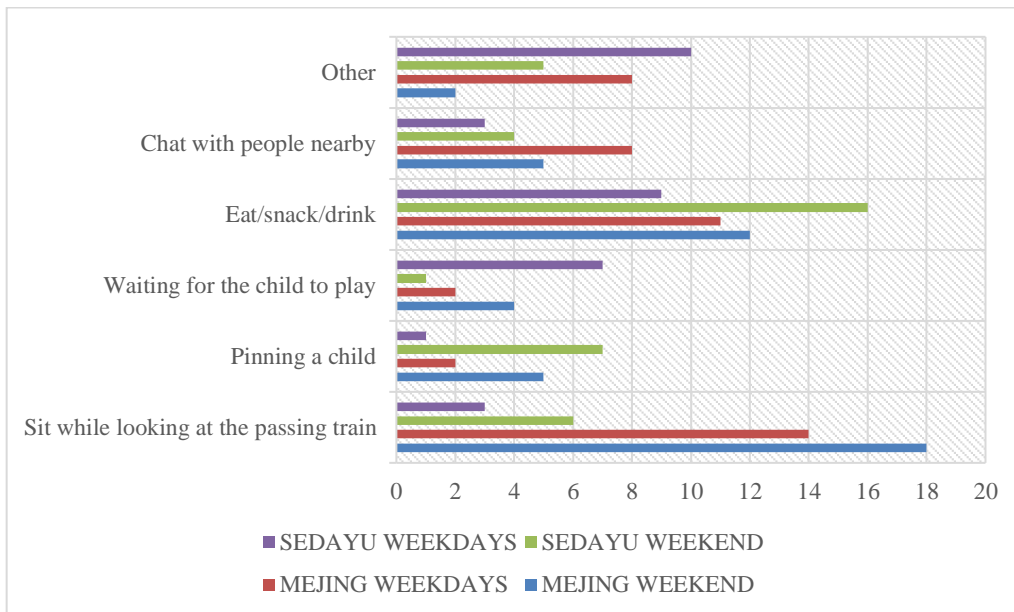


Figure 8 Activities The Visitors

f. Location of Activities

Based on the results of the interview conducted, the place of visitors to the event is as follows; on the edge of the rail, radius ≥ 1 meter (30%), stalls around the tracks (26%), rail edges, radius ≤ 2 meters (18%), sitting on the tracks (if no trains pass) (17%) and others (9%). Other areas, among others; rail edge, radius 3-10 meters.

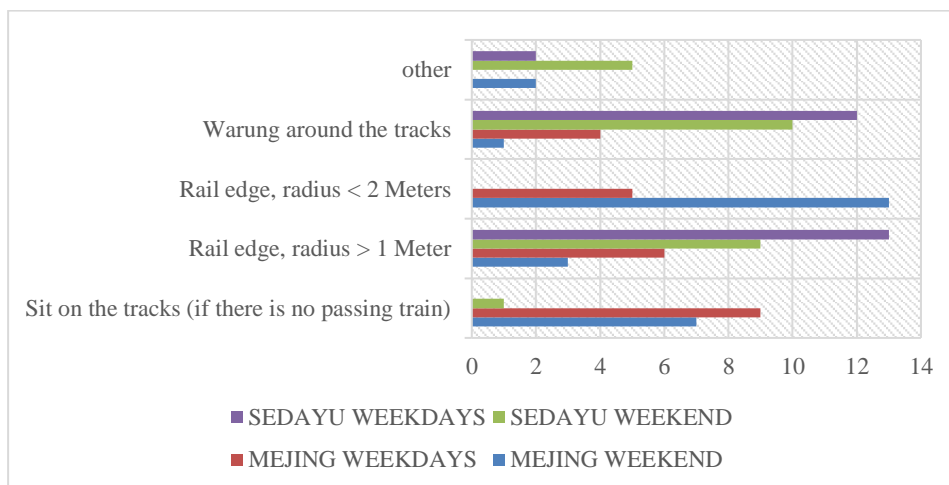


Figure 9 of Activity

g. Frequency of Visits

The most number of visitors to the location is once a week (27%), once a month (21%), daily (17%), twice a week (11%). Others reached (24%), with the frequency of visits uncertain, sometimes, rare and new first time.

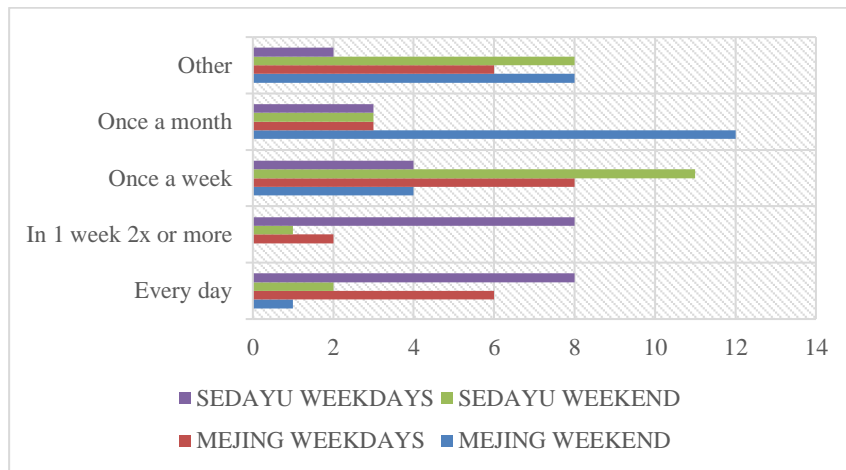


Figure10 Frequency

h. Visit Time

During the visit to the crossing of the mejing and sedayu railways, the most common is on weekends, reaching (40%). Those who visit on weekdays (27%) and who visit daily (21%). And when viewed from visiting hours, the afternoon (03.00 – 08.00 PM), becomes the most visiting hours, which is reaching (84%). While the morning is visited (9%), while others (7%)

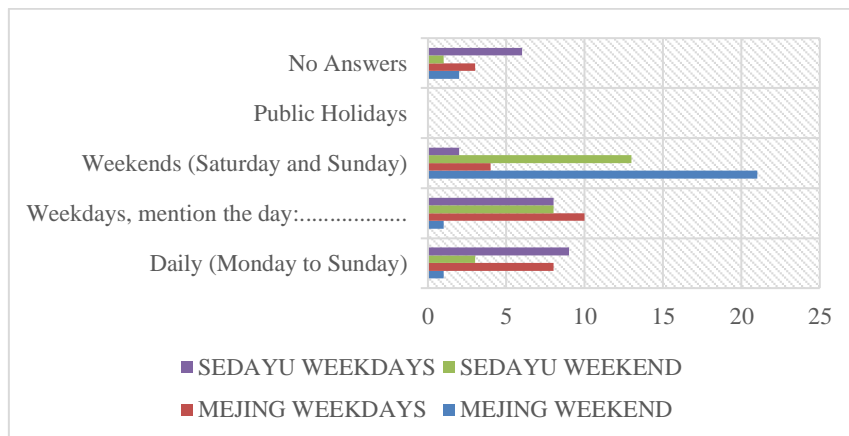


Figure11 time (Day)

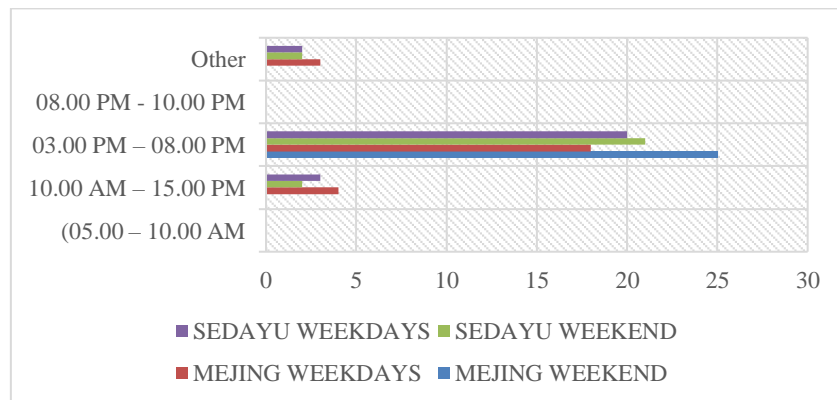


Figure12 Visit time (Hours)

Space Utilization Pattern

Based on the survey results at two crossings in Mejing and Sedayu rail tracks, it has the same pattern of spatial usage. The space used are (1) on the side of the rail track, and (2) the crossing area of a railway-motorways.

The time frames was classified two time: weekdays and weekends/holiday, with the early morning span between 05.00 – 10.00 AM; noon (10.00 AM– 03.00 PM); afternoon (03.00 – 08.00 PM) and evening (08.00 – 10.00 PM).

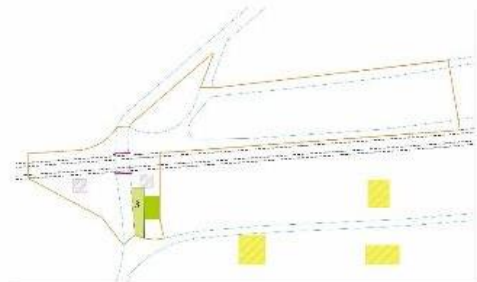

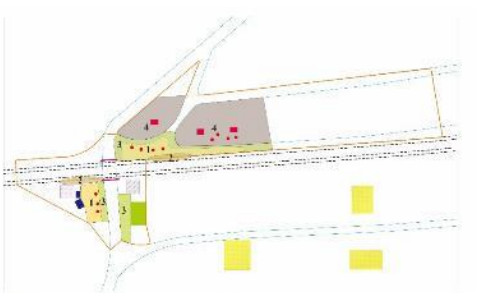
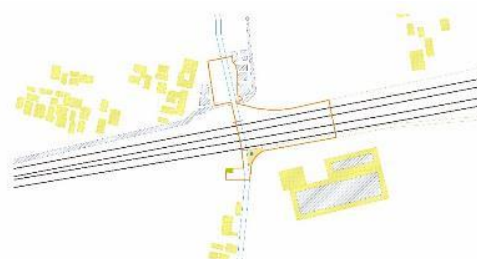
Activity Patterns By Time

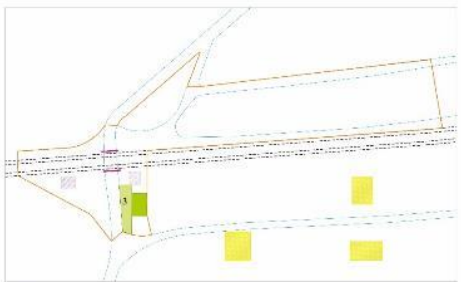
Weekday Utilization Pattern

Based on observations in the field, visitors at the crossing site of Mejing and Sedayu in general found similarities. Visitors occupied the area between 03.00 - 08.00 PM. In the morning to noon, there tend to be no visitors. And at night after 08.00 PM there are also no visitors and activities.

Table 2 Time-Based Activity Patterns (Weekdays)

TIME	LOCATION	ACTIVITY PATTERNS
05.00 AM – 10.00 AM	<u>Mejing</u>	In the morning, there is only one trader (satay trader), and the activity of visitors who come tends to only make trade transactions. And there is no relaxing/refreshing activity. And the activity, only lasts approximately until 10.00 AM. And only one point of location is used
		In the time range from 05.00 – 10.00 AM there has not been any activity
	<u>Sedayu</u>	
10.00 AM – 03.00 PM	<u>Mejing</u>	In the time range from 10.00 AM – 03.00 PM there has been no activity

TIME	LOCATION	ACTIVITY PATTERNS
	<p data-bbox="383 302 470 336"><u>Sedayu</u></p>  <p data-bbox="406 616 566 694"> Keterangan: ■ Bangunan/Rumah Perseorok ■ Pas Jaga Perlintasan ■ Waring ■ Area jalan, bangunan untuk parkir </p>	<p data-bbox="973 302 1388 571"> Activities begin, after 10:00 AM. This activity takes place in permanent stalls (rows of Kabita meatballs). And visitors come to enjoy the culinary, directly there is no activity related to the edge of the rails. And only one location point is used </p>
<p data-bbox="199 698 359 761">03.00 PM – <u>Mejing</u> 08.00 PM</p>	 <p data-bbox="406 1019 821 1120"> Keterangan: ■ Bangunan/Rumah Perseorok ■ Pas Jaga Perlintasan ■ Waring ■ Perseorok Dengan Sepeda Motor/Sepeda ■ Perseorok Dengan Gerobak ■ Odong-odong ■ Area panjang berdiri ■ Area bersandar di sisi rel (Pada saat kereta tidak lewat) ■ Area yang digunakan untuk parkir </p>	<p data-bbox="973 698 1388 1064"> There is an increase in activity points in the afternoon. The activity starts at 15.00 WIB, and experiences peak activity at 04.00 – 17.30 PM. Activities that are done standing, sitting (on the rails or around the tracks), chatting, watching the train, enjoying the food and for the children to play (ride odong-odong or run around in the airy area) </p>
	<p data-bbox="383 1135 470 1169"><u>Sedayu</u></p>  <p data-bbox="406 1478 869 1579"> Keterangan: ■ Bangunan/Rumah Perseorok ■ Pas Jaga Perlintasan ■ Waring ■ Perseorok Dengan Sepeda Motor/Sepeda ■ Perseorok Dengan Gerobak ■ Odong-odong ■ Area panjang berdiri ■ Area bersandar di sisi rel (Pada saat kereta tidak lewat) ■ Area yang digunakan untuk parkir ■ Area tempat parkir ■ Angkutan </p>	<p data-bbox="973 1135 1388 1601"> Similarly, the activity that occurred at the crossing of a section of Mejing railway/ road, at the crossing of a section of Sedayu railway/ road also experienced an increase in activity and started at 03.00 PM, and experienced peak activity at 04.00 - 05.30 PM. Activities that are done standing, sitting (on the rails or around the tracks), chatting, watching the train, enjoying the food and for the children to play (ride odong-odong or run around in the airy area) </p>
<p data-bbox="199 1606 359 1668">08.00 PM – <u>Mejing</u> 10.00 PM</p>	 <p data-bbox="406 1937 837 2016"> Keterangan: ■ Bangunan/Rumah Perseorok ■ Pas Jaga Perlintasan ■ Waring ■ Perseorok Dengan Gerobak ■ Area panjang berdiri ■ Area yang digunakan untuk parkir motor </p>	<p data-bbox="973 1606 1388 1713"> At night (08.00 PM) there is no activity at all. This is possible because it is not a lighting facility. </p>

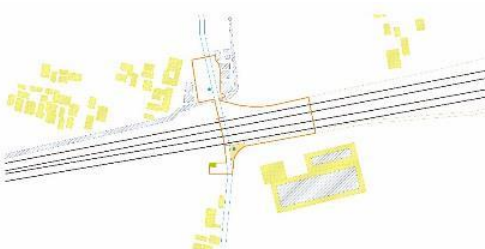
TIME	LOCATION	ACTIVITY PATTERNS
	<u>Sedayu</u>	
	 <p>Keterangan: ■ Bangunan Rumah Perumahan ■ Pas Jaga Perikanan ■ Warung ■ Area yang digunakan untuk parkir</p>	At night (08.00 PM) there is no activity at all. This is possible because it is not a lighting facility.

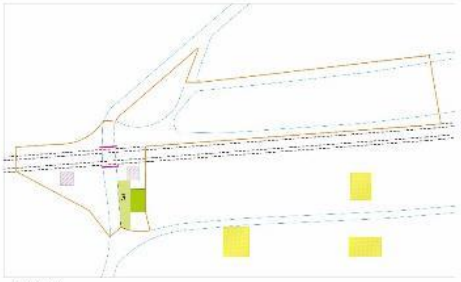
Weekend Utilization Pattern

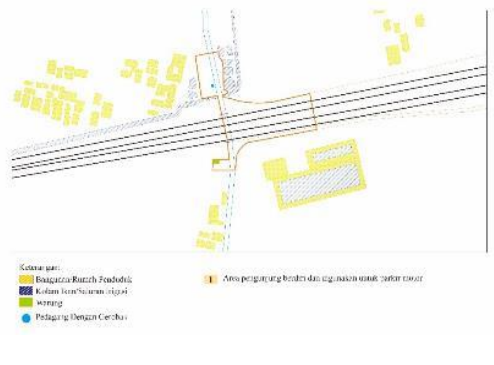
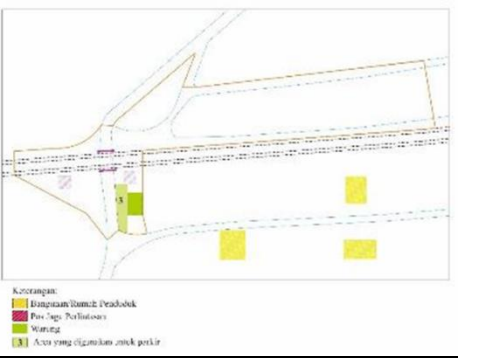
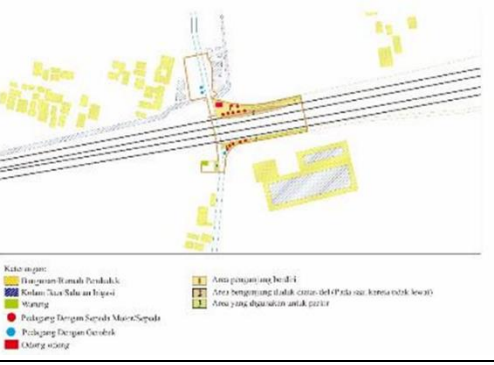
From observation on weekends/holidays (Saturdays and Sundays), visitors numbers are higher compared to weekdays. Thus affecting the diversity and dissemination of activities that occur. The utilization of space, consists of standing, sitting, playing, drinking, feeding children and watching the children playing around. The activity of playing consists of playing using tools, namely riding *odong-odong* (mini merry-go-round) and playing activities without using tools, namely children running around. The most common activity is standing and sitting. Standing activities are done a lot because visitors are moving places or standing still in place because they do not get a seat. Standing activities are often carried out on the circulation access.

The activities that visitors experience and their association with the pattern of space use can be seen from the table below:

Table 3 Time-Based Activity Patterns (Akhir Pekan / Weekend)

TIME	LOCATION	ACTIVITY PATTERNS
05.00 AM – 10.00 AM	<u>Mejing</u>	
	 <p>Keterangan: ■ Bangunan Rumah Perumahan ■ Kolam Tiga Saluran Irigasi ■ Warung ■ Pedagang Dengan Gerobak ■ Area pemangjang becek dan digunakan untuk parkir motor</p>	In the morning, there is only one trader (satay trader), and the activity of visitors who come tends to only make trade transactions. And there is no relaxing/refreshing activity. And the activity, only lasts approximately until 10.00 AM. And only one point of location is used

	<u>Sedayu</u>	
	 <p>Keterangan: ■ Bangunan Rumah Perumahan ■ Pas Jaga Perikanan ■ Warung ■ Area yang digunakan untuk parkir</p>	In the time range from 05.00 AM – 10.00 AM there has not been any activity

TIME	LOCATION	ACTIVITY PATTERNS
10.00 AM – 03.00 PM	<p><u>Mejing</u></p> 	<p>In the time span of 10.00 – 15.00 WIB there has not been any activity</p>
	<p><u>Sedayu</u></p> 	<p>The activity starts, after 10.00 AM. This activity takes place in permanent stalls (rows of Kabita meatballs). And visitors come to enjoy the culinary, directly there is no activity related to the edge of the rails. And only one location point is used.</p>
03.00 PM – 08.00 PM	<p><u>Mejing</u></p> 	<p>There is an increase in activity points in the afternoon. The activity starts at 03.00 PM, and experiences peak activity at 04.00–05.30 PM. Activities that are done standing, sitting (on the rails or around the tracks), chatting, watching the train, enjoying the food and for the children to play (ride odong-odong or run around in the airy area) Space utilization patterns vary greatly, with space utilization patterns scattered along the rail edges.</p>
	<p><u>Sedayu</u></p>	<p>Similarly, the activity that occurs at the crossing of a mejing railway/ road, at the crossing of a piece of Sedayu railway/road also experienced an increase in activity and started at 03.00 PM, and experienced peak activity at 04.00 - 05.30 PM. Activities that are done standing, sitting (on the rails or around the tracks), chatting, watching the train, enjoying the food and for the children to play (ride odong-odong or run around in the airy area) Space utilization patterns vary greatly, with</p>

TIME	LOCATION	ACTIVITY PATTERNS
08.00 PM – 10.00 PM	Mejing	space utilization patterns scattered along the rail edges.
	Sedayu	At night (08.00 PM) there is no activity at all. This is possible because there is no lighting facility.
		At night (08.00 PM) there is no activity at all. This is possible because it is not a lighting facility.

3. The Effect of Physical Settings on Activity Patterns

The crossing site in Mejing and Sedayu track line does not have *street furniture facilities*. Space tends to be utilized for recreational and culinary activities. The activities occur at the crossing site, influenced by the arrival of street vendors and child games rental services in the area, railways as setting locations and irregular motorcycle parking areas



Figure 13 Element That Influence Regional Fission Settings

Source: Survey 2019/2020

Discussion

From analysis, the subject of discussion is the relation between users and activities :

1. The purpose of visitors to come is to recreation, play, culinary, interact
2. by age, visitors range from children to productive adult.
3. by the education background, result varied from uneducated to undergraduate level.

The use of space for public activities is accessible to everyone. without any limitation and restriction, to freely engaged without disturbing other users. Visitors can also feel temporary ownership even though it is an illegal action. Visiting time usually in the afternoon and depend on natural lighting, therefore activity will end after sunset. The spatial component formed temporarily by public activity that visitors engaged in. Some of these activities has no safety control, due to rail/railways main function as train track.

Based on on site observations, there are several *types of* users, namely;

1. Type One, visitors using train rail track to perform activities.
2. Type Two, visitors activities performed on the rail track distance > 1 meter
3. Type Three, visitors activities performed on the rail track distance < 3 meters
4. Type Four, visitors activities performed on a parking motorcycle, on the side of the rail track.

Street vendors and service providers, it is identified as follows;

1. Vendors based on type of vending facility, among others; merchants with permanent stalls/ stalls, merchants with non-permanent stalls/ stalls, vendors using bicycles and motor vehicles.
2. Merchants based on their merchandise, among others; beverage, snack (sticky rice ball, sausage in egg batter, curry pancake, butter toast, etc), food (meatballs, satay, street rice box (*angkringan*) etc)
3. Rental game equipment, usually in the form of odong-odong, prosotan from plastic, and air balloon playground.

The temporary space layout in an organic spontaneous pattern, although the position remains the same. This is because there is no maximum setup and the use of space can be said to be the use of space without permit.

5. Conclusion

When viewed from the function of space, the area is a railway site. The railways site is based on the Minister of Public Works Regulation (05/PRT/M/2008), is a green open space area that control the safety boundary of railways site. According to the Ministerial Regulation, the width of the railway boundary line on the straight railway is more than 11 m of plants and more than 20 m from the building. But the fact in the field, the area is used by the community to engage and interact.

From the results of the study, there can be a change of territory, where the area that should be a restricted area and cannot be functioned as public space with a wide range of activities. Based on the pattern of activities carried out by visitors along the rails and rail edges, the use of space for public activities, organized along the railways/railways as well as the railway banks. This is very dangerous for the safety of the user. The use of space as a public activity is due to the lack of comfortable and safe public spaces.

Recommendations

For Local/Central Government and Related Agencies

- Based on Permen PU 12-2009 related to the provision of Green Open Space facilities on the Rukun Tetangga scale for the population of 250 there must be at least 250 m² of land that serves as Green

Open Space facilities with a radius of 300m from the residents' homes, then the government must facilitate Green Open Space facilities in every *Rukun Warga*.

- Identification by the relevant authority or PT. KAI to record the crossing of any railway/road used for residents protection and safety and PT. KAI needs to synergize with the relevant agencies to rearrange the crossing site of railway/road, so that it can be used safely by the neighborhood community.

For Researcher

- This research is the first step in identifying changes in space and territory and looking at patterns of activity that occur, so that it can be used as material for the design foundation of the utilization of space for public activities.

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