

# Post Utilization of the Venues of the 31st World University Summer Games

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**Abstract:** This study explores the post-game utilization of venues at the 31st Summer Universiade and assesses respondents' satisfaction with venue services. The study found that although large-scale sports events such as the Summer Universiade are held in China, the issue of venue utilization after the games has become an urgent problem that needs to be solved. Although a lot of manpower and material resources have been invested in the construction of modern sports venues, they often only focus on the requirements during the event and ignore the operation and utilization of the venues after the game. In this context, through a survey and analysis of 278 respondents, this study found that venue infrastructure and recreational and leisure facilities scored higher, but other aspects such as venue facilities, accessibility, service personnel, catering services, etc. scored lower. Respondent satisfaction is positively correlated with gender, but not significantly correlated with other demographic characteristics such as age, education, occupation, etc. In social services, product appearance is positively evaluated, but functionality and reliability are not. Finally, the study found that only reliability and transportation accessibility were positively related to satisfaction, emphasizing the important impact of transportation on venue reliability. In summary, this study provides important reference value for solving the post-match utilization issues of large-scale sports event venues. It is recommended that while improving service levels and facility quality, strengthen the function and reliability of social services and pay attention to transportation accessibility, to improve the satisfaction of using the venue after the game.

**Keywords:** University Games; Post-game Utilization of Venues; Satisfaction Evaluation.

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## 1. Introduction

The World University Summer Games, in turn, is a large-scale comprehensive international sports event organized by the International University Sports Federation (FISU). The goal is to promote friendship, solidarity and sports exchanges among university students, and to showcase a platform for youth sports talent. The 31st World University Games was held in Chengdu, from the opening to the closing of the Universiade, only a short twelve-day period, but before the preparations made for it is a long time, the construction of the Universiade venues is the most important part of the process of preparation for the Universiade. In order to successfully host the 31st Universiade, the host city of Chengdu adhere to the "green, thrifty, must" principle of running the games, the new 13 Universiade competition venues, upgrading and renovating 36 existing sports venues. The 31st Universiade has been successfully concluded, and the competition venues will face the problem of post-game development and utilization that the Olympic Games and other large-scale events will face.

With the vigorous and rapid development of China's sports industry, many large-scale sports events in the world have been held in China, the increase in the number of large-scale events, the number and quality of China's large sports venues will face more requirements. The post-event development and utilization of venues after large-scale events has always been a worldwide problem, and if there is no scientific post-event management and operation, it will inevitably have a certain negative impact on the economy of the host city. In the event venues on the construction of excessive investment in large sports events host government, but also due to the poor operation of the stadium and bear a heavy economic burden. How to make it not only to adapt to the requirements of large-

scale events, but also to meet the fitness needs of urban residents, to create good economic and social benefits, not to bring a heavy economic burden to the government, is the current stage of the community's common concern.

Throughout the course of the World University Games, each Universiade host city has invested a lot of manpower and material resources in the construction of venues for the General Assembly, and is committed to the construction of highly modernized sports venues, but it is often the case that they pay attention to the requirements of the Universiade when it is held, and there is very little mention of the post-Games operation and utilization of the venues. In order to effectively use the existing venue resources, reduce the financial and economic pressure on the state and the government, improve the utilization rate of the venue's resources, and improve the economic and social benefits of the venue, the development and utilization of large sports venues after the games, market-oriented operation becomes important. The reason why most of the competition venues are set in colleges and universities is that we hope that these venues can become the teaching venues of colleges and universities after the competition, and also provide fitness venues for the residents of the surrounding communities, so as to improve the utilization rate after the competition, and it is an important innovation to solve the problem of the utilization of the venues after the competition.

This study will be conducive to the relevance of the post-games' utilization of the World University Games venues. The study on the satisfaction of the post-games' utilization of the Universiade venues analyzes the current situation of their utilization, advantages and disadvantages, and fully exploits their utilization value after the Universiade, which not only provides practical countermeasures for the 31st Universiade

venues, but also provides references for the post-games utilization of other Universiade venues.

Theoretical significance of the research on the post-game utilization of large sports stadiums. Theoretical research on the post-game utilization of large sports venues in China is mostly theoretical, and the theoretical results of case studies are relatively few. This paper takes the university stadium as the starting point of case study to further enrich the results of domestic case study on the post-game utilization of large stadiums. It is also necessary to further discover new angles of post-game stadium utilization through in-depth investigation and research.

A reference for the development of sports facilities in other parts of the country. Cities in the construction of sports facilities aimed at meeting the needs of the Games, venues are built to high standards, large scale, and can become a landmark building of the city or region. However, the lack of support for sustained activities after the games has caused the venues to be idle to varying degrees, wasting resources and not giving full play to the role that the venues should play. Discussing the post-games utilization of the Universiade venues is an important reference value for the selection and construction of venues for large-scale sports events to be held in China in the future.

The planning and design of the venues should be conducive to the sports competitions of the Universiade, while giving full consideration to the utilization of the venues after the competitions. In order to meet the technical requirements of the International Universiade during the competition under the premise of maximizing the social benefits of the competition venues, so that it is combined with the general public's daily fitness needs, and to facilitate the development of post-game activities such as culture, sports, exhibitions, trade, tourism, entertainment and other activities. Secondly, adhere to diligence and thrift, and refrain from extravagance and waste. All venues and facilities to build the size, location, the number of one-by-one demonstration, can use the existing venues for remodeling, can be expanded on the new, can engage in temporary venues will not engage in permanent venues.

The researcher chose this topic is based on his master's thesis, "Survey on Service Satisfaction of Badminton Venue in Chengdu City," based on the expansion and extension of the research, but also a step forward to do a good job in quantitative research on venue satisfaction, hoping that through the research can further enhance the operability of the venue satisfaction. However, the doctoral dissertation research is different from the previous master's thesis stadium satisfaction research, now do the stadium satisfaction research is more detailed research survey items, research categories, stadium attributes of the construction and so on.

Both the pre-game construction and post-game development and utilization of venues are huge issues for Chengdu, the host city of the 31st World University Games. The 31st World University Games will involve a huge investment in the construction of the stadiums, most of which will be funded by the government. It would be a huge waste of resources if the various large-scale stadiums built at great cost could not be operated properly and the resources could be fully utilized after the games. Therefore, the purpose and significance of this paper is to further study the post-game utilization and operation of university sports venues, and to classify the competition venues into comprehensive sports venues, university sports venues and private sports venues

according to the operation status quo and the different management subjects, and to analyze the opportunities brought by the Universiade for these venues, and to summarize the countermeasures related to post-game development and utilization of various types of stadiums under the classification, so as to improve the utilization rate of each venue, and to provide a good opportunity for the university to develop and utilize the resources of each venue. This will improve the utilization rate of each stadium, bring economic and social benefits to each stadium, and reduce the financial pressure of the government.

The Basic Public Service Specification for Large Stadiums and the Comprehensive Evaluation System for Operation and Management of Large Stadiums issued by the General Administration of Sport of China on September 12, 2014, require regular evaluation of customer satisfaction and timely improvement based on the feedback to improve the service level. In the process of socialized service, due to the special nature of university asset operation, the opening of university stadiums to the society will face many challenges. On the one hand, the opening of college sports stadiums to the society inevitably involves market-oriented operation, and appropriate charges are needed to make up for certain costs of facilities, equipment and personnel. However, on the other hand, relevant documents such as Education and Finance [2017] No. 9 require universities directly under the university to "strengthen the management of asset allocation" and "standardize the behavior of asset leasing and lending". Therefore, in the process of implementing the responsibility of asset management, universities will strictly prohibit the marketization of quasi-public products such as sports stadiums, and in the process of grasping the balance between opening to the public and its public welfare attributes, it will inevitably produce management difficulties and public dissatisfaction. This study hopes that through the satisfaction survey of off-campus public and on-campus teachers and students on the socialized services of college sports venues, researcher can understand more clearly the public's needs and satisfaction level of the socialized services of college sports venues at the present stage, study the paths to improve the public satisfaction of the socialized services of college sports venues, and study the methods to optimize the level of the socialized services of college sports venues, so as to help the college sports venues to carry out scientific management, according to the public's needs, combined with their own actual situation, targeted to provide sports public services, improve public satisfaction.

Chengdu Universiade has a total of 49 venues, including 13 new venues and 36 renovated venues. Chengdu has invested more than 18 billion yuan in the construction of large-scale stadiums, of which 2 new venues and 22 renovated venues are school venues, which themselves function as sports venues in schools and the surrounding areas, providing public sports services for the public.

June 2021 "Chengdu Universiade Beneficial Action Plan" was formally issued, requiring the Universiade venues eligible for opening to the public to open to the public as much as possible for free or in lieu of fees to meet the public's fitness needs. These school venues open to the public to provide public sports services to the public is its own mission, the future will face the problem of how to do a good job of socialized services.

London Olympic venues in the post-Olympic era focus on the combination of operation and the organization of public

service activities, and such an initiative effectively implements the post-competition sustainable use of Olympic venues (Zhao, J., Kou, X., Tian, J., & Chen, C. ). Zhang X (2018) analyzed the connotation of public services in college sports. From the perspective of the reality of the socialized service of university sports venues, Zhen, M., Wang, F., Jiang, A., & Song, Y. (2022) pointed out that some universities in economically developed regions implemented the opening of venues to the outside world at an early stage, hiring professional teachers and students from their own schools to serve as technical guides. While some areas such as Yuncheng, Shanxi, the degree of openness of college sports venues is not high An, D., & Xu, J. (2022), some are not open to the public, and most of the open venues are mainly open without compensation, which requires optimization of the management, taking into account the public welfare and economy. Bei, T. (2018) believe that it is necessary to strengthen the joint participation of teachers, students and social people to carry out the evaluation of university sports public services. Chen F. (2020) believes that university sports venues are oriented to the social public in the process of socialized services, and they should be aimed at service, and provide services with full consideration and in response to the needs of consumers. Gao W.(2020)believes that the actual work can be understood from the feedback of teachers, students and the public, and the service level can be improved accordingly.

Leng Teng. (2017) analyzed the research of developed countries and found that some countries pay more attention to the effective promotion of management results by the performance evaluation of organizations providing sports public services. Liu, N., & Li, R. (2022), in terms of improving the recognition of the supply of university sports venues and the satisfaction of people's participation, specifically proposed that new media technology can be combined to ensure the effectiveness of communication information and guide public opinion towards positivity. Sun E, Zhong B, (2018). constructed and validated a student satisfaction model for college sports hall services based on the perspective of student satisfaction.

Wang Yaobin (2017) put forward relevant suggestions through the operation and management of venues after the Beijing and London Olympic Games: the government set up a special topic to further strengthen the research; the establishment of a professional non-profit management company for large sports venues. Cao X.(2019) proposes to innovate the operation mode and develop the "Internet + operation mode of sports venues".

Coates, D. (2023) argued that Guangzhou University City Sports Center should develop differentiated competitive advantages according to its own resource conditions, establish its own brand, and position itself around its own image to attract consumer groups. Emery, C. A., & Pasanen, K. (2019) proposed that the post-competition utilization of sports venues for the Beijing Winter Olympic Games should pay attention to the adaptability of the selection of governance subjects, the clear relationship of rights and responsibilities between governance subjects and governance capacity. Wu Can and Feng H.(2018) proposed that we should cultivate stadium management talents in various ways, create event IP, standardize the service quality of stadiums, and improve the management level. The establishment of strategic alliances to improve the operational efficiency of stadiums and other countermeasures and recommendations.

To sum up, at present, some domestic stadiums are still facing problems such as lack of pre-game planning and development of venues, low level of operation and management of venues, low utilization rate of venues, and lack of diversified marketing means. According to the above relevant research, sports venues in the early stage of design should be scientific, targeted post-game utilization planning, the implementation of venue design, construction, operation and management integration mode. Secondly, the post-game operation of the stadium should combine the stadium with entertainment, leisure, tourism, etc., to create a product industry chain; increase the revenue channels of the stadium through multi-industry operation, intangible asset development, etc., and reduce the post-game operating costs of the stadium.

JIANG L,(2019), in his study of the post-competition utilization of the Salt Lake City Winter Olympics, proposed that we should start from the market; attract diversified main bodies and participate in the investment of the venues; and clarify the functional positioning, focusing on the multifunctionality of the games and the long-lasting use of the games. Richard & Johannes .(2018) studied the construction and legacy of the World Cup stadium in Cape Town, South Africa, and concluded that the legacy of the stadium is further - subdivided into hard legacy (stadium) and soft legacy (cultural impact). Tan D.(2018), on the other hand, argues that American stadiums will not adopt a fixed operational model in their operations, but rather an operational model that is mostly consumer-oriented in behavior, diversified in business activities, and diversified in marketing strategies.

According to the above relevant research results, it can be seen that foreign stadiums are characterized by a hundred schools of thought compared to domestic ones, and the operation modes adopted are different according to the economic characteristics of each country. Although we can't copy their operation mode completely, we can find the experience worth learning in them, and provide new ideas for the post-game utilization of domestic stadiums.

Consumer Satisfaction marketing term that refers to a major concept in the field of marketing and consumer behavior. Dardozo in 1965 for the first time in marketing after the concept of consumer satisfaction, it has been highly valued and generally recognized by the academic community.

Satisfaction theoretical frameworks are a structured approach used to study and explain people's satisfaction with products, services or experiences in different contexts. These frameworks typically include a range of factors and variables that influence the level of satisfaction of an individual or group. The following is a generalized theoretical framework for satisfaction. Expectations: Individuals usually have certain expectations before purchasing a product or using a service. These expectations can be formed based on advertising, word of mouth, personal experience, and other factors. The theoretical framework of satisfaction usually considers the relationship between expectations and actual experience.

Actual experience is the emotions and perceptions that individuals feel when using a product, service, or participating in an experience. This includes the quality, performance, and convenience of a.

Perceived quality is an individual's subjective evaluation of the quality of a product or service. This may involve factors such as product a, etc.

Perceived value is an individual's view of the value for money of the product or service purchased. This relates to factors such as price, quality, and functionality.

Satisfaction is an individual's overall feeling about the outcome of a purchase decision. Satisfaction is usually a comprehensive assessment that takes into account expectations, actual experience, perceived quality and perceived value.

Loyalty indicates an individual's willingness to make repeat purchases or continue to use a product or service. High levels of satisfaction are usually associated with high levels of loyalty.

Complaint Behavior is the action an individual takes in the event of dissatisfaction, such as filing a complaint with the company. This can be an indicator of satisfaction.

Word of Mouth is when individuals share their experiences and opinions verbally or through social media. Customers with high levels of satisfaction are more likely to be active word-of-mouth communicators.

Based on the need of the study and the research results of others, my study is through the 31st World University Summer Games venues post-event utilization satisfaction, which is measured through the dimensions of venue infrastructure, venue support facilities, transportation accessibility, service staff, food and beverage services, entertainment and leisure facilities, and information communication, and then provide a reference for the 31st World University Summer Games venues post-event utilization.

## 2. Research Design

Quantitative analytical research using a descriptive comparative research design is an important methodology that allows researchers to gain insight into a particular phenomenon or problem, rather than just measuring and comparing data. Problem. When using a descriptive research design, the problem context and research purpose of the study first need to be clearly defined. This helps to ensure that the focus of the study is clear and can provide detailed information about the particular phenomenon. Data collection methods: Descriptive research usually relies on quantitative data collection. The researcher needs to choose appropriate data collection methods, such as questionnaires, experimental observation, and database analysis. These methods should match the research questions and objectives. Sample selection: In quantitative analysis, sample selection is crucial. Researchers need to select representative samples to ensure that the findings are generalizable and generalizable. Methods such as random sampling and stratified sampling can help achieve this goal. Data Analysis: One of the key parts of descriptive research design is data analysis. This includes the choice of statistical methods such as descriptive statistics, frequency analysis, correlation analysis, etc. These analyses help the researcher to understand the distribution and associations of the data so that the research questions can be better answered. Interpretation of results: after arriving at the results of quantitative analysis, the researcher needs to interpret these results. This may involve graphical representation of the data and relating the results to the research questions and objectives to provide insights and conclusions.

This research takes Chengdu "Universiade" large sports venues after the games as the research object. Specific investigation object selection to Chengdu "Universiade"

reconstruction of large stadiums in colleges and universities, selecting the most representative: Huaxi Campus Gymnasium of Sichuan University, Electronic Science and Technology University of Qingshuihe Campus Gymnasium, Southwest University of Finance and Economics Guanghua Campus Gymnasium, Southwest Jiaotong University Hipu Campus Gymnasium, Chengdu University Gymnasium, Xihua University Gymnasium and other six College stadium specific analysis of the object.

## 3. Sampling Method

This study used a self-administered questionnaire as the main data collection tool, which is based on different questionnaire collections as well as a variety of different research perspectives, and was presented to the research consultant prior to distribution to the target respondents.

Content validation and reliable verification by experts from research sites and academia. The researcher took into account the recommendations and suggestions of the consultants and experts to improve the questionnaire it develops. In addition, the researcher will utilize the problem statement, conceptual and theoretical frameworks, relevant literature and research presented in this study as guiding tools for the development of the instrument.

Two questionnaires were used in this study. The first questionnaire is composed of two parts: the first part is the profile of the respondents, including age, gender, education and so on, respectively; the second part is the evaluation of the satisfaction of the post-game utilization of the venues of the 31st World University Summer Games in terms of the facilities of the venues, the accessibility of the transportation, the service staff, the food and beverage service, the recreation and leisure facilities, and the communication of information. The second questionnaire mainly focused on the measurement and evaluation related to the survey and research of socialized services for the post-games' utilization of the venues.

Random sampling method is a statistical method used to select a sample from a total population in order to obtain representative data in the sample without introducing bias or subjectivity. Simple random sampling method is used in this study: a sample is randomly selected from a total to ensure that each individual has an equal chance of being selected. Implementation: a random number generator can be used to randomly select individuals, or the individuals in the overall population can be sequentially numbered and then a random number table or random number generator was used to select the sample.

**Table 1.** The total population 1000 athletes and the sample size is 278, using Qualtrics Calculation.

Events	Repeation	Sample Size
Badminton	137	100
Volleyball	86	70
Table tennis	150	108
Total population (1000)	1000	278

## 4. RESULTS AND DISCUSSION

In this chapter, the outcomes derived from the survey and data collection conducted in the study are presented. These findings are then followed by a subsequent discussion that

elucidates and establishes relationships and associations between these results and the study's objectives, as well as existing research.

### 1. Demographic Profile of the Respondents

After having completed the data gathering process for the study using a self-administered questionnaire, the results present information garnered from 278 respondents. To be more specific, these were athletes that took part in the 31st World University Summer Games, in the fields of badminton, volleyball, and table tennis.

**Table 2.** The results of the study were completed using a self-administered questionnaire

Category	Frequency	Percentage
Sex		
Male	147	(52.88)
Female	131	(47.12)
Age (years)		
Under 18	2	(0.72)
18 – 27	66	(23.74)
28 – 37	72	(25.90)
38 – 47	63	(22.66)
Over 47	75	(26.98)
Educational Attainment		
Bachelor's Degree	2	(0.72)
Master of Arts	146	(52.52)
PhD	130	(46.76)
Occupation		
Student	138	(49.64)
Coaches	140	(50.36)
Amount of Money Spent per Month		
CNY100 and below	67	(24.10)
CNY 101 – 300	59	(21.22)
CNY 301 – 500	70	(25.18)
CNY 500 above	82	(29.50)
Length involved in sports		
Less than 1 year	6	(2.16)
1 – 3 years	67	(24.10)
3 – 5 years	73	(26.26)
5 – 7 years	72	(25.90)
More than 7 years	60	(21.58)
Purpose of participation in sports		
Exercise	63	(22.66)
Hobbies	50	(17.99)
Socializing	60	(21.58)
Recreation	55	(19.78)
Improvement of sports skills	48	(17.27)
Others	2	(0.72)
Frequency of Participation in sports		
1 time	3	(1.08)
2 times	87	(31.29)
3 times	90	(32.37)
More than 3 times	98	(35.25)
Program		
Badminton	100	(35.97)
Table tennis	108	(38.85)
Volleyball	70	(25.18)

To further describe the demographic profile of the respondents, Table 2 presents the detailed number and frequency of these based on various categories. Namely, these categories are sex, age, educational attainment, occupation, amount of monthly expenses spent (in CNY), time involved in sports, their purpose of participation in their respective

sports field, the frequency of their participation in their sport, and lastly, their program.

To start, when looking further in the results presented in Table 1, it can be seen that a greater portion of the respondents were male, which made up 53% of this. On the other hand, 47% were female. This then shows that perhaps there is a need to do further spatial analysis in the venue of interest, particularly for assessing the equity of males and females. There is a possibility that micro-level practices that preserve male or a single gender dominance is persisting, which is important to evaluate in community sports (Jeanes et al., 2021). In addition to this, a majority of the respondents were over the age of 47, with 27% of these belonging to this age group. This is followed by 26% in the 28-37 age category, 24% in the 18-27 age category, 23% in the 38-47 age category, and only 2 individuals in the under 18 categories. This then shows that the respondents were mostly athletes ranging from their early adult years to their mid-life years. This can then further be related to the occupation of the respondents, which is the fourth category in the profile, where half are coaches and the other half are categorized as students. Aside from this, the result on age can also be further attributed to the educational attainment of the respondents, where a majority completed a master's in arts (52%), followed by PhD graduates (46%). The remaining proportion corresponds to the two unique data points of the younger respondents, who attained bachelor's degrees.

In addition to this, with regards to the amount of money that the respondents spent on sports, this was almost uniformly distributed among the different categories. 29% of the respondents spend more than 500 CNY, followed by 25% that spend 301 to 500 CNY, then 24% that spend below 100 CNY, and lastly, 21% that spend between 101 to 300 CNY. This data suggests that the respondents have almost uniform inclinations of spending a portion of their financial resources to sports, and that it can be said that the range may be an average of less than 100 to more than 500 CNY. This can then further relate to a type of external motivation in the respondents, like the possibility of improving the skill in a certain sport, like those evaluated in children playing baseball. It was observed that parents are more likely to spend for their children when motivated by this, in combination with an opportunity to receive a future scholarship (Post et al., 2019).

With regards to the time that the respondents were involved in their respective sports, 26% were already experienced for 3 to 5 years, followed by another 26% that were involved for 5 to 7 years. Then, 24% were involved for 1 to 3 years, another 22% were involved for more than 7 years while only 2% were new to their sport, with experience for only one year. Furthermore, the results also found that the respondents had differing reasons for participating in their respective sports. 23% of all respondents practiced sports for exercise, while 22% agreed that this was mainly for socializing. Another 20% found this for recreation, 18% for hobbies, 17% for improvement of their own sports skills, and a small percentage of 0.72% listed their purpose of participation under "others." Then, a majority of respondents had a weekly participation of more than three times a week, with 35%, followed by 32% that participate three times a week, 31% that participate twice a week, and only 1% that participate once.

Lastly, as mentioned earlier, the respective programs of the respondents were taken, it was found that 39% of these had table tennis as their sports program. Meanwhile, 36% were

under the badminton program and only 25% were volleyball players.

## 2. Assessment of Satisfaction with the Post-Event Utilization of the Venues of the 31st World University Summer Games

Another important aspect that this study focuses on is on the assessment of the satisfaction with the post-event utilization of the venues of the 31st World University Summer Games. This was assessed on the basis of seven different categories, which are venue infrastructure, venue supporting facilities, transportation accessibility, service personnel, catering services, recreation and leisure facilities, and the communication of information in the venue. The relevant data on the evaluation of these categories are presented in the following tables.

**Table 3.** Assessment on the Satisfaction with the Post-event Utilization of the Venues of the 31st World University Summer Games for Venue Infrastructure

Statement	Mean	SD	Verbal Description	Interpretation	Rank
<b>Venue Infrastructure</b>					
1.Venue Charge Prices	2.96	0.79	Agree	Satisfied	4
2.Quality of site facilities	3.00	0.83	Agree	Satisfied	2
3.Are the facilities and equipment at the venue complete and easy to use?	2.99	0.83	Agree	Satisfied	3.5
4.Venue hygiene	2.94	0.86	Agree	Satisfied	5
5.Is the ambient sound in the venue appropriate?	3.08	0.83	Agree	Satisfied	1
6.Suitability of light and lighting for the venue	2.92	0.84	Agree	Satisfied	6
7.Safe and comfortable environment	2.99	0.82	Agree	Satisfied	3.5
<b>Mean Score</b>	<b>2.98</b>	<b>0.31</b>	\	<b>Satisfied</b>	\

Legend:

3.26 – 4.00 Strongly Agree/Highly Satisfied, 2.51 – 3.25 Agree/Satisfied, 1.76 – 2.50 Disagree/Not Satisfied, 1.00 – 1.75 Strongly Disagree/Not Satisfied at All

Based on the table above Table 3, it can be observed that all the 278 respondents involved were satisfied with the venue infrastructure of the 31st World University Summer Games, as presented by the mean score of 2.98 out of 4.00 and the standard deviation of 0.31. The highest mean is 3.08 and the lowest mean is 2.92. When analyzing this in greater detail, the respondents were satisfied with all the different aspects assessed. These included the price charged for the venue, the quality of the facility, the completeness and ease of use of the equipment, the venue hygiene, the appropriateness of the ambience and sound in the venue, and its lighting, safety, and comfortability. A study by Lee et al. (2015) had mentioned that these are linked to making sports facilities and stadiums more attractive for social events, where effective marketing and branding strategies can be drawn from. This indicates that it is important to put emphasis on these aspects in order to properly utilize venues for sports post-events.

Another interesting point is the hygiene satisfaction assessed, which is an extremely important aspect, particularly in our time where emerging diseases like COVID-19 are rampant. A study by Moritz et al. (2021) had found that indoor sports facilities can play a detrimental role in disease spread when hygiene practices are not improved. Salonen et al. (2020) had also found that people are more at risk of air contaminants in these facilities. Some recommended ways that indoor sports venues can improve the likelihood of these outcomes are by improving ventilation systems, maintaining good hygiene, limiting the number of people per session, and regular clearing and maintenance. Overall, these results suggest that the venue being utilized for post activities for the 31st World University Summer Games were of high quality and did not pose any discomfort and dissatisfaction for the athletes or people involved in the event. Rather, the venue and the people who are managing this were successfully able to use the respective sports venue and its resources for the satisfaction of those involved. The results indicate that there is no evident problem with the infrastructure of the venue.

**Table 4.** Assessment on the Satisfaction with the Post-event Utilization of the Venues of the 31st World University Summer Games for Venue Amenities

Venue Amenities	Mean	SD	Verbal Description	Interpretation	Rank
changing room	2.59	1.07	Agree	Satisfied	1.5
Bathroom conditions	2.46	1.13	Disagree	Dissatisfied	5.5
Consumer beverages provided by the venue	2.46	1.11	Disagree	Dissatisfied	5.5
waiting area	2.59	1.14	Agree	Satisfied	1.5
Pastime products in waiting areas (magazines, computers, etc.)	2.45	1.11	Disagree	Dissatisfied	7
Medical Emergency Measures	2.50	1.13	Disagree	Dissatisfied	3
Are the seats and viewing areas in the arena comfortable and spacious?	2.47	1.16	Disagree	Dissatisfied	4
<b>Mean Score</b>	<b>2.50</b>	<b>0.44</b>	\	<b>Dissatisfied</b>	\

Legend:

3.26 – 4.00 Strongly Agree/Highly Satisfied, 2.51 – 3.25 Agree/Satisfied, 1.76 – 2.50 Disagree/Not Satisfied, 1.00 – 1.75 Strongly Disagree/Not Satisfied at All

Table 4 is assessment on the satisfaction with the post-event Utilization of the Venues of the 31st World University Summer Games for Venue Amenities. The table shows that the infrastructure of the venue, there were and got the highest results found when the amenities (or supporting facilities) of the venue was assessed. The survey had found that the respondents were satisfied with the changing rooms available (mean = 2.59, SD = 1.07) and as well as the waiting area (mean = 2.50, SD = 0.44) while the lowest mean is 2.45. the other hand, there were more categories that indicated a great deal of dissatisfaction to the respondents. Particularly, dissatisfaction was observed with the bathroom conditions of the venue, the consumer beverages provided during the post-events, the pastime products made available in the waiting areas, the readily available medical emergency measures, and lastly, with the comfort and space of the seats and viewing area of the arena. A study by van Mossel and Jansen (2010) had revealed that the priorities of participants may be varying,

however bathrooms were seen to receive a great deal of attention, particularly with the maintenance of these. This is most likely linked to health and hygiene standards as well. In addition to this, dissatisfaction was also seen with the medical emergency measures in the venue, which indicates a need for improving this. A study by Broman and Popp (2020) had mentioned that knowledge of emergency medical procedures should also be supplemented by having the right equipment and in a convenient manner. This would allow adequate and quick responses during emergency situations, which is uncommon in sports where players experience injuries and the like.

When looking at these results, it may elicit confusion as dissatisfaction is seen with available pastime products in waiting areas but satisfaction is observed with waiting areas. This kind of result may need further re-evaluation, perhaps with the time that the respondents spent in the waiting areas as this may be a valuable determinant of their satisfaction. Furthermore, despite the survey having some aspects to show satisfaction, the mean presents a score of 2.50 out of 4.00 and a standard deviation of 0.44. This thus indicates that improvement is needed in the areas of the venue assessed that had received dissatisfied remarks.

**Table 5.** Assessment on the Satisfaction with the Post-event Utilization of the Venues of the 31st World University Summer Games for Accessibility

Statements	Mean	SD	Verbal Description	Interpretation	Rank
Accessibility					
Is the venue conveniently located for transportation?	2.09	0.83	Disagree	Dissatisfied	1
Is adequate parking or public transportation provided around the venue?	2.04	0.83	Disagree	Dissatisfied	2
Are transportation directions around the venue clear and easy to understand?	2.01	0.83	Disagree	Dissatisfied	3
Are convenient transportation rentals available around the venue?	2.00	0.83	Disagree	Dissatisfied	4
Mean Score	2.04	0.41	\	Dissatisfied	\

Legend:

3.26 – 4.00 Strongly Agree/Highly Satisfied, 2.51 – 3.25 Agree/Satisfied, 1.76 – 2.50 Disagree/Not Satisfied, 1.00 – 1.75 Strongly Disagree/Not Satisfied at All

From these results, improvements may be needed in the cleanliness of the bathrooms, variety in the food and beverages choices, timeliness and functionality of pastime products, change of medical services, and as well as a redesign of the comfort of the seats available. Many of these services can directly impact the satisfaction of participants and thus, must be taken into great consideration by event managers and venue organizers.

Table 5 is about assessment on the satisfaction with the post-event utilization of the venues of the 31st world university summer games for accessibility. Another area assessed in the study was the accessibility of transport to the venue, which scored poorly in the survey Table 4. This category calculated a mean score of 2.04 and a standard deviation of 0.41, which falls under the “dissatisfied” evaluation. In greater detail, the respondents had collectively expressed dissatisfaction with the convenience of the location, the adequacy of the parking and public transportation available, the clarity and ease of directions to reach the venue, and the convenience of transportation rentals available. Noor and Foo (2014) had found that mini buses are effective for increasing satisfaction for being convenient and comfortable transport services, which may also be of interest as a way to improve the satisfaction levels obtained from this study.

**Table 6.** Assessment on the Satisfaction with the Post-event Utilization of the Venues of the 31st World University Summer Games for Service Personnel

Statements	Mean	SD	Verbal Description	Interpretation	Rank
Service Personnel					
Is the venue staff friendly and professional?	1.96	0.81	Disagree	Dissatisfied	5
Do venue staff provide timely and accurate information and guidance?	1.90	0.82	Disagree	Dissatisfied	7
Do venue staff deal effectively with participants' questions and complaints?	1.92	0.79	Disagree	Dissatisfied	6
Does the venue staff have good communication and problem solving skills?	1.97	0.81	Disagree	Dissatisfied	4
Are venue staff attentive and sensitive to participants' needs and requests?	2.02	0.83	Disagree	Dissatisfied	2
Field Worker Sports Instructor Accompanist	1.99	0.82	Disagree	Dissatisfied	3
Dress code for service personnel	2.03	0.82	Disagree	Dissatisfied	1
Mean Score	1.97	0.30	\	Dissatisfied	\

Legend:

3.26 – 4.00 Strongly Agree/Highly Satisfied, 2.51 – 3.25 Agree/Satisfied, 1.76 – 2.50 Disagree/Not Satisfied, 1.00 – 1.75 Strongly Disagree/Not Satisfied at All

These results then suggest that perhaps further analysis on the spatial distribution characteristics of the venue should be done as this is important for public venue fitness construction and the health of people living in urban areas (Jiang et al., 2022). It is important that large-scale sports venues have balanced layouts that are suitable to the population of the city where it is built while also considering its accessibility. This then must also take into consideration the relevant demographic characteristics of the population, such as their age, number, and frequent modes of transport. In general, the

results give a straightforward need for managers and event organizers to pay attention to the ease of arriving and traveling to a sports venue for post-activities. As events may already be tiring, making post-events more at ease and comfortable for participants may raise their satisfaction to further involve themselves with the activities prepared.

Table 6 is assessment on the satisfaction with the post-event utilization of the venues of the 31st world university summer games for service personnel. All in all, this category received a lower score from previous categories assessed, which is 1.97 for the mean and 0.30 for the standard deviation. This also indicates dissatisfaction from participants in all of the areas of the personnel assessed.

To be more specific, the respondents were dissatisfied with the friendliness and professionalism of the service team. Similar responses were also observed with the timeliness and accuracy of the information and guidance provided by staff, as well as their ability to deal with the questions and complaints of the participants. Furthermore, the dissatisfaction in these fields is coupled in other aspects, such as with the staff's communication and problem solving skills, their attentiveness and sensitivity to the needs and requests of the participants, and their dress code. Further dissatisfaction was also observed with the field worker sports instructor accompanist.

From the data retrieved, it is evident that further improvement is needed on the service personnel in post-event venues. A study by Aluko et al. (2021) had found that when service quality increases, there is also an increase in client satisfaction. Then, it is also observed that service quality has an important role in increasing customer satisfaction in sports venues and further related to aesthetics and beatification (Ozrudi, 2021). Lastly, another relevant point related to this is the reputation of sports facilities in increasing brand value (Bahrami et al., 2021). This is important for managers to focus on as it can be a good area of focus for marketing strategies that take into account the perceptions of customers of sports facilities.

This suggests that areas of improvement must be invested in the training of the service staff in the areas of communication, customer interaction, empathy, and presentation as this may directly improve the satisfaction of participants. As service staff directly interact with participants, their behavior and performance are crucial in determining the effectiveness and the success of post-events. Improvements in the mentioned areas could potentially have a significant impact in the overall success and satisfaction of post-events in sports-related activities.

Table 7 is assessment on the satisfaction with the post-event utilization of the venues of the 31st world university summer games for food service. Together with service staff, food availability and the delivery of this is another important aspect to evaluate. However, the assessment conducted had also found a mean score of 2.49 and a standard deviation of 0.50, which represents a response of dissatisfaction from the respondents Table 6. More specifically, dissatisfaction was expressed in the reasonability and transparency of the prices of available food and as well as the hygiene and environment where food is prepared and delivered. This data indicates a need to improve the cleanliness of food preparation in the venue as it may be a driver of concern for participants.

**Table 7.** Assessment on the Satisfaction with the Post-event Utilization of the Venues of the 31st World University Summer Games for Food Service

Statements	Mean	SD	Verbal Description	Interpretation	Rank
<b>Food Service</b>					
1. Is the food service at the venue diverse and plentiful?	2.54	1.10	Agree	Satisfied	1
2. Does the quality and taste of the food service meet the expectations of the participants?	2.53	1.09	Agree	Satisfied	2.5
3. Are the prices of food services reasonable and transparent?	2.45	1.14	Disagree	Dissatisfied	4
4. Are wait times for food service reasonable?	2.53	1.09	Agree	Satisfied	2.5
5. Is the environment and hygiene of the food service satisfactory?	2.41	1.13	Disagree	Dissatisfied	5
<b>Mean Score</b>	<b>2.49</b>	<b>0.50</b>	\	<b>Dissatisfied</b>	\

**Legend:**

3.26 – 4.00 Strongly Agree/Highly Satisfied, 2.51 – 3.25 Agree/Satisfied, 1.76 – 2.50 Disagree/Not Satisfied, 1.00 – 1.75 Strongly Disagree/Not Satisfied at All

On the contrary, there were also satisfied responses observed from the respondents. It was found that the food services were considered to be diverse and plentiful, where participants met their expectations on the quality, taste, and waiting time of the food services available. The scores indicate that the venue had satisfactory service with the mentioned areas, although it is also important to notice that these have barely scored within the satisfactory range. This has a similar result with a survey in New Zealand that had found that food served in a sports venue was calorie-rich but nutrient-poor (Carter et al., 2019). Pelly and Tweedie (2021) had also found that despite further inclusion of nutrition in food served in sports events, these were largely influenced and limited by policies and available budgets.

All in all, the result implies that it is still relevant for managers and post-event organizers to be open to any possibilities to improve this further to score higher satisfaction from participants. Some areas that may need improvement are in the quality of the food, the timeliness in preparing these, and the professionalism of the staff (Diaz, 2023).



**Table 8.** Assessment on the Satisfaction with the Post-event Utilization of the Venues of the 31st World University Summer Games for Recreation and Leisure Facilities

Statements	Mean	SD	Verbal Description	Interpretation	Rank
<b>Recreation and Leisure Facilities</b>					
Are the recreational and leisure facilities provided by the venue varied?	2.40	1.06	Disagree	Dissatisfied	4
Is the quality and maintenance of recreation and leisure facilities satisfactory?	2.55	1.13	Agree	Satisfied	2
Are the rules and guidelines for the use of recreation and leisure facilities clear and easy to understand?	2.59	1.15	Agree	Satisfied	1
Are the hours and limits of use of recreation and leisure facilities reasonable?	2.50	1.10	Disagree	Dissatisfied	3
Mean Score	2.51	0.55	\	Satisfied	\

Legend:

3.26 – 4.00 Strongly Agree/Highly Satisfied, 2.51 – 3.25 Agree/Satisfied, 1.76 – 2.50 Disagree/Not Satisfied, 1.00 – 1.75 Strongly Disagree/Not Satisfied at All

Table 8 is assessment on the satisfaction with the post-event utilization of the venues of the 31st world university summer games for recreation and leisure facilities. Moving on, the recreation and leisure facilities of the post-events venue also scored satisfactory for participants. It is seen that this had scored a mean of 2.51 and a standard deviation of 0.55. Positive results were then further observed in the quality and maintenance of the venue’s recreation and leisure facilities, and also in the clarity and ease of comprehending the rules and guidelines in using these.

On the other hand, negative or dissatisfaction responses were observed in the overall variety of the facilities available, indicating that there is a need to diversify these to cater to a wider range of needs for participants. In combination to this, dissatisfaction was also observed with the time limit in the use

of these facilities, suggesting that venue managers may need to adjust or re-evaluate the hours that these may be available for participants.

Like the previous sections of this discussion, a spatial analysis of characteristics of the venue is also further suggested in order to fully make use of the available resources to provide the best service to customers (Naghizadeh-Baghi et al., 2021). This is most especially relevant as sports facilities have a tremendous impact on the mental and physical health of those utilizing these. It is also recommended that the selection and layout of facilities in sports venues should be based on the demand of customers and their needs, which could further improve satisfaction levels (Yuan et al, 2019).

**Table 9.** Assessment on the Satisfaction with the Post-event Utilization of the Venues of the 31st World University Summer Games for Communication

Statements	Mean	SD	Verbal Description	Interpretation	Rank
<b>Communication</b>					
Does the venue provide adequate and accurate information and schedules of events?	2.47	1.11	Disagree	Dissatisfied	3
Does the venue provide clear and easy to understand event guidelines and venue layout maps?	2.51	1.19	Agree	Satisfied	2
Does the venue provide timely and accurate updates on event results and scores?	2.52	1.12	Agree	Satisfied	1
Does the venue provide easy access to information and counseling services?	2.35	1.09	Disagree	Dissatisfied	4
Mean Score	2.46	0.55	\	Dissatisfied	\
Overall Mean Score	2.42	0.17	\	Dissatisfied	\

Legend:

3.26 – 4.00 Strongly Agree/Highly Satisfied, 2.51 – 3.25 Agree/Satisfied, 1.76 – 2.50 Disagree/Not Satisfied, 1.00 – 1.75 Strongly Disagree/Not Satisfied at All

participants as shown through the mean score of 2.46 and a standard deviation of 0.55. Particularly, negative responses were observed with the adequacy and accuracy regarding the information and schedules of events. This suggests that improvement may be necessary with the communication team, wherein platforms used to spread such crucial information must be re-evaluated.

Meanwhile, satisfaction was observed in other areas, such as in the clarity and ease of understanding event guidelines and layout maps prepared. The timeliness and accuracy of updates and event results were also shown to be satisfactory, which shows inconsistent performance on the communication team in these post-events as they scored lower in the previously mentioned area regarding schedules. This is a

relevant aspect to take into consideration as it showcases inconsistency in the service teams in these post-events, which highlights a need for more improvement.

Some recommendations that have been observed to be useful is the creation of intelligent learning platforms that make use of machine learning algorithms (Hu, 2023). This can further increase communication between people and solve information blockage, which could ultimately increase

the enthusiasm to make use of sports facilities and engage in exercise. Then, it is also found that Wi-Fi usage is limited in sports facilities, making this a possible factor of communication issues (Naraine et al., 2020). It is important to look further into this for improving marketing strategies and communication, especially since the internet is a necessity in current times.

**Table 10.** Summary of the Assessment on the Satisfaction with the Post-event Utilization of the Venues of the 31st World University Summer Games

Statements	Mean	SD	Verbal Description	Interpretation	Rank
Venue Infrastructure	2.98	0.31	Agree	Satisfied	1
Venue Amenities	2.50	0.44	Disagree	Dissatisfied	3
Accessibility	2.04	0.41	Disagree	Dissatisfied	7
Service Personnel	1.97	0.30	Disagree	Dissatisfied	8
Food Service	2.49	0.50	Disagree	Dissatisfied	4
Recreation and Leisure Facilities	2.51	0.55	Agree	Satisfied	2
Communication	2.46	0.55	Disagree	Dissatisfied	4
Overall Mean Score	2.42	0.17	Disagree	Dissatisfied	6

Legend:

3.26 – 4.00 Strongly Agree/Highly Satisfied, 2.51 – 3.25 Agree/Satisfied, 1.76 – 2.50 Disagree/Not Satisfied, 1.00 – 1.75 Strongly Disagree/Not Satisfied at All

Table 10 is summary of the assessment on the satisfaction with the post-event utilization of the venues of the 31st world university summer games. Overall, despite some categories presented in Table 10 to have scored positively, a majority of the mean scores assessed showed a negative response through a general mean value of 2.42 and a standard deviation of 0.17. This shows that the utilization of post-event venues for sports needs greater improvement in order to increase the satisfaction of participants, especially in the amenities of the venue, transport accessibility, service personnel, food service, and communication. All of these mentioned categories may need to be taken into consideration as a negative response from participants may affect their future participation and engagement to these events, which in turn, can also affect the continuity, function, community interaction, and utilization of these sports venues for post-events.

Then, as infrastructure is ranked first, it is important to mention that this must be managed in a way that includes both proposals from sports and the community when planning, collaboration between stakeholders, supervision management, and future response evaluations of the community (Setiawan et al., 2022). Then, sports venues and the construction of these should also consider the behavior of the community, the economic situation, and as well as the cultural significance of the infrastructure to the community (Jakar, 2020).

## 5. Summary of Research Findings

Based on the results presented and discussed, the following respond to the initial problem stated in this study:

1. Demographic Profile of Respondents. Regarding the demographic profile of the respondents, 53% were male and 47% were female. Then, 27% of all the respondents involved were over the age of 47, 26% were 28-37 years old, 24% were 18-27 years old, 23% were 38-47 years old, while only 2 individuals were below the age of 18. Furthermore, half of the overall respondents were students while the other half were coaches.

With regards to the educational attainment of the respondents, 52% completed a master's in arts, 46% completed a PhD, while only 2 of the 278 completed a

bachelor's. Furthermore, time and money spent for sports were also taken into account and this was observed to be somewhat uniformly distributed among the financial groups. For the former, 29% spend more than 500 CNY per month on sports, while 25% spend 301 to 500 CNY. 24% spend below 100 CNY, and 21% spend 101 to 300 CNY. On the other hand, for the latter, 26% had spent 3 to 5 years on their respective sport, 24% had spent 1 to 3 years, 22% spent more than 7 years, while only 2% spent only one year on their designated sports program of choice.

In addition to this, 23% of the 278 respondents mainly practiced their sport for exercise while 22% did this for socializing. Another 20% practiced for recreation, 17% for self-improvement, and a small fraction of 0.72% for other unidentified reasons. Then, 35% of participants also practiced more than three times a week, 32% practiced exactly three times, 32% practiced twice a week, and 1% practiced only once per week. As a final detail, 39% of the respondents practiced table tennis, 36% practiced badminton, and 25% practiced volleyball.

1. Assessment of the Satisfaction of the Participants with the Post-Event Utilization of the Venues. With the assessment of the satisfaction of the participants with the post-event utilization of the venues, it was found that participants were satisfied with the venue infrastructure which obtained a mean score of 2.98 and the recreation and leisure facilities that had a mean score of 2.51. Meanwhile, participants were dissatisfied with the amenities of the venue, its accessibility, service personnel, food service, and communication. These had the mean scores of 2.50, 2.04, 1.97, 2.49, and 2.46, respectively.

2. Significant Differences of the Satisfaction of Participants to the Post-Event Utilization of the Venues and Demographic Profiles. With regards to assessing the significant difference of the satisfaction of the participants to the post-event utilization of the venues and their demographic profile, only sex was seen as having a significant correlation to the satisfaction of respondents. More specifically, this received a p-value of 0.0150 with food services, which was the only category where this was seen as significantly related to. Other

demographic characteristics of the respondents were not seen as having significant relationships with their levels of satisfaction. Age, educational attainment, occupation, and time and money spent on sports did not have a significant relationship with the level of satisfaction recorded.

3. Assessment on the Socialized Services with the Post-Event Utilization of Venues. The assessment of the respondents on the socialized services with the post-event utilization of venues revealed that respondents were satisfied with the appearance of the venue for post-events, which calculated a mean score of 2.54. Meanwhile, they were satisfied with the functionality and reliability of this, which scored 2.49 and 2.51, respectively. Although having more areas found to have negative responses, the participants had an overall positive or satisfactory experience with the socialized services assessed, which had a mean score of 2.51.

4. Differences of the Satisfaction of Respondents with Post-Event Utilization of the Venues and Socialized Services. Lastly, when assessing for a significant relationship between the satisfaction of respondents and the utilization of venues for post sports events, it was found that only reliability and transportation accessibility shared a relevant correlation, which was portrayed with the p-value 0.0262.

## 6. Conclusion

From the results obtained and the summary of these, the study deduced the following conclusions:

1. Out of the 278 respondents of the study, the sex ratio was almost fairly even, with a slight greater number of males to females. These were then mostly above 47 years old and had mostly completed a master's in arts. In addition to this, the respondents mostly spend more than 500 CNY on. Sports, with an average time investment of 3 to 5 years. Most also practiced sports for exercise and were highly active, with participation of more than three times per week. Lastly, a majority of these were also in table tennis and badminton.

2. Venue infrastructure and recreation and leisure facilities scored satisfactory for participants while the amenities of the venue, its accessibility, service personnel, food service, and communication scored negatively.

3. Sex was the only demographic characteristic with a positive correlation with the satisfaction levels of respondents, particularly only with food services. Other demographic factors such as age, educational attainment, occupation, and time and money spent on sports did not have a significant relationship with the satisfaction of participants.

4. For the socialized services assessed in the study, only the venue or product appearance received positive responses. On the other hand, participants were dissatisfied with the functionality and reliability of this.

5. Finally, only reliability and transportation accessibility were positively correlated, indicating that transportation has a significant impact on a venue being reliable for participants.

## 7. Recommendations

The study conducted had a limited scope and upon interpreting the results obtained, there are a few areas that the researcher recommends for future studies:

1. Future studies could perhaps look further into the different occupations of participants, rather than simply students and coaches. Perhaps having a wider array of work specializations involved would reveal an interesting pattern

for assessing the satisfaction of a more diverse group of participants.

2. As sex was seen as having a significant impact on the post-event utilization of venues, it would be recommended to explore the area of gender with regards to sports venues. This may include looking into the preferences and needs of different genders and how this can further improve satisfaction levels.

3. Aside from sex, food services were also seen as an interesting area to explore. It is recommended that this is further studied, particularly, in a more in-depth manner, with different facets of this assessed.

4. In addition to sex and food services, transportation was also an interesting finding in the study that was related to reliability. It is recommended that this relationship is further investigated in order to find and deduce the areas that significantly impact the satisfaction of participants.

5. Further statistical analyses on the time spent of individuals on sports would also be needed, as well as their financial investments. These are two factors that show the direct resource allotment of participants and may reveal interesting patterns when studied more thoroughly and statistically.

6. Future studies should also focus on the staff and employees that work at post-event venues. Their satisfaction levels with their occupation may then further be correlated with the satisfaction of participants.

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