

Strategic Innovation Promotion Program(SIP) Automated Driving (expansion of system and service)

Study on Assessment and Strategy of Promotion for Social and User Acceptance

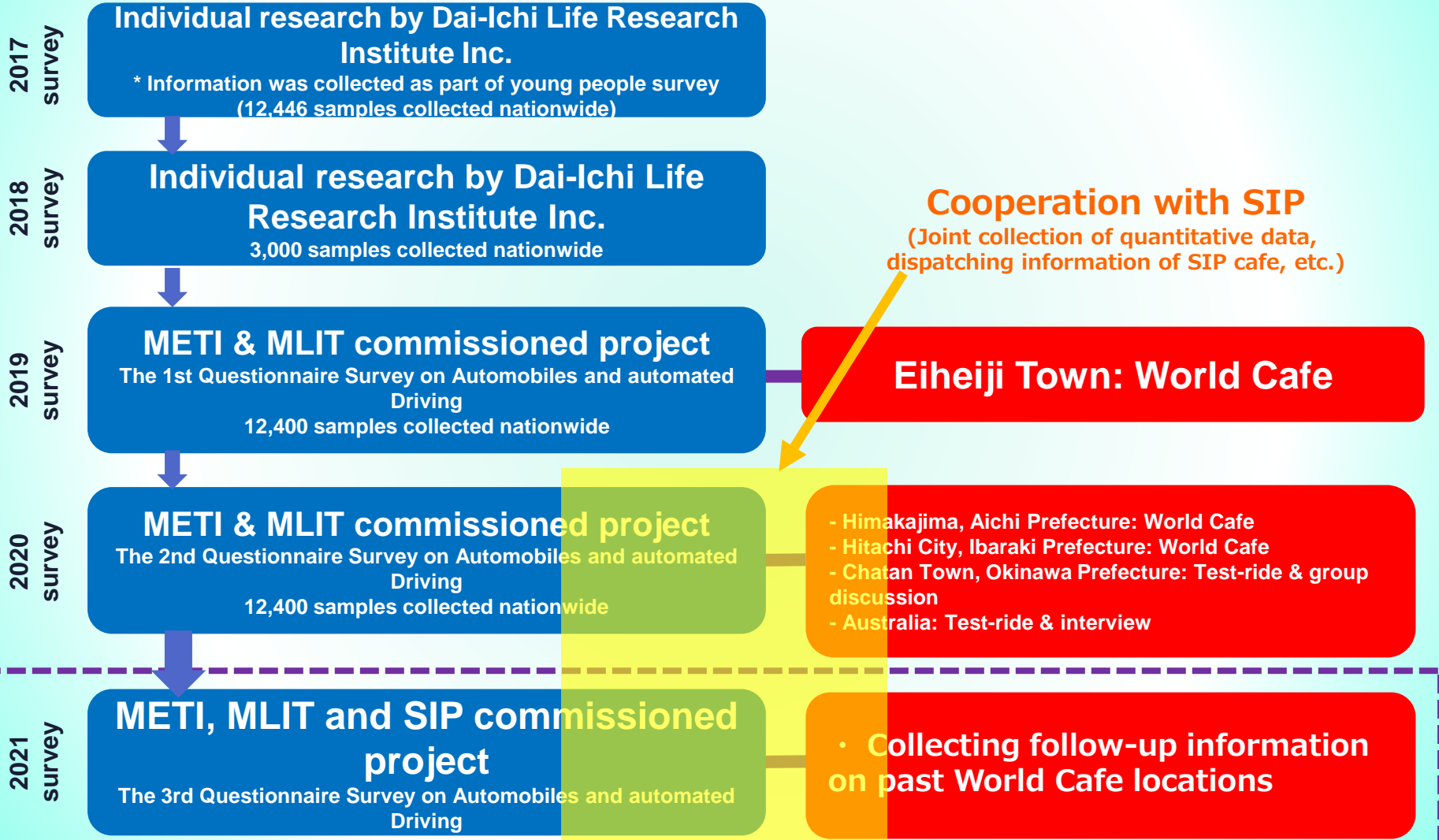
(FY2019-FY2022) FY2020 Annual Report (the second periodic report)

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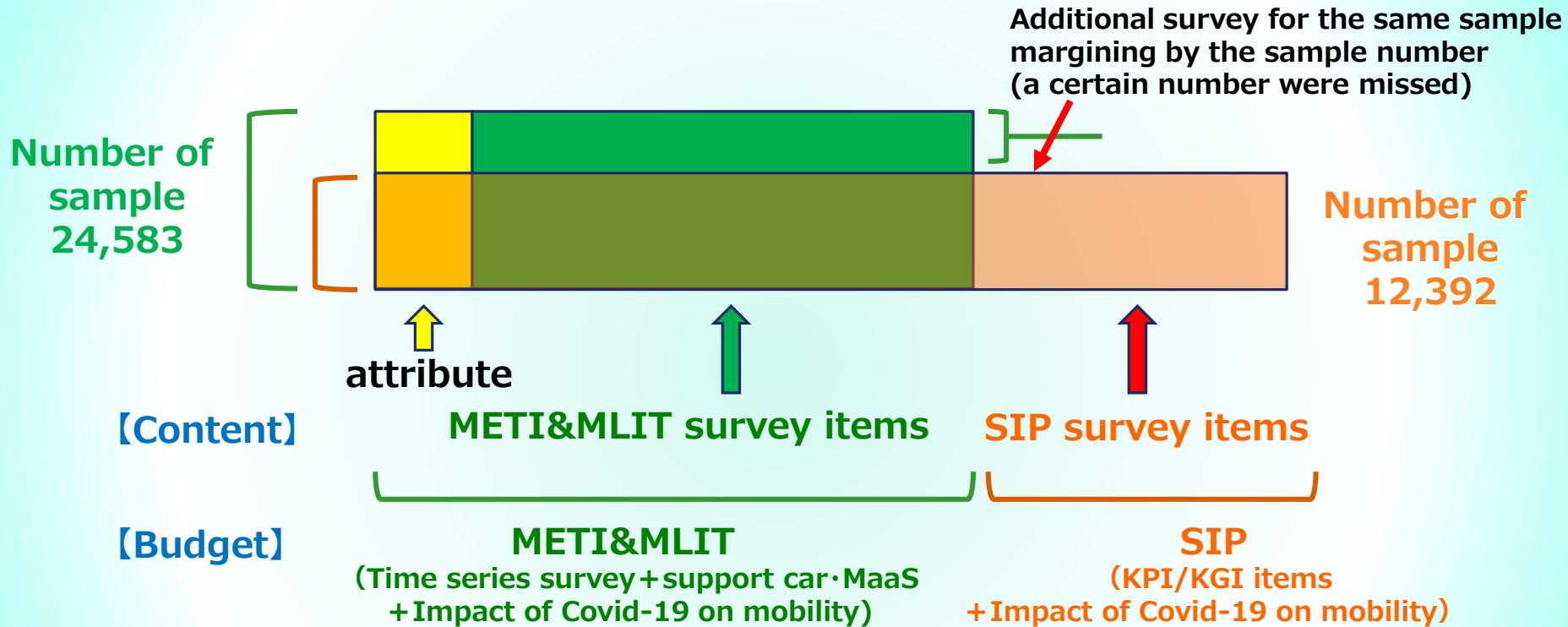
Positioning of the survey

[Collection of quantitative data]

[Collection of qualitative data]



Outline of the Third Questionnaire Survey on Automobiles and Automated Driving



- Target : People aged 18-79 in Japan, 24,583 (METI&MLIT)・12,392名 (SIP)
* the result of age 18-69 is used for main analysis
- Period : January 2021 (METI&MLIT: 1/16-18 · SIP: 1/16-24)
- Method : Online survey (by Cross Marketing)

The Contents of Surveys (Item Lists)

【METI and MLIT Survey】

- ◆ FACE
- ◆ Q1 Automated Driving Comprehensive Acceptance Score by Type
- ◆ Q2 Understanding of automated Driving
- ◆ Q3 License / Car Usage Status / Usage Type
- ◆ Q4 Number of Cars Owned
- ◆ Q5 Accident / Near Miss Accident Experience
- ◆ Q6 Changes in Transportation Usage Due to Covid-19
- ◆ Q7 Regular Places and Means of Transportation
- ◆ Q8 Change in Frequency of Going Out Due to Covid-19
- ◆ Q9 Return of License Due to Aging
- ◆ Q10 Actual Conditions of Use of Support Cars and Support Car Subsidies
- ◆ Q11 Mobility Environment
- ◆ Q12 Awareness of MaaS
- ◆ Q13 Awareness and Actual Conditions Regarding Automated Driving
- ◆ Q14 Usage and Understanding of Driving Assistance Technology
- ◆ Q15 Expectations for Automated Driving

【Cabinet Office SIP Survey】

- ◆ Q1 Awareness of Place of Residence
- ◆ Q2 Itemized Acceptance of Automated Driving (for Scale)
- ◆ Q3 Awareness of Understanding and Cooperation Toward the Spread of Automated Driving
- ◆ Q4 Specific Requirements for the Realization of Automated Driving services
- ◆ Q5 What to Do as a User for Popularization
- ◆ Q6 Movement Restrictions and Lifestyle Changes Due to Covid-19
- ◆ Q7 Satisfaction with Mobility in Daily Life
- ◆ Q8 Avoidance Behavior of Covid-19 Infection Spread
- ◆ Q9 Avoiding the Spread of Covid-19 Infection and the Possibility of Cars
- ◆ Q10 Request for Work Style Change (Workers)
- ◆ Q11 Values and Behavior

Survey form creation cooperation:

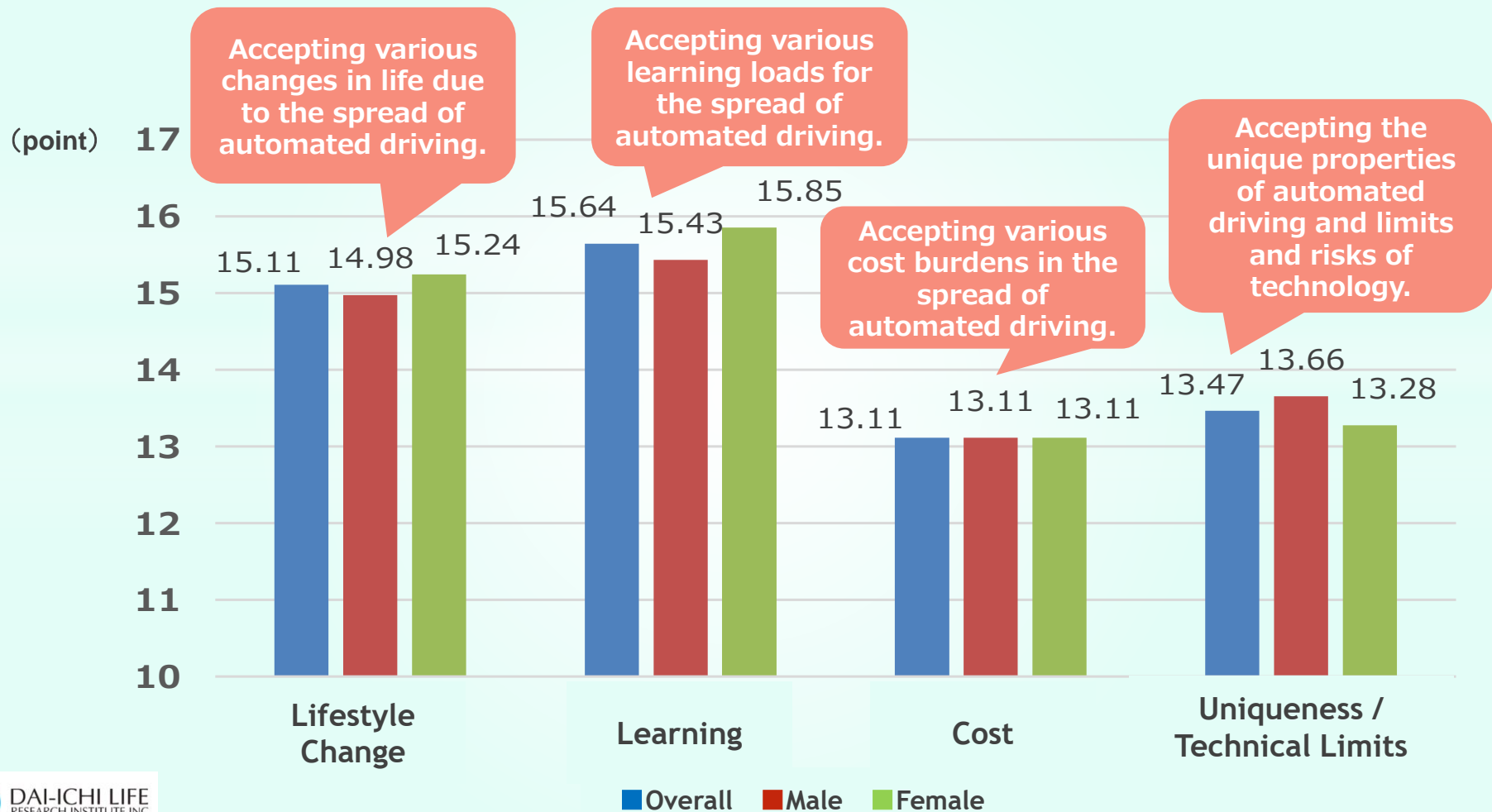
- Cabinet Office (SIP-adus)
- National Police Agency
- Consumer Affairs Agency
- Ministry of Economy, Trade and Industry
- Ministry of Land, Infrastructure, Transport and Tourism



AUTOMATED DRIVING ACCEPTANCE BY FACTOR

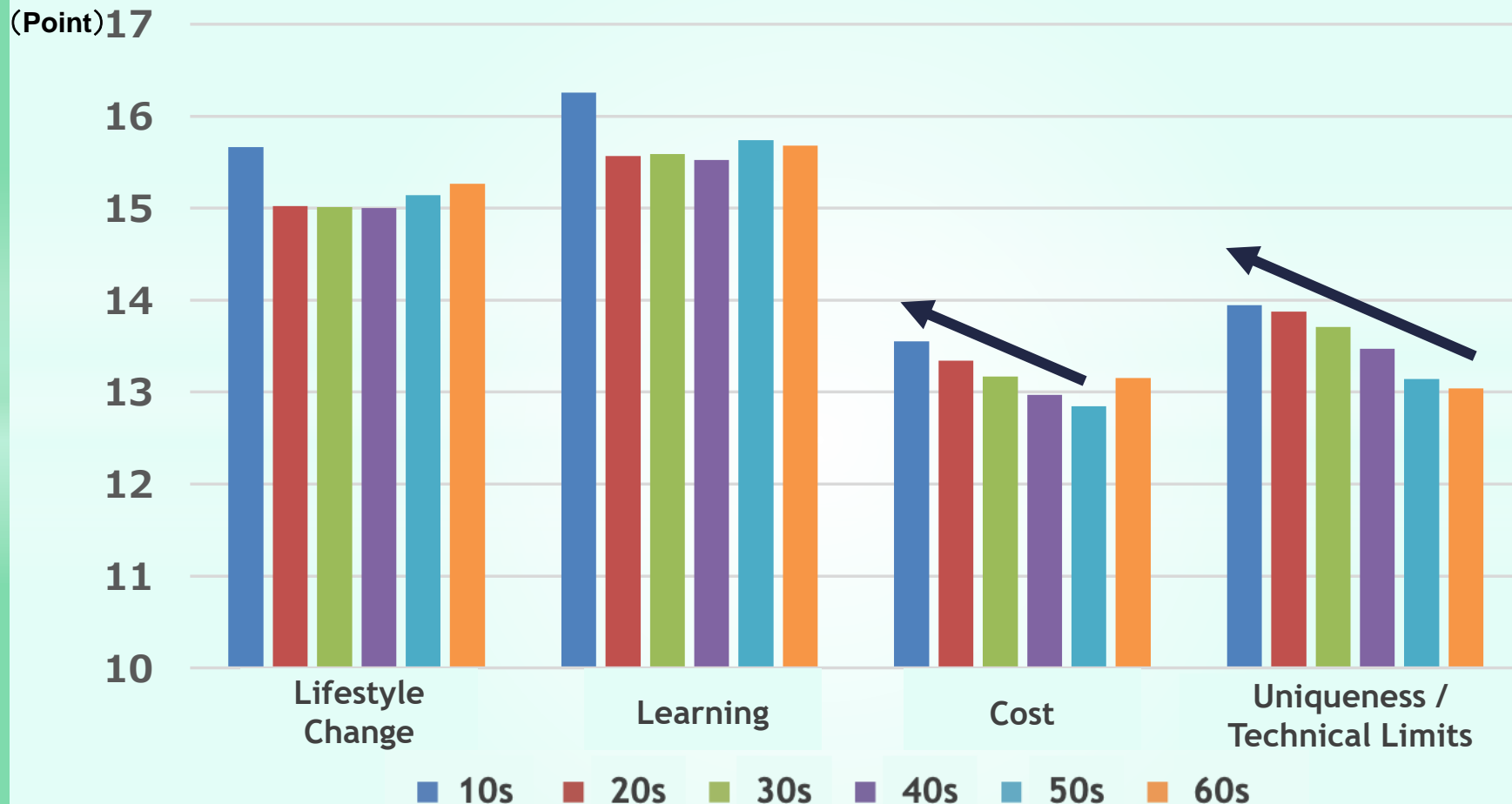
Distribution of Acceptance Scores by Factors (Overall and Gender)

- ◆ Higher acceptance score of life changes and learning in women than in men.
- ◆ Higher acceptance score of Uniqueness and Technical Limits in men than in women.



Distribution of Acceptance Scores by Factors (Age)

- ◆ Teenagers (18-19 years old) tend to be generally receptive.
- ◆ Young people are expected to be a key from the perspective of accepting uniqueness and technical limitations that are particularly difficult to cultivate.

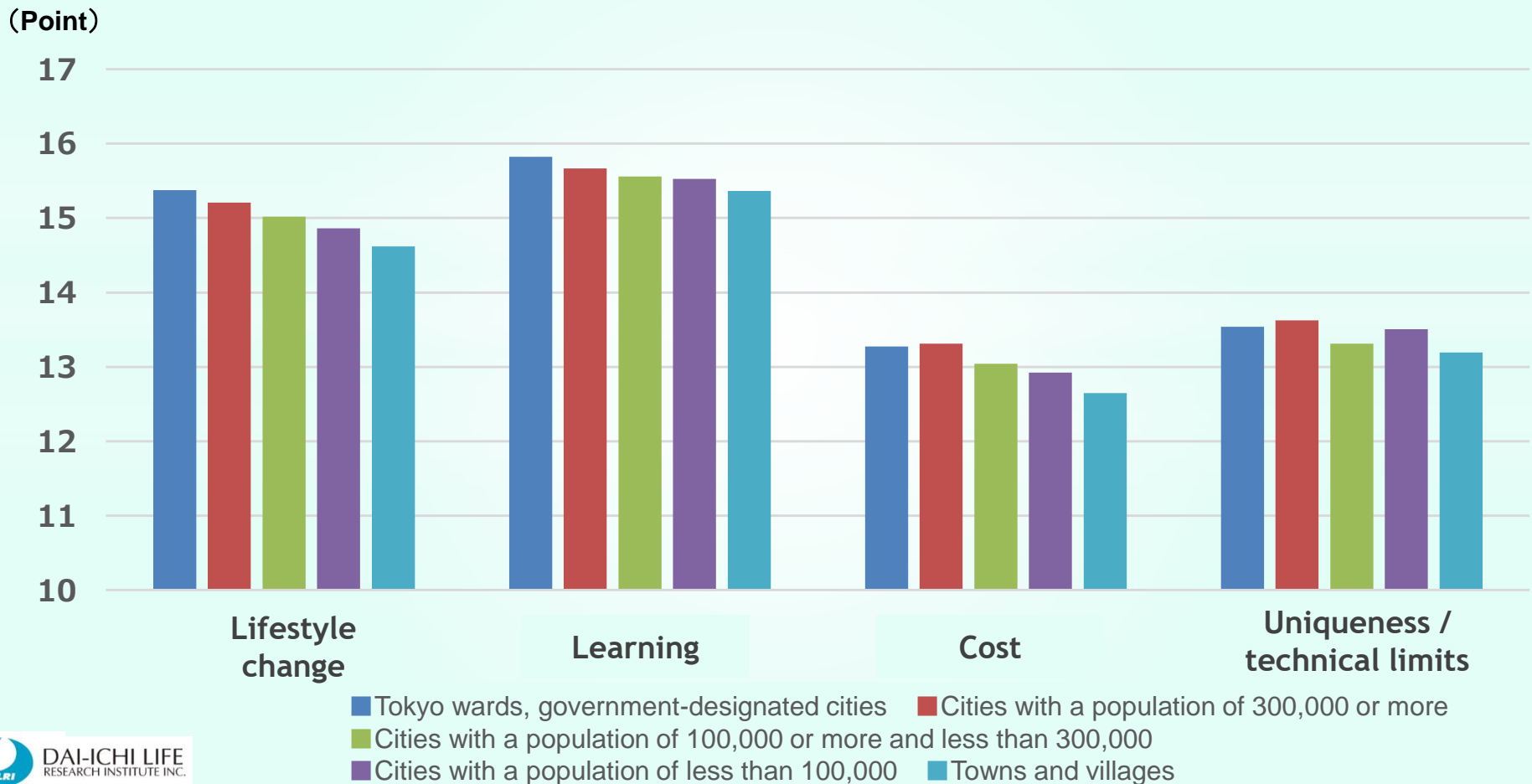


*From the SIP survey section of the Cabinet Office

Acceptance score by factor : A composite score created from multiple questions that make up each factor.

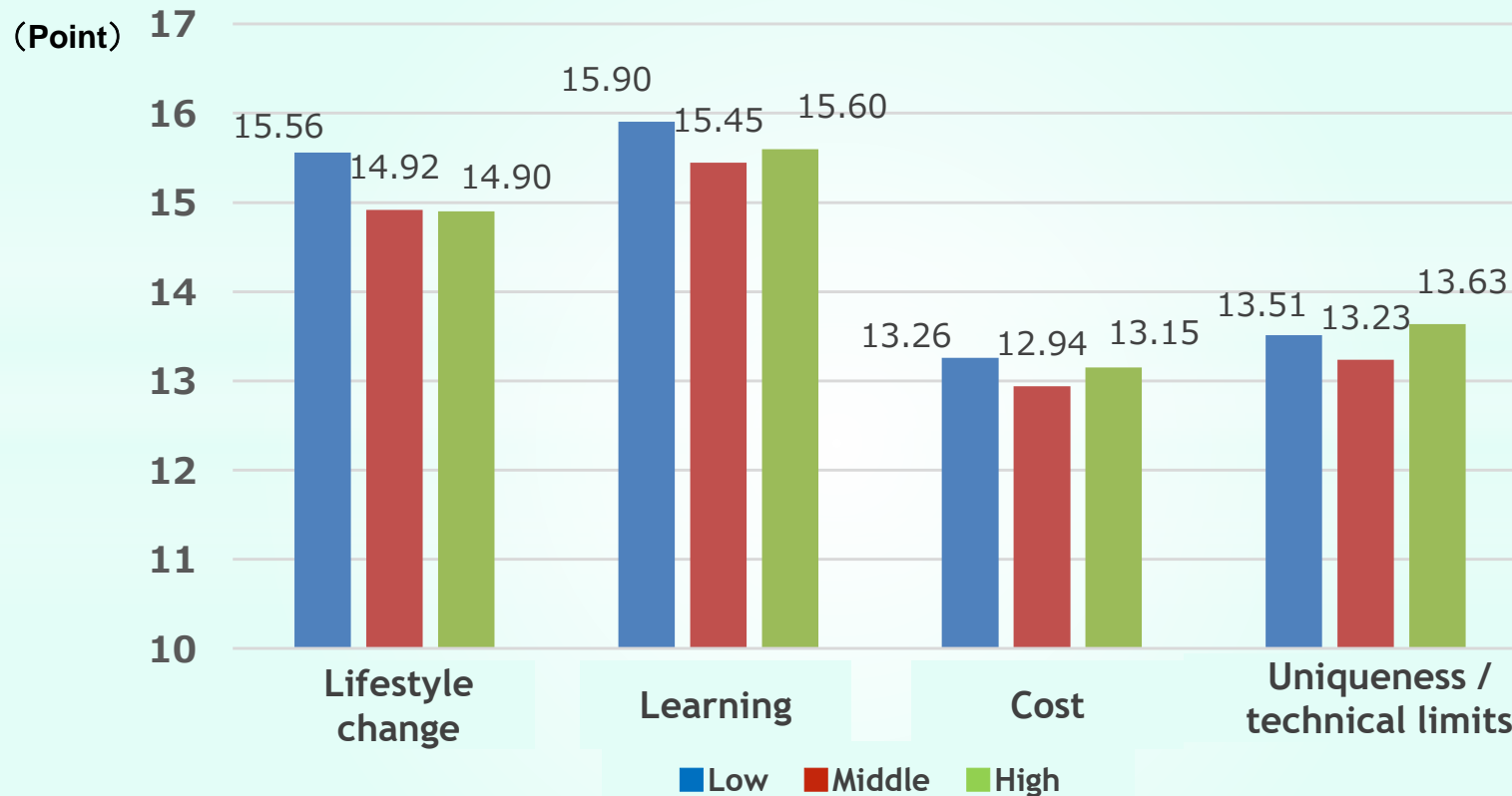
Distribution of Acceptance Scores by Factors (City Scale)

- ◆ Larger cities have more receptive factors.
- ◆ There is a possibility that age is more effective than the size of the city in terms of acceptance of uniqueness and technological limits.



Distribution of Acceptance Scores by Factors (Mobility Issue Score)

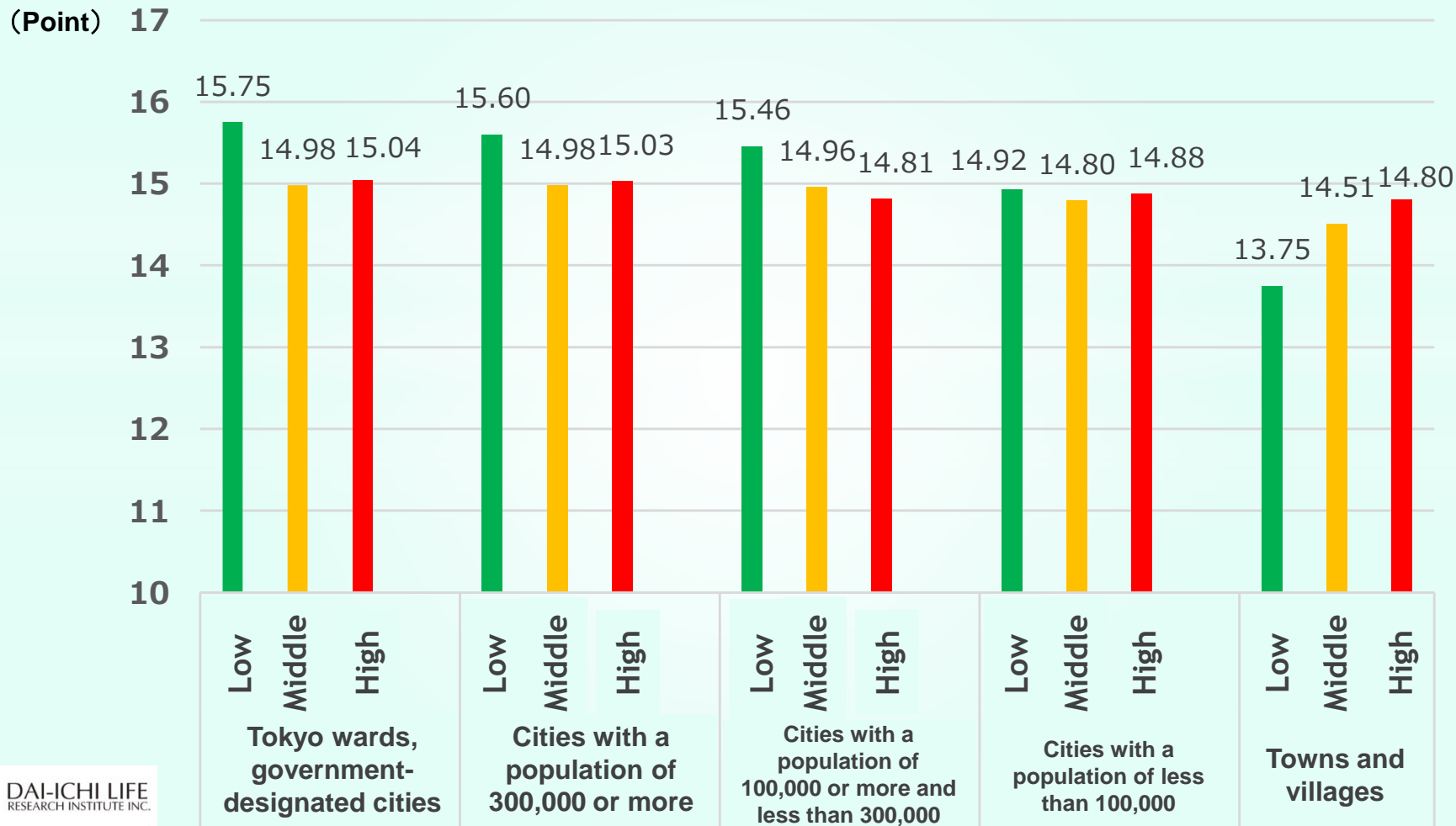
- ◆ For those who have low Mobility Issue Score, there are many factors with the highest acceptance score.
- ◆ Differentiated into a layer that accepts as a social flow (small issue) and a layer that accepts from necessity (large issue).



Mobility score: The mobility score is obtained by reversing and combining the results for the six questions “You cannot live your daily life without a private car,” “You do not have a lot of means of transportation, such as buses and trains,” “You live far from bus stops or stations,” “You often drop and pick up your family members or have your family members drop and pick you up by private car,” “You do not have a good access to the nearest transportation service (e.g. narrow road, unpaved road, dark road),” and “There are restrictions on the use of means of transportation i.e. mountain roads and snowy roads” (Cronbach’s Coefficient Alpha = 0.860).

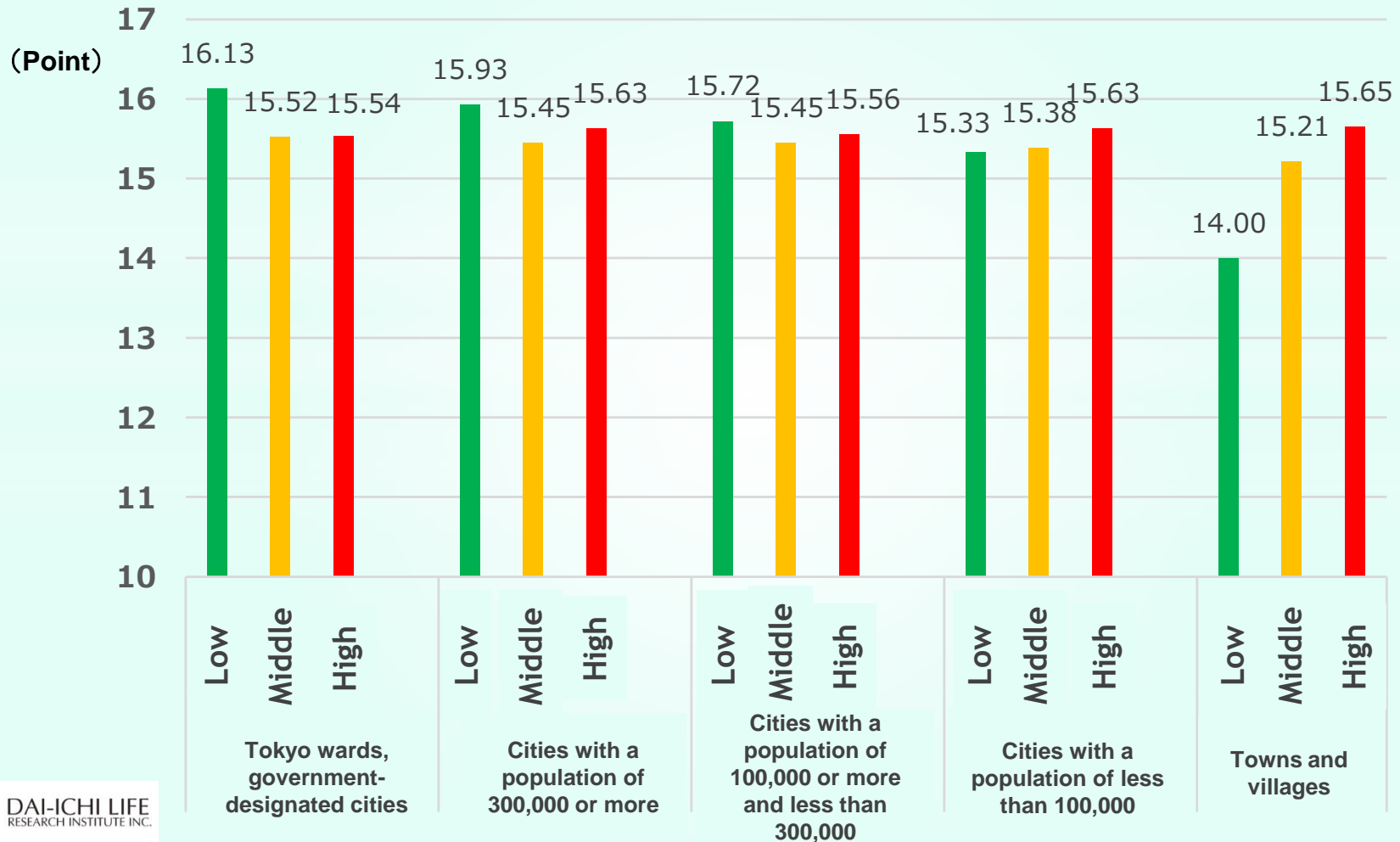
Life Change Acceptance Score (City Scale × Mobility Issue Score)

- ◆ Looking at the size of mobility issues by city size, it is highly acceptable to people with small mobility issues, especially in cities with a population of 100,000 or more.
- ◆ People who live in towns and villages and have small mobility issues are less receptive.



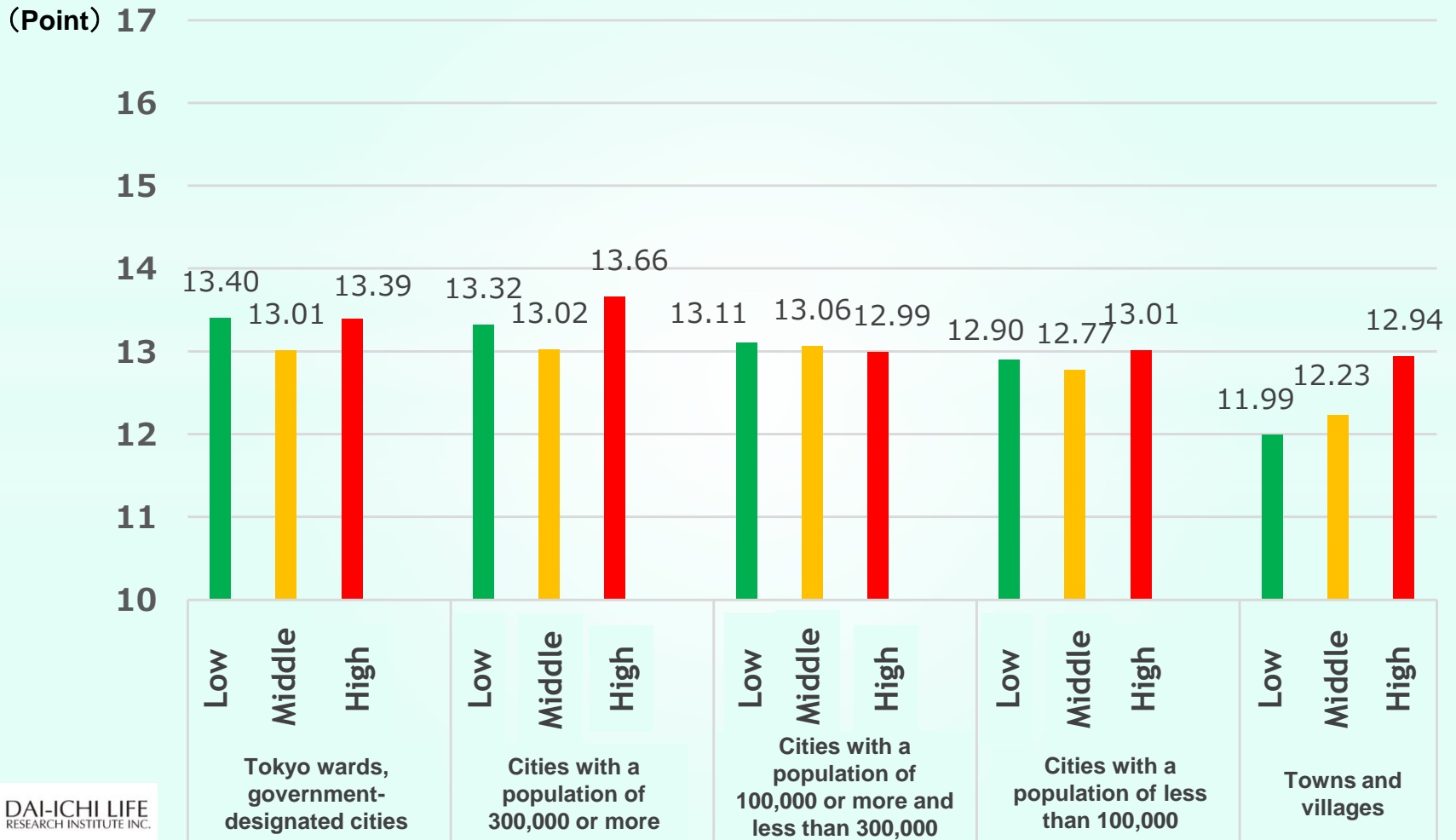
Learning Acceptance Score (City Scale × Mobility Issue Score)

- ◆ Looking at the size of mobility issues by city size, it is highly acceptable to people with small mobility issues, especially in cities with a population of 100,000 or more.
- ◆ People who live in towns and villages and have small mobility issues are less receptive.



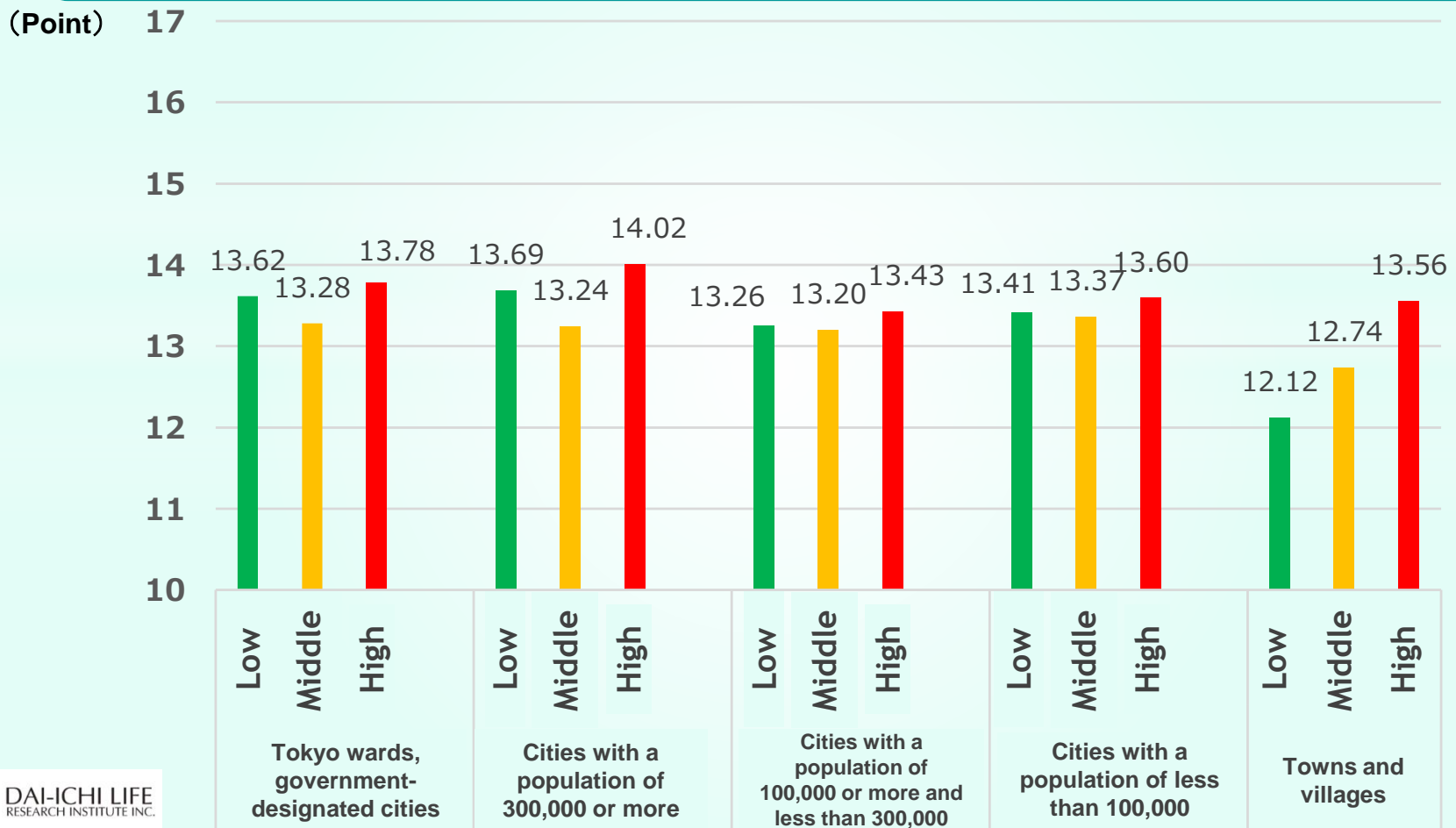
Cost Acceptance Score (City Scale × Mobility Issue Score)

- ◆ Greater mobility challenges are more cost-acceptable in many areas.
- ◆ People who live in towns and villages and have small mobility issues are less receptive (as usual).



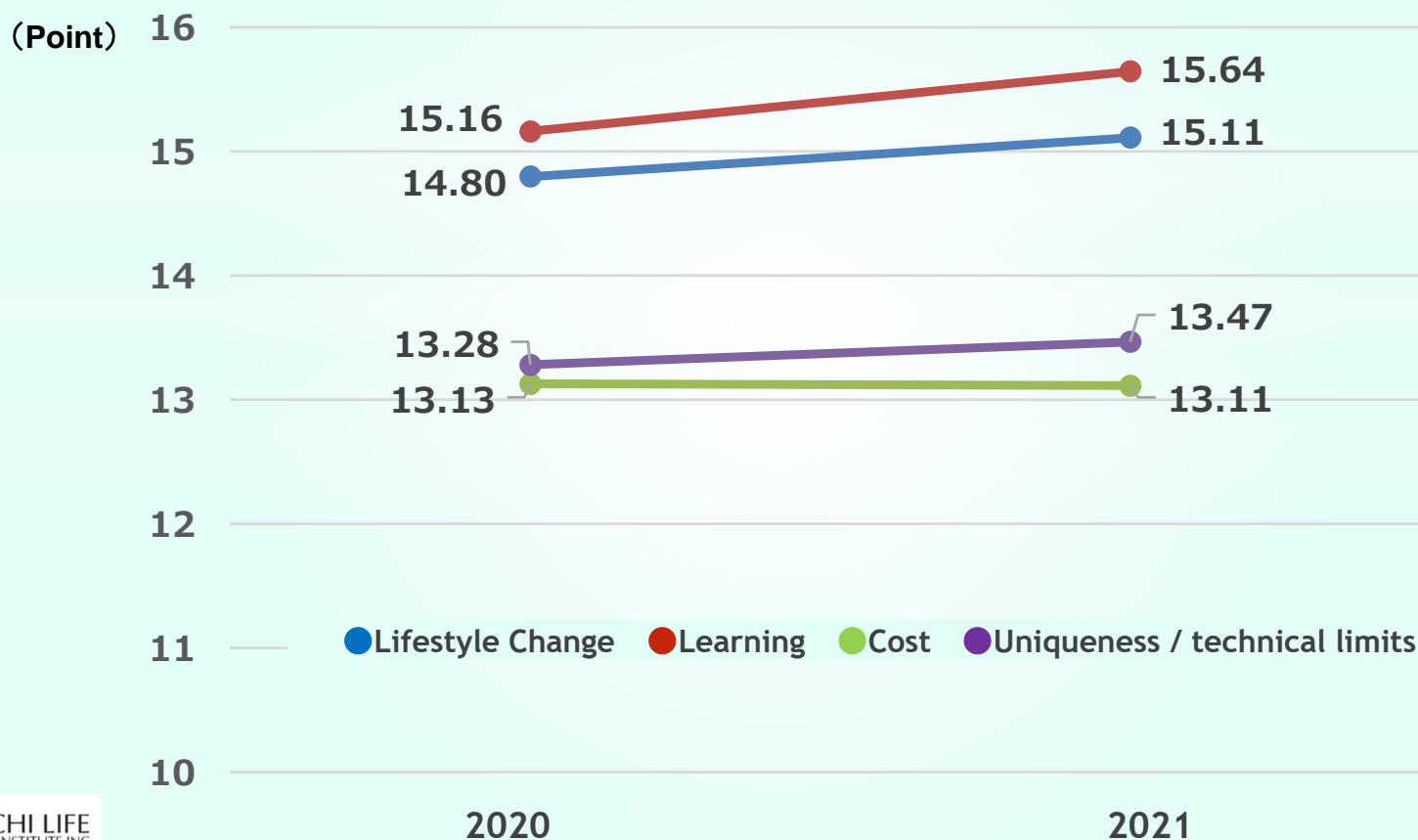
Acceptance Score of Uniqueness and Technological Limits (City Scale × Mobility Issue Score)

- ◆ Large mobility issues are highly receptive to uniqueness and technological limits in many areas.
- ◆ People who live in towns and villages and have small mobility issues are less receptive (as usual).



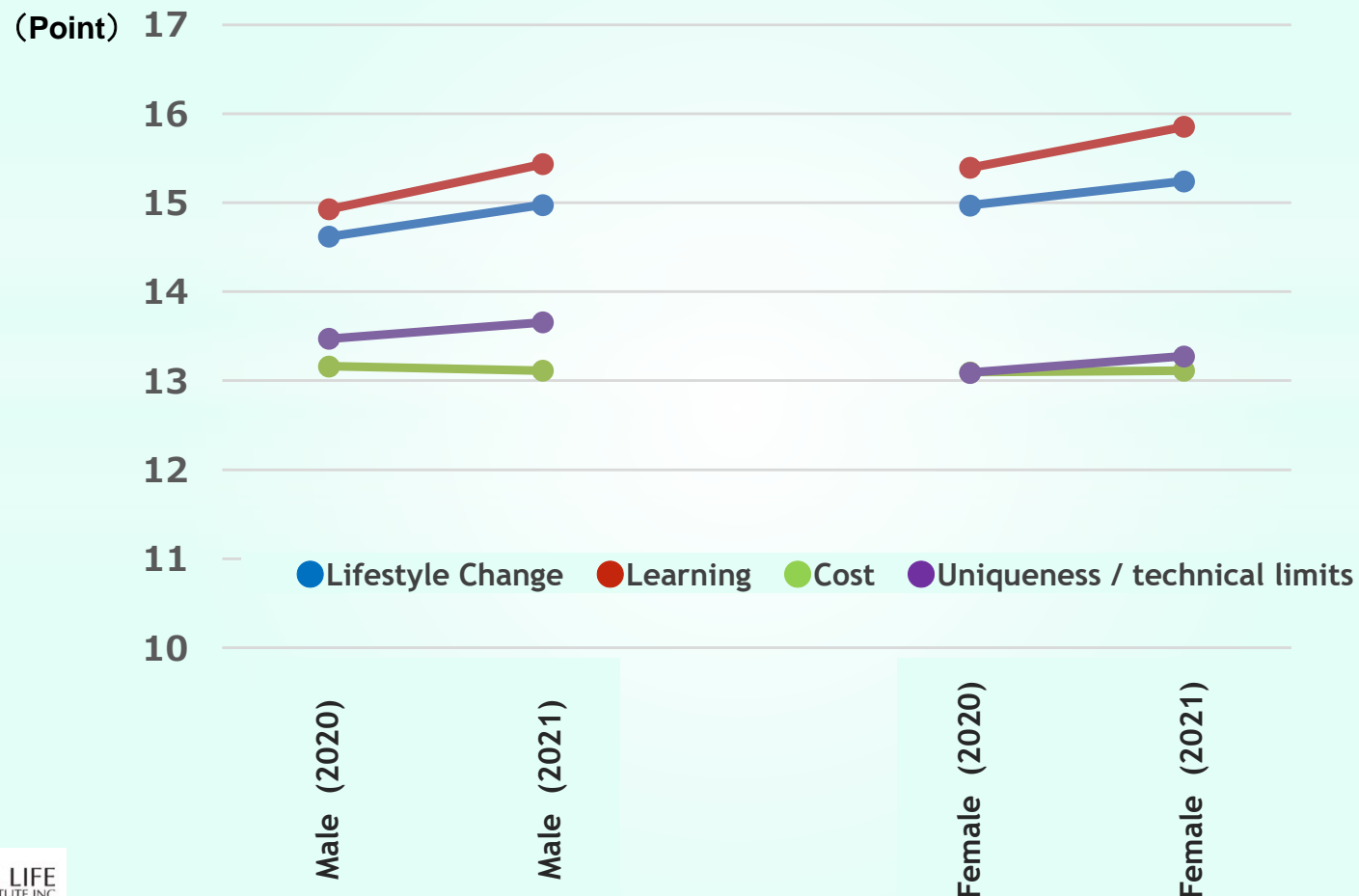
Changes in Acceptance Scores by Factor (2020 ⇒ 2021)

- ◆ Acceptance score of "life changes," "learning," and "uniqueness / technical limits" increased in one year.
- ◆ Acceptance for costs is flat (slightly reduced).



Changes in Acceptance Scores by Factor (Gender)

- ◆ Gender trends are almost the same as overall trends.
- ◆ The stricter acceptance of costs may be due to the economic situation caused by Covid-19.



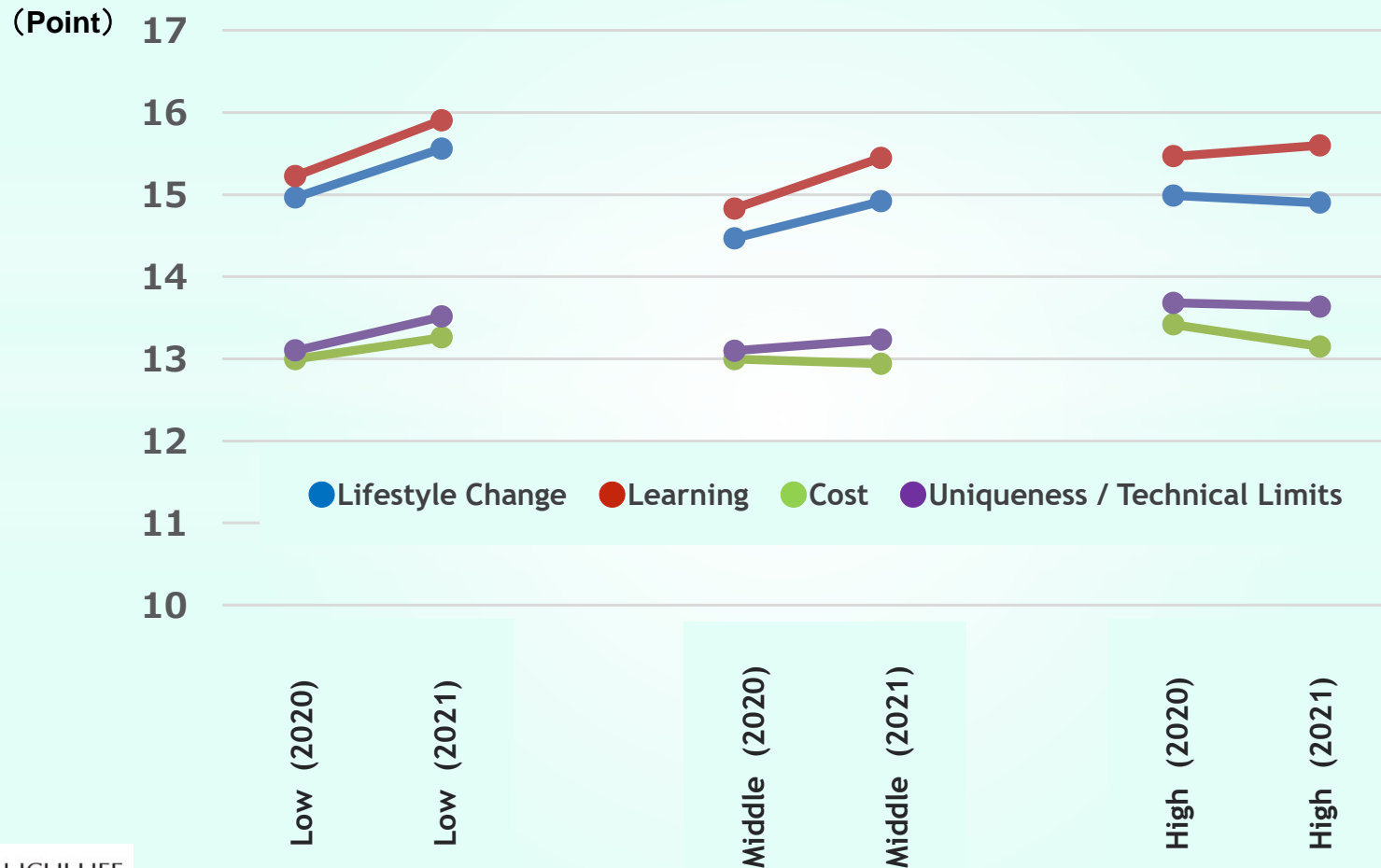
Changes in Acceptance Scores by Factor (Age)

- ◆ "Life change" and "learning" are on the rise in all age groups.
- ◆ "Uniqueness / technical limits" decreased only in the 60s.



Changes in Acceptance Scores by Factor (Mobility Issue Score)

- ◆ Increased acceptability in areas with small mobility challenges.
- ◆ All acceptance factors other than "learning" are down in areas where mobility issues are large.

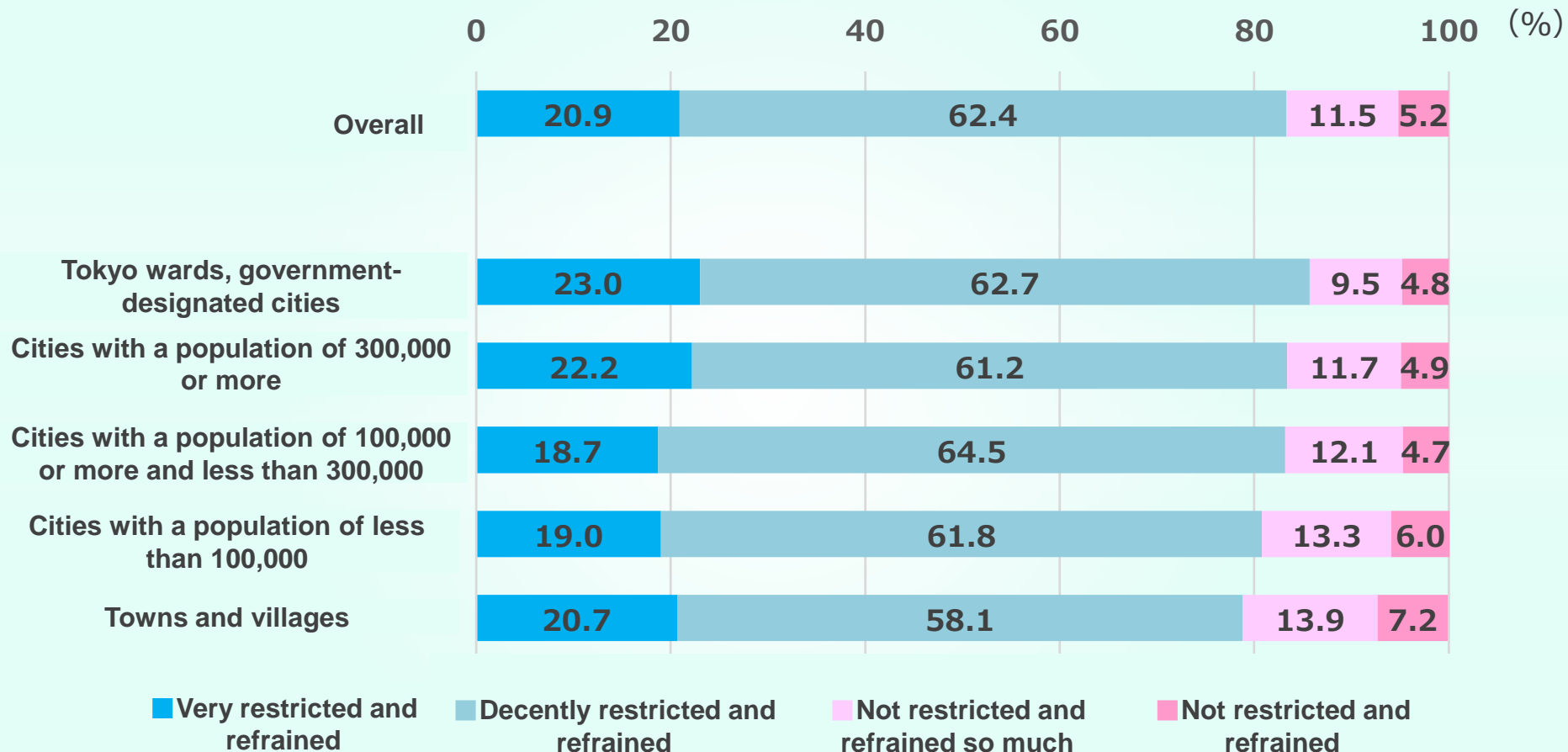




LIFE CHANGES DUE TO COVID-19

Movement Restrictions and Lifestyle Changes Due to Covid-19

◆ The tendency to refrain from moving due to Covid-19 is stronger in larger urban areas.



Changes in Transportation Usage Due to Covid-19

- ◆ In particular, the use of public transportation such as "railroad", "bus" and "taxi" is decreasing.
- ◆ "Private cars" and "bicycles" increased more than decreased.

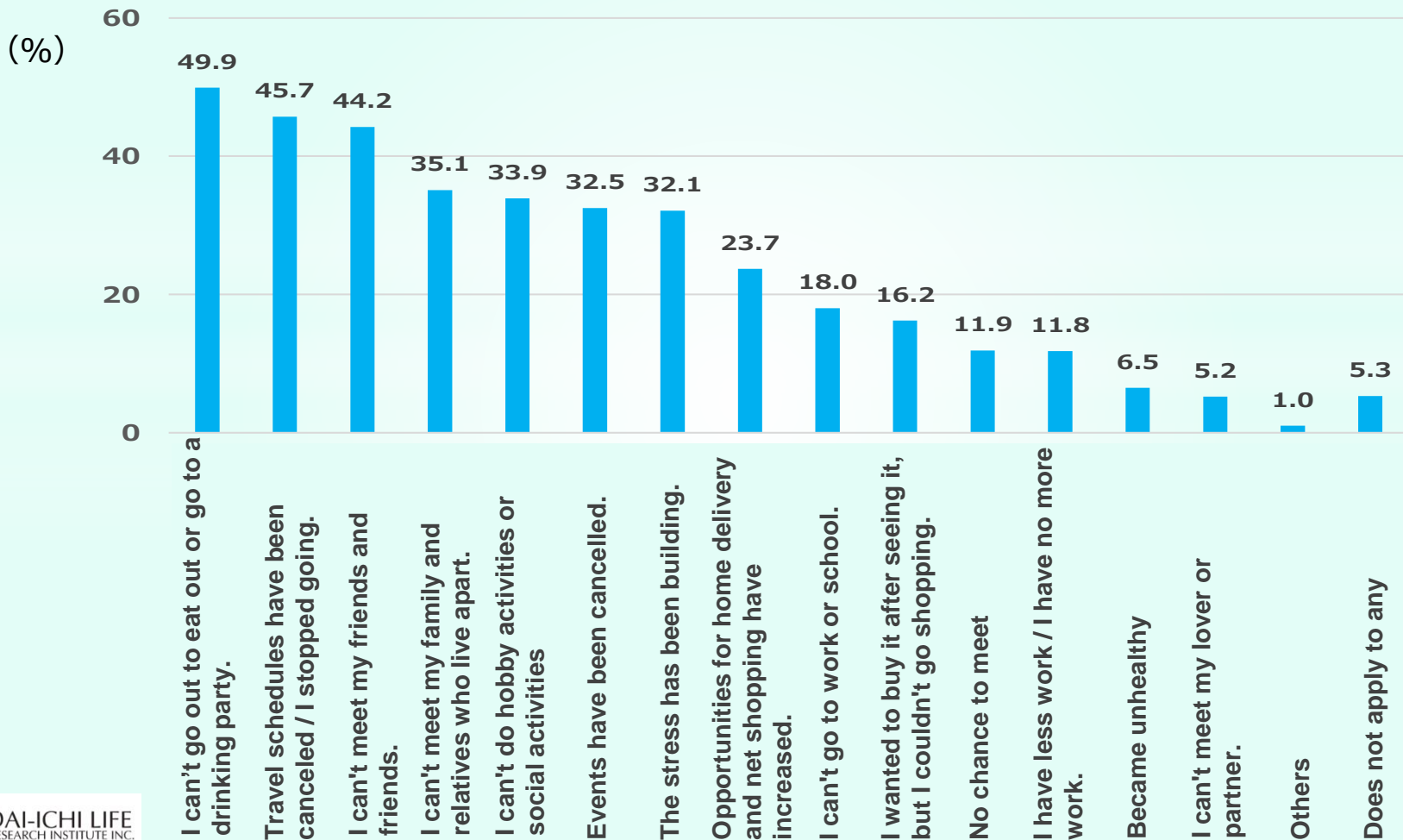
(%)

	n	The usage opportunity has		
		increased	not changed	decreased
Private car (including when you drive yourself and when you don't)	15424	13.8	76.8	9.4
Car sharing, Car rental	4977	6.4	71.9	21.7
Trains (including subway and others)	14779	2.7	51.4	45.9
Buses (including "Community Buses")	11868	3.3	55.3	41.4
Reservation required buses and taxis (riding together)	3427	4.7	70.2	25.1
Taxis	9111	4.8	60.7	34.5
Bike (not electric)	9603	15.4	71.4	13.1
Bike with electric assist machine	4010	14.9	71.9	13.2
Motorbike, scooter	3742	9.2	75.1	15.7

n = the number excluding "not originally used"

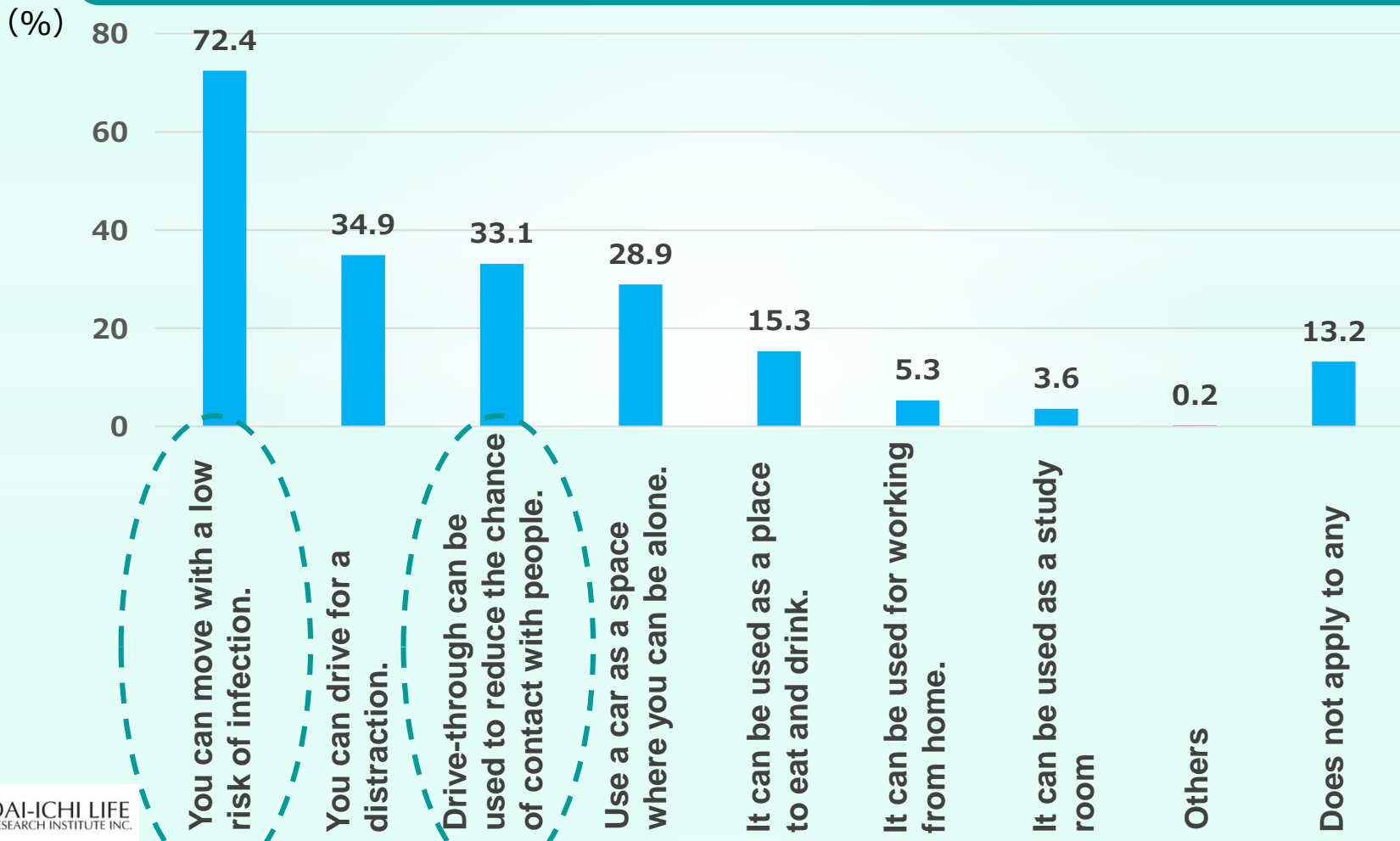
Specific Movement Restrictions in Everyday Life

◆ Specific movement restrictions due to movement restrictions by Covid-19 had a great impact on the connection between people and QoL.



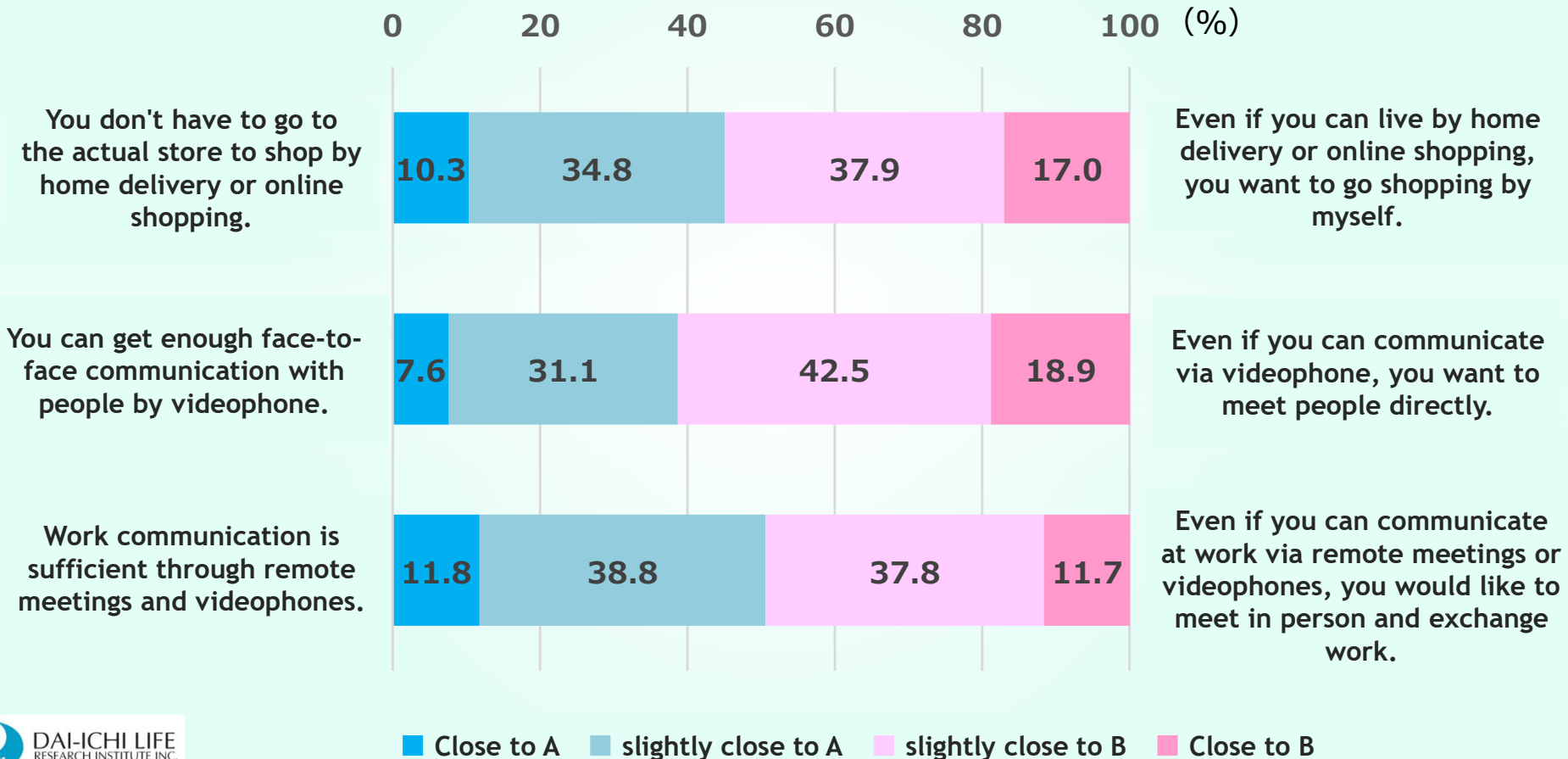
Avoiding the Spread of Covid-19 Infection and the Possibility of Cars

- ◆ Value as a "private room" and "whereabouts" of a car re-recognized in the Covid-19 situation.
- ◆ "Non-contact" with others = Increased incentive for "ownership"?



Mobility Awareness in Everyday Life (Online vs. Real)

- ◆ Even if DX advances, there is a high need for real and face-to-face meetings.
- ◆ It is expected that the significance of moving avoiding accidents and infections will continue to be high.



You don't have to go to the actual store to shop by home delivery or online shopping.

Even if you can live by home delivery or online shopping, you want to go shopping by myself.

You can get enough face-to-face communication with people by videophone.

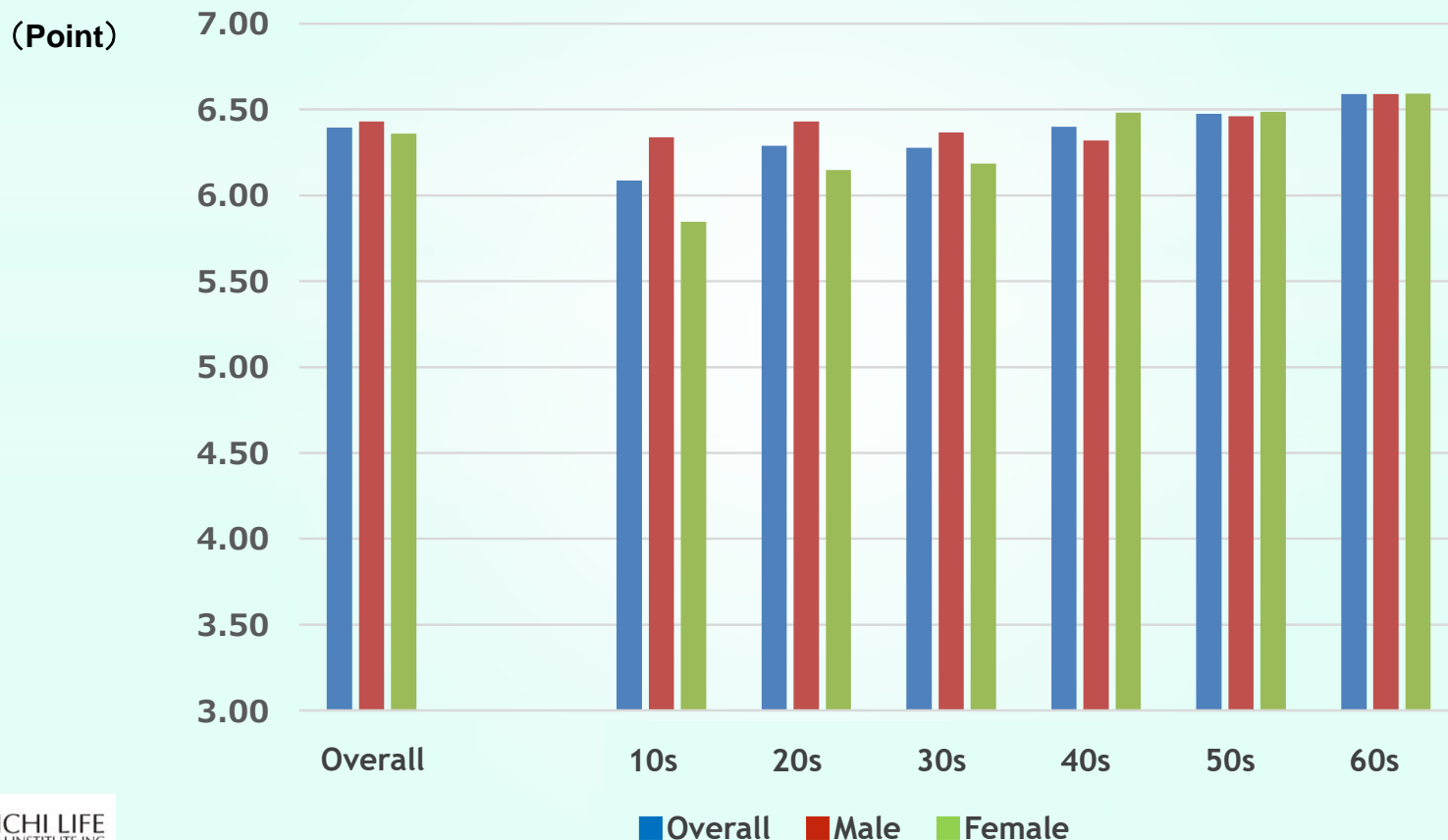
Even if you can communicate via videophone, you want to meet people directly.

Work communication is sufficient through remote meetings and videophones.

Even if you can communicate at work via remote meetings or videophones, you would like to meet in person and exchange work.

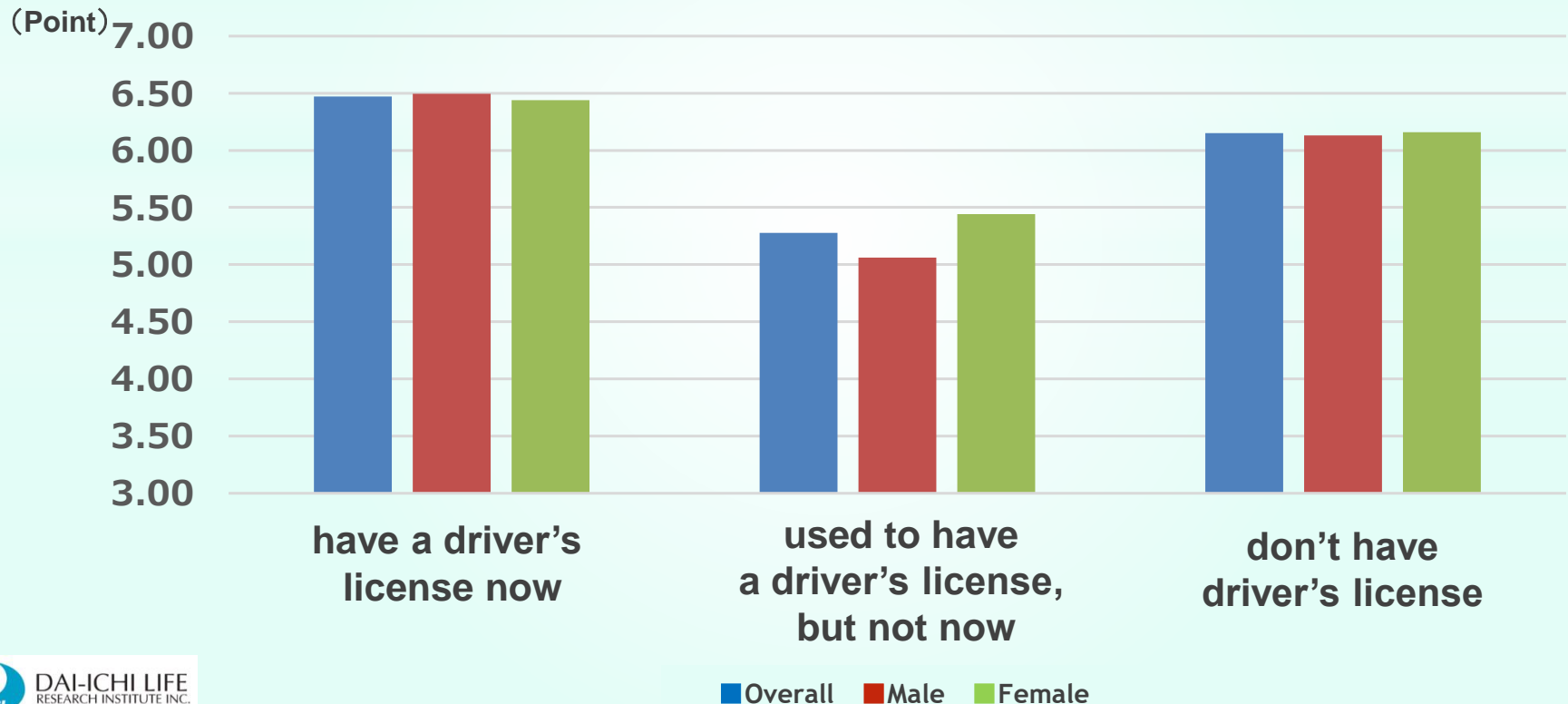
Mobility Satisfaction in Everyday Life (Overall and Age)

- ◆ Women are more anxious about the Covid-19 situation than men. (according to other survey results)
- ◆ Among young people such as teens and 20s, it is possible that the satisfaction level of movement was very low, especially as a result of restrictions on movement by women.



Mobility Satisfaction in Everyday Life (With or Without a Driver's License)

- ◆ People who have had driver's license before have lower travel satisfaction than those who do not have it.
- ◆ Considering that returning a driver's license will greatly reduce the freedom of movement, this may be a major barrier to returning a driver's license for elderlies.





KPI / KGI EVALUATION AND GOAL SETTING FOR THE NEXT YEAR

TEP	Region	Items for Actions (Fixed)	Items that need to be checked (Updated annually)	Specific actions	
1	KPI	P①Examination of foundation	Strategy creation / cooperation in the entire frame and individual projects <Frame & Strategy>	1. Based on existing information, status, and last year's results, we formulate an annual activity plan after formulating a medium- to long-term comprehensive strategy. 2. Each project develops a process with a clear goal. 3. Projects work together without waste or duplication. (Comprehensiveness, appropriate target selection, etc.)	Overall evaluation by SIP committee members
2	KPI		Collecting and understanding information about the target and soil <Target Grasp>	1. Sufficient information was collected and understood in advance about the objects (society, region, people, etc.) that are trying to foster social acceptability.	<ul style="list-style-type: none"> Survey Hearing Citizens Dialogue
3	KPI	P②Dispatching	Selection / editing / processing of information for dispatching <Adaptation>	1. For information dispatching, the selection of appropriate information according to the target was examined. 2. Appropriate editing and processing was performed according to the target for information dispatching.	<ul style="list-style-type: none"> Video creation and dispatching Citizens Dialogue SIP cafe Creating a booklet Utilization of survey results
4	KPI		Information dispatching means / media / place <Means>	1. Appropriate information dispatching means, media, and venues were used to disseminate information to the subject. 2. The viewpoint of SOCIETY 5.0 (physical / virtual fusion) was conscious.	<ul style="list-style-type: none"> Video creation and dispatching Sympogium Citizens Dialogue SIP cafe
5	KPI		Experience opportunity creation · UX <Experience>	1. Realistic customer experience created opportunities for the subject to personalize the issue.	<ul style="list-style-type: none"> Test-ride event Exhibition (e.g. TMS)
6	KPI	P③Reception and Diffusion	Feedback / interactivity <Communication>	1. The impact of the dispatched information was verified through the reaction from the other party to the dispatched information and the interaction with the target. 2. Through the reaction from the other party to the dispatched information and the interaction with the target, it led to the discovery of improvement points regarding the content and method of the transmitted information and the acquisition of new ideas.	<ul style="list-style-type: none"> Sympogium Citizens Dialogue World Café
7	KPI		Information diffusion / social interest <Expansion>	1. The content of activities and transmitted information were linked to the spread of related information on mass media, SNS, etc. 2. A derivative effect of information transmission from person to person was created. 3. The traction effect as an "innovator, early adopter" was brought out by improving the satisfaction of existing users.	<ul style="list-style-type: none"> Number of media publications Number of retweets
8	KGI	GOAL	Understanding in consumers <Understanding>	1. Improved consumer understanding of autonomous driving and ADAS functions. 2. Intrinsic behavior of consumers trying to understand autonomous driving / ADAS functions was aroused.	<ul style="list-style-type: none"> Questionnaire survey (with related items) Attribute survey of event participants
9	KGI		Consumption / use behavior <Use>	1. Consumers understand social issues and their own situations and link them to the purchase of related products, services and functions. 2. Started using products, services, and functions that people already own	<ul style="list-style-type: none"> Questionnaire survey (with related items) Support car sales status ADAS function usage status
10	KGI		Social acceptance in consumers <Acceptance>	1. Consumers are willing to accept each of the potential consequences of the introduction of autonomous driving. ①Lifestyle Change ②Learning ③Cost ④Uniqueness / technical limits	<ul style="list-style-type: none"> Questionnaire survey (transition of acceptability factor scores)

1	KPI	P①Examination of foundation	Strategy creation / cooperation in the entire frame and individual projects <Frame & Strategy>	<ol style="list-style-type: none"> 1. Based on existing information, status, and last year's results, we formulate an annual activity plan after formulating a medium- to long-term comprehensive strategy. 2. Each project develops a process with a clear goal. 3. Projects work together without waste or duplication. (Comprehensiveness, appropriate target selection, etc.) 	Overall evaluation by SIP committee members
2	KPI		Collecting and understanding information about the target and soil <Target Grasp>	<ol style="list-style-type: none"> 1. Sufficient information was collected and understood in advance about the objects (society, region, people, etc.) that are trying to foster social acceptability. 	<ul style="list-style-type: none"> • Survey • Hearing • Citizens Dialogue

2. Collecting and understanding information about the target

- We are making steady progress in collecting and understanding domestic information about objects (society, regions, people) that are expected to foster social acceptability by following.
 - 3 times of quantitative researches
 - “Citizen dialogue”
 - “World Cafe” etc.
- The largest number of samples and the number of questions have been secured this time.

3	KPI	P②Dispatching	Selection / editing / processing of information for dispatching <Adaptation>	<ol style="list-style-type: none"> 1. For information dispatching, the selection of appropriate information according to the target was examined. 2. Appropriate editing and processing was performed according to the target for information dispatching. 	<ul style="list-style-type: none"> · Video creation and dispatching · Citizens Dialogue · SIP cafe · Creating a booklet · Utilization of survey results
4	KPI		Information dispatching means / media / place <Means>	<ol style="list-style-type: none"> 1. Appropriate information dispatching means, media, and venues were used to disseminate information to the subject. 2. The viewpoint of SOCIETY 5.0 (physical / virtual fusion) was conscious. 	<ul style="list-style-type: none"> · Video creation and dispatching · Symposium · Citizens Dialogue · SIP cafe
5	KPI		Experience opportunity creation · UX <Experience>	<ol style="list-style-type: none"> 1. Realistic customer experience created opportunities for the subject to personalize the issue. 	<ul style="list-style-type: none"> · Test-ride event · Exhibition (e.g. TMS)

3. Selection / editing / processing of transmitted information

4. Information dissemination means / media / place

● The investigator reported the quantitative and qualitative data at the official report of the Cabinet Office SIP. Through lecture activities all over the country and contribution activities, information is disseminated after processing the survey results according to the attributes and characteristics of the listeners and readers.

● We responded with the perspective of Society 5.0 and the perspective of regional sustainability and SDGs to the mobility situation and issues in each region and the latest efforts in the local lectures.

● These summaries are published in most local newspapers. It will create opportunities to understand the government's efforts and consider them as issues in each region.

8	KGI	GOAL	Understanding in consumers <Understanding>	1. Improved consumer understanding of autonomous driving and ADAS functions. 2. Intrinsic behavior of consumers trying to understand autonomous driving / ADAS functions was aroused.	· Questionnaire survey (with related items) · Attribute survey of event participants
9	KGI		Consumption / use behavior <Use>	1. Consumers understand social issues and their own situations and link them to the purchase of related products, services and functions. 2. Started using products, services, and functions that people already own	· Questionnaire survey (with related items) · Support car sales status · ADAS function usage status
10	KGI		Social acceptance in consumers <Acceptance>	1. Consumers are willing to accept each of the potential consequences of the introduction of autonomous driving. ①Lifestyle Change ②Learning ③Cost ④Uniqueness / technical limits	· Questionnaire survey (transition of acceptability factor scores)

8. Understanding in consumers

9. Consumption / use behavior

10. Social acceptance in consumers

- about understanding : Overall decrease compared to a year ago (from the survey by METI and MLIT)
- about use behaviour : The utilization rate of automobiles with driving support functions is increasing, but the awareness of using and installing those functions is not yet high.
- about social acceptance : The overall acceptance score for automated driving by owner car, service car, and large logistics car is flat. Acceptance of "life change," "learning," "cost," and "uniqueness / technical limits" increased except for "cost."

**We are considering clarifying
specific evaluation methods and
goals for fostering acceptability
in the next fiscal year.**



STRATEGIC PROPOSALS FOR FOSTERING SOCIAL ACCEPTANCE OF AUTOMATED DRIVING

Which behavioral attributes and regional characteristics are likely to drive receptivity development?

- Area with a large population
- People with high regional identity
- Younger generation, especially women
- People who are not so troubled with mobility now

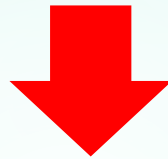


Elderly people living in rural areas who have mobility problems may not necessarily be the ones who can drive the development of social acceptability.

Automated Driving \neq Transportation for the elderly

Which factors influence each acceptance score?

The "Uniqueness and Technical Limit" factors have the greatest effect on acceptance score of all types of automated driving technology.



Promote understanding of what can / cannot be done with current technology.

The perspective and soil of "aiming to maximize the utility of technology while improving technology in society" are important.
(Consumers / businesses / administration)

Findings from consumer survey results

Due to various restrictions by COVID-19

Social mobility needs, significance of mobility, and value recognition are increasing

Focusing on the layer that is easy to improve receptivity (such as young people and women)

Creating "personalization" and "co-creation consciousness" of the automated driving society is needed

**Not only about "advantage of automated driving",
But also understanding of automated driving characteristics and technical limits should be announced.**

Automated driving technology ⇒ Manufacturers, engineers, researchers

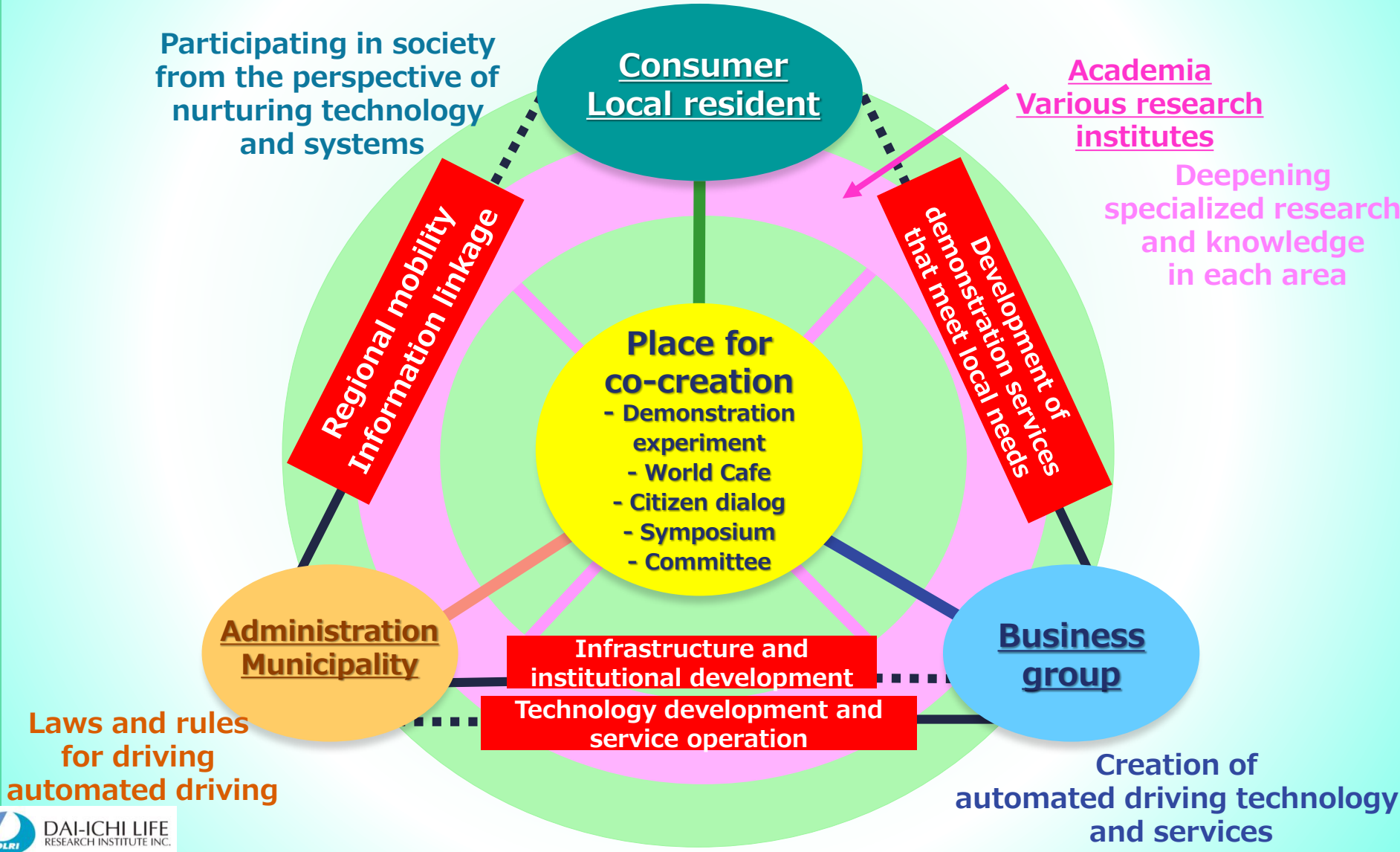
Development of laws and rules for running automated driving

⇒ National and local governments

Realization of an automated driving society ⇒ Consumers

⇒ Change the perspective of "creating together" from the perspective of "accepting" consumers

Division of roles for acceptance and co-creation of automated driving society





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