Article

Role of the Leisure Attributes of Shared Bicycles in Promoting Leisure Benefits and Quality of Life

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Abstract: Given that the use of shared economic resources has increased for leisure, the main goal of the present study is to investigate the influence of the leisure attributes of the sharing economy on leisure benefits and quality of life. For this, the related sub-factors were derived for the verification of the sharing economy's leisure attributes. Next, the sub-components of the concept were integrated and analyzed using a second confirmatory factor analysis. The results of a study using the structural equation model demonstrated that the sharing economy's leisure attributes statistically affect the four levels of leisure benefits (i.e., social, physical, personal, and psychological benefits). We also identified two (social and psychological benefits) out of four leisure benefits that ultimately affect quality of life. This study is meaningful in that it elucidates the relationships between the sharing economy's leisure attributes, leisure benefits, and quality of life.

Keywords: sharing economy; bike-sharing system; leisure benefits; quality of life

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1. Introduction

The sharing economy is based on a collaborative model of consumption in which resources are shared and used together [1]. Specific examples include information and communication technologies (ICTs), including the internet, wireless networks, social networking services, smartphones, computers, and other media applications, which encourage individuals to access, transmit, retrieve, and store information in a digital format and to share their opinions and experiences in various ways. In 2015, The Oxford Dictionary came to include the term “sharing economy”, which it defined as “an economic system in which assets or services are shared between private individuals, either for free or for a fee, typically by means of the Internet”. It is possible to use existing resources more efficiently through the sharing, exchanging, and lending of those resources. As a result, the sharing economy has attracted attention as an alternative path to sustainable growth, and interest in the sharing economy is steadily increasing in various fields [2].

The sharing economy is on the rise in the leisure and tourism industries, where various shared economy tourism platforms, such as Airbnb, Couchsurfing, and Feastly, are becoming increasingly popular and complementary, and are rapidly changing the structure of the industry [3]. For example, since 2008, Airbnb has provided an online platform that enables individuals to share their homes and rooms with vacation guests. Airbnb reported that a total of 17 million guests stayed in Airbnb host locations throughout the world during the summer of 2015, it had a revenue of more than USD 2.6 billion and employed over 3000 people in 2017, and there were over 650,000 Airbnb hosts worldwide and about 6.1 million listings in 2020 [4]. In addition to its economic benefits, the sharing economy leads to significant improvements in quality of life [3,5].

The sharing economy has come to be viewed as a possible means of coping with various social problems facing the world today (e.g., global climate change and warming,

environmental pollution, community collapse, and human alienation) and of achieving sustainable economic development. In addition, the sharing economy allows for the pursuit of common values, such as improving happiness and psychological welfare through sharing behavior, while fostering various socioeconomic benefits [6]. Seoul, the capital of South Korea, first introduced its sharing policy in the declaration of the “Sharing City, Seoul Project” in 2012 to promote the quality of life of Seoul citizens and solve urban problems at the public level. The public projects in this policy include car sharing, parking lot sharing, house sharing, rental facilities for children’s goods, and other kinds of sharing facilities. The most successful case is the shared bicycle system and its related services. The number of shared bicycle users more than tripled in the course of a single year, where the system’s popularity is partly explained by the fact that the bikes are easy to access and the system is easy for a general audience to use [7]. The implementation of a bicycle sharing system has also been voted the most favored policy among Seoul citizens for three consecutive years [8]. According to one recent survey, more than 50% of shared bicycle users primarily show a leisure motivation [8]. This suggests that the bicycle sharing system encourages individuals to engage in leisure activity. However, previous studies regarding the shared bicycle system have mainly focused on its role as an alternative mode of transportation. Little is known about the role of shared bicycles in encouraging leisure activity in the pursuit of a higher quality of life. Therefore, it is necessary to investigate how the leisure attributes of shared bicycles are related to leisure benefits and quality of life.

Heo (2016) suggests that the sharing business model is still in its infancy, a claim supported by the fact that there have been few estimates of the impact of sharing services on the leisure and tourism field [3]. The existing literature on the sharing economy has been divided into several themes, including studies exploring financial and legal approaches to sharing [9], the psychological perspective of sharing [10,11], and the features of peer-to-peer sharing transactions [5] in diverse contexts such as cars, houses, accommodations, and toy sharing. Many of the relevant studies still consist of case and concept research, although the shared economy market has rapidly grown beyond its inception stage. In addition, some existing empirical studies are predictive studies that focus on the factor analysis of pre-use behavior, which differs from actual use results. Therefore, there are a lack of practical implications [12–14]. There are also limits to the extent to which one can understand this comprehensive concept without first considering the complex and diverse characteristics of sharing economy services [15,16]. As a result, the sustainability and revitalization of sharing economy services requires a clear distinction as well as access to various forms.

For the foregoing reasons, this study examines whether the leisure attributes of the sharing economy platform affect leisure benefits and quality of life, with a focus on the famous sharing economy system of Seoul Bike in South Korea. From the user’s point of view, sharing behavior in pursuit of leisure activities could help restore one’s sense of community and improve one’s quality of life. In the following section, we introduce the concept of shared economy and provide evidence of shared economy, leisure benefit, and quality of life in various academic domains. In addition, the research hypotheses, research model, and data collection are described in Section 3. The results of the descriptive and inferential statistics are presented in the results, and lastly, the theoretical and practical implications of the study based on the study results are presented in the conclusion.

2. Literature Review

2.1. *Sharing Economy and Bicycle Sharing: Seoul Bike*

With the development of new online platforms, the sharing economy has dramatically grown to encompass the sharing of goods, services, knowledge, and experiences, thereby offering significant convenience and benefits with no waiting time, no standard solutions, and no maintenance obligations [17–19]. In contrast to the traditional market, properties shared on digital platforms can be easily found and demand can be matched to supply; peers connected through a given platform can request and offer goods and services. In this

context, the sharing economy promotes new lifestyles that encourage reuse, environmental protection, socialization, and alternative business opportunities [18,19]. According to PWC's report, those aged 18 to 24 tend to be more interested in having experiences than material possessions and are the most excited about the sharing economy. Millennials undeniably have a strong sensitivity to the peer-to-peer economy system as well as self-confidence in the use of digital devices, social networks, online services, and applications. Moreover, they aim to be socially and environmentally responsible by following the ethics and practices of the sharing economy [18,19].

In the leisure and tourism field, the sharing economy is greatly increasing the global supply of travel options [20]. Online sharing platforms offer various travel-related services and provide travelers with different types of experiences and business opportunities. The resulting sharing economy system increases visitor satisfaction through peer-to-peer feedback, interactive communication, and transparent transactions [21]. Early studies on sharing economy services generally focused on lodging and vehicle services in tourism [5] but have since expanded to cover parking lots, islands, and public facilities.

Recently, a number of studies on shared bicycles have been published in the fields of tourism and transportation. For example, Chen confirmed that perceived usefulness and enjoyment are key prerequisites to the intent to use bike-sharing services [22]. Yoon, Kim, and Koo organized the attributes of bike-sharing services into accessibility, convenience, and safety while indicating that connectivity, such as social interaction, is closely related to the use of shared economy services for leisure purposes [23]. Wu and Kim showed that the value, safety, and reliability of shared bicycles are service factors and that vulnerability and reliability affect the intent of continuous use [24]. Studies have also shown that convenience and pleasure play important roles in enhancing value and trust in bicycle sharing [25].

There are also studies mainly focusing on the motivation to use public bicycles of cyclists and the quality of service of the platform [26,27]. For example, Han et al. (2017) studied the structural relationships among perceived value, satisfaction, and loyalty of each property by classifying bicycle travel characteristics into attraction, accessibility, pleasure, and convenience [27]. Some studies have found differences in motivation to use bicycles according to the destination by classifying them into enlightenment, adventure, physical health promotion, and novelty destinations [26]. In recent years, there has been a movement to apply the values of the sharing economy model in the public domain to help restore society [6]. The Seoul Metropolitan Government is trying to find ways to use the sharing economy service model in the public sector and to build an environment conducive to this [6]. However, the rate of utilization of the sharing economy varies between local governments and is still insufficient. Due to various problems (e.g., the difficulty of responding to new markets, a lack of understanding, and the ambiguity of institutions), the sharing economy system in the public domain remains stuck in its initial stage [28].

Seoul, South Korea's capital, has the highest technological maturity level and the highest connection speeds available anywhere in the world. However, South Korean citizens face intense social and competitive pressures, and students suffer from extremely high academic and career expectations. To increase the quality of life of citizens and create a real sharing ecosystem, Seoul has decided to implement alternative strategies. The sharing ecosystem goals are to construct and maintain the necessary infrastructure, to promote shared services and support new sharing start-ups, and to encourage citizen use of the sharing economy [8]. Seoul's bike-sharing system, called Seoul Bike, is the most well-known outcome of adopting the principles of the sharing economy. It was launched in October 2015 and is constantly expanding. The plan is to have 20,000 bicycles in the system by 2020 and to provide 2000 bikes for kids by January 2021. These bikes can be found near stations, bus stops, parks, and towns, and they can easily and cheaply be borrowed through the official website or a smartphone application. The application allows a user to select the station's location, and non-residents can access the system as well.

2.2. Leisure Benefits

Leisure scientists have long contended that leisure plays a vital role in improving quality of life and relieving stress [29,30]. Iwasaki (2007) pointed out that leisure could help people improve their quality of life, particularly leisure activity [29]. Leisure benefits are closely related to continuous participation in leisure activities [30]. Thus, participating in leisure activities leads to various benefits. In this sense, “leisure benefits” are the advantages gained from participating in leisure activities [31].

Leisure benefits may occur as an outcome of leisure activity by promoting various social and physical resources that allow individuals to cope with stress and have positive feelings [30]. Most of the research on this topic to date has focused on the social and psychological aspects of leisure benefits by measuring leisure participation [30]. However, it is challenging to comprehensively consider the various social, cultural, personal, and environmental aspects of leisure benefits. Therefore, it is necessary to consider the integrated factors that can be obtained through leisure, and the concept of leisure benefits emerged from this background [32].

Leisure benefits can be divided into personal interests, sociocultural interests, economic benefits, and environmental benefits [33]. As such, leisure benefits include benefits from various aspects of leisure activities, and they are recognized as a result of overall leisure activities, thus representing a broader concept than leisure satisfaction. Individuals who participate in activities gain benefits in terms of psychological, physiological, educational, social, and relaxation. In addition, fatigue, anxiety, and job stress decrease [34]. Therefore, this study defines a leisure activity’s social, psychological, personal, and physical benefits as leisure benefits and then examines the structural relationships between these variables.

2.3. Quality of Life

Various studies have examined the impact of leisure on quality of life with a focus on life satisfaction, which is a widespread measure of quality of life [30]. The satisfaction with life scale (SWLS) for measuring life quality was first developed by Diener [32]. The conceptualization and measurement methods of quality of life are divided into two categories: objective life conditions and subjective satisfaction with life experiences. Thus, quality of life can be understood as a multidimensional construct consisting of factors such as the satisfaction and happiness experienced by an individual [35]. Nevertheless, life quality has long been studied as a psychological construct, and it is defined as an individual’s conscious judgment of their own life satisfaction [36]. Physical activity is likely to improve health-related quality of life [37,38].

In modern society, people can reduce stress and gain energy by participating in leisure activities [39]. Satisfaction with leisure activities is conceptually considered a significant component of life satisfaction. For example, recreational activities such as bicycling have been shown to lead to a good quality of life [40]. Adequate participation in leisure activities reduces depression and creates a positive mood, resulting in happiness and life satisfaction [41,42]. The social support obtained through leisure participation also plays an essential role in reducing stress and improving quality of life [43]. Therefore, the importance of leisure participation in quality of life has long been known [40,44]. However, there has been little research into the relationship between the leisure attributes of bicycle sharing and leisure benefits that may affect an individual’s quality of life. Thus, this study examines the relationship between the leisure attributes of bike sharing, leisure benefits, and quality of life.

3. Methods

3.1. Research Model and Hypothesis

The purpose of this study is to examine the effects of the leisure attributes of the sharing economy on leisure benefits and quality of life. The research model and hypotheses are presented in Figure 1. To set the measurement items of the variables, this study adopted the assessments of various measures from prior studies.

Figure 1. Seoul's bike-sharing system, Seoul Bike. Source: Seoul Bike (<https://www.bikeseoul.com>).

The following measurements were taken: (1) demographic analysis and users' perceptions of shared bicycles, (2) leisure attributes of the sharing economy adopted by [22–25], (3) leisure benefits adopted by [29–32], and (4) quality of life metrics adopted by [30,40,44,45]. These items were analyzed using a 5-point Likert scale (where 1 = not at all and 5 = very much). A research model of the study is shown in Figure 2. In addition, two inverse coding questions were added to increase the reliability of the questionnaire.

Figure 2. The conceptual model.

Hypothesis 1a (H1a). *The leisure attributes of Seoul's shared bicycles have a positive effect on leisure benefits, specifically social leisure benefits.*

Hypothesis 1b (H1b). *Physical leisure benefits.*

Hypothesis 1c (H1c). *Personal leisure benefits.*

Hypothesis 1d (H1d). *Psychological leisure benefits.*

Hypothesis 2a (H2a). *The social leisure benefits of Seoul's shared bicycles have a positive effect on quality of life.*

Hypothesis 2b (H2b). *The physical leisure benefits of Seoul's shared bicycles have a positive effect on quality of life.*

Hypothesis 2c (H2c). *The personal leisure benefits of Seoul's shared bicycles have a positive effect on quality of life.*

Hypothesis 2d (H2d). *The psychological leisure benefits of Seoul's shared bicycles have a positive effect on quality of life.*

3.2. Data Collection

Since extant studies suggest that the quality of the data collected through online surveys is reliable [46,47], an internet crowdsourcing site was used to collect data. Initially, 398 respondents who had ridden bicycles from Seoul Bike were allowed to participate in the survey from 7 to 10 November 2019. After removing surveys including missing values as well as outliers, 363 datapoints were ultimately used for the data analysis. The data analysis procedures used to test the study's hypotheses were run on SPSS Version 24.0 and AMOS Version 24.0. While SPSS 24.0 was used to analyze the frequency distribution and descriptive statistics, structural equation modeling (SEM) was used to test the hypotheses. The present study used a confirmatory factor analysis (CFA), composite reliability test (CR), and average variance extracted (AVE) to validate the measurement scale and correlation analysis to test the discriminant validity. In addition, second-order factor analysis was conducted to confirm the structural validity of the lower level that constitutes the sub-factors of the leisure attributes of the sharing economy, which has not been carried out before, and for a comprehensive interpretation.

4. Results

4.1. Demographic Characteristics

Table 1 shows the demographic characteristics of the respondents. As listed in the table, the proportion of women (61.4%) was higher than that of men (38.6%), and in terms of age, the largest portion of respondents were in their 30s (33.9%), followed by those in their 20s (33.1%). In addition, a survey was conducted on the average usage time and frequency of use of shared bicycles. The results showed that the most common usage time was within 30 min (54.5%), while the most common frequency of use was once per month (71.9%).

Table 1. Demographic characteristics of respondents (N = 363).

		Number of Respondents (%)
Gender	Male	140 (38.6)
	Female	223 (61.4)
Age	10s	23 (6.3)
	20s	120 (33.1)
	30s	123 (33.9)
	40s	64 (17.6)
	50s or over	33 (9.1)
Average usage time	30 min or less	198 (54.5)
	30 min to 1 h	118 (32.5)
	1 to 2 h	41 (11.3)
	2 h or more	6 (1.7)
Frequency of use	Once a month	261 (71.9)
	2–3 times a month	60 (16.5)
	3–4 times a week	21 (5.8)
	5 or more times a week	21 (5.8)

4.2. Measurement Model

In this study, we performed a second-order factor analysis for confirmatory factor analysis (CFA). CFA was conducted to determine how well the measured variables represented their respective constructs. Second-order factor analysis was also conducted to confirm the validity of the factors related to the leisure attributes of the shared bikes. This consisted of three sub-factors (connectivity, pleasure, and value). According to Milfont and Duckitt (2004), second-order factor analysis is a useful statistical technique for demonstrating how the measured variables load into a given number of underlying sub-factors [48]. This also

reduces confusion errors and allows researchers to statistically compare the functions of different dimensions [49]. In this study, second-order factor analysis was conducted to determine which sub-factors play significant roles in the leisure attributes of shared bicycles.

A convergent validity test was then performed by examining the following results: (a) standardized factor loading, (b) construct validity, and (c) average variance extracted (AVE). A convergent validity test measures the extent to which two or more constructs are correlated [50]. Guided by Hair, Black, Babin, and Anderson's (2010) statistical guidelines [51], standardized factor loadings above 0.5, construct validity above 0.7, and AVE above 0.5 were chosen as the guideline criteria levels. As listed in Table 2, the construct validity and AVE both exceeded the criteria levels.

Table 2. Overall confirmatory factor analysis (CFA) for the measurement model.

Constructs and Items			Factor Loadings	SE	CR	AVE
Leisure attributes of shared bicycles	Connectivity	Belonging	0.719	0.036	0.911	0.534
		Sense of Interaction	0.737	0.036		
		Trust	0.750	0.033		
	Pleasure	Mental strain	0.696	0.028		
		Enjoyment	0.766	0.024		
		Fun	0.647	0.024		
	Value	Accessibility	0.798	0.024		
		Eco-friendly	0.680	0.028		
		Efficiency	0.769	0.023		
Leisure benefits	Social	Relationship	0.695	0.029	0.773	0.533
		Social gathering	0.796	0.027		
		Communication Opportunity	0.694	0.027		
	Physical	Vitality	0.559	0.037	0.750	0.506
		Physical strengthening	0.766	0.026		
		Maintenance of health	0.786	0.024		
	Personal	Sense of freedom	0.771	0.020	0.780	0.544
		Good stimulus	0.797	0.018		
		Self-realization	0.634	0.025		
	Psychological	Positive mind	0.740	0.023	0.839	0.635
		Stress	0.809	0.022		
		Entertainment	0.839	0.019		
Quality of life	Quality of life 1		0.748	0.026	0.760	0.514
	Quality of life 2		0.735	0.027		
	Quality of life 3		0.664	0.028		
Goodness of fit			Chi-Square (x ²) = 396.627, df = 234, x ² /df = 1.695, p = 0.000, RMR = 0.026, RMSEA = 0.044, GFI = 0.919, CFI = 0.956, NFI = 0.900, RFI = 0.938, IFI = 0.956, TLI = 0.948			

The overall results of the hypothesis tests are listed in Table 3. The SEM results clarify that the leisure attributes of the shared bicycles were positively associated with the leisure benefits and quality of life. The analysis in this study finds that the leisure properties of the sharing economy had a positive effect on all factors of leisure benefits (social, physical, personal, and psychological leisure benefits), demonstrating that hypotheses H1a ($\beta = 0.709$, $t = 7.318$, $p < 0.001$), H1b ($\beta = 0.740$, $t = 6.749$, $p < 0.001$), H1c ($\beta = 0.913$, $t = 8.514$, $p < 0.001$), and H1d ($\beta = 0.822$, $t = 8.087$, $p < 0.001$) are all statistically supported. In addition, social and psychological gains have a positive effect on quality of life, showing that hypotheses H2a ($\beta = 0.269$, $t = 3.142$, $p < 0.001$) and H2d ($\beta = 0.414$, $t = 4.029$, $p < 0.002$) are statistically supported. However, there is no statistical support for physical or personal benefits from the sharing economy.

Table 3. Structural estimates (hypothesis testing).

	Hypothesis	Standard Beta	t-Statistics	p-Value	Decision
H1a	Leisure attributes of shared bicycle →social leisure benefits	0.709	7.318	0.000	Supported
H1b	Leisure attributes of shared bicycle →physical leisure benefits	0.740	6.749	0.000	Supported
H1c	Leisure attributes of shared bicycle →personal leisure benefits	0.913	8.514	0.000	Supported
H1d	Leisure attributes of shared bicycles →psychological leisure benefits	0.822	8.087	0.000	Supported
H2a	Social leisure benefits →quality of life	0.269	3.142	0.000	Supported
H2b	Physical leisure benefits →quality of life	0.134	1.515	0.948	Not supported
H2c	Personal leisure benefits →quality of life	0.008	0.065	0.130	Not supported
H2d	Psychological leisure benefits →quality of life	0.414	4.029	0.002	Supported

The results also show that the goodness-of-fit indices in this study are suitable, with values of $\chi^2/df = 1.801 \leq 3$, $p = 0.000$, $RMR = 0.027 \leq 0.08$, $GFI = 0.912 \geq 0.9$, $NFI = 0.891 \geq 0.9$, $RFI = 0.875 \geq 0.9$, $IFI = 0.948 \geq 0.9$, $TLI = 0.940 \geq 0.9$, $CFI = 0.948 \geq 0.9$, and $RMSEA = 0.047 \leq 0.08$. Figure 3 shows the structural relationships among variables.

Figure 3. Estimation of the model.

5. Conclusions

The bike-sharing system of Seoul is a promising method for extending the impact of the sharing economy from the private and market sectors into the public space. It meets the goal of environmental sustainability while offering an enjoyable leisure activity that promotes a healthy lifestyle. To make urban transportation more sustainable, bicycling has attracted increasing attention from policymakers and researchers [52]. While bicycles are extensively used to travel around cities in Europe, North America, and Asia, public

bicycle sharing has received increasing attention around the world in recent years [53]. Little is known regarding the sociopsychological perceptions of consumers toward shared bicycles, and very few studies have focused on a sustainable bicycle-sharing practice as transportation [54]. However, bicycle-sharing can help citizens enjoy their leisure time and improve their quality of life, thus leading to various leisure benefits. Accordingly, this paper fills the research gap and focuses on the crucial features of bicycle sharing: leisure attributes and quality of life.

The purpose of this study is to examine the relationships among the leisure attributes of the sharing economy, leisure benefits (e.g., social, physical, personal, and psychological gains), and quality of life in the context of Seoul's bike-sharing system. The hypothesis investigated is that the leisure attributes of the sharing economy will affect leisure gain and quality of life. Questionnaires were collected from people who had experience using Seoul Bike. In total, 363 valid samples were used for this research. This study had two main findings.

First, the present analysis shows that the leisure property of the sharing economy can be divided into four components of leisure benefits: social benefits ($\beta = 0.709$, $t = 7.318$, $p < 0.001$), physical benefits ($\beta = 0.740$, $t = 6.749$, $p < 0.001$), personal benefits ($\beta = 0.913$, $t = 8.514$, $p < 0.001$), and psychological benefits ($\beta = 0.822$, $t = 8.087$, $p < 0.001$), with the latter two having positive effects. These results show that leisure experience through the sharing economy also has a relationship with leisure benefits.

Second, leisure gains differed between shared bicycles and general bicycles, as did quality of life. Leisure benefits were divided into four sub-factors to establish a structural model. Social benefits ($\beta = 0.269$, $t = 3.142$, $p < 0.001$) and psychological benefits ($\beta = 0.414$, $t = 4.029$, $p < 0.002$) from the sharing economy have a positive effect on quality of life. However, physical benefits ($\beta = 0.134$, $t = 1.515$, $p < 0.001$) and personal benefits ($\beta = 0.008$, $t = 0.065$, $p < 0.001$) from the sharing economy did not affect quality of life. These results indicate that the leisure experience that results from sharing bicycles has a significant influence on various leisure benefits in addition to the benefits that can be gained from bikes due to the high social interaction and value-related opportunities stemming from the characteristics of the sharing economy. This is a characteristic part of leisure gain through the sharing economy. As a result, it also affects quality of life, suggesting that social and physical benefits obtained through leisure experiences from the sharing economy are the main factors affecting quality of life.

6. Implications

To date, there has been little research on the topic of the sharing economy in the context of bicycle sharing in tourism and leisure. Nevertheless, shared bicycles have attracted attention in tourism, as the users' perceptions of them are changing due to the proliferation of such bicycles [8]. Although research is actively being conducted into the relationship between the sharing economy and tourism, most relevant studies have focused on the shared bicycle platform, and few studies have focused on the leisure experience from the sharing economy [22,23,55]. Therefore, this study has an important theoretical implication in that it examined the relationship between the sharing economy and leisure sports, which were not covered in previous studies, and it verified the results, indicating that the leisure attribute of the sharing economy has a significant influence on variables related to leisure tourism. Due to the recent increased interest in psychological well-being and life satisfaction, leisure satisfaction can directly affect quality of life and can also indirectly do so depending on the leisure resources [56]. Discussions of this topic are ongoing [57,58].

What the present study found was that the sharing economy platform's resources also had a positive influence on leisure factors and ultimately, influenced quality of life. However, this study also has several limitations. First, it deals with the use of shared bikes as a leisure activity, with a focus on whether leisure attributes affect leisure gain and quality of life. For this reason, demographic variables or variables related to the use of shared bicycles were not combined for analysis.

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