Regular Article
pISSN: 2288-9744, eISSN: 2288-9752
Journal of Forest and Environmental Science
Vol. 37, No. 3, pp. 260-268, September, 2021
https://doi.org/10.7747/JFES.2021.37.3.260

JFES
Journal of Forest and Environmental Science

A Study on Preference and Behavior of Forest Path Users

Yeongwan Seo[1], Sanghyun Jung[2], Sooncheol Jeong[2], Soyeon Kim[2] and Jungkee Choi[2,*]
[1]*Institute of Forest Science, College of Forest and Environmental Sciences, Kangwon National University, Chuncheon 24345, Republic of Korea*
[2]*Department of Forest Management, College of Forest and Environmental Sciences, Kangwon National University, Chuncheon 24345, Republic of Korea*

Abstract

This study was conducted to grasp users' preferences and behavior of forest paths and to provide basic data for forest path construction in the future. Among forest path users, males and females over 20 years old were surveyed on forest path preferences, motives for visiting, using time and distance, companions, and sources for obtaining information on forest paths. A total of 587 people participated in the questionnaire, and cross-analysis was conducted simultaneously using the SPSS statistical program. In analyzing the preference of forest paths, it was found that male and the general public preferred trekking path for activities while female and foresters preferred forest path for relaxation and healing ($p<0.05$). As for the motives for visiting forest paths, the response that they visited for a walk/rest was the highest in gender, occupation, and age group. As for the number of annual visits, less than 5 was the highest in overall, and foresters tended to visit forest path more often than the general public, and the number of visits to the forest paths increased with age ($p<0.01$). The most common route to acquire information about forest paths is the Internet, while the Internet use is relatively low in those over 60s ($p<0.05$). The response ratio of accompanying their family in visiting forest paths were the highest, while the response in their 20s and 60s was the most in accompanying their friends ($p<0.05$).

Key Words: forest path, preference, behavior, cross-analysis, questionnaire

Introduction

With the spread of 5-day work a week, public interest in forest activities that can improve health with enjoying nature is increasing (Oh 2018; Kim and Choi 2018). About 32 million people, or 77% of the population aged 19 and over in Korea, hike more than once a year, and the population who hikes more than once a month reaches 13 million (Korea Forest Service 2015). In particular, the demand for recreation to experience the beauty of nature and the unique culture and history of the region is continuously increasing (Kim et al. 2012). The horizontal concept of walking through the forest path is rapidly moving away from the existing vertical climbing pattern (Yoo 2014; Choi et al. 2017). In addition, more people are visiting the forest to soothe the tired heart from urban life to pursue speed through walking on the forest path (Kim and Lim 2017).

Although policies and projects related to the creation of various types of forest paths were promoted, systematic forest path management and policy preparation based on analysis of user needs and perceptions were relatively insufficient (Oh et al. 2018). For systematic management and

Received: March 31, 2021. Revised: August 5, 2021. Accepted: August 10, 2021.

Corresponding author: Jungkee Choi
Department of Forest Management, College of Forest and Environmental Sciences, Kangwon National University, Chuncheon 24345, Republic of Korea
Tel: +82-33-250-8337, Fax: +82-33-259-5617, E-mail: jungkee@kangwon.ac.kr

revitalization policies of forest paths, data on basic perceptions such as the purpose and motivation of forest path users' visits, convenience and uncomfortable matters for forest path use are important (Yoo 2014). Forest path policy requires that various social demands for forest recreation be reflected in forest paths, and forest paths have a very diverse role, ranging from users accessing the forest to experiencing nature, which is directly or indirectly involved in the user's recreational activities. It can have an effect (Seo et al. 2013). In addition, many changes are expected in the use of forest paths due to the increased participation of the elderly and the increasing demand for families and women (Lee et al. 2020).

The Forest Service included the definition of forest paths in the 2012 Forest Culture and Recreation Act in order to safely use forest paths and meet various demands as the walking path trend is active. In other words, the 'forest path' was defined as a path created in the forest for activities such as mountain climbing, trekking, leisure sports, tripping, or recreation and healing. According to this law, a forest path refers to 1) mountain trail (MT) that trains the mind and body while climbing a mountain, 2) leisure sports paths (LSP) that provides forest leisure and sports, 3) exploratory path (EP) that experiences, learns or observes forest ecology, 4) forest path for relaxation and healing (FPRH) that promotes health, such as relaxation and healing, or for recreation in forests, and 5) trekking path for activities (TPA) that promote health while experiencing the local history and culture while walking the path, enjoying the scenery, and promoting health. Forest paths have a variety of roles, ranging from users accessing the forest to experiencing nature, and this can have a direct or indirect effect on the users' recreational activities (Son and Ha 2012). Therefore, analysis of users' usage behavior and consciousness survey on the use of forest paths are considered to be meaningful in terms of providing quality visiting services and operating forest paths according to the characteristics of the types of use. However, a detailed approach is required because forest paths can be classified in various ways according to difficulty, degree of development, and characteristics of forest path users. Therefore, this study is aimed to 1) understand the preferences and behaviors of forest path users for the types of forest paths and 2) provide basic data on forest path creation by grasping the usage behavior of forest path users.

Materials and Methods

Data collection

A questionnaire survey was conducted targeting forest path users to understand their preferences and behavior patterns for the types of forest paths from August to December 2020. The questionnaire was composed of preferred types of forest paths, motives to visit, usage time and distance, visiting companions, and source for acquiring forest path information route. The questionnaire survey was conducted on both men and women over the age of 20 among the users of the forest path, with a self-written face-to-face survey and an on-line survey using a random sample extraction method.

Analysis method

SPSS statistics program was used for the analysis of collected data and percentages were compared to understand the general status of the subjects. A homogeneity test was performed through cross-analysis to confirm whether the behavior patterns were different in the group of sex, occupation, age and preference.

Result and Discussion

General status of respondents

A total of 587 respondents participated in the survey, of which 399 (68.0%) were men and 188 (32.0%) were women. By occupation, 183 (31.2%) were foresters such as officials, students, professors, and researchers in the field of forestry and 404 (68.8%) were general public. By age, there were 51 in their 20s (8.7%), 104 (17.7%) in their 30s, 118 (20.1%) in their 40s, 193 (32.9%) in their 50s, and 121 (20.6%) in their 60s or older (Fig. 1).

Forest path preference

In the question of preference for forest paths it was found that male preferred trekking paths (32.3%) the most, followed by hiking trails (MT) (29.8%) and forest path for relaxation and healing (FPRH) (27.6%), while female preferred in the order of forest path for relaxation and healing (FPRH) (41.0), trekking path for activities (TPA)

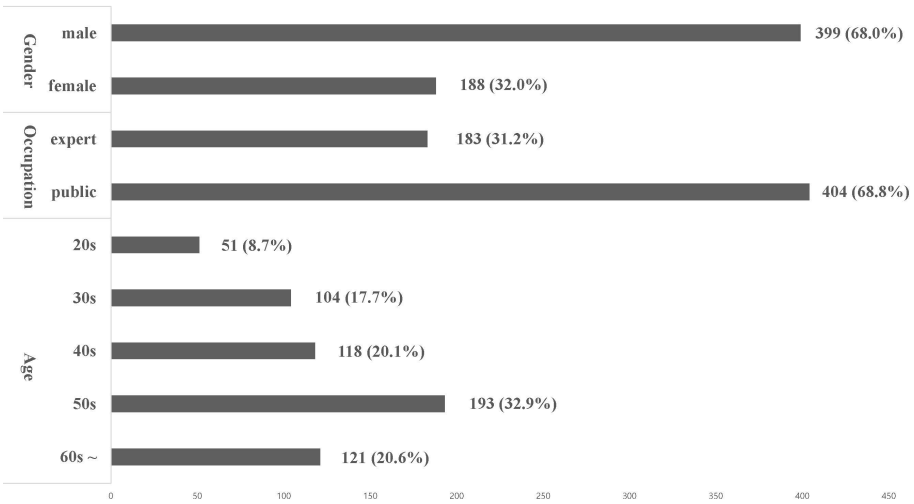

Fig. 1. General characteristics of questionnaire respondents.

Table 1. Most favorite type of forest paths

Classification \ Factors		MT	TPA	FPRH	LSP	EP	χ^2
Gender	Male	119 (29.8)	129 (32.3)	110 (27.6)	14 (3.5)	27 (6.8)	18.977**
	Female	35 (18.6)	49 (26.1)	77 (41.0)	5 (2.7)	22 (11.7)	
Occupation	Forester	41 (22.4)	48 (26.2)	61 (33.3)	8 (4.4)	25 (13.7)	13.191*
	Public	113 (28.0)	130 (32.2)	126 (31.2)	11 (2.7)	24 (5.9)	
Age	20s	8 (15.7)	11 (21.6)	23 (45.1)	3 (5.9)	6 (11.8)	28.904*
	30s	26 (25.0)	28 (26.9)	30 (28.8)	5 (4.8)	15 (14.4)	
	40s	37 (31.4)	31 (26.3)	38 (32.2)	4 (3.4)	8 (6.8)	
	50s	48 (24.9)	66 (34.2)	58 (30.1)	4 (2.1)	17 (8.8)	
	60s~	35 (28.9)	42 (34.7)	38 (31.4)	3 (2.5)	3 (2.5)	
Total		154 (26.2)	178 (30.3)	187 (31.9)	19 (3.2)	49 (8.3)	

MT, mountain trail; TPA, trekking path for activities; FPRH, forest path for relaxation and healing; LSP, leisure sports paths; EP, exploratory path.
*$p < 0.05$, **$p < 0.01$.

(26.1%) and mountain trails (MT) (18.6%) ($p < 0.01$) as showed in Table 1. Foresters were shown to prefer in the order of FPRH (33.3%), TPA (26.2%) and MT (22.4%) ($p < 0.05$). It was shown that FPRH (45.1%) was preferred the most in the 20s, followed by TPA (21.6%) and MT (15.7%), and the 40s preferred in the order of FPRH (32.2%), MT (31.4%) and TPA (26.3%). Meanwhile TPA was preferred the most, followed by FPRH and MT in their 30s, 50s and 60s ($p < 0.05$).

Motivation for using forest path

The motivation for visiting forest paths was in the order of 'for walking/resting', 'for exercise', 'for healing' in both gender and occupation group. In terms of age group, the response of visiting the path 'for walking/resting' had the highest ratio at 39.7% in 30s, followed by 'for healing' (23.7%) and 'for exercise' (22.9%), whereas 'for walking/resting' had the highest ratio in other age groups, followed by exercise and healing. This is considered to be the result of the increased values of the people's quality of life. The respondents who preferred MT and leisure sports

paths (LSP) were in the order of 'for exercise', 'for walking/resting' and 'for healing'. The respondents who prefer TPA were in the order of 'for walking/rest' (36.9%), 'for exercise' (27.8%) and 'for healing' (17.0%), while the respondents who prefer FPRH were in the order of 'for walking/resting', 'for healing and exercise' ($p < 0.01$). It can be inferred that respondents who prefer MT and LSP visit the forest paths 'for exercise' and respondents who prefer FPRH visit the forest path 'for walking/rest'. Meanwhile, Kang and Jung (2011) showed that 'for understanding and experience of nature' or 'for appreciation of scenery' were the main factors of visiting forest paths (Table 2).

Number of forest path visits

In the question of the number of visits to the forest paths in the last 1 year, it was found that the response ratio of 'less than 5 times' was the highest for both men and women, followed by '6-10 times'> and '11-15 times'. Foresters and the general public showed the same order, but foresters tended to walk forest paths longer than the general public on average ($p < 0.05$). A survey on forests by Korea Forest Service (2015) had the similar result to this study, where 28.8% of the general public visit the mountain once or twice a year, and 43.0% of the foresters visit the mountain more than once a month. It is considered that foresters visit forest paths more often than general public because foresters have more knowledge, experience and interest in forests than the general public. As for the age group, the number of forest road visits tended to increase as the age increased ($p < 0.01$). A survey on forest by the Korea Forest Service (2015) and the studies by Son et al. (2012) and Kim (2015) showed that the ratio of middle-aged and elderly people in their 50s and older people to use forest roads was relatively high as shown in this study (Table 3).

In the question of the visiting number per year by preferred forest paths, the respondents who preferred LSP the most 6-10 times was the highest with 31.6%, followed by 5 times (31.5%) and 11-15 times (21.1%) and less than 5 times is the highest on other preferred forest path, followed by 6-10 times and 11-15 times ($p < 0.05$). Overall, the number of visits by users of forest roads in Daegu Metropolitan City was the highest in cases of less than 5 times (41.7%). In overall, this study was the highest in cases of less than 5 times (41.7%). This is a different result from the study of Kwon and Lee (2013), where respondents who frequently visit more than 25 times (30%) showed the largest

Table 2. Responses to motives for visiting forest paths

Classification \ Motivation		Walk/rest	Exercise	Observation/ experience	Healing	Others	χ^2
Gender	Male	207 (38.0)	159 (29.2)	43 (7.9)	116 (21.3)	20 (3.7)	5.308
	Female	107 (43.3)	61 (24.7)	12 (4.9)	59 (23.9)	8 (3.2)	
Occupation	Forester	96 (39.8)	57 (23.7)	17 (7.1)	56 (23.2)	15 (6.2)	9.420
	Public	218 (39.6)	163 (29.6)	38 (6.9)	119 (21.6)	13 (2.4)	
Age	20s	32 (44.4)	18 (25.0)	7 (9.7)	13 (18.1)	2 (2.8)	20.804
	30s	52 (39.7)	30 (22.9)	13 (9.9)	31 (23.7)	5 (3.8)	
	40s	67 (45.6)	29 (19.7)	15 (10.2)	30 (20.4)	6 (4.1)	
	50s	102 (37.8)	86 (31.9)	11 (4.1)	62 (23.0)	9 (3.3)	
	60s~	61 (35.5)	57 (33.1)	9 (5.2)	39 (22.7)	6 (3.5)	
Preference	MT	73 (35.4)	80 (38.8)	13 (6.3)	35 (17.0)	5 (2.4)	33.094**
	TPA	93 (36.9)	70 (27.8)	17 (6.7)	60 (23.8)	12 (4.8)	
	FPRH	115 (46.2)	51 (20.5)	15 (6.0)	60 (24.1)	8 (3.2)	
	LSP	7 (31.8)	9 (40.9)	2 (9.1)	4 (18.2)	0 (0.0)	
	EP	27 (42.9)	9 (14.3)	7 (11.1)	17 (27.0)	3 (4.8)	
Total		315 (39.8)	219 (27.7)	54 (6.8)	176 (22.2)	28 (3.5)	

MT, mountain trail; TPA, trekking path for activities; FPRH, forest path for relaxation and healing; LSP, leisure sports paths; EP, exploratory path.
**$p < 0.01$.

Table 3. Number of forest paths visits in the last 1 year

Classification \ Visiting no.		~5	6-10	11-15	16-20	21-25	26~	χ^2
Gender	Male	150 (37.6)	109 (27.3)	59 (14.8)	30 (7.5)	7 (1.8)	44 (11.0)	10.840
	Female	95 (50.5)	45 (23.9)	25 (13.3)	10 (5.3)	2 (1.1)	11 (5.9)	
Occupation	Forester	71 (38.8)	47 (25.7)	20 (10.9)	15 (8.2)	5 (2.7)	25 (13.7)	11.171*
	Public	174 (43.1)	107 (26.5)	64 (15.8)	25 (6.2)	4 (1.0)	30 (7.4)	
Age	20s	35 (68.6)	8 (15.7)	3 (5.9)	2 (3.9)	1 (2.0)	2 (3.9)	41.900**
	30s	54 (51.9)	22 (21.2)	17 (16.3)	6 (5.8)	1 (1.0)	4 (3.8)	
	40s	48 (40.7)	29 (24.6)	18 (15.3)	11 (9.3)	1 (0.8)	11 (9.3)	
	50s	66 (34.2)	59 (30.6)	31 (16.1)	10 (5.2)	5 (2.6)	22 (11.4)	
	60s~	42 (34.7)	36 (29.8)	15 (12.4)	11 (9.1)	1 (0.8)	16 (13.2)	
Preference	MT	48 (31.2)	37 (24.0)	25 (16.2)	17 (11.0)	5 (3.2)	22 (14.3)	36.650*
	TPA	78 (43.8)	51 (28.7)	22 (12.4)	11 (6.2)	0 (0.0)	16 (9.0)	
	FPRH	96 (51.3)	43 (23.0)	28 (15.0)	7 (3.7)	2 (1.1)	11 (5.9)	
	LSP	6 (31.6)	7 (36.8)	4 (21.1)	1 (5.3)	0 (0.0)	1 (5.3)	
	EP	17 (34.7)	16 (32.7)	5 (10.2)	4 (8.2)	2 (4.1)	5 (10.2)	
Total		245 (41.7)	154 (26.2)	84 (14.3)	40 (6.8)	9 (1.5)	55 (9.4)	

MT, mountain trail; TPA, trekking path for activities; FPRH, forest path for relaxation and healing; LSP, leisure sports paths; EP, exploratory path.
*$p < 0.05$, **$p < 0.01$.

Table 4. Forest paths walking distance per day

Classification \ Number		~1 km	1-5 km	5-10 km	10-15 km	15-20 km	20 km~	χ^2
Gender	Male	40 (10.0)	188 (47.1)	127 (31.8)	36 (9.0)	8 (2.0)	0 (0.0)	15.768**
	Female	26 (13.8)	88 (46.8)	68 (36.2)	3 (1.6)	2 (1.1)	1 (0.5)	
Occupation	Forester	19 (10.4)	104 (56.8)	46 (25.1)	11 (6.0)	2 (1.1)	1 (0.5)	13.199*
	Public	47 (11.6)	172 (42.6)	149 (36.9)	28 (6.9)	8 (2.0)	0 (0.0)	
Age	20s	19 (37.3)	19 (37.3)	9 (17.6)	3 (5.9)	1 (2.0)	0 (0.0)	85.008**
	30s	19 (18.3)	62 (59.6)	19 (18.3)	4 (3.8)	0 (0.0)	0 (0.0)	
	40s	11 (9.3)	61 (51.7)	38 (32.2)	7 (5.9)	1 (0.8)	0 (0.0)	
	50s	8 (4.1)	93 (48.2)	72 (37.3)	16 (8.3)	3 (1.6)	1 (0.5)	
	60s~	9 (7.4)	41 (33.9)	57 (47.1)	9 (7.4)	5 (4.1)	0 (0.0)	
Preference	MT	10 (6.5)	60 (39.0)	57 (37.0)	23 (14.9)	4 (2.6)	0 (0.0)	55.176**
	TPA	14 (7.9)	81 (45.5)	68 (38.2)	11 (6.2)	3 (1.7)	1 (0.6)	
	FPRH	30 (16.0)	100 (53.5)	53 (28.3)	2 (1.1)	2 (1.1)	0 (0.0)	
	LSP	4 (21.1)	8 (42.1)	4 (21.1)	3 (15.8)	0 (0.0)	0 (0.0)	
	EP	8 (16.3)	27 (55.1)	13 (26.5)	0 (0.0)	1 (2.0)	0 (0.0)	
Total		66 (11.2)	276 (47.0)	195 (33.2)	39 (6.6)	10 (1.7)	1 (0.2)	

MT, mountain trail; TPA, trekking path for activities; FPRH, forest path for relaxation and healing; LSP, leisure sports paths; EP, exploratory path.
*$p < 0.05$, **$p < 0.01$.

distribution.

Distance and time of using forest paths

In both of gender and occupation groups, the response rate of walking 1-5 km was the highest, followed by 5-10 km and less than 1 km (Table 4). In terms of age group, 1-5 km was the highest in 20s, 30s, and 40s, followed by less than 1 km and 5-10 km, and 1-5 km the highest in 50s and over 60s, followed by 5-10 km and 10-15 km ($p < 0.01$). Respondents who prefer MT are in the order of 1-5 km (39.0%) > 5-10 km (37.0%) > 10-15 km (14.9%) and 1-5 km was the highest in other preferred forest paths, followed by 5-10 and less than 1 km ($p < 0.01$).

By age group, the groups under 40 were in the order of 1-2 hours > less than 1 hour > 2-3 hours, and the 50s and older were in the order of 1-2 hours, 2-3 hours and 3-4 hours ($p < 0.01$). In terms of preference, MT was in the order of 1-2 hours (37.7%) > 2-3 hours (28.6%) > 3-4 hours (14.9%), and LSP in the order of 1-2 hours (36.8%), 3-4 hours (26.3%) and less than 1 hour (15.8%). TPA, FPRH and EP were found to be 1-2 hours > 2-3 hours > less than 1 hour. These results were highly similar to the ones from the research by Seo et al. (2013) (Table 5).

Forest path information acquisition route

As for the information acquisition route for forest paths, it was found to be the Internet > friends > local promotional materials regardless of gender, occupation, age, or preference. However, the percentage of obtaining the information from the Internet was significantly higher in forester group than in general public, while it was noticeably lower in 60s and older than in other age groups (Table 6).

Forest path companion

In the response terms of accompanying persons during visit to the forest road, both male and female were found in the order of family > friends > co-workers, but female had a significantly higher proportion of family and friends than male ($p < 0.01$). By occupation, foresters were shown as family (37.4%) > co-workers (22.0%) > friends (15.4%), while the general public was family (30.7%) > friends (29.8%) > co-workers (14.0%).

By age group, the response ratio of accompanying friends was the highest at 38.5% in the 20s group, followed by family members (27.7%) and alone (26.2%). family (37.3%) > co-workers (22.0%) > friends (16.0%) in the

Table 5. Forest paths walking time per day

Classification \ Time		~1 hour	1-2 hours	2-3 hours	3-4 hours	4-5 hours	5 hours~	χ^2
Gender	Male	42 (10.5)	185 (46.4)	101 (25.3)	44 (11.0)	16 (4.0)	11 (2.8)	9.710
	Female	28 (14.9)	83 (44.1)	58 (30.9)	14 (7.4)	4 (2.1)	1 (0.5)	
Occupation	Forester	27 (14.8)	82 (44.8)	45 (24.6)	15 (8.2)	7 (3.8)	7 (3.8)	7.463
	Public	43 (10.6)	186 (46.0)	114 (28.2)	43 (10.6)	13 (3.2)	5 (1.2)	
Age	20s	11 (21.6)	28 (54.9)	10 (19.6)	2 (3.9)	0 (0.0)	0 (0.0)	59.977**
	30s	24 (23.1)	51 (49.0)	23 (22.1)	4 (3.8)	1 (1.0)	1 (1.0)	
	40s	11 (9.3)	56 (47.5)	37 (31.4)	10 (8.5)	3 (2.5)	1 (0.8)	
	50s	15 (7.8)	80 (41.5)	59 (30.6)	25 (13.0)	10 (5.2)	4 (2.1)	
	60s~	9 (7.4)	53 (43.8)	30 (24.8)	17 (14.0)	6 (5.0)	6 (5.0)	
Preference	MT	10 (6.5)	58 (37.7)	44 (28.6)	23 (14.9)	12 (7.8)	7 (4.5)	52.665**
	TPA	19 (10.7)	78 (43.8)	55 (30.9)	18 (10.1)	4 (2.2)	4 (2.2)	
	FPRH	31 (16.6)	96 (51.3)	47 (25.1)	10 (5.3)	2 (1.1)	1 (0.5)	
	LSP	3 (15.8)	7 (36.8)	3 (15.8)	5 (26.3)	1 (5.3)	0 (0.0)	
	EP	7 (14.3)	29 (59.2)	10 (20.4)	2 (4.1)	1 (2.0)	0 (0.0)	
Total		70 (11.9)	268 (45.7)	159 (27.1)	58 (9.9)	20 (3.4)	12 (2.0)	

MT, mountain trail; TPA, trekking path for activities; FPRH, forest path for relaxation and healing; LSP, leisure sports paths; EP, exploratory path.
**$p < 0.01$.

Table 6. Sources to acquire forest path information

Classification \ Source		TV/radio	NP&M[1)]	Internet	Friend	Relatives	LPM[2)]	Others	χ^2
Gender	Male	34 (6.2)	31 (5.6)	273 (49.5)	138 (25.0)	6 (1.1)	56 (10.1)	14 (2.5)	2.365
	Female	20 (7.7)	14 (5.4)	117 (45.2)	73 (28.2)	3 (1.2)	24 (9.3)	8 (3.1)	
Occupation	Forester	11 (4.8)	4 (1.7)	135 (58.4)	50 (21.6)	2 (0.9)	25 (10.8)	4 (1.7)	21.419**
	Public	43 (7.4)	41 (7.1)	255 (44.0)	161 (27.8)	7 (1.2)	55 (9.5)	18 (3.1)	
Age	20s	6 (9.1)	2 (3.0)	31 (47.0)	11 (16.7)	2 (3.0)	9 (13.6)	5 (7.6)	47.193**
	30s	5 (3.8)	2 (1.5)	73 (54.9)	35 (26.3)	2 (1.5)	12 (9.0)	4 (3.0)	
	40s	4 (2.6)	5 (3.3)	82 (54.3)	43 (28.5)	0 (0.0)	13 (8.6)	4 (2.6)	
	50s	23 (8.2)	17 (6.1)	133 (47.7)	77 (27.6)	2 (0.7)	24 (8.6)	3 (1.1)	
	60s~	16 (8.8)	19 (10.4)	71 (39.0)	45 (24.7)	3 (1.6)	22 (12.1)	6 (3.3)	
Preference	MT	13 (6.4)	9 (4.5)	103 (51.0)	53 (26.2)	3 (1.5)	16 (7.9)	5 (2.5)	19.846
	TPA	15 (5.7)	19 (7.2)	128 (48.5)	64 (24.2)	2 (0.8)	29 (11.0)	7 (2.7)	
	FPRH	21 (8.2)	15 (5.9)	115 (44.9)	69 (27.0)	4 (1.6)	22 (8.6)	10 (3.9)	
	LSP	2 (8.0)	1 (4.0)	13 (52.0)	5 (20.0)	1 (4.0)	3 (12.0)	0 (0.0)	
	EP	4 (6.1)	1 (1.5)	28 (42.4)	23 (34.8)	0 (0.0)	10 (15.2)	0 (0.0)	
Total		55 (6.8)	45 (5.5)	387 (47.6)	214 (26.3)	10 (1.2)	80 (9.8)	22 (2.7)	

[1)] NP&M: news paper/magazine, [2)] LPM: local promotion materials.
MT, mountain trail; TPA, trekking path for activities; FPRH, forest path for relaxation and healing; LSP, leisure sports paths; EP, exploratory path.
*$p < 0.05$, **$p < 0.01$.

Table 7. Companion on forest paths

Classification \ Companion		Family	Friend	Colleague	Mountain club	Alone	Others	χ^2
Gender	Male	164 (30.3)	124 (22.9)	97 (17.9)	65 (12.0)	77 (14.2)	14 (2.6)	19.653**
	Female	96 (37.5)	81 (31.6)	35 (13.7)	20 (7.8)	19 (7.4)	5 (2.0)	
Occupation	Forester	85 (37.4)	35 (15.4)	50 (22.0)	15 (6.6)	37 (16.3)	3 (1.3)	30.796**
	Public	175 (30.7)	170 (29.8)	82 (14.4)	70 (12.3)	59 (10.4)	5 (0.9)	
Age	20s	18 (27.7)	25 (38.5)	4 (6.2)	0 (0.0)	17 (26.2)	1 (1.5)	67.220**
	30s	51 (38.9)	35 (26.7)	22 (16.8)	3 (2.3)	18 (13.7)	2 (1.5)	
	40s	56 (37.3)	24 (16.0)	33 (22.0)	14 (9.3)	20 (13.3)	3 (2.0)	
	50s	86 (30.7)	67 (23.9)	53 (18.9)	41 (14.6)	24 (8.6)	9 (3.2)	
	60s~	49 (28.7)	54 (31.6)	20 (11.7)	27 (15.8)	17 (9.9)	4 (2.3)	
Preference	MT	52 (26.1)	59 (29.6)	24 (12.1)	33 (16.6)	31 (15.6)	0 (0.0)	56.495**
	TPA	81 (31.6)	67 (26.2)	44 (17.2)	30 (11.7)	24 (9.4)	10 (3.9)	
	FPRH	103 (40.6)	61 (24.0)	47 (18.5)	10 (3.9)	27 (10.6)	6 (2.4)	
	LSP	2 (8.7)	9 (39.1)	4 (17.4)	5 (21.7)	3 (13.0)	0 (0.0)	
	EP	22 (33.8)	9 (13.8)	13 (20.0)	7 (10.8)	11 (16.9)	3 (4.6)	
Total		260 (32.6)	205 (25.7)	132 (16.6)	85 (10.7)	96 (12.0)	19 (2.4)	

*$p < 0.05$, **$p < 0.01$.
MT, mountain trail; TPA, trekking path for activities; FPRH, forest path for relaxation and healing; LSP, leisure sports paths; EP, exploratory path.

40s and friends (31.6%) > family (28.7%) > mountain group (15.8) in the 60s. The 30s and 50s were in the order of family > friends > co-workers in ($p < 0.01$) (Table 7).

In terms of preference, the respondents who prefer mountain trails had the highest rate of accompanying their family with 29.6%, followed by friends (26.1%) and moun-

tain groups (16.6%). The leisuresports path was in the order of friends (39.1%) > mountain groups (21.7%) > co-workers (17.4%), and the exploratory path was family (33.8%) > co-workers (20.0%) > alone (16.9%) ($p < 0.01$). In addition, TPA and FPRH appeared in the order of family > friends > co-workers. In this study, the ratio of accompanying family in visiting forest paths was the highest, and the same results were also found in the study of Park and Jung (2013).

Conclusion

Recently, the population visiting forest paths has increased as social demands for health promotion have increased. This study was conducted to provide basic data on forest road construction by identifying the preferences and behavior of forest road users, and the main results are as follows:

First, the analysis of the preference of forest paths showed that male prefers trekking path for activities while female prefers forest path for relaxation and healing. Foresters was found to prefer forest path for relaxation and healing while the general public prefer trekking path for activities ($p < 0.05$).

Second, the highest response was in the question of the motive for visiting forest roads that they visited forest roads for a walk/rest regardless of gender, occupation, or age group. The number of annual visits to forest path was less than 5 times. Meanwhile, foresters tended to visit forest paths more often than ordinary people, and the number of visiting forest paths increased with age ($p < 0.01$).

Third, the most common route for obtaining forest road information was the Internet in overall, but Internet use was relatively low among those in their 60s or older ($p < 0.05$).

Fourth, the walking distance of the forest path was found to be in the order of 1-5 km > 5-10 km > less than 1 km and the walking time on the forest path was in the order of 1-2 hours > 2-3 hours > less than 1 hour in general. Meanwhile the distance and time tended to increase with age.

Fifth, in the question of the person accompanying when visiting the forest road, the response rate of accompanying family was the highest in overall, while the response that they accompany their friends was the highest in the 20s and 60s ($p < 0.05$).

This study was conducted to provide basic data for the establishment of forest paths, and the behavior of forest path users was identified through a questionnaire survey. For the survey, it was important to extract the subjects of the questionnaire in a statistically significant way by region, gender, or age, but the sampling of the questionnaire was insufficient in this study. Also analyzing the behavior of users by type of forest path can be used as a more realistic basic data for forest path construction, but this study has limitations in presenting clear forest path construction guideline by limiting to only a forest path. However, it is considered to have provided important information on forest path construction by deriving general forest path usage behaviors of the users.

References

Choi YS, Seong BH, Yoo KJ. 2017. A Study on Visitors' Perception for the Visitor Crowding on the Jeju Olle Trails, Korea. J Assoc Korean Photo-Geogr 27: 11-22. (in Korean with English abstract)

Kang MH, Jung H. 2011. Identification of Trekkers' Characteristics: Focusing on Jirisan-round Trail Users. J Korean For Soc 100: 382-391. (in Korean with English abstract)

Kim SG, Kweon HK, Kim DG, Lee JW. 2012. A Study on the Type Classification and the Proper Standard of domestic Trail. J Korean Inst For Recreat 16: 77-86. (in Korean with English abstract)

Kim SY, Choi JK. 2018. Effects of Forest Experience Activity on the Attitude toward Forest and Personality of Primary School Students. J For Environ Sci 34: 490-496.

Kim TK, Lim WH. 2017. A Study on Gait Characteristics of Visitors Walking through Forest Trails. J Korean Inst For Recreat 21: 53-61. (in Korean with English abstract)

Kim YH. 2015. The Analysis of Needs for the Development of Forest Therapy Program. PhD thesis. Chungbuk National University, Cheongju, Korea. (in Korean with English abstract)

Korea Forest Service. 2015. Report on the Survey on Public Awareness of Forests. Korea Forest Service, Daejeon. (in Korean)

Kwon TH, Lee DJ. 2013. User Satisfaction and Motivation to Forest Trail near Metropolitan City of Korea[1a] - Focused on the Forest Trail of Daegu. Korean J Environ Ecol 27: 405-412. (in Korean with English abstract)

Lee JS, Lee SG, Seo JW, An KW. 2020. An Analysis on Social Media Users' Perception of Korean Major Forest Trails. Korean J For Econ 27: 51-67. (in Korean with English abstract)

Oh TB, Lee JI, Choi IH. 2018. Improvement Plan of Forest Trail Management through Consciousness Analysis of Forest Trail

User. J Assoc Korean Photo-Geogr 28: 115-130. (in Korean with English abstract)

Oh YM. 2018. Demand analysis of Jirisan trail users. MS thesis. Kyungpook National University, Daegu, Korea. (in Korean with English abstract)

Park KM, Jung TY. 2013. An Analysis on the Consciousness and Attitudes of Groups to the Mountainous Ecology Trail - Focused on Jarakgil in Sobaeksan(Mt.). Proc Korean Soc Environ Ecol Con 23: 88-90.

Seo YA, Yeoun PS, Shin CS, Kim JJ, Kim TI. 2013. Analysis on Visitor's Psychological Benefits and Behavioral Pattern by Different Types of Forest Trails. J Korean Inst For Recreat 17: 19-29. (in Korean with English abstract)

Son JW, Ha SY, Kim JJ. 2012. A Study on Visitor Characteristics for Trail Program Development. J Korean Soc For Sci 101: 469-479. (in Korean with English abstract)

Son JW, Ha SY. 2012. A Study on Visitor's Behavior as a Characteristics of Different Forest Trails. J Korean For Soc 101: 309-316. (in Korean with English abstract)

Yoo KJ. 2014. A Study on Users' Attitude Toward the Forest Trails - Focused on the Jirisan Dulegil. Korean J Environ Ecol 28: 247-252. (in Korean with English abstract)