

# Professional Women in Japanese Television Commercials: A Data-Driven Study

Urszula Frey

Kyoto University of Foreign Studies, Japan

[u\\_frey@kufs.ac.jp](mailto:u_frey@kufs.ac.jp)

**Abstract:** This research examines how representations of professional women in Japanese television commercials have changed over time, from 1985 to 2005. The study adopts a data-driven approach in which information about commercials is recorded and stored in a structured database. Digital humanities and statistical methods are used to identify hidden biases and obtain insights that may not be immediately noticeable through simple viewing and qualitative analysis of the commercials. The aim of this research is to identify the factors linking gender and employment and to examine how these factors shape the representation of female professionals. The analysis focuses on commercials that received the All Japan Radio & Television Commercial Confederation Award (ACC Awards). The ACC awarded commercials are chosen for their impact and availability. The commercials are first viewed and then systematically described using a structured data format. The dataset records what characters do, where they act, and how they are represented in each commercial. The resulting data are stored in a database from which samples can be extracted, based on which several statistical models are constructed. By examining the variables of these models, the relative importance of different factors can be evaluated. The analysis shows that during the 1980s foreign women had a higher probability of being represented as professionals. In this period, the variable “ethnicity” had greater weight than factors such as age. By constructing similar models for different periods, it becomes possible to observe how these patterns evolved over time. For example, during the 1990s ethnicity lost much of its influence as Japanese women increasingly appeared as professionals. However, these portrayals were still often associated with young age and were frequent when not in presence of a man. By identifying the biases underlying these representations and tracing their evolution over time, the study will provide new insights into how professional women have been portrayed in Japanese television advertising.

**Keywords:** Japanese television advertising, Media stereotypes, Professional women, Gender representation, Structured data analysis, ACC Awards

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## 1. Introduction

When people watch commercials, they are not only being persuaded to buy a product, their worldview is influenced as well. Young people learn from media how to behave according to gender-based expectations (Tuchman 2000). If women are portrayed mostly in domestic environments or service occupations, while men appear primarily in professional settings, these representations may reinforce existing perceptions of gender roles.

Pongsapitaksanti (2008, 2017) conducted comparative studies of Japanese and Thai television commercials using advertisements that received the ACC or TACT awards (Pongsapitaksanti 2008, 2017). These studies analyzed gender roles mainly through variables of gender and setting, such as the home and workplace as determining factors in whether individuals were depicted as housewives or working individuals. However, this approach does not consider the combined influence of other factors such as age, ethnicity, or authority. Sakamoto et al. (2003) found that the increase over time was primarily in the portrayal of women as intellectuals rather than in their depiction as being employed, while Arima (2003) showed that men were most often portrayed as professionals and women more frequently in stereotypical roles (Arima 2003, Sakamoto et al. 2003). In contrast, the present research focuses specifically on the portrayal of working women and examines the factors shaping the representation of female professionals over time. By systematically analyzing multiple attributes recorded in a database of commercials, this study aims to reveal patterns in the depiction of professional women that have not been addressed in previous research.

While some gender stereotypes in commercials can be observed through manual viewing, other biases may remain hidden. This paper demonstrates how both visible and hidden biases in commercials can be identified automatically and measured quantitatively. Once identified, the causes of these biases can be examined in relation to the historical situation in which the commercials were produced.

## 2. Methodology

### 2.1 Data Structure

A structured dataset is created using commercials that have received the All Japan Radio & Television Commercial Confederation Award (ACC Awards) between years 1985 and 2005. Each commercial is viewed,

and its contents are recorded in a database. The data record is stored as JSON in a MongoDB database, while a web application is used to create and edit records to minimize data entry errors.

Each commercial is described through attributes of the people appearing in the commercial: the action they perform, characteristics of the accompanying people, the setting, or the overall mood of the scene. From the structured data, tabular data is created using MongoDB queries. Each sample contains variables such as gender, age group, ethnicity, setting, and occupation of the person. This tabular data is then used as training data to build the statistical models using *chefboost* and *scikit-learn* in Python.

## 2.2 Tree Based Models

One of the statistical models, a decision tree, partitions the dataset by repeatedly splitting it on variables such as gender, age, ethnicity, and other attributes to lower the entropy. Decision trees are easy to interpret because they show how specific combinations of attributes lead to particular outcomes. Since a tree model partitions the dataset, it only shows local effects within a branch, for example the effect of age on Japanese females. By calculating the feature importance of the tree, the global effects of the variables can be shown as well.

## 2.3 Probit Regression

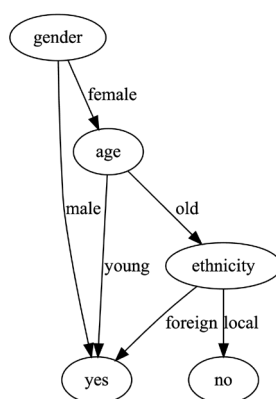
In addition to tree-based models, a probit regression model is used to estimate the probability that a person in a commercial is depicted as having a job. The marginal effects of the model indicate how changes in individual variables influence the probability of being depicted as having a job. Variables with larger absolute marginal effects have a stronger influence on the outcome, while negative values indicate a negative relationship. Regression models only provide a global view of how variables influence the outcome across the entire dataset.

## 2.4 Temporal Analysis

Once sufficient data has been collected for individual years, the importance of variables obtained from statistical models can be examined over time. For regression models, this involves plotting the marginal effects of variables across different periods. For tree-based models, feature importance scores can be used. By comparing these measures across years or decades, factors influencing the depiction of professional women can be discovered. This temporal analysis will reveal how certain attributes, such as ethnicity, age, or gender interactions, gain or lose importance in shaping representations of working women in Japanese television commercials.

## 3. Preliminary Results

The decision tree model (Figure 1) shows that men will be shown in a professional position regardless of other variables. For women, young women and older foreign women are shown as practicing a professional occupation, while older local women will not be depicted as having a job.



**Figure 1: A decision tree built from samples**

Using the tree model, it is also possible to split the data into periods with different outcomes. When year is added to the tree model, a cut-off point is automatically created in 1998 where the branches become slightly different. When creating two separate models, the model starting from 1999 no longer gives a positive importance to being foreign (Table 1). The factor of being female becomes less negative but being young increases in importance.

**Table 1: The feature importance of the decision tree**

Attribute	Feature importance	Up-to 1998	From 1999
female	-0.0206	-0.0207	-0.0176
young	0.6778	0.3311	0.6846
foreign	0.3381	0.3369	-0.3428
outside	0.0047	0.3527	0.6758

The probit regression model shows that being female decreases the probability of being depicted as a professional, while being young, foreign, or being outside increases the probability (Table 2).

**Table 2: The marginal effects of the probit regression model**

Attribute	Marginal effect	Standard error
female	-0.1577	0.022
young	0.2480	0.021
foreign	0.2683	0.056
outside	0.1492	0.034

Both models show that in general, being a woman is a disadvantage. On the other hand, being young, foreign, or being outside is an advantage. The tree model gives more importance to factor young while the probit regression model finds both young and foreign of equal importance.

#### 4. Discussion and Conclusion

The data confirms previous findings of men of all ages being portrayed as working but mostly of only young women portrayed as employed (Arima 2003, Sakamoto et al. 2003). For some of the biases we can find historical reasons of why these exist. Men typically worked throughout their lives, while women were more likely to withdraw from employment once married and therefore tended to be portrayed as having an occupation only when young and unmarried. One reason for women’s withdrawal from occupation were policies favoring women’s stay-at-home lifestyle in the form of large pensions for the non-working wives of employees of large companies (1985) and the tax deduction for those with dependent spouses (1986) (Ochiai 2011).

Foreign women are an important exception to this pattern. The analysis shows that during the 1980s and early 1990s, foreign women had a significantly higher probability of being represented as professionals, with the variable *ethnicity* exerting a stronger influence than factors such as age. This suggests that female professionalism in Japanese television commercials was at the time closely associated with Western identity rather than with Japanese women themselves. Western lifestyles and images were already idealized in Japan in the 1970s, prior to the bubble economy of the 1980s, however, in the case of female professionalism in advertising, this association persisted into the 1980s and early 1990s. As a result, when professional women were depicted, they were often portrayed by foreign actresses. While Arima (2003) and Sakamoto et al. (2003) pointed out the limited representation of Japanese women as professionals, this analysis demonstrates that this absence was not only a matter of gender but also strongly linked to ethnicity.

Further insights emerge from the analysis of gender interactions. A decision tree model using the variables *female* and *malePresent* shows that the presence of a man significantly reduces the possibility of a woman being depicted as a professional. This suggests that women’s professional identity is less likely to be constructed in relational contexts involving men, pointing to hidden gender bias in advertisements.

These findings show that television commercials both reflect and reinforce broader social and cultural structures. By combining structured data analysis with statistical methods, this study can discover hidden gender biases and provide a better understanding of how professional identities of women are constructed in Japanese media over time.

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## References

- Abapo, L. (2012) *The authentic self and advertising: The effects advertising has on the formation of the authentic self*. Master's thesis. University of North Florida.
- Airriess, H.M. (2020) *Staging the bright life: White-collar cinema in Japan's era of high economic growth (1954–1971)*. PhD thesis. University of California, Berkeley.
- Arima, A.N. (2003) "Gender stereotypes in Japanese television advertisements", *Sex Roles*, Vol 49, pp 81–90.
- Ochiai, E., (2011) "Unsustainable societies: The failure of familialism in East Asia's compressed modernity." *Historical Social Research/Historische Sozialforschung*, Vol 36, No. 2, pp.219-245. doi: <https://doi.org/10.12759/hsr.36.2011.2.219-245>
- Pongsapitaksanti, P. (2008) "Terebi koukoku ni okeru jendaa no yakuwari no henyou - Nihon to Tai no hikaku kara", *Nihon Jendaa Kenkyuu*, No. 11, pp 15–27. doi: <https://doi.org/10.14831/genderstudies1998.2008.15>
- Pongsapitaksanti, P. (2017) "Gender and working roles in television commercials: A comparison between Japanese and Thai television commercials", *jsn Journal*, Vol 7, No. 3, pp 159–171. doi: <https://doi.org/10.14456/jsnjournal.2017.10>
- Sakamoto, A., et al. (2003) "A content analysis of gender stereotyped portrayals in television commercials: How have they changed over thirty-three years?" (Terebi komaasharu ni okeru sei sutereotaipu-teki byousha no naiyou bunseki kenkyuu: 33-nenkan de dore dake henka shita ka), *Journal of Gender Studies*, No. 6, pp 47–57.
- Tuchman, G. (2000) "The symbolic annihilation of women by the mass media", in *Culture and Politics: A Reader*, Palgrave Macmillan, pp 150–174. doi: 10.1007/978-1-349-62397-6