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Latent Opportunities for the Use of Two-Rider Bicycles and Associated Challenges by Welfare Service Providers

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Synopsis

For persons with reduced mobility (PRM), the two-rider bicycle might be a potential, practical means of transportation, and the development of bicycles that meet these needs is in progress. While it revealed that there were many limits imposed on their use as a private use in a previous study, the opportunities for business use or associated challenges remain unclear. Thus, the purpose of this study is to understand the latent opportunities or use of two-rider bicycles by welfare service providers, as well as the associated challenges. A hearing survey was conducted on various type of welfare service providers that operate transportation services for the elderly and people with disabilities. Furthermore, a questionnaire survey was conducted on potential users after providing opportunities to experience two-rider bicycles. The results confirmed that there were different types of latent opportunities for the use of two-rider bicycles by each type of welfare service providers.

KEYWORDS: two-rider-bicycles, elderly or disabled people, welfare serves, hearing survey, questionnaire survey

1. Research Background and Objective

Persons with reduced mobility (PRM) including mothers and young children with disabilities, have expressed an interest in a bicycle that can be ridden by two people, and the development of bicycles that meet these needs is in progress.

According to previous researches, while there were latent opportunities for the use of tandem bicycles especially for people with visual impairment, it revealed that some trainings or experiential sessions were required to reduce subjective fears in some unstable situations¹⁾. Regarding challenges for the use of two-rider bicycles by PRM when they use it in daily life, the result of questionnaire survey showed that they would feel concerned about road conditions, parking spaces, and getting a help for seeking a pilot rider²⁾.

There were many limits imposed on their use as a private use, the opportunities for business use or associated challenges remain unclear. Thus, the purpose of this study was to clarify the latent opportunities or use of two-rider bicycles by potential providers in welfare service sector, as well as the associated challenges.

2. Research Methods

2.1 Method of Hearing Survey

A hearing survey was conducted on various type of welfare service providers (e.g., day care providers, afterschool, visiting long-term care, and guide helper services) that operate transportation services for the elderly and people with disabilities in order to investigate the following topics: first, to research the realities with regard to outings during service provision; and second, to investigate the opportunities of using a two-rider bicycle (Table.1). The hearing survey consisted of five items on organization characteristics, five items on user characteristics, and six items on the presence or absence of current challenges and their details, as well as in the scenarios of bicycle use.

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Table.1 Subjects of hearing survey

Type of Subject	Day Care Provider	Afterschool	Visiting long-term care	Guide Helpers
Service User	Elderly	Children with Disabilities	Elderly	Disabilities
Place for service	Institution	Institution	Home	Out Side
Observe date	2017/1/20	2017/1/24,26	2016/12/12	2017/1/10
Number	1	2	1	1
Transport service	○	○	×	×
Origin-Destination of Transportation	Institution-Home	Institution-Home/School	No Pick Up	Anywhere based on requests
Mode of Transportation	Vehicle	○	×	×
	Wheel Chair	○	○	○
	Walk	○	○	○
	Public Transportation	×	○	○

2.2 Method of Evaluation by Two-Rider-Bicycles Experience

A questionnaire survey was conducted after providing opportunities to experience two-rider bicycles (i.e., tandem bicycles and tricycles with frontal seats) for individuals with limited mobility as a passenger and their families and welfare service providers as a driver. Responses were received from a total of 77 drivers and the passengers, who revealed the latent opportunities of using two-rider bicycles by type of difficulty for going out, as well as the associated challenges (Table.2). The questions included four items on individual characteristics, five questions on daily outing-related behaviors, four questions on bicycle performance, and five questions on intentions of using or owning a bicycle. The questionnaire was designed so that the difficulties of the passenger could be understood from the driver's response in cases where the passenger's disability or other difficulty limited his or her capacity to respond to the questionnaire.

Table.2 Outline of evaluation by two-rider-bicycles experience

Riding Place	Ground, Park and Cycling Stadium (No Vehicle Traffic)	Cycling Road (Less Vehicle Traffic)	Public Road (Much Vehicle Traffic)
Subjects	--Participants of the bicycles experience event --Welfare service providers and its users	--Participants of the bicycles experience event --Welfare service providers and its users	--Participants of the bicycles experience event
Number	27(Difficult to go out:8 (including to answer instead))	44(Difficult to go out:21 (including to answer instead))	5(Difficult to go out:4 (including to answer instead))
Observe Period	2016/10 - 2018/1	2016/11 - 2018/2	2017/3
Two-rider -bicycles	Tandem Bicycles Tricycles with Frontal Seats(2Types)	Tandem Bicycles Tricycles with Frontal Seats(2Types)	Tandem Bicycles

3. Research Results

3.1 Results of Hearing Survey

The results confirmed that there are latent opportunities for the use of two-rider bicycles by welfare service providers, as it can be used for small-scale welfare service businesses that provide transportation as part of their services. The results also confirmed that even welfare service providers that do not offer transportation had needs for recreational purposes for routine outings and other uses as per users' interests. On the other hand, there are many systemic challenges, such as insurance and indemnity liabilities for welfare service providers, as well as challenges associated with the environment of use, such as parking space (Table.3).

Table.3 Opportunities for the use of bicycles by welfare service provider type and associated challenges

Type of provider	(Afterschool) Day services	Visiting long-term care	Guide Helpers
Interests in use by welfare service providers	Transportation, Routine outings	During visits, Routine outings	During accompanied outings
Interests/purpose for use by welfare service users	Recreational purposes	Routine outings Recreational purposes	Routine outings Recreational purposes
Interested purpose for use by welfare service users	Common challenges	[Vehicle] --Poor weather conditions	[Systemic] --Insurance system, indemnity liabilities for transportation [Environment of use] --Parking space
	Individual challenges	Limited number of people who can be transported	Bicycle parking at the visit destination Designation of daily use tools and equipment

3.2 Results of Evaluation by Two-Rider-Bicycles Experience

The study confirmed that there is a level of interest in using two-rider bicycles by people with difficulties for going out. Furthermore, people with inability or difficulty walking tend to be interested in using frontal-seat types for routine outings, and people with visual disabilities tend to be interested in using the tandem type for recreational purposes (Fig.1).

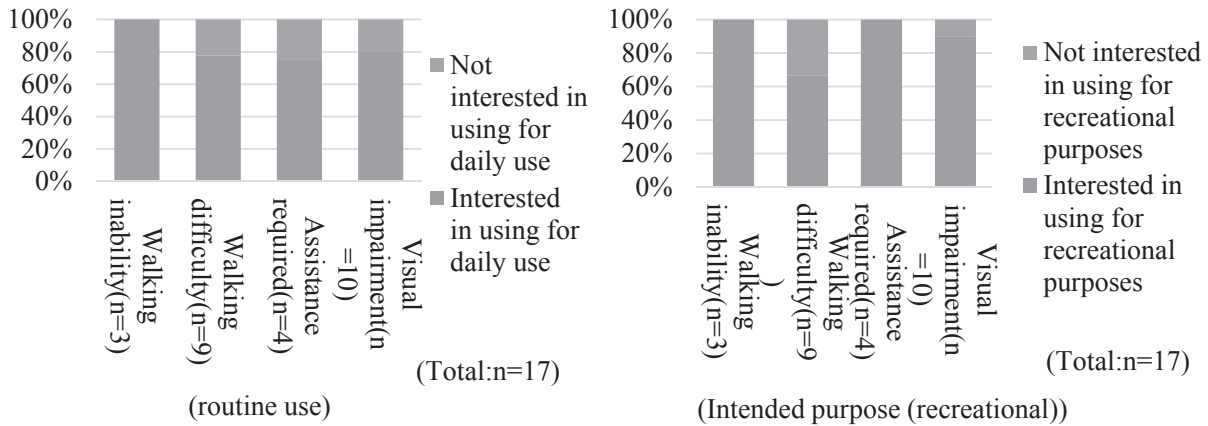


Fig.1 Purposes of the use of bicycles by type of reduced mobility for going out.

4. Conclusion

In this study, the latent opportunities or use of two-rider bicycles were clarified by a hearing survey and a questionnaire survey for potential business users based on an experiential evaluation. We obtained the following results;

- there are latent opportunities for the use of two-rider bicycles by small-scale welfare service businesses that provide transportation as part of their services,

- even welfare service providers that do not offer any transportation service had needs for recreational purposes for routine outings and other uses as per users' interests,
- there are many systemic challenges for welfare service providers, as well as challenges associated with the environment of use, and
- people with inability or difficulty walking tend to be interested in using frontal-seat types for routine outings, and people with visual disabilities tend to be interested in using the tandem type for recreational purposes.

From now on, it will be required to clarify the method of bicycle education for passengers assuming the use of a two-rider bicycle and the benefit in daily use.

5. References

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