

# Analysis concerning informational environment of public space based on aspect of body attribute at current state under Questionnaire Survey on "Outing and Transportation Guidance"

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After five years have passed (on investigation) from the enforcement of Traffic Barrier-Free Law, around 60 percent of the users highly evaluated the "hardware" maintenance of railway stations, such as the installation of elevators. However, guidance in stations received poor evaluation. The survey showed that disabled persons get lost very frequently in stations compared with persons without disability, and 70 percent of accompanying helpers had experienced getting lost. Also, there were complaints that necessary information could not be obtained before going out. The delay of the maintenance to the barrier-free information environment "Software" is a barrier of the railway use.

## Public transportation facility, Barrier-Free Environment, Smoother Mobility, Body Attribute Comparison, Scheme of Sign, Questionnaire Survey

### 1. Introduction

The new installation of elevators and the maintenance of restrooms for disabled persons are advanced at the public transportation.

Barrier-free access of these facilities is easy to use for all the people regardless of disablement, age, or health. And it leads to improvement to the safer comfortable going out environment. For such various people, our purpose makes the subjects clearly on this investigation about the problem arising from the use of facilities with guidance information and station indication in reference to the route from the house to the destination when going out by railroad.

We consider it the new viewpoint to pay attention to analyze the anxiety and inconvenience caused by the difference in the physical disabilities and aging when going out, which has been hardly verified so far.

### 2. Survey Content

Survey period/2006 March11~May22

Survey area/Osaka Prefecture the under and the vicinity city  
Survey object person/Disabled Person, Senior citizen, Person with restriction, Person without disability, Helper

Survey procedure/A questionnaire is brought or mailed, collected the other day

Survey item/Opportunity to going out and the barriers while going out,

Uneasiness before going out and Information gathering, Barrier-free at stations used in daily life, Experience of getting lost and user-friendliness of railways, About guidance in stations of railways etc. We conducted a questionnaire survey consisting of 20 questions in the questionnaire form and the respondents attribute.

### 3. Number of Samples and Respondents Attribute

Responses received from 2,059 questionnaires (Distribution total 9712, Recovery percentage 21.2%)  
Respondent's attribute, Content of trouble and Health conditions related with restriction for going out

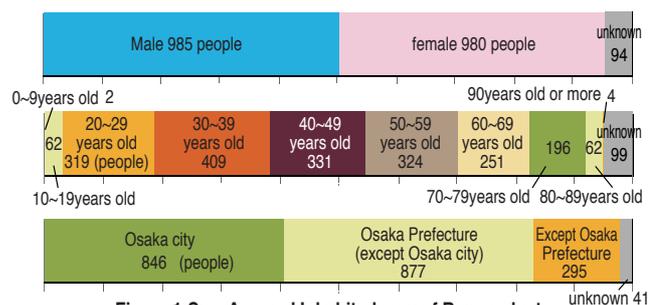


Figure 1: Sex, Age and Inhabited area of Respondents (activity area of helper)

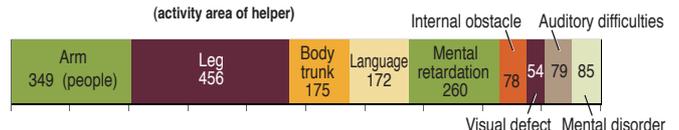


Figure 2: Barrier contents to Disabled Person (multiple answers)

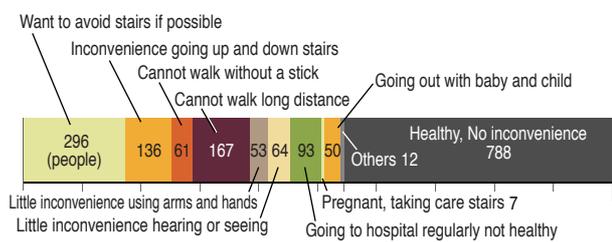


Figure 3: Actions of Persons without disability when going out (multiple answers)

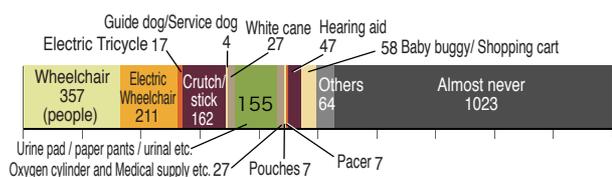


Figure 4: Something to bring and using when going out (multiple answers/all attribute)

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## 4. Classification by Body Attribute in Case of Analysis

We have made classification as follows by body attribute of walking, for making clear the relation from the view point of barrier-free between the answers and the restrictions when going out.

List 1: Classification by Body Attribute

<b>Disabled—Walk</b>	Respondents necessary to use a walking aid or with an obstacle in a leg
<b>Disabled—Others</b>	All persons with disabilities besides Disabled—Walk
<b>Person without disability</b>	Person without disability who doesn't avoid stairs with no restrictions on walking when going out
<b>Person with restriction</b>	All persons with disabilities besides Person without disability
<b>Helper</b>	Respondents who participate in nursing and assistance The person without disability generally has the restrictions of movement in the environment of facilities when going out as an accompaniment (We request the answers unified with experience at going out as an accompaniment)

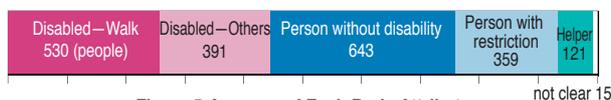


Figure 5: Answers of Each Body Attribute

## 5. Leading to Easiness of Going Out

We found out that it leads to easiness of going out for senior citizens and persons with disabilities (Figure 6) to receive information beforehand and the station guidance in use. We consider the improvement problem in the information environment at current state by focusing on these 2 points.

### 5-1. Strong Desire and Anxious Matter of Disabled Persons for Going Out

The survey shows the total results that there is no difference about the frequency of going out in daily life area between the persons with and without disability. However the survey shows clearly their request for increasing chances to go out including shopping and leisure under completed conditions (Figure 7). A railroad is often used as means of transportation to go out, but the helper and the person with disabled-walk answered that "Is it possible to move at the station?" is the anxious matter when going out. The person without disability answered that "Do we lose the way outside of the station?". These are contrastive (Figure 8,9).

### 5-2. Dissatisfaction to Get Barrier-Free Information in Advance When Going Out

When the person without disability and helper don't find out the matter that they would like to know before going out, they often check by themselves through the internet. However the helpers have a lot of dissatisfaction that they can't get them in offered information contents, it's contrary to the evaluation of the person without disability.

The disabled persons-Walk have the same tendency with the helpers too. The survey shows that they do not obtain the barrier-free environment information of movement routes and restrooms at stations sufficiently (Figure 10,11).

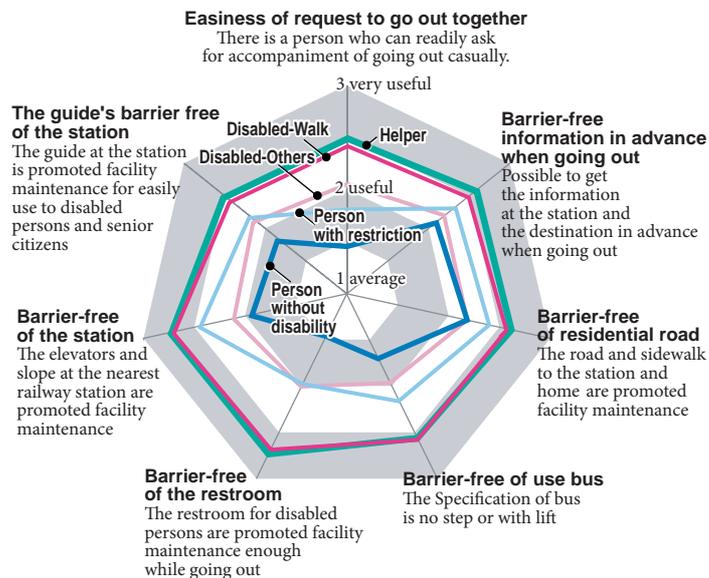


Figure 6: Concerns which leads to easiness of going out (average each attribute)

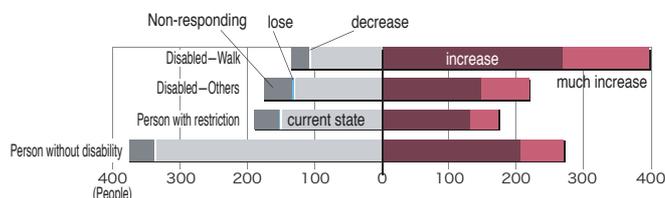


Figure 7: How would you like your going out increase or decrease?

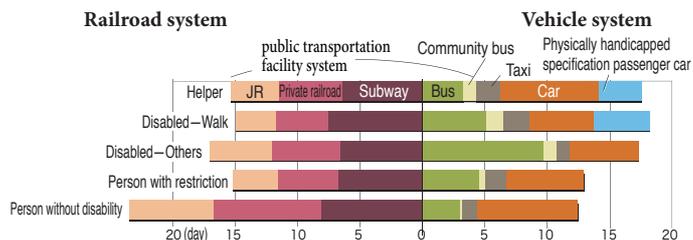


Figure 8: Transportation and Usage frequency for going out (The total number of days rough estimate/monthly)

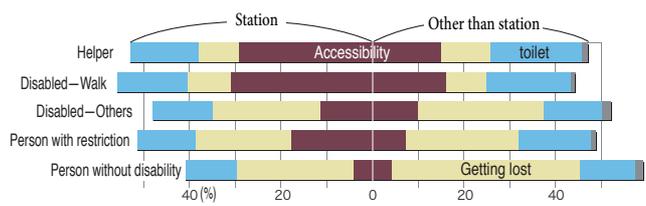


Figure 9: Concerns While Going out (multiple answers)

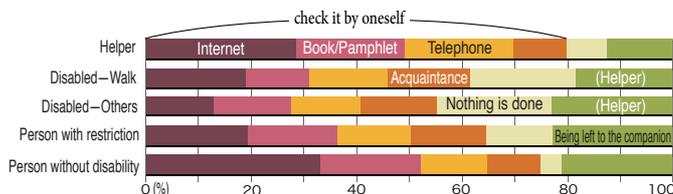


Figure 10: Correspondence when not finding out what you'd like to know (multiple answers)

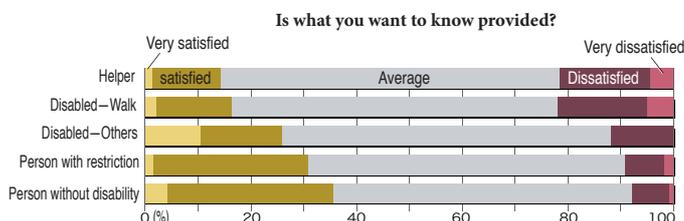


Figure 11: The use degree of satisfaction/Internet

## Hard maintenance

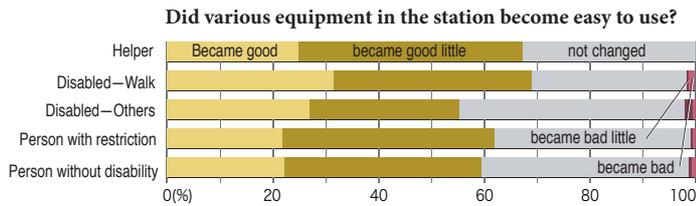


Figure 12: The maintenance evaluation of facilities of the station compared with 5 years before

## Soft maintenance

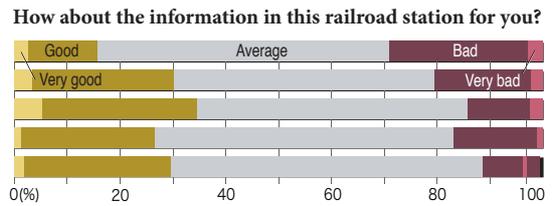


Figure 13: The evaluation of station guidance understandability

## 6. The Guidance Maintenance to Use Barrier-Free Facilities Will Be Important Hereafter.

The users highly evaluated the hardware maintenance of facilities such as elevators. However the information to use it received poor evaluation (Figure 12,13).

The evaluation reveals so great difference of attribution that we will look for a factor according to a movement situation at the station.

### 6-1. Verification of Function for Guidance Information by Getting Lost on Route

The survey shows that the helpers and disabled-walk persons get lost more frequently than others in comparison with the average of the classification by body attribute in Figure 14.

They look for available facilities and movement routes, because their answer by item indicates the strong tendency of getting lost at a restroom and an elevator exit concerning to the barrier-free items.

This is the current situation of the station guidance reflected of the total result” Is it possible to move at the station ? ” that they have anxiety when going out.

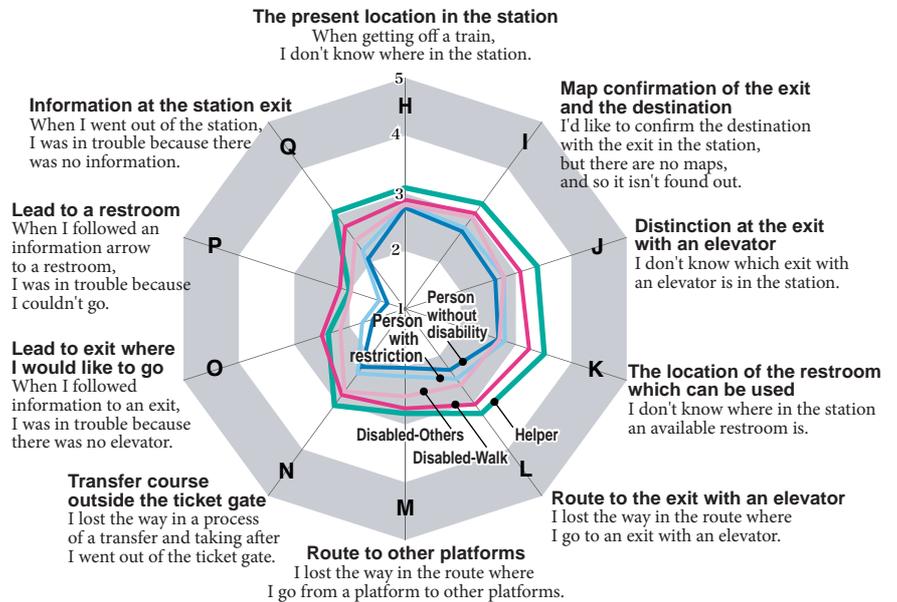
### 6-2. Guidance Information and the Current Situation of Facilities for Smoother Mobility (Figure15)

A problem of the current guidance system is indicated by comparing with the details about the items related to elevator (EV) in the Figure14.

**J.** The evaluation of reverse between helpers and persons without disability has been made. The survey shows that the people who need EV cannot find easily the entrances/exits by watching the guidance map or general guide that do not indicate the distinction of one another.

**L.** This is the comparison of the persons with different physical attributes when going to the exit of EV. There are many cases that the subjects who are limited to use the route by walking restriction get lost. The guidance system of the current situation does not follow the information route for smoother mobility.

**O.** The survey shows that the disabled-walk persons and helpers get lost frequently. It is a factor that lead signs to exit for persons without disability do not point out the

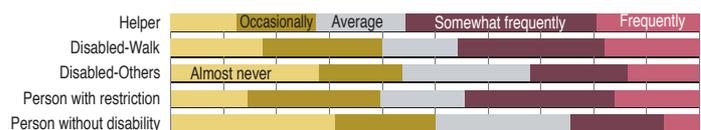


Experience by losing the way/Almost never/Occasionally/Average/Somewhat frequently/Frequently  
The respective answers/1 point/2 point/3 point/4 point/5 point/ were gathered average by every attribute

Figure 14: The experience by losing the way on the station information

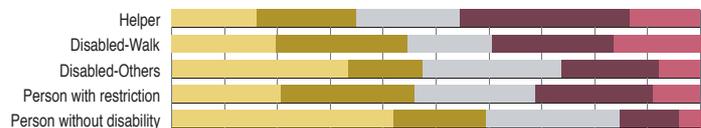
### J. Facility location/functional classification

Cannot find the exit that has an elevator in a station



### L. Guidance of movement route

Got lost on the route to the exit that has an elevator



### O. Facility guidance

Had trouble without an elevator after following guidance to an exit

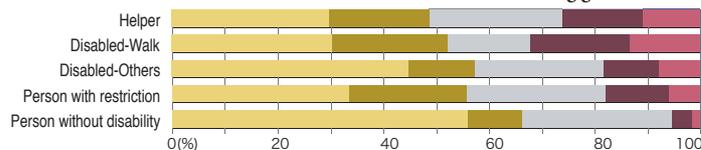


Figure 15: Getting lost in elevator use (According to attributes in detail)

direction of the route for smoother mobility. These cases indicate that the station information is barrier. Therefore it is necessary to create the “software” maintenance promptly, reaching “hardware” maintenance without delay.

## 7. Summary- Smoother Mobility and Problem of Station Guidance

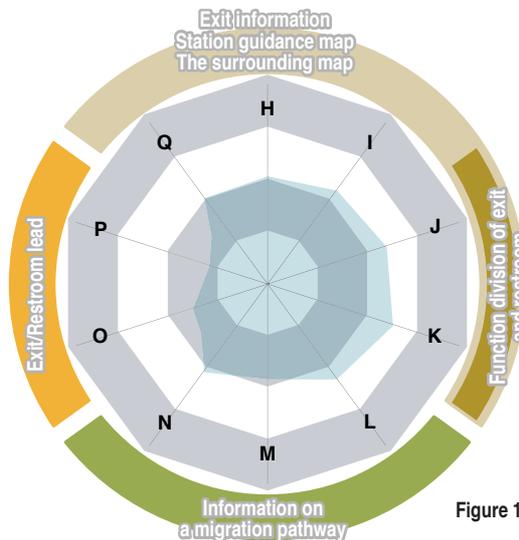
The guidance problems of facility space in stations were summarized into the following figure based on the investigation. The guidance problem for smoother mobility is thought to be the same situation as in underground shopping areas and facilities to attract customers at present. In addition we consider that the investigation can be adopted to grasp problems in each space.

### Clarifying the priority of the information to be shown

There is a lot of bewilderment in all the attributes about the information of the construction and arrangement of the facilities. The guidance information is necessary to be found easily and to be shown at the proper place on the presupposition. The information in the complicated and incomprehensible space of facilities tends to show too much and multifarious contents. Contrary to this situation, all the persons request understandable and simple expression that is easy to find important information.

### Specification of the facility function of the barrier-free exit and restroom

The survey shows that many persons do not know the elevator exit and the location of available restroom. Improvement in information display is easy to be conducted. The reason why persons with the restrictions in use of facilities cannot find easily the information display like the exit information and the station guidance map is that the display of the function does not indicate the distinction.



### Solution of incomplete leading to barrier-free facilities and exit

Person in wheelchair cannot go even to the barrier-free facilities with lead arrow signs to indicate the way of the movement to exits and restrooms in the case that there is no facility to solve the difference in level. When a roundabout route is necessary, the leading signs should be not only to elevator facilities but also to the route.

Figure 16: Summary of smoother mobility and information problem in stations

### Need of the indication maintenance for understandability of mobility route

Persons do not get lost where they can see the front, but they get lost where they cannot see the front because of the complicated space. Persons with disabilities and helpers get lost frequently looking for routes. Some persons with and without disability get lost frequently looking for the route to elevator exit. It is important to establish the measures for the route guidance understandable.

### Approach for improvement of the information environment

The survey shows that it is necessary for the station guidance to maintain the understandable guidance of the station at the destination. The expectation on the large effect was indicated in all the different attributes.

### Case of Trial by NPO

Our NPO provides the website on the internet that shows the smoother mobility route map and barrier free information of facilities in the verified designs as for the subway stations with tendency to get lost.

It has a construction that operators and personal users can write in and offer the information of the change in the environment, the useful guidance in the station on the view point of the person who visits for the first time(Figure17).

It is very important to utilize the effort for maintenance of facilities by the appropriate information. We consider that the lack of guidance information can be solved with many people's "voices" including administrators of facilities and users.

We hope many people to take a positive attitude.



Figure 17: Barrier-free information of station "EKI PEDIA" Web site <http://ekipedia.jp>