

# Impact of films on filming locations:

## The case of Japanese romance films

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### Abstract

*In recent years, “film tourism,” which is triggered by films, animations, and other creative works, has been attracting increasing attention in Japan’s tourism sector. Looking specifically at Japanese films, box office revenues have been on the rise. In terms of audience demographics, the movie-viewing rate among young women in their twenties has also been increasing. Consequently, many of the top-grossing films in recent years have been romance films. Based on these trends, this study focuses on Japanese romance films as the subject of analysis. The aim of this paper is to investigate the relationship between the “basic information” of Japanese romance films and the “number of tourists” visiting the filming locations. The data used for analysis consist of 34 romance films released between 2000 and 2019. Variables such as the presence or absence of an original work, running time, protagonist age, and history of film awards are used as basic information. This study seeks to clarify how these factors influence changes in the number of overnight visitors in the year following a film’s release. Specifically, films were classified into two categories—those associated with an increase in the number of overnight visitors and those associated with a decrease. The analysis revealed that factors such as whether the film is based on a comic, running time, and the protagonist’s age have a significant impact on tourist numbers.*

### Keywords

*data analysis, contents tourism, film tourism, original work, romance films*

### 1. Introduction

#### 1.1 Background of the research

In recent years, the field of tourism in Japan has been attracting significant attention. In fact, domestic tourism consumption, which was approximately 18 trillion yen in 2014, has significantly increased to approximately 25 trillion yen in 2024, despite a temporary decline due to the COVID-19 pandemic [Ministry of Land, Infrastructure, Transport and Tourism, 2024]. Among these trends, a new form of tourism promotion called “contents tourism” is gaining attention [Shimizu, 2018]. “Contents tourism” refers to traveling to visit the settings of works from various media such as films, television, novels, *manga*, and *anime* [House of Councillors, 2013]. There are several types of contents tourism, including “seichi junrei” (sacred site pilgrimages) to the settings of *anime* and *manga*, “film tourism” to the locations of films and dramas, and “heritage tourism” to historical sites. Among these, “Film tourism” has begun to generate significant economic effects as box office revenues increase [House of Councillors, 2013].

Focusing on Japanese cinema, Box Office Revenue is on an upward trend [Motion Picture Producers Association of Japan, 2024]. In particular, the box office revenue for domestic Japanese films has shown remarkable growth, increasing from approximately 54 billion yen in 2000 to approximately 150 billion yen in 2023, a nearly threefold increase [Motion Picture Producers Association of Japan, 2024]. Looking at the demographics of recent audiences, the film-viewing rate among young women in their 20s is on the rise [Nakamura and Sasaki, 2021:

18]. Consequently, romance films have frequently appeared among the top-grossing films in recent years [Motion Picture Producers Association of Japan, 2024]. Based on these trends, this study focuses on Japanese romance films as its objects of analysis.

Looking at some case studies in film tourism, for the film “Your Name.,” which was a major hit in 2016 with a box office revenue of 25 billion yen, an increase in tourists was confirmed in Hida City, Gifu Prefecture, which served as the film’s setting, after its release [Osada and Tomono, 2019]. Furthermore, in Numazu City, Shizuoka Prefecture, the setting for “Love Live! Sunshine!!,” a continuous influx of tourists has been sustained by devoted fans of the series even after the television broadcast ended [Murakoshi, 2024].

From the above, it is expected that in film tourism, a hit film or *anime* can lead to the revitalization of the land and region that served as its setting. However, no studies have examined how the basic information of a film (hereafter, basic information) affects the number of tourists. Here, basic information refers to factors such as the existence of an original work for the film, the director, actors, and staff involved in the production, the Running Time (minutes), and the number of cast members.

Therefore, this study investigates how a film’s basic information influences the increase or decreases in the number of tourists due to film tourism. By analysing the relationship between this “basic information” and “tourist numbers,” this research aims to clarify what kind of impact the “basic information” has on the number of tourists in the region that served as the setting.

#### 1.2 Previous research

This section reviews previous research related to film tourism and contents tourism. Research investigating the age de-

mographics of tourists participating in contents tourism has pointed out that the majority are young people in their teens to 30s [House of Councillors, 2013]. Furthermore, it has been noted that tourists continue to visit for the purpose of film tourism even four years after filming and broadcasting have concluded [Dai et al., 2015]. In addition, another study analysed Hitoyoshi City in Kumamoto Prefecture, the “sacred site” for the *anime* “Natsume’s Book of Friends,” to investigate the reasons why tourists make repeat visits. This study pointed out, based on survey results, that if tourists’ preferences regarding accommodation and dining are met during their initial stay, they develop an attachment to the location and make repeat visits [Iwasaki et al., 2018].

From the above, much of the conventional research has utilized data from surveys and interviews, and a study analysing the relationship between a film’s basic information and tourist numbers is lacking.

### 1.3 Purpose of the research

The purpose of this study is to investigate the relationship between the basic information of films and the number of overnight guests (hereafter, tourist numbers) in the prefectures that served as the settings for these films, targeting 34 Japanese romance films. If the results reveal any relationship between the basic information of the films and tourist numbers, the following implications can be suggested. For example, by clarifying the relationship between romance films and contents tourism, we believe it will be possible to gain insights into measures to

promote tourism to the regions used as settings, and by confirming domestic demand, to inform strategies for contents tourism targeting foreign tourists.

## 2. Data details and analysis method

### 2.1 Data details

Details of the data are described below. Table 1 summarizes the basic information, providing a sample of the data. The subjects of this study were 34 Japanese romance films (from 2000 to 2019). These films were selected on the basis that their filming locations were explicitly stated on prefectural websites or similar sources. The details of the data are as follows.

“Films Code” in the basic information shown in Table 1 is a code to identify the corresponding film. “Box Office Revenue (billion yen)” shows the box office revenue of the film in billion yen. “Running Time (minutes)” indicates the running time of the film in minutes. “Based on Comic (*Manga*)” shows whether the original work of the film is a comic or not. “Gender of Main Character” indicates whether the main character is male or female, and “Age of Main Character” shows the main character’s age setting in the film. “Female” and “Male” indicate the number of female and male actors who appeared in the film, respectively. “Director and Best Picture Awards” through “Newcomer Awards, etc.” show the number of awards that the director and actors received before appearing in the corresponding film (the four awards listed in reference were used [Kinema Junpo-sha, 2009: 238-245]). “Appearance by EXILE Members” through “Leading Role by Johnny’s Mem-

Table 1: Basic information

Films Code	Box Office Revenue (billion yen)	Running Time (minutes)	Based on Comic ( <i>Manga</i> )	Gender of Main Character	Age of Main Character	Female	Male	Director and Best Picture Awards	Best Actress Award	Best Actor Award
0001	24.7	119	1	1	10	9	12	0	0	0
0002	17.8	117	1	1	20	3	9	0	0	0
0003	15.1	122	0	0	20	6	6	0	0	0
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
0033	10.1	124	1	1	10	8	10	0	0	0
0034	28.2	119	1	1	20	5	4	0	0	0

Films Code	Best Supporting Actress Award	Best Supporting Actor Award	Newcomer Awards, etc.	Appearance by EXILE Members	Leading Role by EXILE Members	Appearance by Johnny’s Members	Leading Role by Johnny’s Members	Distributor	Year-on-Year Change
0001	1	0	0	1	1	0	0	0	0.950
0002	0	0	0	0	0	0	0	1	1.006
0003	0	0	0	0	0	0	0	1	0.992
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
0033	0	0	0	0	0	1	1	0	0.995
0034	0	0	0	0	0	0	0	0	1.026

bers” indicate whether a member of a Japanese dance & vocal group or an idol from a specific talent agency played a leading or supporting role. “Distributor” shows whether the film was distributed by a leading company in the Japanese film industry [Jiji Eigatsūshinsha, 2007: 111-123]. “Year-on-Year Change” indicates the change in the number of overnight visitors to the prefecture where the film was set, as a ratio (number of overnight visitors in the following year/number of overnight visitors in the year of release). A Year-on-Year Change value of 1 or more indicates an Increase Group in tourists in the year after the film’s release, while a value of less than 1 indicates a Decrease Group.

## 2.2 Analysis method

This study will proceed with the analysis as follows.

### (1) Confirmation of Basic Statistics:

We will confirm the basic statistics of the data to be analysed. The basic statistics used in this study are the Maximum Value, Minimum Value, and Average Value of each variable.

### (2) Analysis of Tourist Numbers and Basic Film Information:

While step 1) examined the relationship between the number of tourists in the prefecture where the film was set and the basic film information using basic statistics, step (2) will use a binary classification to determine the relationship between the increase/decrease in tourists and the basic film information by estimating the number of tourists from the film’s basic information. Specifically, we will assign a value of 1 to films with a Year-on-Year Change of 1 or more (hereinafter referred to as the Increase Group) and a value of 0 to films with a Year-on-Year Change of less than 1 (hereinafter referred to as the Decrease Group), to examine how the basic information affects the film. The explanatory variables will be the basic information of the respective films.

## 3. Data analysis

### 3.1 Confirmation of basic statistics

Table 2 shows the statistics for the Increase Group and the Decrease Group. The statistics used are the Maximum Value, Minimum Value, and Average Value.

Table 2: Basic statistics

		Box Office Revenue (billion yen)	Running Time (minutes)	Based on Comic ( <i>Manga</i> )	Gender of Main Character	Age of Main Character	Female	Male	Director and Best Picture Awards	Best Actress Award	Best Actor Award
Increase Group	Maximum Value	28.200	120.000	1.000	1.000	20.000	13.000	14.000	0.000	3.000	0.000
	Minimum Value	0.700	105.000	1.000	0.000	10.000	3.000	4.000	0.000	0.000	0.000
	Average Value	12.722	116.667	1.000	0.444	16.667	7.111	8.444	0.000	0.333	0.000
Decrease Group	Maximum Value	35.200	140.000	1.000	1.000	60.000	12.000	40.000	3.000	2.000	3.000
	Minimum Value	1.200	105.000	0.000	0.000	10.000	3.000	3.000	0.000	0.000	0.000
	Average Value	14.019	117.520	0.720	0.520	21.600	7.960	10.000	0.120	0.360	0.120
		Best Supporting Actress Award	Best Supporting Actor Award	Newcomer Awards, etc.	Appearance by EXILE Members	Leading Role by EXILE Members	Appearance by Johnny's Members	Leading Role by Johnny's Members	Distributor	Year- on-Year Change	
Increase Group	Maximum Value	6.000	1.000	1.000	1.000	0.000	1.000	1.000	1.000	1.122	
	Minimum Value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.006	
	Average Value	0.667	0.111	0.111	0.222	0.000	0.444	0.222	0.667	1.045	
Decrease Group	Maximum Value	4.000	3.000	4.000	1.000	1.000	1.000	1.000	1.000	0.999	
	Minimum Value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.614	
	Average Value	0.560	0.280	0.800	0.120	0.080	0.240	0.240	0.640	0.917	

(1) Based on Comic (*Manga*):

For “Based on Comic (*Manga*),” the average value for films in the Increase Group was 1, while the Average Value for the Decrease Group was 0.720. This indicates that all films in the Increase Group were based on comics.

## (2) Age of Main Character:

For “Age of Main Character,” the Average Value for the Decrease Group was shown to be higher than that of the Increase Group.

## (3) Male:

For “Male,” the Average Value for the Decrease Group was shown to be higher than that of the Increase Group.

## (4) Director and Best Picture Awards:

For “Director and Best Picture Awards,” the Average Value for the Increase Group was 0, while the Average Value for the Decrease Group was 0.120. This indicates that no films in the Increase Group had received this award.

## (5) Best Actor Award:

For “Best Actor Award,” the Average Value for the Increase Group was 0, while the Average Value for the Decrease Group was 0.120. This indicates that no films in the Increase Group had received this award.

## (6) Features with No Significant Difference between the Increase Group and Decrease Group:

Running Time (minutes), Gender of Main Character, Female, Best Actress Award, Best Supporting Actress Award, Best Supporting Actor Award, Newcomer Awards, etc., Appearance by EXILE Members, Leading Role by EXILE Members, Appearance by Johnny’s Members, Leading Role by Johnny’s Members, Distributor.

### 3.2 Analysis of tourist numbers and basic film information

As mentioned above, distinct characteristics were shown for the Increase Group and the Decrease Group. This section clarifies the relationship between them by predicting whether tourist numbers will increase or decrease based on basic film information. Specifically, we will perform a binary classification using Year-on-Year Change as the objective variable, classifying the films into the Increase Group and Decrease Group. The explanatory variables will be the basic information of the corresponding films. From the results of this binary classification, we will clarify the relationship between basic film information and tourist numbers. The binary classification was conducted as follows.

## (1) Binary Classification Method:

The method used in this study is XGBoost [Akiyama et al., 2021], as it exhibits better classification accuracy than Random Forest and exhibits stable performance even when the amount of data to be classified is small [Akiyama et al., 2021].

## (2) Implementation of Cross-Validation:

To suppress bias in the analysis results, we will perform k-Fold Cross-Validation. We will use 4 folds and repeat the

process of creating a predictive model with the training data and validating it with the test data four times [Avila and Hawk, 2019: 23; Chawla et al., 2002]. The discussion of classification accuracy will focus on the model with the highest accuracy rate among the cross-validation runs, as will be described later.

## (3) Implementation of Oversampling:

From the analysis of basic statistics in Section 3.1, the number of films in each group is unequal (9 with a Year-on-Year Change of 1 or more, and 25 with less than 1), so we will perform oversampling [Chawla et al., 2002; Kadowaki et al., 2019: 69, 235, 273, 342].

## (4) Accuracy Rate:

We used the accuracy\_score from scikit-learn, which is an indicator of how well the overall prediction results match the true values. We will also show the confusion matrix and confirm the classification accuracy of each category.

## (5) Feature Importance:

To confirm which features are useful for improving classification accuracy, we will use feature importance [Avila and Hawk, 2019: 24-39]. The type of feature importance used was “gain.”

Tables 3 and 4 show the results. Table 3 shows the accuracy rate for each of the four cross-validation iterations. Table 4 shows the confusion matrix for the 4th model, which had the highest accuracy rate among the models created. These results indicate that, although the data is limited, there is a relationship of over 90 % between basic film information and tourist numbers.

Table 3: Accuracy score

1	2	3	4
0.846	0.615	0.846	0.923

Table 4: Confusion matrix

		Forecast Value	
		Decrease Group	Increase Group
True Value	Decrease Group	5	0
	Increase Group	1	7

Furthermore, to see the influence of the features, Figure 1 shows the feature importance of the model with the highest accuracy rate. Features with high importance include “Based on Comic (*Manga*),” “Newcomer Awards, etc.,” and “Running Time (minutes).”

## 4. Discussion

We will conduct a discussion based on the analysis results. Due to space constraints, we will focus on the top five features with the highest importance.

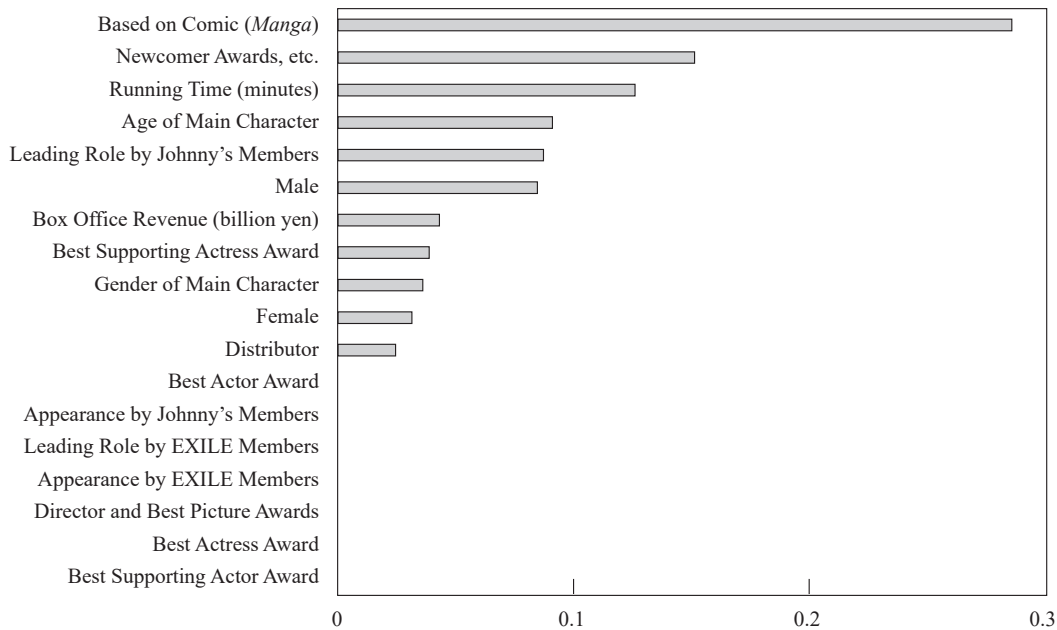


Figure 1: Importance

(1) Based on Comic (*Manga*):

The analysis showed that for “Based on Comic (*Manga*),” all films in the Increase Group were based on comics. It also had the highest importance value, indicating a significant impact on tourist numbers. This suggests the following: The target demographic for comics is said to be people in their 20s and 30s [NTT Com Research, 2012]. As mentioned earlier, the target demographic for romance films and content tourism is the younger generation, aged 10 to 30. It is therefore plausible that the overlapping target demographics of comics, romance films, and content tourism lead to fans of the original comics and the films becoming tourists in the regions where the films are set.

## (2) Newcomer Awards, etc.:

The analysis showed that this feature also had a high importance value, indicating a significant impact on tourist numbers. Compared to the Increase Group, the Decrease Group had a higher Average Value for “Newcomer Awards, etc.,” suggesting that they tend to cast more frequently young actors who have won such awards. While casting young actors can generate buzz, the quality of a work depends not only on the actors’ fame but also on the authenticity of the adaptation [Kinoshita, 2023]. It is possible that the use of young actors resulted in an unconvincing adaptation, which in turn did not lead to an increase in tourist numbers.

## (3) Running Time (minutes):

The analysis showed that “Running Time (minutes)” had high importance, indicating a significant impact on tourist numbers. This suggests that a longer running time may allow the film to convey the charm of the region more effectively, which could influence the increase or decrease in tourists.

## (4) Age of Main Character:

The analysis showed that the Age of Main Character in the Decrease Group was higher (Average Value was higher). It also had a high importance value, indicating its impact on tourist numbers. This suggests, as in point (1), that an overlapping target demographic is crucial for tourist numbers. When the main character’s age is higher, it may become difficult for younger audiences to empathize, and as a result, the film may fail to appeal to the target demographic for content tourism.

## (5) Leading Role by Johnny’s Members:

The analysis showed that “Leading Role by Johnny’s Members” had a high importance value, indicating a significant impact on tourist numbers. This suggests a similar point to those made in sections (1) and (4). A large portion of Johnny’s fans are in their 20s [Saito et al., 2023], and when a Johnny’s member takes a leading role, dedicated fans are likely to go see the film. As indicated by previous research, dedicated fans are likely to visit the regions where the films are set. It is therefore plausible that this had an impact on tourist numbers.

## 5. Conclusion

In this study, we conducted an analysis based on basic information from 34 films and the number of tourists in the regions where the films were set. The results of this analysis revealed that “Based on Comic (*Manga*),” “Running Time (minutes),” and “Age of Main Character” have an impact on the number of tourists.

Future tasks include the four points listed below. We hope to consider and address these in the future.



## (1) Recommendations for Generalization:

This study was limited to Japanese romance films, making its scope narrow. In the future, by accumulating knowledge from such analyses, we aim to make recommendations for generalization.

## (2) Data Expansion:

The data targeted in this study was limited to Japanese romance films with clearly defined filming locations, which resulted in a small dataset. Going forward, we want to expand the data to include other genres and perform further analysis.

## (3) Responding to the Diversification of Film Tourism:

Film tourism is becoming more diverse, with some forms not involving overnight stays. It is necessary to conduct analyses that also incorporate these forms of tourism.

## (4) Data elaboration:

In this analysis, we examined the relationship between the year of publication of the number of prefectural overnight guests and the increase or decrease in the following year. However, it is necessary to conduct a more detailed analysis at the municipal level, incorporating demographic data provided by mobile phone companies, as well as considering the timing of film releases and endings.

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