Project name: Strategic Innovation Program (SIP) Phase 3: Construction of a Smart Mobility Platform / Examination of the Welfare Effects of Mobility Support on Community Building and Activities

2023 Annual Report

March 2024





Trustee name:

Japan Automobile Research Institute (JARI)

Institute for Health Economics and Policy (IHEP),

Association for Health Economics Research and Social Insurance and Welfare

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I -1. Purpose of Research and Development

- ◆For the re-design of the region
 - ⇒Realization of smart mobility services that are close to local activities and lifestyles
- Visualization of the value of mobility
 - ⇒Visualization of the value of moving not only in terms of the "amount of travel" but also in terms of welfare factors



The project aims to be horizontally expanded to regions that are considering the introduction of new welfare and mobility services in the future by identifying environmental factors and methods for introducing efficient and continuous mobility that achieves the well-being of residents.

I -2. Overall overview of research and development

The project will be

horizontally expanded to regions that are considering

the introduction of new welfare and mobility

services in the future by

introducing efficient and continuous mobility that achieves the well-being of

identifying environmental factors and methods for

Research and Development Theme: "Verification of the Welfare Effects of Mobility Support on Community Building and Activities"

Solving social issues such as medical care, declining birthrate, and aging population in the region, realizing well-being to maintain and promote people's health, including preventing frailty, etc.

Achieving well-being requires both mobility and creating a purpose for moving.

Realization of mobility considering local needs •Restructuring of regional transportation •Continuity of operations

- Creating a purpose for moving
- Small base (consolidation of facilities and functions)
 Building a sustainable regional structure

R&D item "6 Practice of Tactical Mobility Re-Design"



I-3. Surveyed area



II. JARI Activities

II-1. Goals of this R&D and Themes to Focus on

- Rebuild regional transportation systems that support regional activities and lifestyles (resident activities, regional medical welfare, daily life support services, etc.)
 - Depopulation and aging of the population will make it challenging to secure a particular scale of demand necessary to maintain livelihood services, community activities, etc., forcing the coverage area of services to be expanded.
 - As a result, it is anticipated that the region may become challenging to maintain due to increased costs associated with longer travel times, withdrawal of services, etc.

Story creation of new community bases

- To promote exchange and cooperation with other satoyama and cross-regional communities to form a new community with a broader scope.
- > To promote residents' outings and intercommunity exchanges.

Support for means of transportation to facilitate participation in story creation, events, etc.

Creation of a path toward "two-base life" by making it easier for residents to interact with other communities between communities and to go and come between the satoyama and the "town center."

Goal: To build a system that enables cooperation and flexible operation by integrating local stakeholders, including residents.

II-2. Activities and Results in Yabu City

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About Yabu City "Small Base"

- Construction of "small bases" is underway to continue the region's efforts to resolve the declining birthrate, aging population, and depopulation issues.
- Construction of a bus terminal, medical and nursing care, stores, and community space for residents. \rightarrow Planned to be developed as a hub for regional transportation
- With the Sekinomiya area serving as a leading example, the "small base" concept is to expand from other areas in Yabu City to the entire Tajima region, a secondary medical care area.



(4) Bus terminal

Image of a small base in the Sekinomiya area (Source: Yofu City data)

generation to generation.

Study framework for the reconstruction of public transportation in Sekinomiya area, Yabu City



Objectives of the Demonstration Experiment

- To create opportunities for residents to experience "reservation-based shared-ride transportation" as a first step in the study to secure a means of access to the "small base" to be constructed in the Sekinomiya area.
 - \rightarrow To survey "acceptability of reservation-based shared ride transportation."
- > To establish relationships for sustainable provision of mobile services in the Sekinomiya area.
 - → To establish a forum for discussion among residents, local government, transportation operators, and other related parties.

♦ JARI's Role

- > To promote local residents' understanding of the need for new mobility services and build a cooperative framework.
 - → Involvement of residents' self-governing bodies from the planning stage of the demonstration experiment (four councils in the Sekinomiya area)
- > To develop a plan for the demonstration experiment and prepare materials to disseminate to residents.
- Analysis of demonstration experiment results, etc.

Characteristics of the demonstration experiment

- > Trials of activities to provide services with continuity
 - \rightarrow Multiplication of appointments for time visits at the clinic + appointments for rideshare transportation
 - \rightarrow Operation of shopping service to local supermarkets

Results : Demand transportation demonstration experiment in 2023

Demonstration period:

October 28th - November 10th (14 days)

Semi-Demand Operation

- ♦ October 28-November 3 (first 7 days)
- Number of passengers: 98 (actual number of passengers: 49)

Full-demand operation

- November 4-10 (second half 7 days)
- ♦ Number of passengers: 278 (actual number of passengers: 141)
 ✓ Medical cooperation (set appointments for medical treatment and demand operation) and shopping service (demand operation to supermarkets in each village in batches) are implemented.





Scene of reservation at the waiting area and running of a rideshare vehicle



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Changes in residents after the demonstration experiment

The local council (on the residents' side) began to ask if it would be possible to use demand transportation to participate in local activities and events.



The council is in charge of accepting demand reservations, setting operation routes, and communicating with residents.

Survey on "awareness" and "acceptability" of demand transportation by creating opportunities for residents to use it.



If we miss this opportunity, we will become mobile refugees ourselves! The last chance, we have to speak up ourselves!

A trial of a new "residents' mutual assistance-type transportation service" to support community activities is underway.





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Demand transportation information flyer (using last fall's map)

II-3. Activities and Results in Niyodogawa Town

Current status of public transportation in Niyodogawa Town

- Last year, a survey was conducted on all bus rides. Although the number of users is small, a few people have no other means of transportation.
- The town's bus service includes nine routes operated within Niyodogawa Town, a route to Sakawa Town via the neighboring Ochi Town, and a route to Kochi City and outside of the prefecture in the direction of Ehime Prefecture. Most routes are operated for students commuting to school, with four to six services daily, mainly during morning and evening hours.
- Community buses are operated once a week on round trips, especially to supplement branch lines beyond the main road.
- There is one taxi company for each former town/village (three companies in total). All of them operate one vehicle (one spare vehicle).

Restructuring of regional transportation

- > Necessary for means of transportation to support local activities and maintain community
 - Given the aging of residents and the geographical features of Niyodogawa Town(steep mountain roads), cooperation not only from "residents' mutual aid" but also from "local transportation operators" is essential.
 - We should consider how transportation operators can survive in connection with the restructuring of public transportation.

Flail Prevention Activities in Niyodogawa Town, Kochi Prefecture 15

- Created by the merger of Agawa Village, Ikegawa Town, and Niyodo Village in 2005.
 - The administrative services and resident-led activities are based on the units of former towns and villages, and there is little interaction and connection among the regions.
 - Considering the ongoing decline in population, it will be difficult for traditional forms of community to continue to exist.
- ◆ An NPO was established by local residents to promote activities to prevent frailty.
 - ✓ The NPO will play a central role in building "new bonds" through "story creation" activities the residents organize.
 - ✓ The program also includes "eating together," watching movies and creating a "heart-to-heart notebook" to record how you want to live your life from now on.
- As a leader in activities for preventing frail aging, the cooperation has started collaborating with neighboring municipalities and establishing voluntary gathering places for graduates of Hatsuratsu Exercise.



Scene of flail prevention activity, members of flail prevention activity, and discussion meeting about local transportation

Symposium organized by Frail Support Niyodogawa

- The "Symposium on Sustainable Community Development under Declining Population," organized by Frail Support Niyodogawa and Niyodogawa Town and co-sponsored by JARI, was held on March 16.
 - Lecture by Dr. Kamata, the director of JARI, on "Topics of Mobility in a Declining Population" and introduction of activities in SIP
 - Panel discussion by frailty supporters and occupational therapists from three Shikoku municipalities (Niyodogawa Town, Otoyo Town, Shimanto City)
 - Summary comments from Mr. Tsuji, IHEP President
 - ➤TMS, Zentan Bus, and Silver Human Resource Center from Yabu City, which were also in the study area in SIP, also participated.





Providing mobility support for flail prevention activities

- Now, I can participate in frail activities and community events by driving myself or riding in a car with other neighbors, but...
 - \cdot How long can I drive by myself?
 - \cdot What would happen if I gave up my driver license?
 - \cdot It seems difficult to participate in activities only by public transportation.
 - \rightarrow It restricts participation in various activities...
 - \rightarrow I am going to stay cooped up in the house...
 - \rightarrow My health/frail conditions may worsen ...
- Loaned a small EV vehicle, SAKURA, to a Frail Support Niyodogawa to create a system of mobility services that support local activities, such as transportation by shared rides, residents' mutual assistance mobility services, and cooperation with businesses.
- Wrapping SAKURA
- For symbol and mascot of local frail activities
- Going out for "fun" by using SAKURA
- \cdot More and more places to go
- Going out with other people you don't know is a new experience! It is also a "stimulus"!





- Elderly people who eat alone are at risk of poor nutrition, decreased motivation to eat, and increased risk of depression.
 - The percentage of elderly single-person households in the population aged 65 and over will be 18.9% for male and 23.9% for female in 2030, with an increasing trend for both male and female.



- The "eating together" has a significant effect on preventing frailty in older people!
 - Frail Support Niyodogawa is currently practicing a "communal eating place" where participants bring homemade vegetables and dishes.
 The event was very successful: the participants enjoyed it and found it worth
 - The event was very successful; the participants enjoyed it and found it worth living.
 - \cdot Creation of more "communal eating places" outside of the town center.
 - $\cdot\,$ Kitchen cars and community nurses visit communities.
 - $\cdot\,$ From not public facilities such as residents' yards into places where everyone can gather.

Create a "micro base"

- \cdot A park or someone's yard becomes a "micro base" by developing interaction among residents.
- We would like to encourage community interactions by involving residents from outside the community and people of multiple generations.
- \cdot We would like to "reconstruct and sustain the community" by providing mobility for this purpose.

II-4. Gantt chart for research and development

II-4. Gantt chart for research and development



III. IHEP Activities

III-1. Project Overview

(Background, Content of Research & Development [R&D])

Background of R&D

Research Background

When introducing mobility solutions tailored to the needs of each community, technological development alone is not sufficient for implementing and firmly establishing it. What is essential is enhancing public acceptance, which requires changing the mindsets and behavior of local stakeholders including residents and municipal workers.

Technology can be developed but may not be successfully implemented in society

<u>3rd term of SIP</u>





1. Studying and analyzing leading practices

Collecting information on local communities (or part of the communities) where residents are strongly aware of issues on community development, community activities, and mobility; and analyzing their geographic characteristics, transportation resources, as well as how residents' awareness has been raised

2. Introducing new mobility solutions and creating opportunities to go out / participate in society

<Intervention #1> Creating opportunities where residents lead activities to discuss challenges and vision of the community as well as to learn how to prevent frailty and the need for care. Raising residents' awareness of issues on mobility and going out through learning and experiencing frailty prevention in an ongoing manner

= Creating opportunities for behavioral change so that residents themselves can take action to introduce mobility solutions

<Intervention #2> Developing mobility solutions such as shared taxi service, transportation by neighborhood associations, mobility assistance to/from gathering places, and use of Green Slow Mobility, while facilitating resident-led activities to develop gathering places, to build relationships that encourage going out, and to create daily opportunities to go out



Physical and Mental Condition of the Participants: Image



(Created by Katsuya Iijima, Institute of Gerontology, The University of Tokyo. Modified from Masafumi Kuzuya, Japanese Journal of Geriatrics, 2009, 46:279-285.) 25



IHE

Content of R&D



Content of R&D

3. Visualizing effects

Lack of transportation is a factor leading to homebound status. By developing and spreading mobility solutions in areas without transportation, what changes will we see including how often people go out, their health outcomes, the proportion of people with long-term care insurance (LTCI) certification, and LTC expenditures? We will analyze such effects quantitatively and qualitatively.

[Research methods]

- 1. Complete enumeration surveys (Ikeda & Kannami) (population approach)
- 2. Targeted surveys (Ikeda*, Matsudo, Fujieda & Kannami) (high-risk approach)
- 3. Interviews (Ikeda, Matsudo, Fujieda & Kannami)
- * In Ikeda Town, the surveys will be conducted only w/ the intervention group.



1. Complete enumeration surveys in Ikeda Town & Kannami Town

Purpose	To follow the users and non-users of mobility sole solutions, aiming to examine their effects on people's	utions in the areas scheduled to introduce such health outcomes								
Subjects	Those living in the areas scheduled to introduce having the LTCI certification, not being eligibility cars to go out	the mobility solutions, aged 75 or over, not for General Program, and <u>not driving their</u>								
Number of subjects	Approximately 2,000 at Wave 1									
Survey items	Frailty (Kihon checklist), QOL (EQ-5D-5L), frequency of going out, subjective health, mental health (WHO-5), frequency of social interaction, social participation, working, <i>ikigai</i> (purpose of life), etc.									
Covariates	Gender, age, education, living alone, financial status, t	transportation, illness								
Research period	FY 2023 – annually (4 years)	Wave 1 response rate: >70%								
Research schedule	March-April 2024, April 2025, April 2026, and April 20)27								
Others	Also exploring possible comparisons between the intervention and control areas in the number or % of people with the LTCI certification & in LTC expenditures (no surveys necessary)									

Content of R&D

2. Targeted Surveys in Ikeda Town, Matsudo City, Fujieda City, and Kannami Town

Purpose	To examine the effects of mobility solutions on people who used them based on care plans with a focus on supporting independent living, comparing users and non-users of the solutions
Subjects	Newly certified people requiring LTCI (at support levels) who participate in this mobility project in the areas that develop mobility solutions (intervention group) and in the areas not developing mobility solutions (control group)
Number of subjects	Approximately 150 for the intervention group and the control group, respectively
Survey items	LTC expenditure, frequency of going out, subjective health, mental health, frequency of social interaction, QOL, social participation (level, type), physical activity level, frailty (Kihon Checklist), level of care needs, wellbeing, life satisfaction, <i>ikigai</i> , sphere of activity, service satisfaction, etc.
Covariates	Gender, age, living alone
Research period	6 months (may change depending on when the study starts)
Research schedule	Starting pre-tests once the interventions (1) to (4) are ready (scheduled within FY 2024) Items under consideration are shown in red.

Hypothesis



Through care plans leveraging mobility solutions, can't we increase users' social interaction and participation, thereby reducing the number or % of people with the LTCI certification & LTC expenditures?



Interventions

	Areas developing mobility solutions (targeted survey: intervention group)	Areas not developing mobility solutions (targeted survey: control group)					
(1) Creating more purposes to go out = Program to Develop a Support System in Daily Living Training & working along with SCs in the intervention areas	Yes	Yes					
(2) Promoting care plans focusing on supporting independent living = Preventive care management Training & working along with community general support centers and care managers	Yes	Yes					
(3) Promoting frailty prevention = General programs to prevent the need for care Promoting it to local residents	Yes	Yes					
(4) Introducing mobility solutions	Yes	No					



Content of R&D

3. Interviews in Ikeda Town, Matsudo City, Fujieda City, and Kannami Town

Purpose	To qualitatively examine the effects and challenges of introducing mobility solutions
Subjects	 (1) Project participants (2) Service providers (3) SCs and community general support center staff
Number of subjects	Around 3 people for subjects (1) to (3), respectively, in each municipality
Interview questions	 What they find beneficial and challenging as they participated What they find beneficial and challenging as they participated Changes, benefits, and challenges after this project is brought to the community
Research schedule	June to July 2027 (scheduled)



4. Organizing practical approaches to social implementation tailored to different community characteristics

5. Organizing and categorizing approaches for different communities

Identifying intervention processes that can change residents' mindsets and behavior through the introduction of new mobility solutions and the creation of opportunities to go out and to participate in society.

SCs and community general support centers are expected to provide support not only at an individual but also at a community level, including the introduction of mobility solutions. To help these professionals promote residents' behavioral change, IHEP will provide training and workshops on community intervention methods. We will also conduct training to municipal workers on how to develop policy and to effectively use systems such the LTCI. Building on these activities, we will identify the processes.

- The participating municipalities and the IHEP will work together to organize approaches, aiming to enable local stakeholders to independently and speedily run the PDCA cycle for their programs (i.e., continuing to implement the plans while also evaluating whether the programs bring desirable outcomes, and improving the programs based on the evaluation results).
 - → Building on these processes, we will organize and categorize community-level criteria to redesign service introduction according to the needs of different communities, such as metropolitan areas, provincial cities, and rural areas.



III-2. Introduction of a Logic Model for an Agile Development Model

Agile Development Model: Basic Concept

 A more agile and comprehensive approach to solving social issues is needed as technological development and the business environment change more rapidly than in the past.

Conventional

Linear development model

SIP approach

(image assuming a basic case)

Mission-oriented agile development model



Managing technological development to achieve predetermined goals

Flexibly and comprehensively set and modify the theme under the leadership of a program director based on the PDCA cycle

Setting Multi-Step Outcomes from Beneficiaries' Perspective ³⁶

- In principle, we set outcomes at multiple steps from beneficiaries' perspective.
- While the steps can be grouped in different manners (e.g., "initial, mid-term, and final," "initial, medium-term, and long-term," "short-term, medium-term, and long-term"), as the initial (short-term) outcome, we set the beneficiaries' first change deriving from the output.

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Output

- As an implementing body (e.g., country), what and how much does/did it provide/prepare to whom and to what extent?
- = Provider's perspective
- Can be controlled by Gov't

Outcome

- (Through output implemented (provided/prepared) by the country & others,) how do/did beneficiaries change?
 - = Beneficiaries' perspective
- Cannot be controlled by Gov't

Also see "Policy goals and basic procedures of clarifying logic (5): setting output," p.49

Relationships between the Logic Model and

Problem Solutions, True Causes, Options



Source: Institute for Health Economics and Policy. FY 2023 MHLW program for health promotion for the elderly. "Research on building organizations to enhance local community designs aiming to deepen and promote community-based integrated care systems: a program to co-create agile community-based integrated care policies." (created by Zentaro Kamei, Chief Research Fellow, PHP Research Institute)

THE

III-3. Project Schedule and Progress

Project Schedule (Ikeda Town)

		FY2023		FY∙2	2024			FY∙2	2025			FY∙2	2026		FY-2027				
		Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Collecting information		Dec	 c. 27 & 2 m Mitsub	28: comp pishi UFJ	oleted wit Researc	th the co h and Co	ooperatic onsulting	on of Mr.	Suzuki										
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	(3)-Promoting- frailty-prevention	Ma	Mar. 1: a workshop by Hattori from IHEP																
_	(4)·Mobility· solutions																		
h	Complete- enumeration-surveys	Mar. 29: Qs sent		Apr. 23: reminder non-resp	rs sent to ondents		W2				W3				W4				
Researc	Targeted survey					To b	e conc	lucted pro	accorc e-test	ling to → post	the tir test 6	ning ea 5 mont	ach par hs late	l ticipar r	nt start	s:			
	Interview																		
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Project Schedule (Matsudo City)

		FY2023		FY-2	2024			FY∙2	2025			FY∙2	2026		FY-2027				
		Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Collecting information		Feb	. 28: Co subishi U	mpleted IFJ Resea	with the arch and	e cooper Consult	ation of I ing	Mr. Suzu	ki from										
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	(4)∙Mobility• solutions																		
ų	Complete- enumeration-surveys				The	comp	lete e	nume	ration	surve	ey will	not b	e con	ducte	d				
Researc	Targeted survey			To be conducted according to the timing each participant starts pre-test → post-test 6 months later											s:				
	Interview																		
Mobility-Redesign- Promotion-Council			eb. 6: 1 Mar. 21:	st counc 2nd cou	il meetir Incil mee	ng, w/ th eting	ne 4 mur	nicipalitie	es also pa	articipati	ing								



Project Schedule (Kannami Town)

		FY2023		FY∙2	2024			FY∙2	2025			FY-2	2026		FY-2027				
		Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Collecting information		Jan	. 9: con n Mitsul	l npleted w pishi UFJ	vith the o Researc	cooperat h and Co	ion of Mi onsulting	r. Suzuki											
s	(1)-More-purposes- for-outing		ition inals				1												
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ų	Complete- enumeration-surveys	Mar. 29: Qs sent		Apr. 23: reminder non-resp	s sent to ondents		W2				W3				W4				
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	Interview																		
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Project Schedule (Fujieda City)

		FY2023		FY•2	2024	_		FY-2	2025	_		FY∙2	2026		FY-2027				
		Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Collecting information		Mar	lar. 27: Completed with the coopera uzuki from Mitsubishi UFJ Research					Mr. nsulting	ting										
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	Interview																		
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