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Temporal Distribution as a Solution for Over-Tourism in Night Tourism: The Case of Suwon Hwaseong in South Korea

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Abstract: As the demands of tourism become increasingly bigger, there are side effects of rapid quantitative growth, representatively, over-tourism. As efforts at minimizing over-tourism, the possibilities of temporal and seasonal distribution were explored. For the experiment, an offline survey was conducted targeting the visitors who visited Suwon Hwaseong, the UNESCO World Heritage in South Korea during the nighttime. Group classification was conducted based on visitors' preferred times and seasons and estimated the marginal willingness to pay (MWTP) for night tourism activities by these classifications. To compare the MWTP of the groups and examine differences in attributes between the groups, a choice experiment (CE) was used. The results from the CE revealed that the MWTP for attributes was different in those groups. Based on MWTP of each group and their characteristics, it was confirmed that temporal and seasonal distribution can be one solution of over-tourism. These results may be useful for night tourism management and development at a UNESCO World Heritage site, such as providing strategies for minimizing over-tourism, which is distributed by peak and non-peak times.

Keywords: over-tourism; temporal distribution; willingness to pay; choice experiment; tourism management and development; UNESCO World Heritage site

1. Introduction

Why is the issue of over-tourism important? According to the UNWTO (World Tourism Organization) [1], tourism demand is increasing significantly with an increase in the number of tourists from 25 million in 1950 to 1.3 billion in 2030. There are a few side effects of rapid quantitative growth such as the influx of tourists to a region that exceeds the tourism capacity, which is called over-tourism [1,2]. Tourists come and go from pre-existing spots and sometimes they visit new areas which are not prepared for over-tourism. When over-tourism occurs, residents experience its side effects in environmental, economic, and social aspects, whereas tourists experience a decrease in visit satisfaction due to crowding, and a lower likelihood of return visits [3–5]. Irresponsible use of resources due to tourism development has led to conflicts between tourists and locals, creating difficulties in sustainable tourism [6]. Side effects from over-tourism have been reported around the world, and solutions are being sought [2,5–7].

Over-tourism occurs when too many people gather at any one particular place, and it is associated with over-crowding and carrying capacity [1]. In this regard, solutions that are being considered include regulation and education, limiting visitor numbers, and distribution [2,5–7]. However, tourism

is a demand-driven activity that is difficult to regulate or educate. It is also burdensome for destinations to forcibly regulate the number of tourists which inevitably leads to quantitative reduction [8]. On the other hand, distribution is utilizing off-peak seasons and times, distributing tourists to other regions, and changing the target tourism market [2,5]. This should be based on the characteristics of the destination and an understanding of the visitors to a destination. Distribution through clear targeting not only improves the quality of tourism by easing crowding and increasing satisfaction, but can also achieve sustainable quantitative growth including balanced development during all seasons (peak or off-peak seasons) [9]. This is not a new solution from over-tourism but is widely used in tourism and outdoor recreation [10,11], and is also explained conceptually as substitutability, or alternative recreation opportunity [12]. However, existing studies do not deal with the distribution of visitors in night tourism as a solution for over-tourism, and being mostly case studies, there is a lack of empirical research on the applicability of visitor distribution.

Thus, the present study examines visitor distribution as a solution for over-tourism, especially in night tourism. Night tourism is a form of sightseeing that takes place during the night. It is popular in its economic impact of increasing length of stay through the use of overnight accommodations [13] Night tourism increases immersion and attraction to destinations or activities through the reduction of vision at night [14]. In Korea, cultural assets which were previously only opened during the day due to management issues have now been opened at night. Night tourism focuses mainly on cultural assets and promotes aspects such as night views, night experience activities, night transportation, night performances, and interpretation [15]. However, when night tourism is active and more tourists enter a limited area, crowding impairs immersion to the destination [14,15]. In addition, when there are many people at night, when vision is limited, safety issues may arise [16]. Thus, a solution for over-tourism during night tours is more important than for daytime tours.

The purpose of the present study is to find a concrete way of distributing visitors to solve over-tourism in night tourism. In order to do this, the willingness to pay of night visitors to Suwon Hwaseong Fortress, a UNESCO (United Nations Educational, Scientific and Cultural Organization) World Heritage site, was estimated for less preferred times and seasons. Less preferred times and seasons were defined as non-peak times and seasons. According to Suwon City, Suwon Hwaseong is a representative tourism destination that has 720 thousand daytime tourists per year in 2019. At that time, the night tourism program was provided during just three days and 130 thousand nighttime tourists had been visited. Since the limitations of infrastructure and place on the event days, over-tourism has been raised as a problem at night. Suwon City has considered distribution strategies as a solution to the nighttime over-tourism problem based on the experiences to temporal distribution of night tourism at heritage sites in Korea. As mentioned in previous studies [2,5], this study explores the possibilities of temporal distribution as an effective solution on Suwon Hwaseong nighttime over-tourism by empirical research.

Specifically, this study aims were first, to estimate visitors' willingness to pay for non-peak times and compare it to the willingness to pay for peak times, and see if the temporal distribution was possible. Second, the study aimed to compare visitors' willingness to pay for non-peak seasons with the willingness to pay for peak seasons, and to see if the seasonal distribution was possible. Third, the study aimed to compare the willingness to pay for night tourism attributes using the choice experiment method. We examined which attributes should be given more emphasis on establishing strategies for temporal and seasonal distribution of night tourists. The present study aims to empirically examine the application of visitor distribution as a solution for over-tourism in night tourism, with an emphasis on sustainable tourism development through mitigation of over-tourism.

2. Literature Review

2.1. Night Tourism

Night Tourism—tourism that occurs during the night—has made a big wave in the international tourism market. In 2019, the Union Minister of State for Tourism and Culture of India emphasized 'night tourism' and they opened their important monuments until late in the night for visitors [17]. Also, the Chinese government regarded night tourism as a vast opportunity for new growth and made great efforts to boost it [18]. However, although various studies have spotlighted night tourism since the early 21st century, there is no unified definition of "night tourism" yet, instead only a main debate focused on the scope of 'night' exists [13]. Night tourism can be considered as a simple extension of tourism activities from daytime tourism activities [19]. In other words, night tourism should be characterized in that the night itself is the core attractive attribute [14]. In short, night tourism can be referred to any kind of tourism activity that occurs between sunset and sunrise.

Night tourism can be composed of various programs. Tong [20] divided the night tourism program into three types: performance, participation, and landscape. Cao [21] expanded the classification to include performance, participation, landscape, and comprehensive type. From various studies, it is possible to see that night tourism activities can be categorized in the same way as typical tourism activities. It can include sightseeing, watching performances, and participating in tourism programs just like day-time tourism activities.

Night tourism received attention from major destinations with rich natural and cultural resources as enhancing competitiveness and advancing marketing strategies. Numerous cities, including Paris, Melbourne, London, Jerusalem, Baltimore, and Barcelona, promoted night tourism programs such as light festivals [22]. Night tourism, which has emerged as an alternative to securing tourism competitiveness, has been attracting more attention by the emergence of the night economy. Night tourism can lead to 24-hour economic development by generating 24-hour consumption by tourists [13]. Night tourism could trigger the development of the night economy of destinations. Evans [23] analyzed late-night events/festivals and confirmed that perceived benefits from night economy growth as improving the vitality of areas, expanding leisure venues, growing the number of citizens, increasing the number of jobs, increasing the number of tourists, and activating investments of other areas' businesses. Also, night tourism could enrich the local culture since it not only brings the tourist from outside but also gives a chance for consumption in the cities by local citizens [14,23].

However, over-tourism problems could also arise in night tourism, since it occurs during the night which is not considered to be normal tourism time. Night tourism could bring about conflicts between residents and tourists [14]. It causes inconveniences for resident such as noise at night [24], and this also lead to deterioration of tourism destinations due to residents' resistance [14]. In addition, it could also result in the decrease of the attractiveness of tourism destinations as Smith and her colleagues revealed that perception of crowdedness during night tours is significantly related to the decline of the attractiveness of the destination [15,24].

2.2. Over-Tourism

UNWTO [1] defined over-tourism as "the impact of tourism on a destination, or parts thereof, that excessively influences perceived quality of life of citizens and/or quality of visitors experiences in a negative way." Goodwin [3] said over-tourism could describe destinations where hosts or tourists, locals or visitors feel that the number of visitors is too high and that the quality of life in the area or the quality of the experience has declined unacceptably. In short, over-tourism could be referred to as the negative impact of an intolerably large number of tourists. This concept emerged in the late 2010s, and studies on the effects and solutions of the causes have been conducted so far [2].

Over-tourism could cause serious problems at the destinations, bringing economic, social, physical, and environmental problems which impede sustainability of the destination. It can be understood from the perspective of sustainable tourism. UNWTO [25] explained sustainable tourism in three pillars:

economic, social, and environmental sustainable development. Economic sustainable development means generating prosperity of society and cost effectiveness of all economic activity for maintaining economics in the long term. However, over-tourism could lead economic unsustainability by a "tragedy of the commons" [4]. Social sustainable development emphasizes local communities and maintaining and strengthening their lives and culture. Over-tourism could harm this aspect by causing deterioration of residents' quality of life [5]. It could lead to conflicts between locals and visitors [14] and if it becomes more serious, over-tourism can cause residents' resistance [14]. Environmental sustainable development means conserving and managing resources especially for biological diversity and natural heritage. It also emphasizes actual actions for minimizing pollution. However, over-tourism could have negative effects on the physical and environmental resources of the destination [5].

For solving the problems due to over-tourism, it is easy to find the various efforts that have been made thus far. Also, various studies have introduced ways of relieving the negative effects of over-tourism, including spatial dispersion of spots for tourists [2], temporal and spatial distribution of tourists [5], educating residents, [6] and a taxation strategy [7]. Understanding of the nature of tourism, which is a demand-driven industry, it should be recognized that it is very difficult to solve the deformation phenomenon in large numbers of tourists with education or regulation strategies. If the destination regulates the number of tourists compulsorily, they might face the burden of the quantitative reduction of tourists [8]. In contrast, temporal or spatial distribution will be a better solution since it could affect target tourists' behavior without any enforcement [2,5].

2.3. Distribution as a Key to Solve Over-Tourism at Night

Night tourism is one of the most obvious cases of the over-tourism problem. Since night tours take place outside of regular hours, the side effects of over-tourism, such as inconveniences to residents, are clearly evident. In order to solve the problem of over-tourism during peak times, it is necessary to implement a decentralization policy in relation to night tourism. Since one of the main attractions of night sightseeing is its quietness, the problem of over-tourism must be solved. Just emphasizing responsible tourism is not the best solution and a distribution policy could be an alternative way to solve the problem more effectively [26]. As we have seen, there are many ways to solve over-tourism problems, and temporal dispersion can be one of them. Although the effectiveness of temporal variance has not been validated in day tourism cases, as investigated in day tourism cases, studies have confirmed that temporal dispersion such as reducing the seasonality of tourism can be a solution of over-tourism [9].

In fact, many destinations use temporal distribution strategies to solve over-tourism. In Barcelona's Boqueria Traditional Market, only locals are allowed to see the market, and the time limit for entering groups is limited. In addition, Venice provided water bus priority boarding passes to local residents during rush hours. In Lisbon, they regulate operation hours for protecting central inhabited areas and they more actively protect those areas by inducing night tours in places where few residents live [9]. Especially, some famous destinations use night tourism as a visitor management strategy, for example, the Taj Mahal in India opens for night viewing every full moon day after 8:30 p.m. until 12:30 a.m., and in Mont St. Michel, France, abbey grounds are opened from 7 to 10:30 p.m. during the summer, which is the peak season.

In addition, various studies showed that the effort to solve over-tourism using temporal variance was significant. In Vermont, researchers found the factors which affect people to turn their intention to visit from peak times to non-peak times, such as variation of the entrance fee, and perception of crowdedness [10]. Other studies have found the characteristics of tourists who are less affected by seasonality. In a study in England, they were purposive tourists such as VFR (Visiting Friends and Relatives)tourists [11], and in Slovenia [27] and Sweden [28], the influence of seasonality was different according to nationality. Also, a study conducted in Nigeria suggested one way to overcome the seasonality issue during the off-peak season was through a family tourism business [29].

In addition, the study revealed that the morning-larks tended to pursue novelty more than night-owls, and the tendency to enjoy tourism activities was higher when the novelty-oriented trends were higher [30]. There was also a study that revealed that college students are interested in tourism after 12 a.m. [31]. It is also possible to develop night tourism targeting these specialty floors, and finding out potential targets that can be visited during non-peak hours can be an alternative to over-tourism at night.

3. Method and Materials

3.1. Study Area

Suwon Hwaseong Fortress was selected as a study area. It is the UNESCO World Heritage Site in the Republic of Korea. There are various types of tour programs for visitors including night tourism programs during the summer. For example, Suwon Cultural Heritage Night provides the opportunity to enjoy the night view of the fortress with special parades, and to experience the history and culture of Suwon (see Figure 1).
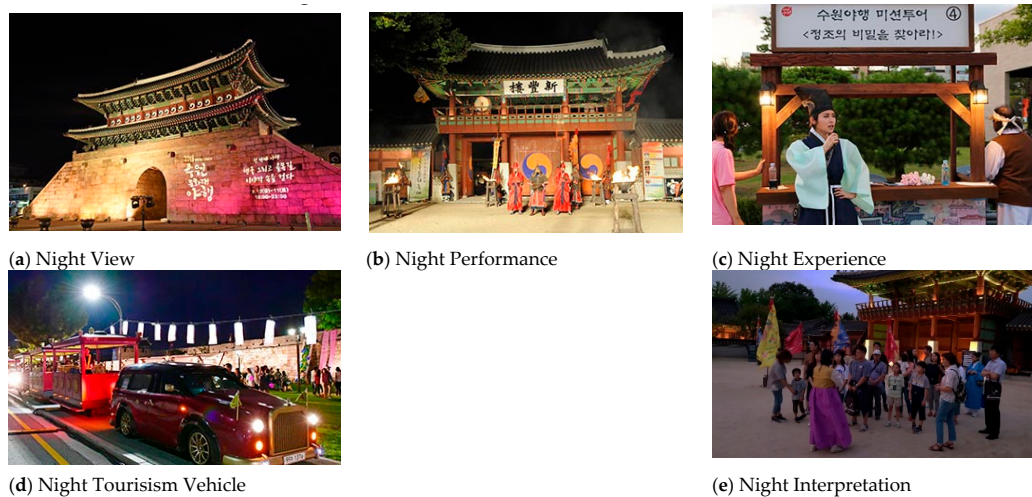

(**a**) Night View

(**b**) Night Performance

(**c**) Night Experience

(**d**) Night Tourisism Vehicle

(**e**) Night Interpretation

Figure 1. Various night tourism attractions in Hwaseong Fortress.

At present these night tourism programs are provided in partial areas only in summer which means providing at the limited time and place. By an exceeding the acceptable number of visitors in Suwon Hwaseong fortress at night, as shown in Figure 2, visitors are suffered from crowding. In other words, there is over-tourism. According to the Suwon Hwaseong night visitor survey [32], visitors' inconvenient experiences are about crowding, such as hardness to join programs and to take tourism vehicles because of crowding. In addition, many visitors asked to extend the running hours or to expand other seasons, to avoid the crowding.
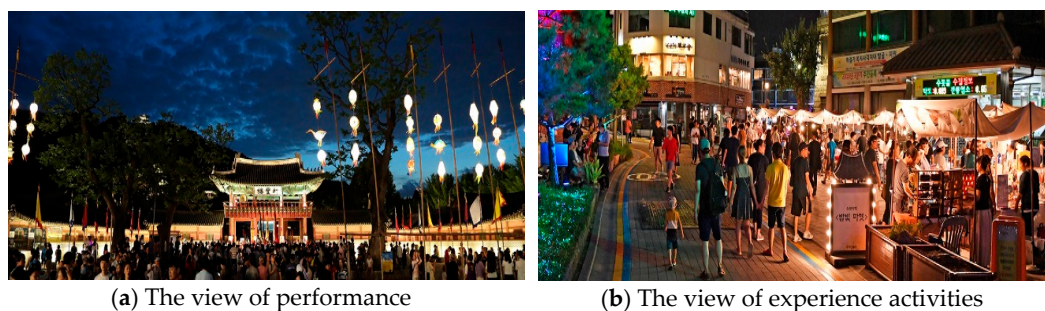

(**a**) The view of performance

(**b**) The view of experience activities

Figure 2. Over-tourism in Suwon Hwaseong Fortress at night.

3.2. Choice Experiment Analysis

In the present study, the possibility of visitor distribution was examined using CE to determine willingness to pay for night tourism at less preferred times and seasons. Based on marginal utility theory [33], CE estimates the marginal willingness to pay (MWTP) for various attributes that affect the value of goods and services [34], and is one of the most used methods for estimating the value of tourism resources and tourism products [8]. Due to its advantage of being able to estimate the willingness to pay for each attribute that affects the value of tourism resources, CE has been used in various tourism studies [8,34–40].

The willingness to pay for night tours of Suwon Hwaseong Fortress was obtained, and McFadden's conditional logit model (CL) was used to estimate the indirect utility function [33]. MWTP was calculated using the maximum likelihood estimator for each attribute and level. As all variables except for the price variables were binary variables, MWTP values for level 2 and level 3 of each attribute mean additional willingness to pay compared to level 1.

The application of CE requires the setting of attributes and levels that constitute the value of the tourism resource. The attributes and levels used to examine the willingness to pay for Suwon Hwaseong Fortress night tourism were set as shown in Table 1. These settings were in consideration of the specific attributes of Suwon Hwaseong Fortress night tourism as discussed previously in the Section 2.

Table 1. Attributes and levels for Choice Experiment.

Attribute	Level	Content
Night view	1	Basic lighting (street lighting, basic building lighting)
	2	Beautiful special lighting and night sculptures
	3	Real-time media performances at night using lights and sounds
Performance	1	None
	2	Small-scale performance (E.g., solo plays, etc.)
	3	Large-scale performance (E.g., martial arts, opera, etc.)
Experience activities	1	None
	2	5–10 minutes simple experience
	3	30-minute experience of various themes
Tourism vehicle	1	None
	2	Tourism vehicle on fixed course (E.g., Hwaseong sightseeing train)
	3	Tourism vehicle on free course (E.g., bicycle taxis)
Interpretation	1	None
	2	Yes
Entrance fee (per person)	1	5000 KRW (4.3 USD)
	2	15,000 KRW (12.7 USD)
	3	30,000 KRW (25.5 USD)

Considering the types of night tourism in the previous researches [20,21] and types of night programs which currently underway in Suwon Hwaseong, as well as domestic cultural heritage sites, the main attributes were derived. The attributes of Suwon Hwaseong Fortress night tourism include night view, performances, experience activities, rides, and interpretation. The payment vehicle utilized an entrance fee. Each attribute was divided into three levels, with the first level not including any additional content. At level 2 and level 3, additional content is provided.

In the present study, a key question for resolving over-tourism by visitor distribution is "What are the differences in willingness to pay for night tourism at less preferred times and seasons compared with others?" MWTP calculations using CE were used to compare groups that were derived as follows. First, willingness to pay was compared between two groups: Group A that prefers night tourism at the peak time of 6 to 10 p.m., and Group B that prefers night tourism at non-peak times. Second, willingness

to pay was also compared between Group C that prefers night tourism during peak seasons (spring, fall), and Group D that also prefers non-peak seasons. The results allow us to discuss the possibility of distributing tourists to less preferred times and seasons to overcome the problem of over-tourism.

3.3. Questionnaire Design and Data Collection

The choice set in the experiment questionnaires was based on level-specific combinations of attributes as seen in Table 1. A full factorial design of all 486 (35 × 2) choice profiles is not possible to consider. Thus, a fractional factorial orthogonal design is generally used [41,42]. In the present study, 18 profiles derived from an orthogonal design using SPSS (IBM, Armonk, New York, USA). 23 were used for the choice set. Survey respondents randomly selected 3 of these 18 profiles at each round, and either chose their favorite choice or chose none of them. The experiment was conducted in 6 rounds with all respondents. The number of valid responses was 563, with the total number of experimental responses at 3378.

The target population of the present study was night tourism visitors to Suwon Hwaseong Fortress who were over 19 years old. A pretest was conducted in order to increase the objectivity of the survey and to increase the validity of the questionnaire. After the revision of the questionnaire, the main survey was conducted. The survey was conducted on weekends and weekdays over 17 days in night tourism periods of Suwon Hwaseong Fortress, from 9–25 August, 2019, using face-to-face 1:1 surveys. Systematic random sampling was used at survey areas. In addition to CE items, the survey consisted of items about night tourism preferences, Suwon Hwaseong Fortress visiting behavior, and demographic characteristics. Each survey took about 15 minutes to complete.

4. Results

4.1. Sample Characteristics

Of all 563 respondents, demographic characteristics of the sample included more women (*n* = 343, 60.9%) than men (*n* = 220, 39.1%). The average age of participants was 39.9 years (SD = 12.57), with more visitors older than 30 (*n* =159, 28.2%) than those in their 40s (*n* = 155, 27.5%) or 20s (*n* = 120, 21.3%). Residents from the Suwon area (i.e., within 30 min; *n* = 280, 49.7%) and the Gyeonggi Province (i.e., 30 min to 1 h; *n* = 175, 31.1%) accounted for more than three-quarters of the sample (80.8%), indicating that visit rate was highest among residents within one hour travel time (i.e., local visitors). College attendance/graduation was the most common educational level (*n* = 347, 61.6%) and household income was more than 4 thousand dollars a month (n = 323, 57.4%), which indicated a high proportion of highly educated and high-income visitors. 48.3% of visitors had visited Suwon Hwaseong Fortress three times or more during the past year (i.e., excluding first visit and one-time revisit). In relation to night tourism, 80.2% of respondents preferred night tourism between 6 and 10 p.m., and 10.8% for 10 –12 a.m., and 7–9 a.m. In terms of seasons, 67.7% of respondents only preferred the peak seasons of spring and fall, and 32.3% also preferred the non-peak seasons of summer and winter.

4.2. Visitors' WTP for Less Preferred Times

Groups were divided according to their preferred times for night tourism, with Group A's preference for peak times of 6 –10 p.m., and Group B's preference for non-peak times of 7–9 a.m. and 10 p.m. to 12 a.m. (Table 2). A comparison of the frequency of visits did not show a large difference in that 48.2% of Group A visitors who prefer peak times visited Suwon Hwaseong Fortress more than three times in the past year, whereas 49.2% of Group A visitors who prefer non-peak times visited more than three times.

Table 3 showed the conditional logit model estimation results of the selection experiments for each group. First, the coefficient estimates of payment amount are negative and statistically significant at the p < 0.01 significance level. Thus, when other conditions are held constant, the larger the amount of payment, the lower the probability of selection, indicating rational decision-making has occurred in

the experiment. Again, the coefficient estimates by attribute and level were positive and statistically significant (except for interpretation). That is, when other conditions are constant, the probability of choosing another alternative (level 2 or level 3) increases compared to the baseline (level 1).

Table 2. Conditional Logit Model Estimation Results by Preferred Time Group.

Attribute and Level		Coefficient [1]	
		Group A (Prefers Peak Times)	Group B (Prefers Non-Peak Times)
Payment Amount		-4.7×10^{-5} *** (2.5×10^{-6})	-3.2×10^{-5} *** (6.5×10^{-6})
Night view	Level 2	0.571 *** (0.059)	0.407 ** (0.165)
	Level 3	0.569 *** (0.06)	0.408 ** (0.165)
Performance	Level 2	0.903 *** (0.062)	0.880 *** (0.171)
	Level 3	1.034 *** (0.059)	0.777 *** (0.166)
Experience activities	Level 2	0.721 *** (0.061)	0.547 *** (0.168)
	Level 3	0.907 *** (0.06)	0.744 *** (0.159)
Tourism vehicles	Level 2	0.817 *** (0.06)	0.943 *** (0.171)
	Level 3	0.870 *** (0.06)	0.938 *** (0.166)
Interpretation	Level 2	0.357 *** (0.053)	0.222 (0.145)
Log likelihood		−3,136	−403
Number of observations		12,028	1460

[1] Parentheses indicate standard errors, ** $p < 0.05$, *** $p < 0.01$.

Table 3. Marginal willingness to pay (MWTP) estimation results by preferred time.

Attribute and Level		MWTP [1]		MWTP Gap [2] (B Group – A Group)
		Group A (Prefers Peak Times)	Group B (Prefers Non-Peak Times)	
Night view	→ Level. 2	12,535 [9879–14,452]	11,502 [4286–24,273]	−1,032
	→ Level. 3	11,506 [9858–14,373]	13,428 [4321–23,898]	1,922
Performance	→ Level. 2	20,350 [16,574–21,945]	18,772 [17,361–45,828]	−1,578
	→ Level. 3	23,737 [19,436–24,667]	18,646 [14,925–40,707]	−5,091
Experience activities	→ Level. 2	15,612 [13,021–17,639]	14,849 [8,439–29,860]	−763
	→ Level. 3	19,893 [16,803–21,777]	18,813 [14,363–38,024]	−1,080
Tourism vehicles	→ Level. 2	16,647 [15,069–19,650]	21,741 [19,860–46,351]	5,094 **
	→ Level. 3	18,057 [16,086–20,904]	21,947 [19,669–46,522]	3,891
Interpretation	→ Level. 2	7924 [5657–9503]	6706 [−594–16,038]	−1,218

[1] Willingness to pay is a payment amount that one is willing to pay as content is added compared to level 1. Square brackets indicate 90% confidence interval using the Krinsky–Robb [43] parametric bootstrapping. [2] ** The different in payment amount is statistically significant at the 0.10 level.

MWTP estimation results for each group are summarized in Table 4. Overall, MWTP increases from level 2 to level 3, but not at a statistically significant level. Group B that prefers non-peak times has a relatively lower MWTP, except for rides. However, as the differences are small, Group B still demonstrates the willingness to pay, and the dispersion of visitors to non-peak times would be possible through discounts and product differentiation.

Table 4. Conditional logit model estimation by preferred seasons group.

Attribute and Level		Coefficient [1]	
		Group C (Prefer Peak Seasons Only)	Group D (Prefer Non-Peak Seasons Also)
Payment Amount		-5.3×10^{-5} *** (2.9×10^{-6})	-3.2×10^{-5} *** (3.9×10^{-6})
Night view	Level 2	0.630 *** (0.069)	0.439 *** (0.096)
	Level 3	0.611 *** (0.071)	0.461 *** (0.096)
Performance	Level 2	0.938 *** (0.072)	0.849 *** (0.098)
	Level 3	1.054 *** (0.069)	0.918 *** (0.095)
Experience activities	Level 2	0.664 *** (0.071)	0.777 *** (0.099)
	Level 3	0.884 *** (0.07)	0.910 *** (0.095)
Tourism vehicles	Level 2	0.867 *** (0.069)	0.754 *** (0.1)
	Level 3	0.875 *** (0.069)	0.870 *** (0.096)
Interpretation	Level 2	0.275 *** (0.062)	0.466 *** (0.083)
Log likelihood		−2,371	−1,160
Number of observations		9,136	4,352

[1] Parentheses indicate standard errors, *** $p < 0.01$.

The order of preference for attributes differs between the two groups with MWTP for level 3 in Group A that prefers peak times in the order of Performance > Experience activities > Paid rides > Night views > Interpretation. In contrast, Group B's order of preference is Tourism vehicles > Performance > Experience activities > Night view > Interpretation. Thus, willingness to pay for performances and rides varies the most depending on the preferred time of visits. Group B visitors who prefer non-peak times have a relatively lower willingness to pay. However, considering the margin of error, the differences in payment amount in willingness to pay are not statistically significant at the 0.10 level. Group B also indicated a higher willingness to pay for Tourism vehicles, and this difference was statistically significant.

4.3. Visitors' WTP for Less Preferred Seasons

Based on preferred seasons for night tourism, groups were divided into Group C that prefers only peak seasons (spring, fall), and Group D that also prefers non-peak seasons (summer, winter). Due to seasonal characteristics of Korea, visitors are mainly concentrated during the seasons of spring and fall which are the most pleasant times to enjoy night sightseeing. Considering the frequency of visits, 46.5% of Group C visitors who only prefer peak seasons had more than three nights visits to Suwon Hwaseong Fortress, whereas 52.2% of Group D visitors who also prefer non-peak seasons had more

than three visits. This indicates that many visitors who also prefer non-peak seasons are loyal visitors to tourist attractions. In contrast to the results of the MWTP for less preferred times, the MWTP in the group that also prefers non-peak seasons may be higher.

The conditional logit model estimation results of the CE for each group are summarized in Table 5. The coefficient estimates of the payment amount in both groups are negative and statistically significant at the 0.01 level, indicating rational decision making occurred. All attribute and level coefficient estimates in both groups were positive and statistically significant.

Table 5. MWTP estimates for preferred easons.

Attribute and Level		MWTP [1]		MWTP Gap [2] (D Group − C Group)
		Group C (Prefer Peak Seasons Only)	Group D (Prefer Non-Peak Seasons Also)	
Night view	→ Level. 2	11,975 [9719–14,401]	13,903 [8586–20,350]	1928
	→ Level. 3	11,613 [9342–13,993]	14,608 [9375–20,881]	2995
Performance	→ Level. 2	17,838 [15,287–20,713]	26,891 [20,256–35,949]	9053
	→ Level. 3	20,051 [17,573–22,839]	29,091 [22,719–37,810]	9039
Experience activities	→ Level. 2	12,637 [10,369–15,036]	24,620 [18,664–32,160]	11,983 **
	→ Level. 3	16,805 [14,391–19,368]	28,843 [22,446–37,422]	12,037 **
Tourism vehicles	→ Level. 2	16,483 [14,217–18,879]	23,871 [18,081–31,209]	7388
	→ Level. 3	16,650 [14,292–19,182]	27,573 [21,476–35,590]	10,922 **
Interpretation	→ Level. 2	5232 [3249–7222]	14,757 [10,042–20,373]	9525 **

[1] Willingness to pay is a payment amount that one is willing to pay as content is added compared to level 1. Square brackets indicate 90% confidence interval using the Krinsky–Robb [43] parametric bootstrapping. [2] ** The different in payment amount is statistically significant at the 0.10 level.

The difference in MWTP in groups divided according to preferred seasons was greater than in groups divided according to preferred times. Group D that also prefers non-peak seasons was more willing to pay than Group C that only prefers peak seasons. In particular, MWTP was 1.7–2.8 times larger for paid experience activities, tourism vehicles, and interpretation, and these differences were statistically significant. The payment amount that visitors were willing to pay at level 3 were highest in the order of Performance > Experience activities > Tourism vehicles > Night view > Interpretation.

5. Discussion

The present study was an empirical examination of temporal and seasonal distribution that is considered to be a possible solution for over-tourism. The possibility of distribution was tested by comparing willingness to pay between peak and non-peak times during night tourism activities at Suwon Hwaseong Fortress, a UNESCO World Heritage site. The contribution of this study is to expand the scope of the study of over-tourism to the overlooked field of night tourism.

The results and implications are as follows. First, in terms of frequency of night tourism visits, the group that also preferred the non-peak seasons group had higher visiting frequency compared to the group that only preferred peak seasons. There was, however, no difference between peak time preferred group and non-peak time preferred group. The result of the temporal comparison indicates that, regardless of preferred time zones, night tourism activities can only be offered until 10 p.m. That is, visitors to the study site are not familiar with various night zones. However, considering Mont-Shell Michel in France and the Taj Mahal in India, which are open from sunset to sunrise, it will be necessary to examine the possibility of expanding opening hours. The result of the seasonal comparison is in line

with substitutability that local residents and regional visitors can be made to visit during non-peak times (i.e., mornings, evenings, and weekdays) rather than at peak times [12].

Second, the comparison of willingness to pay for night tourism products between the group that preferred peak times and the group that preferred non-peak times showed that the willingness to pay was lower for all products except for tourism vehicles in the non-peak times group. The reason why willingness to pay of the non-peak times preferred group was high for tourism vehicles is that non-peak times are non-operating time zones at this site. Also, the number of seats and operating time zones of tourism vehicles are also fixed. Thus, there is an additional willingness to pay for currently non-operating time zones and to reduce inconveniences caused by overcrowding. There was also a positive willingness to pay for all attributes in the case of non-peak times preferred group. This suggests that visitors will still visit even if they are distributed to different time zones. It is thus necessary to expand gradually from the provision of services that do not cost a lot even during non-peak times. Tourism vehicles for which visitors indicate a high willingness to pay maybe a key product to attract tourists during non-peak times. This study expands the scope of night tourism with an expansion of temporal range, supporting previous studies which propose an expansion of night tourism targets [14,23].

Third, in relation to seasonal distribution, a comparison of the group that prefers only peak seasons and the group that also prefers non-peak seasons showed that the latter group showed a higher willingness to pay for all attributes. Specifically, willingness to pay was high for experience activities, tourism vehicles, and interpretation, suggesting a high preference for the avoidance of overcrowding inconveniences that occur during peak seasons for these contents. The high frequency of visits of the group that also prefers non-peak seasons seems to be influencing their high willingness to pay. These findings expand Hospers' [5] examination of the usefulness of temporal distribution by comparing visitors' willingness to pay, and provide practical implications for the applicability of temporal distribution.

6. Conclusions

For sustainable night tourism, the management of over-tourism is important. This study examined the possibility of temporal and seasonal distribution as a solution for over-tourism in night tourism by estimating the willingness to pay for peak and non-peak times of visitors to a World Heritage site. This is important in terms of sustainable development of night tourism, and the implications of this study are as follows.

First, temporal and seasonal distribution were proposed as a solution for over-tourism in night tourism. Existing over-tourism research has been conducted in a case-by-case manner without empirical testing of methods that have been carried out under the general concepts of crowding or displacement, rather than considering site or visitor characteristics [2,5,9]. However, distribution criteria should be based on an understanding of both the characteristics of the destination and its tourism resources, as well as the target market. This study thus proposed a specific distribution method based on characteristics of night tourism. Night tourism refers to tourism at all other times during which day tourism occurs. With developments in transportation, one can easily leave destinations, and the benefits of night tourism such as overnight lodging do not always occur. Late night times (i.e., after 10 p.m.) or early morning times (i.e., earlier opening times) may be effective ways of temporal distribution. Seasonal distribution methods were also presented by comparing visitors who prefer non-peak seasons in addition to general peak seasons. These solutions can be effective in attracting additional tourists by providing differentiated tourism products that consider seasonal characteristics.

Second, the choice experiment method was used to examine in more detail the distribution of night tourism visitors. Choice experiments allow estimations of the MWTP according to each attribute and level of night tourism products. The findings suggest that there are restrictions on service provision for temporal and seasonal distribution, and that emphasis should be placed on interpretation, tourism vehicles, and experience activities during which the inconveniences of overcrowding are especially felt.

Third, the applicability of temporal and seasonal distribution was tested through an examination of visitors' willingness to pay during peak or non-peak times. The distribution of visitors to non-peak times is aimed at sustainable development of target resources [9] in terms of preventing peak season crowding, improving satisfaction, and reducing fluctuations in demand, through an easing of over-tourism in night tourism. In addition, it is possible to broaden the field of night tourism by targeting time zones during which night tourism content is not yet provided. Thus, in order to avoid crowding during peak times and lower quality tourism experiences, there is a need to provide both pleasant and differentiated experience activities during non-peak times for visitors.

Finally, similar to previous studies that examined the characteristics of potentially distributable groups [11,12,27], this study examined characteristics of the group of visitors that preferred non-peak times. According to Manning [12], visit frequency may still be high for local residents and regional visitors even if time zones are changed. Providing support for this, visitors who also preferred non-peak seasons had a high number of night tourism experiences at the study site (22.4 average visits vs. 13.2 average visits for peak times). The non-peak preference group can be seen as loyal customers for whom various strategies such as discounts, and time zone or season specific services and product development are needed. The results of this study indicated a high willingness to pay for night tourism experience activities, tourism vehicles, and interpretation, allowing specific distribution strategies to be established.

Given the exploratory nature of this study in which just the possibility of distribution was tested, the intention to visit based on specific services/products was not directly examined. For actualization of distribution, more detailed research is needed on so-called loyal customers who are likely to visit frequently. Through big data analysis, visit patterns by times/seasons should be obtained, and basic distribution data should be prepared in order to break down time zones and seasons in more detail. Since this study is about the specific case on over-tourism of night tourism, to generalize the results more researches are needed in other cases. In addition, to introduce a temporal distribution as a solution for over-tourism, the incentives for workers and local residents, who provide the services, should be considered. Despite theoretical and practical limitations, the present study is meaningful in that it pursues sustainable development through elimination of over-tourism in night tourism at a World Heritage site by testing the possibility of distribution in more detail using visitors' willingness to pay.

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