

# Study on Traffic Convenience of Aged People with Mobility Disadvantage: Focusing on Hanam-eup, Miryang-city, Gyeongsangnam-provance

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## 〈Abstract〉

According to the statistics, Korea is expected to reach a super-aged society in 2025. In preparation for an aging society, The government is making efforts to improve in social activity and welfare for the elderly people. But in case of people who live in urban-rural mixed cities, They can not benefit from traffic convenience that is essential in social activities. For example, surveys and interviews show that, The dwellers(65+ of some urban-rural mixed cities) have many restrictions on social activities because of mobility disadvantage. Therefore, We propose that expansion for the people who need to use the voucher taxi, Increase of the public bus service and rebuilding of the bus stop terminal. We are looking forward to this study will be used as basic data for transportation policy of urban-rural mixed cities across the country.

*Keywords : Aged People, Mobility Disadvantaged Persons, Traffic Convenience, Urban-rural mixed city, Bus Stop Terminal*

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## 1. Introduction

In general, a society is categorized as an 'aged society' when the proportion of the population aged 65 or older, eligible for social security benefits, reaches 14% or more. If this proportion exceeds 20%, it is categorized as a 'super-aged society'[1]. According to the report on population status and future projections released by the National Statistical Office(NSO), South Korea is projected to become a super-aged society by 2025. By 2035, it is predicted that the elderly population, aged 65 or older, will represent 30.1% of the total population, a figure projected to surpass 43% by 2050[2].

Certain Urban-rural mixed city have already entered a super-aged society, in addition to the national projection by the N.S.O. The Miryang city, located in Gyeongsangnam-province, had a total population of 107,419 individuals as of December 31, 2022. Among the total population, the number of individuals aged 65 or older was 29,887, which accounted for approximately 27.8% of the total population.

The Act on 「The Guarantee Of Convenience Promotion Of Persons With Disabilities, Senior Citizens, Pregnant Women And Nursing Mothers」 emphasizes the importance of providing safe facilities, convenient equipment, and access to information for the elderly[3]. This aims to enable their active participation in social activities and contribute to the promotion of welfare. However, in contrast to

these legal provisions, the elderly residing in former county areas within urban-rural mixed cities do not have the same level of transportation convenience as those living in urban areas.

As a result, this study focused on examining and surveying transportation convenience for individuals aged 65 and above in Hanam-eup, Miryang-city, which is an urban-rural mixed area. The collected data will serve as fundamental research material to enhance transportation accessibility for the elderly and other vulnerable groups in urban-rural mixed regions nationwide.

## 2. Literature Review

### 2.1 Urban-Rural Mixed City

An urban-rural mixed city or known as an urban-rural integrated city, refers to a city that combines urban areas with rural eup/myeon regions[4]. Several urban-rural complex cities emerged as a result of integrating cities with surrounding counties with the implementation of local autonomy in 1995. Generally the city hall is located in the dong (neighborhood) of the integrated exhibition area, serving as the central hub of the urban-rural complex. In accordance with Law No. 4774, commonly referred to as the Act on 「33 Urban-Rural Complex Types of Facilities, etc」 including Namyangju-city Gyeonggi-Province, Miryang-city was incorporated

as an Urban-rural mixed city on January 1, 1995.

Prior to the urban-rural integration, Miryang City consisted of five dong, including Naeil-dong. And, the Miryang-city rural area consisted of eleven eup/myeon regions. In the studying case of Hanam-eup, which will be the focus of this study, it consists of Susan-ri and seven other administrative districts. And the population of Hanam-eup reached 6,907 residents as of the end of 2022.

## 2.2 Mobility Disadvantaged Aged People

The term ‘Aged people’ does not have a universally standardized definition. According to the Act on ‘Prohibition of Age Discrimination in Employment and Elderly Employment Promotion」 individuals who are 55 years old and above are considered senior citizens[5]. And the Act on ‘Long-Term Care Insurance」 defines the elderly as individuals aged 65 years or older, or individuals under 65 years old with geriatric diseases[6]. The definition of the aged people, for the purpose of this study, aligns with the age group of 65 years or older as stipulated by Act on ‘Long-Term Care Insurance」 for the Elderly.

Also, In this study, the term ‘Mobility disadvantaged’ refers to individuals who face challenges in daily life due to disabilities, advanced age, pregnancy, the presence of

infants and young children, and children who encounter difficulties in mobility[7]. The notion of inconvenience in movement encompasses not only physical and mental factors, but also transportation disadvantages stemming from the social environment, such as a lack of transportation options.

## 2.3 Traffic Convenience

While there is no standardized definition of transportation convenience, it generally refers to the ability to reach a desired destination within a designated timeframe, for a specific purpose and at a desired time. Considering the transportation options available within the jurisdiction of Hanam-eup, rural buses, taxis, voucher taxi systems, and arrangements made by caregivers are included.

The bus service for rural buses, which are frequently utilized by the elderly, begins at A.M. 07:50 in the morning and concludes at N.T. 07:10 in the evening(Table 1). The buses operate eight times per day, and regardless of the distance traveled, the fare remains at a fixed rate of 1,500 won.

The designated boarding and alighting location for rural buses is the rural bus stop

Table 1. Time table of bus

Division	A.M.	P.M	N.T.
Time	7:50	1:00	7:10
	9:00	2:50	-
	10:30	4:50	-
	-	5:50	-

terminal located on 12 Susanjungang-ro, the main street in Hanam-eup. There is an outdated prefabricated building that has been in use for over 30 years. Passengers face various inconveniences, such as water leakage in the waiting room during the rainy season and the lack of functional heating facilities in winter(Fig. 1).



**Fig. 1 Interior and exterior views of bus stop terminal (a)(b)(c)**

There are two taxicab company operating a combined total of 12 taxis in Hanam-eup. The taxis are stationed at the garage of a taxi business association, located in Susan-ri, Hanam-eup. They move to their destinations upon receiving requests from customers or passengers who place phone calls. The basic rate is 5,000 won and while the fare for destinations in the outskirts of Hanam-eup, which is the farthest from the taxi stop, is 11,000 won.

The voucher taxi service, which is supported by the Transportation Administration Division of Miryang City, is intended for individuals with walking disabilities, long-term care benefits graded 1 to 3, wheelchair users, and pregnant women who face challenges in utilizing public transportation. The service

operates from 06:00 to 22:00. Wheelchair users with walking disabilities are free from time restrictions. The fare for using the service is set at 1,500 won, and Miryang City directly supports any amount exceeding the co-payment.

In Addition, there is a transportation option available through the visiting care service provided under Act on 「Welfare of Senior Citizens, Long-term Care Insurance」. A caregiver offer support by providing personal assistance services to aged people(65 or older), who require long-term care ranging from levels 1 to 5, and accompany them when they need to go out[8,9].

### 3. Interview and Survey

#### 3.1 Interview

In this study, an in-depth interview was conducted to a CEO from a bus stop located in Susan-ri, Hanam-eup, Miryang-city. The CEO has been operating in Hanam Bus stop terminal since June 2008.

The ticket box operating time is every morning from 06:00 to 21:00, open year round.

In the result of interview, it was founded that over 90% of rural bus passengers were aged 65 or older. And the number of elderly passengers has declined by more than 50% compared to COVID-19 before[10]. The decline in passengers is the result of

retrogression compare with increasing elderly population aged 65 or older in Hanam-eup, Miryang-city[11](Table 2).

**Table 2. Population of 65+ aged**

Division	Population	65+ aged	Percent
2018	7,822	2,387	30%
2019	7,542	2,432	32%
2020	7,364	2,514	34%
2021	7,042	2,592	37%
2022	6,907	2,671	39%

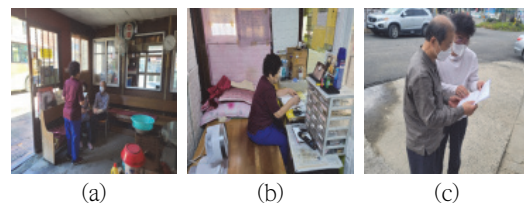
Several reasons can be attributed to the decrease in the number of bus users among the aged in rural areas. Firstly, the fear of contracting the COVID-19 has led many aged individuals to avoid using public transportation. Additionally, the decline can be attributed to the inconvenient intervals between buses in rural areas and the lack of proper rest areas for bus boarding. Furthermore, CEO explained that due to transportation inconveniences “many elderly individuals in the outskirts of Hanam-eup are unable to engage in regular hobbies and leisure activities, often resulting in them living alone in their homes”[12].

### 3.2 Survey Method and Composition

For study on traffic convenience of aged people with mobility disadvantage, was conducted a survey in the bus stop terminal of Hanam-eup, Miryang-city, Gyeongsangnam-province from May 1 to May 15, 2023. For smooth study, the research was conducted

with the cooperation of CEO

In order to promote the unrestricted expression of participants' opinions, this study opted for an open-ended questionnaire format instead of a multiple-choice. Also, in order to ensure the reliability of the research, explained the subjects, objectives, and research methods to the respondents prior to conducting the survey. The results were analyzed by identifying the top three responses with the highest frequency for each item. Survey, excluded age and gender, were composed of five questions(Fig. 2).



**Fig. 2 Survey at bus stop terminal of hanam-eup (a)(b)(c)**

### 3.3 Results

As a result of the survey of 77 rural bus passengers, subject of study are 66 respondents were, excluding 11 who responded incompletely. General characteristics of study subjects, six males and sixty females. And in terms of age distribution, there were 35 individuals aged over 65, 19 individuals aged over 75, and 12 individuals aged over 85(Table 3).

Among the 66 passengers aged 65 or older, 41 people used the bus the most by

**Table 3. Aged groups**

Division	Males	Females
Age or older 65	5	30
Age or older 75	1	18
Age or older 85	-	12

**Table 4. Statistic of survey**

Category	Details(Peoples)
Transportation	Bus(41) Taxi(15) Car of neighborhood(10)
Convenience	Agree(12) Undecide(10) Disagree(44)
Reason of uncomfortable	Long time of the bus stop(20) Burden of taxi fare(13) Distant location of the bus stop(10)
Constraints of Social activity	Agree(44) Undecide(8) Disagree(14)
Suggestions	Increase of the bus service(30) Rebuild of the bus stop terminal(21) Support taxi fares(15)

transportation. Next taxis 15 people and neighbors' cars 10 people. And 44 people, representing over 66%, expressed dissatisfaction with their current transportation options. The main reasons of inconvenience cited were inadequate bus dispatch intervals (20 people), Expensive taxi fares (13 people), circumstances associated with the remote location of bus stops in rural areas and their residences (10 people). In the result of the survey, a significant number of respondents (35 people) experienced limitations in actively participating in social activities due to transportation inconveniences (35 people). As a requirement for the city, increasing the number of buses(30

people), improving environment of the bus stop terminal (21 people), Support for taxi fares (15 people) (Table 4).

#### 4. Consideration and Conclusion

According to Article 4 Act on 「Promotion Of The Transportation Convenience Of Mobility Disadvantaged Persons」 is stipulated that ‘The state and local governments shall establish and implement policies to ensure convenient use of all means of transportation and passenger facilities and to improve the pedestrian environment so that mobility disadvantaged persons may move safely and conveniently’. But despite the efforts of local governments, the measures aimed at addressing transportation issues for the aged peoples and other vulnerable groups in urban-rural mixed cities remain insufficient.

According to the survey findings from this study, it is evident that individuals aged people 65+ experience significant limitations in participating in social activities due to insufficient transportation convenience. Therefore, in this study, presents the following proposals to facilitate the active participation of elderly individuals and other vulnerable transportation users in social activities.

As can be seen from the survey results clearly, many people indicate a demand for an increase in the number of buses. However, it is impossible because of profit in the bus company. As a substitute for this, It is necessary

to expand the use of current voucher taxi services to aged 65+ regardless of their level of medical care or mobility disability.

Furthermore, there is a need to extend and implement the ongoing Arirang Bus project to cover all outskirts areas of Miryang-city, that is in order to supplement the transportation policy of insufficient public transportation.

Moreover, there is a pressing need to enhance the environment of bus passenger stops in rural areas, particularly to provide better rest and convenience for the elderly between rural bus dispatches. The existing hanam-eup bus stops, which have been in use for over 30 years, are outdated structures that lack convenient facilities and adequate resting spaces for the elderly. In the near future, it is necessary to consider the reconstruction of bus stops and equip convenient amenities, such as massage chair and rest facilities for socializing.

The presented policy above, it will positively contribute to population growth in rural areas. In conclusion, Study on Traffic Convenience of Aged People with Mobility Disadvantage, I hope it will be used as basic data for making transportation policy in Urban-rural mixed city.

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