

## Attention-Grabbing Train Car Advertisements

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### Abstract

Younger people have changed the way they access information in recent years, increasing the number of opportunities to take advantage of transit advertising. Train car advertising in particular boasts a high contact rate and extended length of contact. This study seeks to understand the correlations between passenger information and riding conditions when it comes to train car advertising (hanging posters, above-window posters, and sticker ads) in order to discover the ideal way to advertise inside passenger trains. Specifically, the study first tries to find the correlations among three factors: (1) whether or not passengers pay attention to train car advertisements, (2) basic passenger information (age and gender), and (3) riding conditions (riding time, average number of trips, etc.). Once data on riding conditions is collected, it is then grouped using a cluster analysis and Quantification Theory Type III in order to establish the relationship of the data to passenger attention towards train advertisements once again. Then, in order to conduct an in-depth analysis, a Categorical Automatic Interaction Detector (CAID) analysis is done on each group, using passengers pay attention to train advertisements as the objective variable and basic passenger information as the explanatory variable. The results of the CAID analysis are then used to study the format of existing and future train car advertisements.

**Keywords:** Train Car Advertisements, AIDA model, CAID analysis

### I. Introduction

Younger adults, particularly men in their 20s, have been changing the way they access information and participate in city life. Because they are so frequently on the move for their jobs, there are more opportunities for them to come in contact with forms of outdoor media. Longer times spent traveling and on the internet have been shown to decentralize media contact. Essentially, transit ads are a more effective form of advertising these days since they have a high contract rate among people with hectic modern schedules.

This study deals with the in-car train advertisements that have been garnering attention in recent years with research that focuses on attention: the first stage in the AIDA model (A : Attention, I : Interest, D : Desire, A : Action) of consumer behavior. The goal is to first quantify the way passengers pay attention to train car advertisements, and then propose the ideal form that in-car train advertising should take based on a visual representation of passenger information.

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### II. Background

#### 2.1 The advertising industry: Current status and issues

Over the last ten years, Japan has consistently spent around 6.5 trillion yen on advertising. The companies have no choice but to spend money on advertising, and are always looking for a format whose performance will justify their significant investment (Dentsu, 2011). The kinds of advertising that companies use to target consumers can be divided into three major categories: (1) mass media advertising, including TV commercials and newspaper ads; (2) direct mail (DM) advertising; and (3) newer forms of advertising media, such as advertising on public transportation and the internet.

In terms of money spent on each category, mass media advertising accounts for as much as two-thirds of company advertising budgets (Dentsu, 2011). It is thought that companies blindly spend

massive amounts of money on mass media advertising in order to get consumers' attention—which they believe is the only function of their promotional efforts. What is needed is for companies to quantitatively grasp the amount of publicity generated by different forms of advertising media (Amasaka, 2005; Amasaka, 2007; Amasaka, 2010).

## 2.2 The study of advertising performance

In the past, many researchers have studied consumer response patterns as a way of quantitatively grasping advertising performance (Amasaka, 2009). Numerous consumer response models, which predict consumer behavior from the time they learn about a new product through an ad until the time they purchase it, have been offered. The most well-known of these is probably the AIDA (Attention, Interest, Desire, Action) model, which outlines a four-stage consumer response pattern.

This model has been further developed through applied research in recent years, with alternative models such as the AIDMA (Attention, Interest, Desire, Motive, Action) and AISAS (Attention, Interest, Search, Action, Share) also being proposed. Despite these variations, the one thing that all of these models have in common is that the initial step in consumer purchase behavior is always the attention phase. Because of this, attention can be considered the most critical element in the process whereby consumers move towards actually making a purchase (Ferrell and Hartline, 2005; Mehta, 2000; Shimizu, 2004).

## 2.3 Transit advertisements: Current status

The number transit advertising opportunities

has increased in recent years. One of the major characteristics of this form of ads is an extended contact period. As Figure 1 shows, railway usage peaks in the morning and evening. Between these two periods, in the hours following 12 noon, train usage and shopping activities follow essentially the same line.

What this means is that the form of ads consumers are most likely to come in contact with while they are shopping is transit advertising, a situation that creates major opportunities for these advertisements to lead to purchases. Three key characteristics of transit advertising are listed below (The Kanto Transit Advertising Council, 2009).

1. For male and female teenagers (ages 10–19), group 1 men (age 30–34), and group 2 men (age 35–49), transit advertising is a powerful form of media on par with traditional mass-media advertising in terms of having a good contact rate, long-term contact, and a frequent contact rate.

2. After television, transit advertising scores higher than all other forms of media in terms of natural, habitual viewing, enjoyable viewing, generating surprise or interest in viewers, and other positive characteristics. For this reason, transit advertisements have a powerful ability to draw consumers in, making it difficult for viewers to overlook them.

3. Because they make appeals to consumers while they are out of the house, transit advertisements are known for having a powerful link to outside purchasing behavior. The third most common source of new product information after TV and shop displays, transit advertising is a form of media that positions itself within everyday situations and locations—including buying situations.

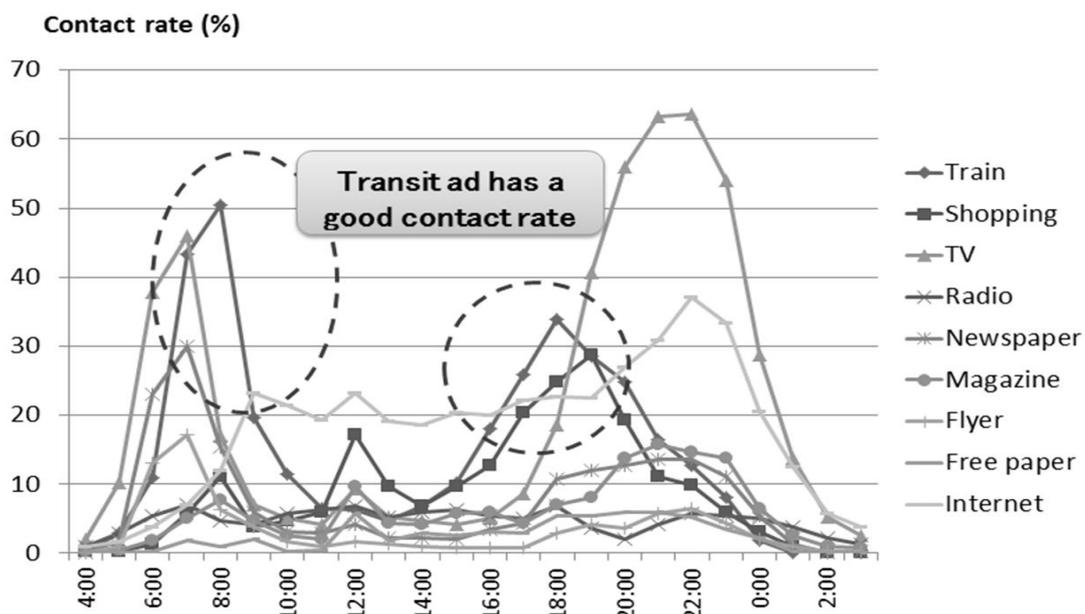


Figure 1 The media contact situation according to the time on weekdays

The above characteristics give transit advertising enormous potential when it comes to influencing purchase behavior. This study takes the insights gained from previous advertising research and uses it to lay the foundation for future inquiries on this important topic.

#### 2.4 Prior research on transit advertisements

Even within the category of transit advertising, in-car train advertisements are a powerfully influential form of media that is placed right in front of viewers for a certain period of time—whether or not it captures their interest. Still, the authors are not aware of that many studies that have been done on train advertising relative to the amount of research done on TV or newspaper advertising.

Two examples of prior research on transit advertising follow. The first study, A Look at Subconscious Awareness in Train Car Advertising by Gonda (2004), focused on the subconscious and saw train advertising as a locally based form of media that was both impactful and could be customized to suit individual train lines or regions. Gonda felt that in-car train advertising was a form of information that improved the quality of life in local areas, and studied the role of transit advertising as a conduit of local information for passengers.

A second study by Takenaka and Harada (2003) entitled A Study on Watching Professional Baseball and Information Contact via Transit Advertisements, focused on transit advertisements that promoted professional baseball games, grouping subjects into segments based on how frequently they rode trains and looking at differences in the level of information contact among the groups. The study then examined how those differences affected game

watching.

The studies above did not look statistically at the correlations between passenger information and riding conditions. Noting this gap, the authors of this study decided to examine those relationships and how they relate to train car advertising with the aim of defining the ideal format for this type of media.

### III. Proposing transit advertisements for boosting ad awareness of passengers

#### 3.1 Clarifying the relationships between basic passenger information and riding conditions

As mentioned in the previous chapters, the purpose of this study was to examine the correlations between passenger information and riding conditions in train car advertising in order to discover the ideal way to advertise inside passenger trains. For the purpose of this study, in-train advertisements were divided into three different types based on external appearance.

The types (No1.hanging posters, No2.above-window posters, and No6.stickers placed to the side of doors) are shown in Figure 2. The number of trains featuring digital advertisements is increasing, but the authors chose to limit their selection to these three based on an examination by a professional market survey company, which indicated that these ads are used on all major railways in the Kanto region, marking them as representative forms of media on every train line.

##### 3.1.1 Field survey

In order to suggest ideal positioning for train advertisements, the authors teamed up with the market survey company mentioned above and a related committee to produce a survey to collect information from actual passengers. The interview-style survey

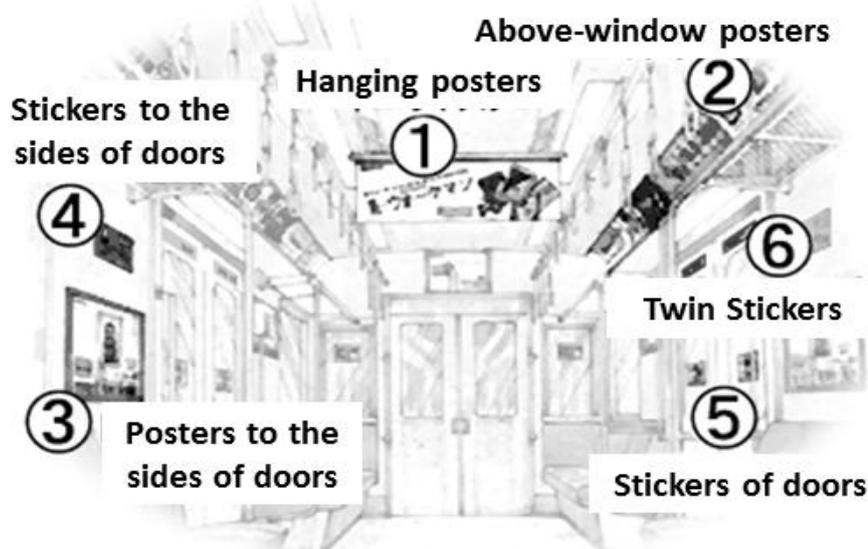


Figure 2 The type of in-train advertisements

was conducted multiple times on two urban train lines (Line A and Line B) between late December 2005 and early January 2006.

The number of valid response was 50 people (26 were men and 24 were women ranged from 15 to 54 years). The survey asked passengers a series of multiple-choice questions designed collect the basic information needed to construct personal profiles of the test subjects. Respondents were asked to select their age, gender, time spent riding trains, and the average number of weekly trips they made. Subjects were also shown a diagram of a train interior and asked to point out where they were in the train, what position they took when riding, and whether they were aware of the train advertisements (hanging posters, above-window posters, and stickers to the sides of doors).

The authors looked at the format of questionnaires conducted by the marketing survey company for reference (The Kanto Transit Advertising Council, 2006). The data they collected was analyzed and closely examined in order to pinpoint trends that affected passenger’s attention towards hanging posters, above-window posters, and stickers. For each type of advertisements, subjects were asked to respond in one of three ways: “I saw it”, “I think I saw it”, and “I didn’t see it”. The results were used to assign an attention ratio to each form of advertising by taking the total number of “I saw it” and “I think I saw it” responses as a percentage of the total. The authors defined this value as the “attention rate” for that form of media.

### 3.2 Visualizing causal relationships between basic passenger information and riding conditions using multivariate analysis

The survey data used to examine the current state of train car advertising in the previous section was then subjected to a statistical analysis in order to visually represent the correlations between passenger information and riding conditions. The procedure and goals of this analysis follow.

1. Look at overall trends in passenger information using a cross tabulation method that focuses on whether passenger attention turned to hanging posters, above-window posters, or sticker advertisements.
2. Perform a cluster analysis on riding conditions and group the results using Quantification Theory Type III. Then, look at the relationship between (1) the riding conditions grouped in the cross tabulation and (2) whether passenger attention turned to hanging posters, above-window posters, or sticker advertisements.
3. Run a CAID analysis on the grouped riding condition data and basic passenger information to determine how it relates to attention rates established for the three types of advertising.

#### 3.2.1 Visualizing causal relationships between basic passenger information and ad awareness of passengers (Analysis step 1)

In step 1 of the analysis, the authors performed a cross tabulation on the survey data collected in a previous section and researched the correlations between whether passengers notice each form of train car advertising (hanging, above-window, and sticker) and passenger information (age and gender) in order see how passenger information relates to attention rates. As part of this process, the age information from the surveys was grouped into young (15–25), intermediate (26–40), and older (41 and up) age brackets.

Table 1 shows the results of the cross tabulation for passenger information (age and gender) and attention rates for each form of train car advertising. The analysis revealed that younger passengers looked at the hanging posters, while the attention rate for older passengers was low. The results were reversed for advertisements placed above train windows, with older passengers paying close attention to them. Sticker advertisements tended to be noticed by women, and younger passengers in general also tended to look at sticker advertisements.

	Hanging posters	Above-window posters	Stickers
Gender(Men)	59.3%	40.7%	25.9%
Gender(Women)	56.5%	50.0%	39.1%
Young (15-25)	76.5%	42.1%	36.8%
Intermediate (26-40)	55.6%	43.8%	25.0%
Older (41 and up)	40.0%	53.3%	33.3%

Table 1 The cross tabulation for passenger information and attention rates for each form of train car ad

#### 3.2.2 Visualizing causal relationships between riding conditions and ad awareness of passengers (Analysis step 2)

In this step, the authors used the survey data gathered to represent current in-train advertising conditions, subjected it to a cluster analysis, and then used Quantification Theory Type III to group riding conditions. They then looked for correlations between the resulting data and whether passengers paid attention to different types of train advertising.

The binary data on riding time (0–15 minutes, 16–45 minutes, 46 minutes or more), average number of weekly trips (Less than two, two or three, four or more), and riding position (standing or sitting) that passengers provided during the survey was subjected

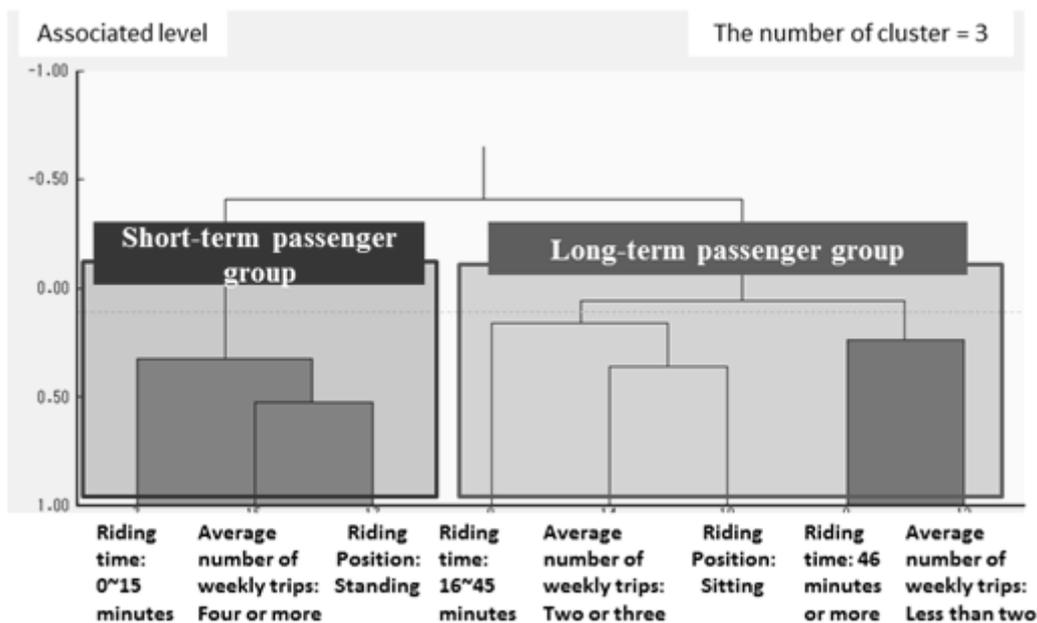


Figure 3 Cluster analysis of the ride condition

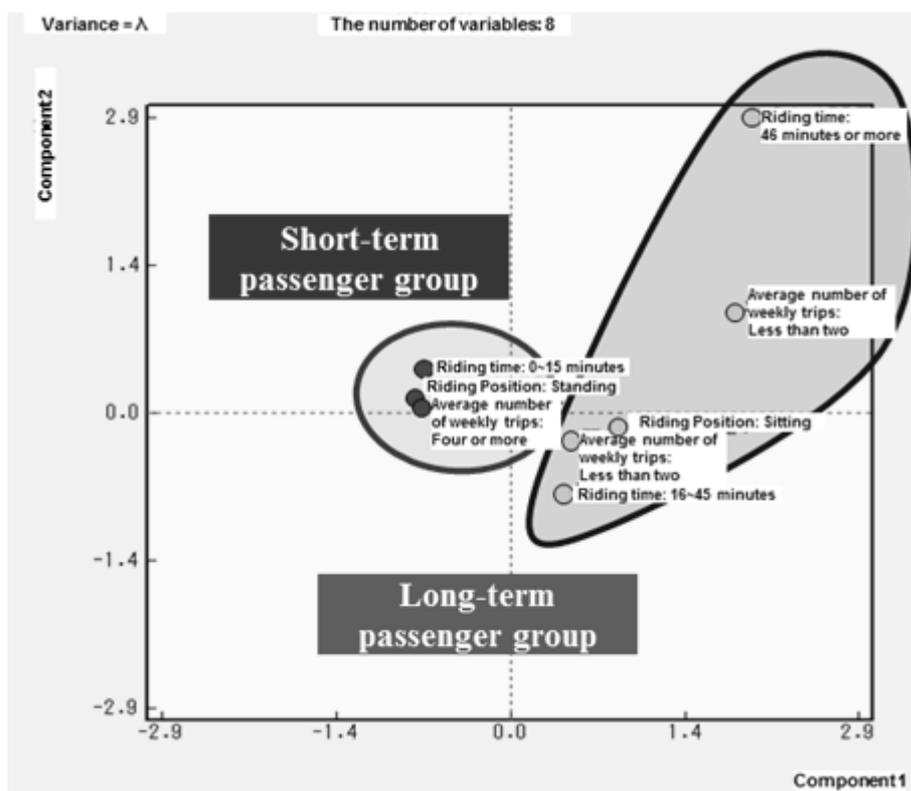


Figure 4 Quantification Theory Type III of the ride condition

to a Euclidean distance cluster analysis. The results of this analysis are shown in Figure 3. It was found that the eight types indicated in this dendrogram could be separated into two groups.

Similar results were obtained when the Quantification Theory Type III was used on the survey data (Figure 4). Since the first group consisted of standing passengers who ride the train for 0–15

minutes, they were labeled “short-distance passengers”. The second group rode the train for a longer period of time and tended to sit, so this group was called the “long-distance passengers”.

	Hanging posters	Above windows posters	Stickers
Short-term passenger group	69.2%	61.5%	46.2%
Long-term passenger group	37.5%	29.2%	29.2%

Table 2 The cross tabulation for passenger information and attention rates for each form of train car ad after grouping

The passengers in each group were then summarized, and this data was subjected to a cross tabulation with awareness rate for hanging posters, above-window posters, and sticker advertisements to find the correlations (Table 2). The highest awareness rates for the short-distance passenger group were on hanging advertisements, followed by above-window and sticker ads.

These short-term riders had higher awareness rates overall than those in the long-distance group, who showed similar results in that they were most aware of hanging posters, followed by above-window posters and stickers. They paid less attention to ads overall than their short-term passenger counterparts.

### 3.2.3 Visualizing causal relationships between basic passenger information, riding conditions and ad awareness of passengers (Analysis step 3)

The authors then examined the characteristics of the short-term and long-term passenger groups defined in the previous section, conducting a CAID analysis (Murayama, 1982) in order to understand in-depth correlations involving passenger information. The CAID analysis is to search which variable is strongly correlated with criterion variable on the basis of simultaneous distribution of frequency data, and divide a sample population by the category of the related high criterion variable.

Specifically, a CAID analysis was conducted for each form of advertising (hanging, above-window, and stickers next to doors) as it related to the two groups discussed in the last section. The data collected in the survey was used for the analysis, with awareness rates for the different forms of advertising used as criterion variables. Passenger information (age and gender) was used for the explanatory variables. In this way, the relationship between on-board riding conditions and passenger information was analyzed.

Figure 5 shows some of the results from the analysis. These are the results of the awareness rate for hanging posters among short-term riders is used

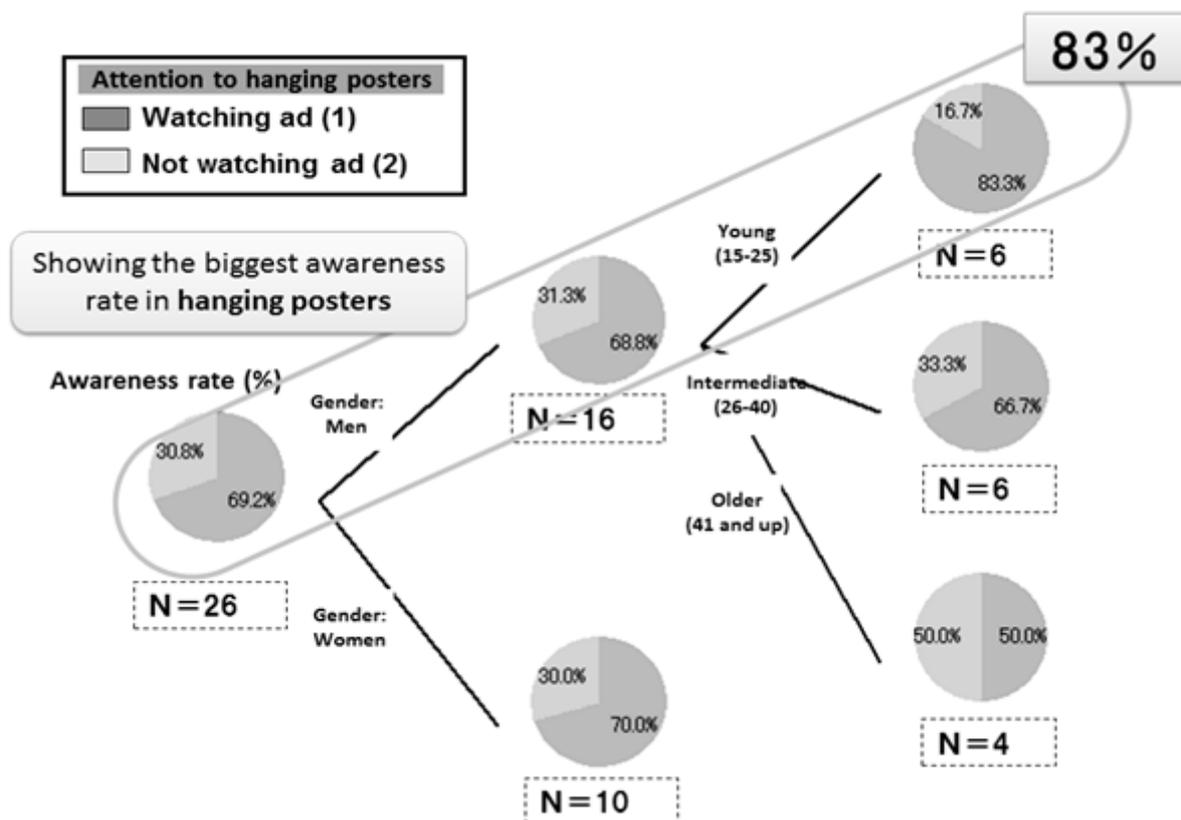


Figure 5 Quantification Theory Type III of the ride condition

Table 3 The results of the CAID analysis on the short-term passenger group

Hanging posters	69.2%					
Gender	Men			Women		
	68.8%			70.0%		
Age	15~25 years old	26~40 years old	41 years old	15~25 years old	26~40 years old	41 years old
	83.3%	66.7%	50.0%	80.0%	66.7%	50.0%
Above-window posters	61.5%					
Gender	Men			Women		
	56.3%			70.0%		
Age	15~25 years old	26~40 years old	41 years old	15~25 years old	26~40 years old	41 years old
	50.0%	50.0%	75.0%	60.0%	66.7%	100.0%
Stickers	46.2%					
Gender	Men			Women		
	43.8%			50.0%		
Age	15~25 years old	26~40 years old	41 years old	15~25 years old	26~40 years old	41 years old
	66.7%	33.3%	25.0%	60.0%	33.6%	50.0%

as a criterion variable using the CAID analysis. The results indicate that the highest awareness rate in this group is among men in the youngest age category (15–25). Table 3 shows the results of the CAID analysis on the short-term passenger group.

A CAID analysis like the one in Table 3 was similarly conducted for each type of media among the long-term passenger group, with passenger information designated as the explanatory variable. Barring a few exceptions, the results indicate an overall trend of awareness rates being higher among the younger generations. Comparing the two groups, the authors found that the short-term passengers (who tended to stand when riding) had higher awareness rates in general.

Passengers who sat, on the other hand, had more opportunities to engage in different activities during their ride, such as reading or doing work, which probably contributed to their paying less attention to advertisements than the passengers who were standing. The analysis revealed that women passengers 26 and older in particular did not look at in-car advertisements. It also indicated that older passengers

frequently paid attention to advertisements located above windows.

#### IV. Proposing train car advertisements

Based on the results from the previous section, the authors attempted to provide specifics on an ideal format for train car advertisements. Figure 6 uses a picture to indicate the results of the CAID analysis in a way that is easy to understand. Awareness rates for hanging posters were high among younger passengers and standing passengers, and the difference between men and women was slight.

Both male and female members of the older age group frequently paid attention to above-window posters. Men 41 and over who sat while riding the train, as well as women who stood while riding, tended to view these advertisements the most. Awareness rates for sticker advertisements were low overall; however, younger riders frequently looked at them, as did standing passengers. To summarize, train car advertisements are most likely to catch the eye of standing passengers, and the younger generation tends to look at them the most.

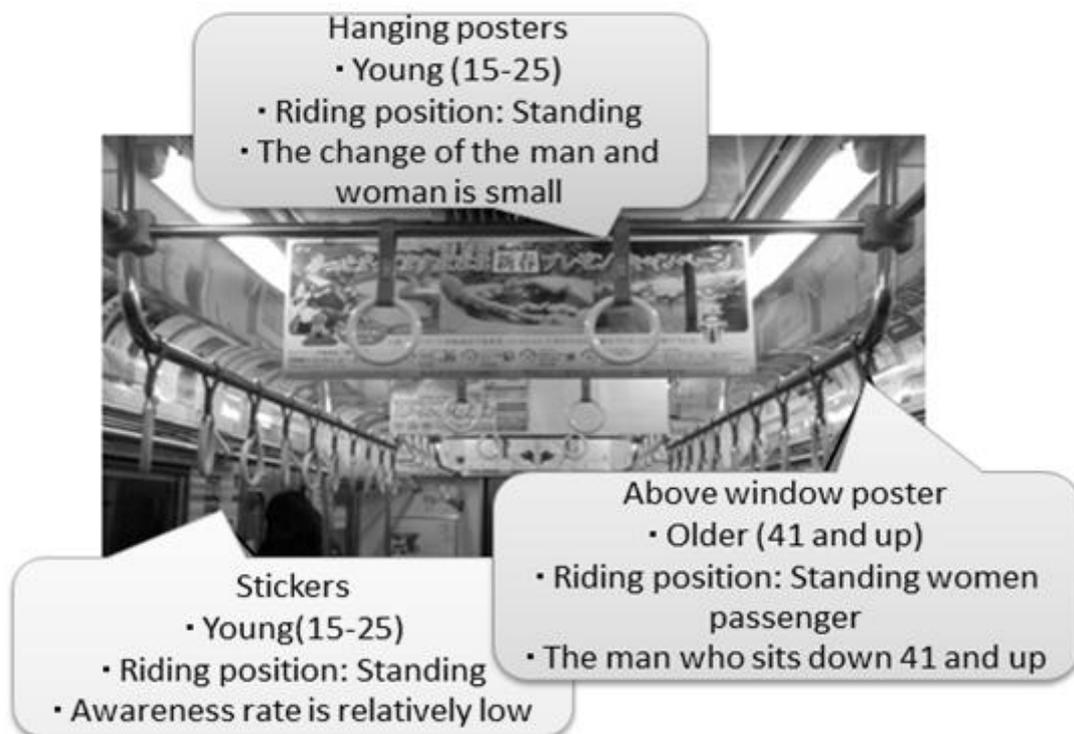


Figure 6 Visualizing causal relationships between basic passenger information, riding conditions and ad awareness of passengers

Based on these conclusions, the authors' first recommendation is for existing train car advertising. Because hanging posters, stickers, and other in-car advertisements are likely to attract younger riders, this space should be used to advertise weekly manga magazines, fashion magazines, sales, or other products likely to appeal to this generation. Another important consideration is using popular celebrities to catch the eye of these passengers.

Above-window advertising space, on the other hand, may be better used to appeal to those of the older generation. These passengers are more likely to be married and have children, so it may be beneficial to feature family-friendly topics. Specifically, posters advertising events for families or travel may be ideal in this location. Also, because it was found that standing passengers tend to look at advertisements frequently, riders may pay attention not only to ads that help them pass the time while standing, but also those that stimulate their interest or desire. Instead of showing just a picture, a magazine ad, for example, could feature headlines or other clever designs aimed at stimulating purchase behavior. It is important that other advertisements do not simply catch the eye, but encourage viewers to linger.

Secondly, the authors suggest that trains adopt new forms of advertising media. The analysis results indicated that passengers who stand tend to have high awareness rates when it comes to in-car advertising, but advertisements on the floor may be

easier for sitting passengers to see. Riders who sit naturally allow their eyes to fall downward, making a floor advertisement an eye-catching option. Those who sit and read are also looking downward as well, increasing the chances that they may see these advertisements.

## V. Conclusion

Focusing on transit advertising which has a good contact rate and long-term contact, the authors decided to examine those relationships and how they relate to train car advertising (hanging posters, above-window posters, and sticker ads) with the aim of defining the ideal format for this type of media.

Additional research must be done in order to quantify how the attention captured through train car advertising leads to other stages of purchasing behavior. In addition, a strategic approach method that actually drives consumers to purchase must be considered. The effectiveness of other train-related advertisements, such as in-car digital ads and exterior train advertisements must be studied so that even greater value can be obtained from transit advertising media.

## VI. Acknowledgement

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