

# Important Value Analysis and Institutionalization Plan for the Safe Use of Personal Mobility in Jeju Island\*

Yeong-gon Kim(PhD student in the department of public administration, Jeju National University ; Jeju urban regeneration center, S. Korea)

Hye-young Ko(Professor of academic research, Jeju National University, Institute for Social Science Research, Hang-ung Cho, Intran Co. S. Korea)

Kyung-Soo Hwang(Corresponding Author, Professor, the department of public administration, Jeju National University ; The Dean of Institute for Social Science Research, Jeju National University, S. Korea)

## Abstract

The purpose of this study was to analyze laws and policies related to personal mobility (PM) in foreign countries, review Korean laws, hear opinions from experts on the orientation of personal mobility devices to propose a framework for the safe use and activation of personal mobility devices.

At the local government level, the following were suggested as matters that Jeju Island should pursue with interest and should be stipulated in the ordinance.

First, designate the availability of personalized mobile devices.

Second, promote the availability of personal mobile devices.

Third, establishing a basic plan for activating the use of personal mobile devices to ensure safety.

Fourth, support for personal mobile driving roads.

Fifth, the restriction and prohibition of traffic of personalized mobile devices and the content regulations for time designation and management.

Sixth, regulations on the contents of regulations such as prohibition of parking and illegal parking, prohibition and processing of long-term neglect, etc.

Seventh, designation and operation of a special zone for individual vehicles.

Eighth, various rules for driving.

### Key words :

laws and policies related to personal mobility (PM), the orientation of personal mobility devices, framework for the safe use, activation of personal mobility devices.

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## Introduction

The purpose of this study is to analyze the values that should be important for the safe use of personal mobility (PM) and to institutionalize the context.

As a methodology, first, laws and systems related to personalized mobile devices in Korea are analyzed. Second, it analyzes foreign related systems. Third, we investigate and propose the factors that local experts think are important to activate personalized mobile devices.

Finally, implications are derived from each analysis, and methods for safe operation and activation of personalized mobile devices and grafting with tourism are considered and proposed. It proposes the framework of the Jeju Special Self-Governing Province (tentative name) Support Ordinance for the Safe Use of Personal Mobile Devices in Jeju Special Self-Governing Province.

## Reviewing related theories and PM-related regulations in Korea.

### 1. Concept and regulation of personalized mobile devices.

In Korea, the Road Traffic Act, revised and enforced on December 10, 2020, stipulates that it is a "personal mobile device" prescribed by Ordinance of the Ministry of Public Administration and Security among personal mobile devices with a maximum speed of less than 25 km/h and a total weight of less than 30kg.

### 2. Characteristics and conditions for activating the personalized mobile device.

The characteristics of the personalized mobile device are summarized by citing the contents of Shin Hee-cheol et al. 2020 study as follows.

First, it is portable.

Second, it is convenient to move mid-range.

Third, it is eco-friendly with electricity as power.

Fourth, it is suitable as a next-generation means of transportation for the physically weak and the elderly.

Fifth, leisure has a strong character.

Various conditions are required for this personalized mobile device to be activated. According to a study by Shin Hee-cheol et al. (2016), it is argued that the

following conditions are necessary for a personalized mobile device to operate on a bicycle path.

First, personalized mobile devices should show similar traffic characteristics to bicycles.

Second, personalized mobile devices should be as safe as bicycles.

Third, the consultation process with bicycle users must be carried out.

Fourth, it is necessary to expand bicycle paths and improve road flatness.

Fifth, it is necessary to expand education related to personal mobile devices.

### 3. Analysis of the operation method system of PM in Korea.

1) Prohibited for under 13 years of age and required a driver's license for personal mobile devices.

Under the revised bill on December 10, 2020, the same way of passage and the driver's duty of care, such as allowing personal mobility devices to pass through bicycle paths, are applied, but children under the age of 13 are prohibited from driving.

With the recent increase in traffic accidents related to personalized mobile devices, concerns about traffic safety among teenagers are increasing. In this context, a bill related to the safety reinforcement of personal mobile devices passed the plenary session of the National Assembly on December 9, 2020. If the revised Road Traffic Act is enforced (4 months after fear), a driver's license will be required to drive a personal mobile device, and a fine will be imposed if two or more people are on board without wearing protective equipment.

### 2) Use and Prohibition of Bicycle Roads

Regarding the "Act on the Promotion of Bicycle Utilization", the Road Management Administration designates a certain section of the bicycle road to prohibit or restrict the passage of personal mobile devices for safe and smooth communication of bicycles and personal mobile devices<sup>1</sup>.

1) For reference, related ministries such as the Ministry of Land, Infrastructure and Transport formed a "public-private consultative body" on November 30 (Monday) in which government ministries and PM-related companies jointly participate to spread the culture of safe personal mobility devices.

Through a business agreement (MOU) with shared service companies, the consultative body has decided to limit the age of users who rent shared PMs to 18 years or older (however, even 16 or 17 years old can have a license for motorcycles). In addition to the press release of the Living Space Policy Division of the Ministry of Public Administration and Security (2020.12.10.), "Revision of the Road Traffic Act and the Act on the Act on the Promotion of Bicycle Use"

3) Criminal punishment for driving in excess.

The newly revised Road Traffic Act also includes a significant reinforcement of punishment for driving at speeds exceeding 80 km/h (also known as "excessive driving"). In the past, if it exceeds the speed limit of 60 km/h, only fines (120,000 won) and driver's license penalties were imposed uniformly, but there was no criminal punishment.

<Table 1> Punishment criteria and contents for speeding driving.

No.	Violation contents.	Penalty rules.	Penalty points.	note
1	Less than 20km/h.	Penalty of 30,000 won.	-	
2	20km/h to 40km/h or less.	Penalty of 60,000 won.	15	
3	40km/h to 60km/h or less.	Penalty of 90,000 won.	30	
4	60km/h to less than 80km/h.	Penalty of 120,000 won.	60	
5	80km/h to less than 100km/h.	Penalties and detention of up to 300,000 won.	80	
6	More than 100km/h.	Penalties and detention of up to 1 million won.	100	
7	More than 3 times, more than 100km/h.	imprisonment for up to one year or a fine of up to KRW 5 million.	-	Driver's license cancellation.

Data: In addition to the Living Space Policy Division of the Ministry of Public Administration and Security (2020.12.10.), "Revision of the Road Traffic Act and the Act on the Promotion of Bicycle Utilization" related to personal mobilities.

In the future, due to the revision of the law, driving at a speed exceeding 80 km/h will be subject to criminal punishment, and driving at a speed exceeding 100 km/h more than three times will be revoked as well as criminal punishment.

4. Comparison of the Road Traffic Act on December 10, 2020 and the revised Act on December 9, 2020 (effective after about 4 months)

Prior to the implementation of various other opinions on the contents of the Personalized Mobile Device Act, which will take effect on December 10, 2020, the revised 7H procedure was taken. The newly revised law came into effect about four months after the National Assembly's resolution on December 9, 2020, a day before it took effect on December 10, 2020.

The revised contents on December 9, 2020 are as follows compared to the law already in effect on December 10. The bill before December 10 will be referred to as Act A, the amendment that will take effect on December 10 for four months will be referred to as Act B, and the bill revised on December 9 and implemented after four months and April 9, 2021 will be referred to as Act C.

First, the legal status of personal mobile devices was handled in the scope of motorized bicycles in Act A, but in Act B and Act C, if the same standards as electric bicycles are met, it is defined as a 'personal mobile device'.

Second, in Act A, personal mobile devices are required to pass through the roadway by motorized bicycle, and sidewalks are prohibited in any situation, while the B Act and the Dec. 9 Resolution Amendment Act, which are prohibited, require that sidewalks not pass. Where there is no bicycle path, you have to use the roadway.

<Table 2> Comparison of the contents of the Road Traffic Act related to personalized mobile devices.

Sortation	The current Road Traffic Act. : Act A.	Revised Road Traffic Act (No. 1731). : B law.	Revision Road Traffic Act. (Resolution of the plenary session on December 9, 2020): Act C
Effective date.	It's being implemented.	'20. 12. 10.	<u>4 months after the proclamation</u>
Legal status.	Motorized bicycle.	(If you meet the same standards as an electric bicycle) Personalized mobile device.	
How to pass.	"The Roadway" traffic principle. (You can't pass through "Report")	"Bicycle road" traffic rules. (Can't go through the sidewalk)	
driver's license	Motor license or higher.	×	Motor license or higher. PM is planning to establish a new license.
Punishment for driving without a license.	○(300,000 won ↓)	×	○(200,000 won ↓ penalty.)
Children are banned from driving allowed to drive.	×		○
When children drive, Punishment for guardians.	×	×	○(200,000 won ↓ fine.)

Driver's duty to be careful.	No passengers allowed to ride.	×	○	
	Punishment.	×	×	○(200,000 won ↓ penalty.)
	Wearing safety helmets.	○(A safety helmet for motorcycles.)	○(A safety helmet for bicycles.)	
	Punishment.	○(200,000 won ↓ penalty.)	×	○(200,000 won ↓ penalty.)
	Equalization device operation.	○	○	
	Punishment.	○(200,000 won ↓ penalty.)	×	○(200,000 won ↓ penalty.)
	Overwork, medication, etc.	○	○	
	Punishment.	○(Drug: 3 years ↓ 10 million won ↓ overwork: 300,000 won ↓)	×	○(200,000 won ↓ penalty.)
main punishment provisions	Drinking and driving (simple drinking).	1 year ↓ 5 million won ↓	Penalty of 30,000 won.	Reorganizing subordinate laws. (Variable)
	Traffic violations, invasion of the center line, driving on the sidewalk, Violation of pedestrian protection.	Penalty of 40,000 won.	Penalty of 30,000 won.	
	Violation of designated lane. (Passing by the upper lane)	Penalty of 20,000 won.	Penalty of 10,000 won.	

Data: In addition to the Living Space Policy Division of the Ministry of Public Administration and Security (2020.12.10.), "Revision of the Road Traffic Act and the Act on the Promotion of Bicycle Utilization" related to personal mobilities.

Third, in the case of the license situation, Act A was required to own and operate a motor license or more, and Act B was reserved for this, but Act C required to own a motor license or more to operate. It also plans to establish a new PM license.

Fourth, the prohibition of driving children, which was not in the Act A and the Act B, is set as the prohibition of driving children in the Act C. In case of violating this, there is a provision that can punish

guardians. It is a fine of up to 200,000 won.

Fifth, although it was not in Act A and Act B, Act C added a clause prohibiting passengers from boarding. In case of violation, a fine of up to 200,000 won is required.

Sixth, Act A required motorcycles to wear safety helmets and stipulated fines for motorcycles. There were no regulations in the B bill, and in the C bill, the provision for wearing a safety helmet is added to the provision for wearing a "bicycle safety helmet" so that it is worn when using a personal mobile device. In case of violation, a fine of up to 200,000 won is required.

Seventh, the operation of the equalization device was not in the crime B, and there are provisions in the Act A and the Act C.

Eighth, regarding the wearing of a safety helmet, Act A stipulates a safety helmet for motorcycles for motorized bicycles and a sound of crime against it, while Act B did not have it, and Act C stipulates that it is a safety helmet for bicycles, and the law is less than 200,000 won.

Ninth, for driving such as overwork and drugs, Act A stipulated a fine of not more than 3 years and not more than 10 million won for drugs for motorized bicycles. For overwork, a fine of not more than 300,000 won was stipulated. The B bill was reserved, and the C bill stipulates a fine of not more than 200,000 won.

Tenth, Act A and Act B stipulate drunk driving, signal violations and central line violations, sidewalk driving, pedestrian protection violations, and designated lane violations, but Act C is revising subordinate laws as of January 2021. For reference, the Act B stipulated a fine of 30,000 won for drunk driving and 30,000 won for signal violations and centerline violations, sidewalk driving, and pedestrian protection violations. Violations of designated lanes stipulated a fine of 10,000 won.

### Analysis of systems related to personalized mobile devices in foreign countries.

Foreign institutions were summarized through data from Cho Yu-bin (2020.09.17), Road Traffic Authority (2015), Park Jong-joon (2017), Lee Soo-il (2020), Kim Jae-yeol (2020), Kim Seong-ho et al. (2020), and Park Won-gyu (2020).

The implications obtained through foreign case

analysis are as follows.

First, it stipulates the contents of usable roads. In the case of the UK, small two-wheeled vehicles prohibited from being used on roads or sidewalks are designated, and are only available on private property licensed by the owner. France prohibits sidewalk driving and even parking except for designated areas. In the case of the United States, one of the features is to use crosswalks when turning left or crossing intersections. Germany meets the requirements and allows it to operate on the road if approved. Special permission is required if it is intended to be used in pedestrian areas and sidewalks to be used for tours.

Second, it is about the regulation of the number of passengers. France only allows one driver. Singapore also requires only one person to ride.

Third, it is about regulations on wearing and using mobile phones. France is banning the use and wearing of mobile phones while driving.

Fourth, it is the regulation of driving speed. France is based on 25km/h.

Fifth, it is a regulation for drivers. Arizona in the United States defines it as a pedestrian, and Michigan and others define it as a vehicle driver.

Sixth, it is related to the ban on night operation. The U.S. prohibits operations from 9 p.m. or 10 a.m. to 4 a.m. or 5 a.m.

Seventh, it is an insurance content regulation. Germany requires different insurance coverage according to the prescribed maximum speed of the means. It is required to attach a license plate stating that it has been renewed every year after subscribing to insurance. It is managed by changing colors from year to year. Transportation authorized for less than 6 km/h does not require insurance coverage. In Singapore, even if you do not have to subscribe to insurance, you can be subject to criminal punishment in case of an accident. In Singapore, insurance is available from the age of 8 to 70.

Eighth, it is about the braking system. Germany is braking system shall be two, and stipulates must operate independently of each other.

Ninth, it is related to front and rear lighting devices. Germany is in braking the rear lighting device shall be activated.

Tenth, the horn is attached. Germany is trying to settle the horn.

eleventh, it is the content of regulations that apply during operation. Germany prohibits the operation of two or more cars in the country. Germany prioritizes

bicycle driving. Bicycle roads are required to run at a lower speed than bicycles. When a bicycle wants to overtake, it must always yield. Pedestrians and bicycle paths prioritize pedestrians. It is trying to match the pace of pedestrians.

Twelve, it is a connection with public transportation. In Singapore, it is activated by allowing people to ride on subways with personal mobiles.

## Investigation and analysis of key factors in activating personalized mobile devices

### 1. Section 1 Major elements of activating personalized mobile devices

Prior to the creation of the ordinance, factors to be important were established through related theories, previous studies, and foreign case analysis. The items are as follows.

#### 1) Relieve your worries.

Solving the worries of personalized mobile devices

- ① Prevent obstruction of movement of mainstream vehicles due to activation of personal moving devices.
- ② Pedestrian protection on the sidewalk by activating personalized mobile devices.
- ③ Regulation of night usage time.
- ④ Introduction of the insurance system.

#### 2) Ensuring safety.

Securing the safety of personalized mobile devices.

- ① Prevention of accidents with personalized mobile devices.
- ② Speed regulation of personalized mobile devices.
- ③ Strengthen the installation of safety devices when operating personal mobile devices.
- ④ Reinforcement of crackdown on personalized mobile devices.

#### 3) Driving conditions.

: Personalized mobile system operating conditions.

- ① Processing of the neglected personalized mobile device.
- ② Secure personalized vehicle lane through road diet.
- ③ Designation of a passageway for personalized mobile devices.
- ④ Notification of the traffic available road information for personal mobile devices.

4) Safety education.

: Safety training related to personalized mobile devices

- ① Reinforcement of safety education (including guidance) to users of personal mobile devices.
- ② Reinforcement of education to avoid personalized mobile devices for car drivers, etc.
- ③ Reinforcement of consciousness education to protect personalized mobile devices for car drivers, etc.
- ④ Reinforcement of education to safely avoid personalized mobile devices for ordinary pedestrians.

5) Utilization in society such as tourism.

: Utilizing the advantages of personalized mobile devices in society such as tourism.

- ① Connecting tourism through the use of coastal roads.
- ② Offering tourists' masks.
- ③ Reduce carbon by utilizing electric energy.
- ④ Contributes to stabilization by slowing down the overall traffic.

2. Analysis of major factors through AHP survey

1) Survey summary.

The expert AHP survey for this study was conducted from January 6 to January 15. It was investigated in a face-to-face manner. If inevitable, e-mail was used. I surveyed experts in Jeju Island. Seventeen people were surveyed and 11 questionnaires were used, except for cases with an inconsistency index of 0.15. A survey was conducted on local transportation experts working in Jeju Island.

<Table 3> Overview of the AHP survey.

Sortation	content	note
Date and time of survey: 2021.01.06.~01.15.	Face to face.	If it's inevitable, email application is accepted.
Selection of survey targets.	Selection of experts in Jeju Island.	Transportation-related experts in the province.
The subject of the survey.	17 people.	
As a result of the survey,	11 people.	Inconsistency index below 0.15

2) Questionnaire analysis.

① Organize general information.

In order to investigate the preference of the factors selected according to the goal of this study, a 9-point comparison questionnaire was produced for experts.

<Table 4> Summary of General Information (Respondents Stat.)

occupation	sex		age			level of degree	
	male	female	~40th	50th	60th	Bachelor	Master
Research	3	1	8	8	1	2	15
Academia	2						
Public School	7	1					
Corporate	2	1					
Total	17		17			17	

The questionnaire is largely composed of two structural factors, and the goals are as follows. First, it aims to achieve the goal of "activating personal mobiles" by helping to make decisions based on importance when enacting local ordinances through pairwise comparison between major factors and sub-factors constituting the main factors.

Experts who participated in the survey commissioned a total of 17 people who were judged to have expertise in the subject by age and occupation, and the survey method used direct interviews (11 copies collected) and e-mails (6 copies collected). After the survey, verification was conducted through the Consistency Ratio (CR) to secure the reliability of the survey. As a result, it was used in the AHP analysis technique using the survey result value of 11 copies with an Inconsistency Index of 0.15.

② Individual inconsistency index status.

As a result of the AHP analysis of the factors that activate the personal mobile device, the inconsistency index of 0.15 or higher was analyzed as 5 persons. The questionnaire was analyzed excluding.

As a result of analyzing the inconsistency index by factor, there were no disqualification items based on 0.15. The matters are shown in the following table.

<Table 5> Average Inconsistency Index

Factors that activate personalized mobile devices.		Average Inconsistency Index
Factors that activate PM.		0.0621
Secondary factors	Don't worry.	0.0399
	Securing safety.	0.0330
	Driving conditions.	0.0445
	Safety education.	0.0401
	Activities related to society-related activities.	0.0524

③ Summary of the analysis results.

The overall contents of the analysis results are summarized in a single table as follows.

<Table 6> AHP Comprehensive Analysis Results

category	Small items.	AHP results.	note
1. Individual. Mobile device. Activation factor..	Don't worry.	0.10482	4th place.
	Securing safety.	0.39143	1th place.
	Driving conditions.	0.22439	2th place.
	Safety education.	0.19310	3th place.
	Activities related to society-related activities.	0.08626	5th place.
	Sum	1.00000	
2. Factors to relieve worries.	Prevention of multi-car traffic.	0.19874	2th place.
	Protection of pedestrians to ensure safety.	0.52209	1th place.
	Regulations on night time.	0.10289	4th place.
	Introduction of the insurance system.	0.17627	3th place.
	sum	1.00000	
	3. Factors to ensure safety.	Accident prevention.	0.35709
Speed control.		0.22268	3th place.
Safety equipment.		0.30008	2th place.
Strengthen the crackdown.		0.12016	4th place.
sum		1.00000	
4. Elements of driving conditions.	Dealing with neglected devices.	0.05223	4th place.
	Securing a mobile road.	0.31309	2th place.
	Designated as a passageway.	0.45251	1th place.
	Notification of the accessibility information.	0.18217	3th place.
	sum	1.00000	
5. Safety education elements.	Safety education.	0.61445	1th place.
	Avoidance education for protection (car)	0.11920	4th place.
	Consciousness education.	0.13463	2th place.
	Avoidance education for safety (walker)	0.13173	3th place.
	sum	1.00000	
6. Elements of activities related to society.	Tourism connection.	0.16338	3th place.
	Transportation means provided.	0.29880	2th place.
	Saving carbon.	0.11114	4th place.
	Traffic safety.	0.42669	1th place.
	sum	1.00000	

④ The results of the importance analysis by major factors.

The relative weights between the evaluation factor items derived from the survey analysis results were expressed as a ratio scale. As a result, experts put a weight of 0.3914 on the item "Securing Safety" among the main factors for "activating personal mobile

devices," which was the most important means to ensure the safety of mobile devices. Next, operating conditions (0.2244), safety education (0.1931), anxiety relief (0.1048), and social linkage activities (0.0863). Among them, it was investigated that the factors of 'relieving concerns' and 'linked activities with society' showed a relatively low rate.

<Table 7> The importance of each major factor.

The first factor.	Importance (%)
Don't worry.	10.48% (4)
Securing stability.	39.14% (1)
Driving conditions.	22.44% (2)
Safety education.	19.31% (3)
Activities related to society-related activities.	8.63% (5)

In order to evaluate the relative importance of detailed factors that can compose and explain major factors, a pairwise comparison between factors was conducted, and the results are as follows.

Priorities through importance among the sub-factors of securing safety (0.3914) were investigated in the order of accident prevention (0.36), safety equipment (0.30), speed regulation (0.22), and crackdown reinforcement (0.12).

⑤ As a result of analysis on the importance of securing safety,

In terms of securing safety, accident prevention (0.3571) was the highest. Safety equipment (0.3001) was ranked second, speed regulation (0.2227), and crackdown reinforcement (0.1202).

<Table 8> The Importance of Securing Stability

Securing safety. (2nd factor)	Importance (%)
Accident prevention.	35.71% (1)
Speed control.	22.27% (3)
Safety equipment.	30.01% (2)
Strengthen the crackdown.	12.02% (4)

⑥ As a result of analyzing the importance of driving conditions

The sub-factors of operating conditions (0.2244) were weighted in the order of designation of a accessible road (0.45), securing a mobile lane (0.32), notification of accessible information (0.18), and neglected device processing (0.5).

〈Table 9〉 The importance of driving conditions.

Requirement of driving conditions (secondary factors)	Importance (%)
Dealing with neglected devices.	5.22 % (4)
Secure a car with a mobile device.	31.31 % (2)
Designated a passageway.	45.25 % (1)
Notification of the accessibility information.	18.22 % (3)

⑦ The results of safety education importance analysis.

The sub-factors of safety education (0.1931) were weighted in the order of safety education\_PM user (0.61), conscious education\_automobile (0.14), safety avoidance education\_pedestrian (0.14), and safety avoidance education\_automobile (0.13).

〈Table 10〉 The importance of each factor.

Safety education (2nd factor)	Importance (%)
Safety training (PM user)	61.45 % (1)
Avoidance education for protection (automobile)	11.92 % (4)
Consciousness training (car)	13.46 % (2)
Avoidance education for safety (walker)	13.17 % (3)

③ As a result of analyzing the importance of relieving worries

The sub-factors of relieving concerns (0.1048) were weighted in the order of pedestrian protection (0.52), prevention of obstruction of automobile traffic (0.19), introduction of insurance systems (0.17), and regulation of nighttime hours (0.10).

〈Table 11〉 The importance of each factor.

Resolving worries (secondary factor)	Importance (%)
Prevent traffic jam.	19.87 % (2)
Pedestrian protection on the sidewalk.	52.21 % (1)
Regulations on night time.	10.29 % (4)
Introduction of the insurance system.	17.63 % (3)

⑨ The result of analyzing the importance of social activities.

The sub-factors of social linkage activities (0.0863) were weighted in the order of traffic safety (0.42), means of transportation (0.29), tourism linkage (0.16), and carbon reduction (0.11).

〈Table 12〉 The importance of each factor.

Social activities (secondary factors)	Importance (%)
Tourism connection.	16.34 % (3)
Transportation means provided.	29.88 % (2)
Saving carbon.	11.11 % (4)
Traffic safety.	42.67 % (1)

3) Theorem priorities and derive implications.

The priorities of detailed factors for "activating personal mobiles" are as follows by summing the detailed weights through pairwise comparison of sub-factors that make up the main factors to the weights for each factor derived through pairwise comparison of major factors.

〈Table 13〉 The final importance of each factor.

Factors.	Importance	Factors.	Importance
Prevent traffic jam.	2.08%(15)	Safety equipment.	11.75%(3)
Pedestrian protection on the sidewalk.	5.47%(7)	Strengthen the crackdown.	4.70%(8)
Regulations on the time of night use time	1.08%(19)	Dealing with neglected devices.	1.17%(18)
Introduction of the insurance system.	1.85%(16)	Secure a car with a mobile device.	7.03%(6)
Accident prevention.	13.98%(1)	Designated as a passageway.	10.15%(4)
Speed control.	8.72%(5)	Notification of the accessibility information.	4.09%(9)
Safety training (PM Car)	11.88%(2)	Avoidance education for protection (car)	2.30%(14)
Consciousness education (car)	2.60%(11)	Avoidance education for safety (walker)	2.54%(13)
Tourism connection.	1.41%(17)	Transportation means provided.	2.58%(12)
Saving carbon.	0.96%(20)	Traffic safety.	3.68%(10)

All the items surveyed in this study are important, but among them, priorities were analyzed and organized. The most important thing to pay attention to is accident prevention. It can be seen that the system and policy related to personal mobiles should start from the perspective of accident prevention. The second was to provide safety education, and the third was to guide them to operate with safety equipment. If you look at only five things, fourth, designating a accessible road and then fifth, speed regulation. Referring to these contents, it is necessary to refer to these factors when establishing a system related to personal mobile devices.

### Policy Proposal: The framework of the ordinance and other proposals.

The contents of the ordinance are summarized as follows. In revising the law, if possible by revising the Jeju Special Self-Governing Province Special Act, the

provisions of the Jeju Special Self-Governing Province Special Act should be established and amended, and then added to the ordinance. In terms of ensuring the unification of the national transportation system, it is difficult to stipulate the Ordinance of Jeju Special Self-Governing Province, which may be made an effort to propose to the relevant central government.

#### 1. Purpose.

The purpose of this ordinance reflects the increasing trend of the use of personal mobile devices due to the increase in the number of single-person households, and reflects the context of carbon zero island orientation and reduction of traffic accidents.

2. Designated the availability of personalized mobile devices.

Jeju Special Self-Governing Province explains the concept of roads where personal mobility devices are available every year and defines roads where personal mobility devices are available in Jeju Island.

3. Promote the availability of personalized mobile devices.

Jeju Special Self-Governing Province will continuously inform roads where personal mobility devices are available through numerical maps and paper maps.

4. Establishing a basic plan to promote the use of personalized mobile devices to ensure safety.

Jeju Special Self-Governing Province establishes a "Basic Plan for Revitalizing Personalized Mobile Devices and Improving Operating Conditions" as a mid-term plan every five years. An annual implementation plan is established and operated.

5. Support for personalized mobile driving roads.

It stipulates that safety facilities on private mobile roads, including bicycle road safety facilities, can be provided and supported first to maintain safety facilities can be provided.

6. Contents regulations for restriction and prohibition of traffic and time designation and management of personalized mobile devices.

In addition to the designation of roads available for operation, prohibited spaces and prohibition of night traffic are stipulated.

7. Regulations on the contents of regulations such as prohibition of parking and illegal parking, prohibition of long-term neglect, and processing.

It includes the contents for the imposition of illegal parking prohibition and storage costs for personalized mobile devices.

8. Designation and operation of a special zone for personalized mobile devices.

Special tour zones or personal mobile device tour zones are designated so that permission for operating spaces and methods can be obtained and utilized. In the case of designating a village unit or designating a certain area, special efforts are made to ensure that personal mobile devices can use it safely.

9. Regulations on how to drive.

First, wearing and using phones is prohibited to shorten cognitive response time. It is prohibited to use headphones that listen to music.

Second, do not overtake bicycles.

Third, if the pedestrian protection obligation and damage to pedestrians on the pedestrian road are caused, reinforcement punishment is required.

Fourth, bicycles take precedence over bicycle roads, and if a bicycle wants to overtake, it should not be allowed to run at more than that speed, and if it wants to overtake, it should yield a personal mobile device.

Fifth, consider regulations that require the use of crosswalks when crossing.

Sixth, it stipulates that only one person should board.

Seventh, it is prohibited to operate side by side.

10. Connecting with public transportation.

It is possible to connect by allowing people to board public transportation.

11. The contents of personal mobile devices available in Jeju Island are regulated and renewed annually.

It continuously presents specific personalized mobile devices and specific roads and regulatory contents to be used for each mobile device.

12. Support for rental and utilization of public personalized mobile devices on coastal roads, etc.

It supports the rental and utilization of public personalized mobile devices for ecological use and revitalization of coastal roads in Jeju Island.

## conclusion

The purpose of this study was to analyze laws and policies related to personal mobility (PM) in foreign countries, review Korean laws, hear opinions from experts on the orientation of personal mobility devices, and fourth, to propose a framework for the safe use and activation of personal mobility devices.

At the local government level, the following were suggested as matters that Jeju Island should pursue with interest and should be stipulated in the ordinance.

First, designate the availability of personalized mobile devices.

Second, promote the availability of personal mobile devices.

Third, establishing a basic plan for activating the use of personal mobile devices to ensure safety.

Fourth, support for personal mobile driving roads.

Fifth, the restriction and prohibition of traffic of personalized mobile devices and the content regulations for time designation and management.

Sixth, regulations on the contents of regulations such as prohibition of parking and illegal parking, prohibition and processing of long-term neglect, etc.

Seventh, designation and operation of a special zone for individual vehicles.

Eighth, various rules for driving.

Ninth, connecting with public transportation.

Tenth, the contents of personal mobile devices available in Jeju Island are regulated and updated annually.

Eleven, support for rental and utilization of public personalized mobile devices on coastal roads, etc.

In addition, first, it is necessary to prepare requirements for autonomous driving of personal mobile devices, second, it is necessary to prepare measures to use reporting for low-speed personal mobile devices, and third, a block chain approach is required to proceed with the sharing system. It was suggested that it is necessary to actively accept discounts on public transportation within the block chain.

As a follow-up study, it is necessary to conduct a study to turn Jeju Island's coastal road into a paradise of personal mobility devices. Coastal

roads are used interchangeably with passenger cars, but are roads that can be used safely by individual mobile devices, and legal regulations are required.

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