2017

"Strategic Innovation Promotion Program (SIP) for Automated Driving Systems/Large-Scale Field Operational Test"
"Comprehensive Study Regarding Social Acceptability"

Report (Overview)

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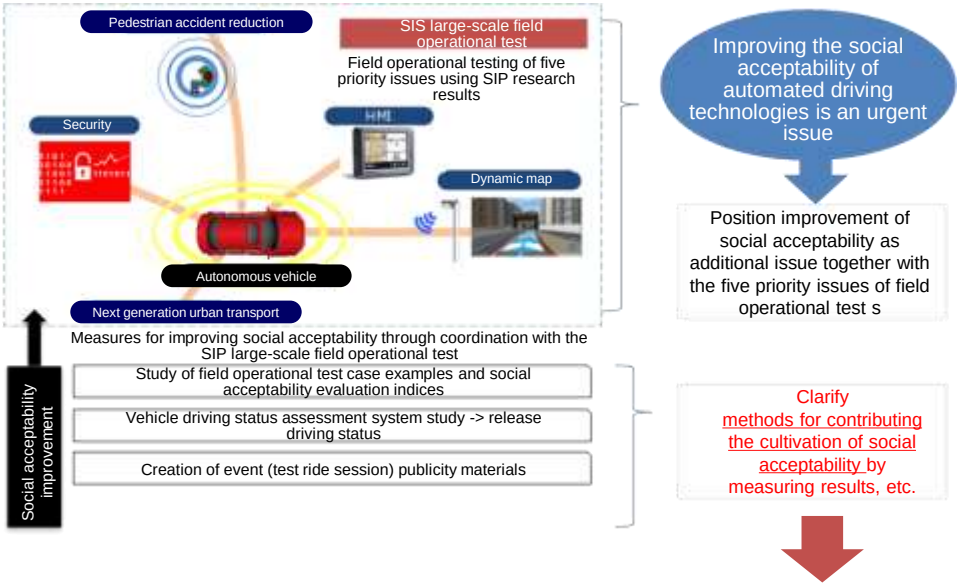
Toyota Tsusho Corporation
NIPPON KOEI CO., LTD.
Nagoya University
Nikken Sekkei Ltd.

Study objectives

The objective of this research study is the clarification of methods which contribute to the improvement and cultivation of the social acceptability of autonomous vehicle and related technologies when conducting the SIP automated driving large-scale field operational test planned by the Large-Scale Field Operational Test Secretariat since last year. Specifically, it seeks to assess methods for cultivating social acceptability by clarifying indices and methods that contribute to social acceptability through various studies and events, etc.



In order to clarify methods that contribute to the fostering of the social acceptability of automated driving, the following were studied.

1. Study of Japanese and foreign field operational test methods related to automated driving
2. Study of social acceptability evaluation methods and indices
3. Display of driving status in large-scale demonstration tests of automated driving systems (implementation of movement management systems and performance of movement management)
4. Study of methods for improving social acceptability by communicating information such as automated driving system/large-scale field operational testing events and public relations materials, etc.
5. Study of social acceptability through the implementation of automated driving system/large-scale field operational testing

Study objectives

There is a need to investigate methods that contribute to the improvement and fostering of social acceptability based on stakeholder and automated driving technology application situations.
This study focused on private vehicle owners and drivers, investigating methods for improving and fostering social acceptability by communicating information such as information regarding field operational tests.

[Automated driving technology stakeholders (examples)]

Element	Stakeholder
System	Police (Road Traffic Law), Ministry of Land, Infrastructure, Transport and Tourism (Road Act, Road Transportation Law, Road Trucking Vehicle Act), etc.
Market	Vehicle related, insurance related, public transport related, local government agencies, etc.
Technology	Private companies using autonomous vehicles in business operations
Region	Private vehicle drivers, public transport passengers, people living along roads, pedestrians, etc.

[Automated driving technology usage scenarios (examples)]

Private, commercial

Transportation, logistics

Study items and responsible parties

No.	Study items	Responsible parties
1	Study of Japanese and foreign field operational test methods related to automated driving	Toyota Tsusho NIPPON KOEI
2	Study of social acceptability evaluation methods and indices	Nagoya University NIKKEN SEKKEI Research Institute
3	Display of driving status in large-scale demonstration tests of automated driving systems (implementation of movement management systems and performance of movement management)	NIPPON KOEI
4	Study of methods for improving social acceptability by communicating information such as automated driving system/large-scale field operational testing events and public relations materials, etc.	Toyota Tsusho NIPPON KOEI Nagoya University NIKKEN SEKKEI Research Institute
5	Study of social acceptability through the implementation of automated driving system/large-scale field operational testing	Nagoya University NIKKEN SEKKEI Research Institute

1. Study of Japanese and foreign field operational test methods related to automated driving

Toyota Tsusho/NIPPON KOEI

1.1 Study on domestic trends in automated driving demonstration tests

NIPPON KOEI

1.1 Study on domestic trends in automated driving demonstration tests

・Study target

This study focuses on test demonstration projects on autonomous vehicles conducted in Japan by the Japanese government or local governments.

After conducting an overview survey for each project, more detailed surveys are conducted on sample projects focused on cultivating social receptivity toward autonomous vehicles through test rides and other means involving general users.

The study focuses on test demonstrations from FY 2016 and FY 2017.

・Study methodology

1) Overview surveys

List created using previous literature, web searches, and other information to organize overviews for each project.

2) Detailed surveys

Field surveys and other surveys were conducted via phone, email, etc., to relevant responsible parties.

・Study perspectives

1) Overview surveys

Overviews of test demonstrations, implementing bodies, vehicle(s) used, demonstration participants, and items surveyed via the test demonstrations.

2) Detailed surveys

Implementation scheme / methodologies for test demonstrations, implementation environments for test demonstrations, creative methods employed in test demonstrations

Status of initiatives aimed at cultivating social receptivity toward autonomous vehicles

Outcomes of test demonstrations

1.1 Study on domestic trends in automated driving demonstration tests

List of projects covered by the study (1/4)

	Project name	Dates and locations	Primary members	Initiatives aimed at cultivating social receptivity toward autonomous vehicles
1	Aichi Pref. 15-municipality autonomous vehicle demonstration promotion project	From May 18, 2016 (ongoing) in 15 Aichi Pref. municipalities	> Aichi Prefecture > Aisan Technology Co., Ltd. > Aisan AW Co., Ltd.; Nagoya University; SB Drive Corp.; ZMP Inc.	> **Implementation of test-user surveys on needs and social receptivity using an application whereby users can simulate use of a driverless taxi.**
2	Project promoting industry-government-academia collaborative test demonstrations on autonomous vehicles (Ama City Model)	Aug. 19, Sept. 18-19, Nov. 18-20, 2016; Ama, Aichi Prefecture	> Ama City; Nagoya University; Aisan Technology Co., Ltd.; Tokio Marine & Nichido Fire Insurance Co., Ltd.	> **Hosting of test-riding events and similar events using the parking lot of Shippo Art Village when it is closed, and implementing a test-user survey on needs and social receptivity.**
3	Test demonstration at Kyushu University's Ito Campus	Dec. 13, 2016; Fukuoka City, Fukuoka Pref. (Ito Campus, Kyushu Univ.)	> Smart Mobility Promotion Consortium (Kyushu University; NTT DOCOMO Inc.; DeNA Co., Ltd.; Fukuoka City)	> **Implementation of a test demonstration on the university campus for participation by students and teaching staff.** > **Ongoing plan to implement demonstrations for the attention of students and teaching staff on campus.**
4	Test demonstrations of self-driving public buses (Nanjo City)	Mar. 20 – Apr. 2, 2017; Nanjo, Okinawa Pref. (roads around Azama Sunsun Beach)	> Cabinet Office > Advanced Smart Mobility Co., Ltd.; SB Drive Corp.; Japan Research Institute, Limited	> **Demonstration of technology that stops public buses as stops on public roads.** > **Study of social receptivity via questionnaire surveys, with local area residents, transport operators, and resort facility-affiliated individuals participating as riders.**
	Test demonstrations of self-driving public buses (Ishigaki City)	June 26 – July 8, 2017; Ishigaki, Okinawa Pref. (New Ishigaki Airport to Rito Terminal)	> Cabinet Office > Advanced Smart Mobility Co., Ltd.; SB Drive Corp.	> **Implementation of demonstrations of self-driving as a next-generational metropolitan transportation system, conducting a questionnaire survey of general test users.** **・Did you feel safe and secure riding the self-driving bus?** **・Level of comfort riding the self-driving bus** **・Expectations of self-driving buses** **・Problems with existing bus routes**

1.1 Study on domestic trends in automated driving demonstration tests

List of projects covered by the study (2/4)

	Project name	Dates and locations	Primary members	Initiatives aimed at cultivating social receptivity toward autonomous vehicles
5	Autonomous vehicle test demonstrations in National Strategic Special Zones	Nov. 13, 2016; Semboku, Akita Pref.	> Cabinet Office; Semboku City; DeNA Co., Ltd.	> **Test-riding conducted among general test-users, but no specific public initiatives.**
		Feb. 29 – Mar. 11, 2016; Fujisawa, Kanagawa Pref.	> Robot Taxi Co.	> **Test-user survey pertaining to future services provided by taxis that utilize autonomous driving technology (i.e. robot taxis).**
		Mar. 27, 2016; Sendai, Miyagi Pref.	> Cabinet Office; Semboku City; Tohoku University; Robot Taxi; etc.	> **Test-riding conducted among general test-users, but no specific public initiatives.**
6	Research on the practical implementation of next-generational mobility	Scheduled to begin FY 2017 Gunma Pref. (municipalities, etc., in the prefecture)	> Planned: Gunma University; NTT Data Corporation; etc.	> **Planned implementation of test demonstrations beginning in FY 2017.**
7	Project on next-generational transportation measures	Mar. 18 – June 30, 2015; From July 1, 2015 (ongoing); Wajima, Ishikawa Pref.	> Wajima Chamber of Commerce and Industry; Yamaha Motor Company	> **Implemented as a service, but no initiatives implemented toward cultivating social receptivity.** > **Consideration underway in the METI Last Mile Project regarding the potential for implementation of even more advanced vehicles.**

1.1 Study on domestic trends in automated driving demonstration tests

List of projects covered by the study (3/4)

	Project name	Dates and locations	Primary members	Initiatives aimed at cultivating social receptivity toward autonomous vehicles
8	Demonstration using independent self-driving autonomous vehicles	Feb. 24, 2013; Oct. 27, 2013; Suzu, Ishikawa Pref.	> Kanazawa University; Suzu City, Ishikawa Pref.	> **In preparation for practical implementation of this technology in society, work is currently underway to improve self-driving intelligence through experimental runs on public roads, with future plans for initiatives to cultivate social receptivity.**
9	Experimental operation of driverless buses	Aug. 1-11, 2016; Chiba, Chiba Pref. (Toyosuna Park)	> AEON Mall Co., Ltd.; DeNA	> **Experimentally implemented for general city residents (shoppers at AEON MALL Makuhari New City), but no specific public initiatives to cultivate social receptivity.**
10	Autonomous vehicle service based out of roadside rest areas, etc., in rural mountainous areas	FY 2017, from summer to the following March (i.e. to the end of the fiscal year) @ 8 sites with highly feasible business models in collaboration with distinctive existing local initiatives.	> Differs by test demonstration location	> **Verification of the benefits to problem-solving in the local community through each demonstration. Implementation of both test-user participation and surveys.** > **Building of a cooperative community infrastructure oriented toward practical implementation in society and with affiliated organizations with which collaboration is anticipated in test demonstrations.**

1.1 Study on domestic trends in automated driving demonstration tests

List of projects covered by the study (4/4)

	Project name	Dates and locations	Primary members	Initiatives aimed at cultivating social receptivity toward autonomous vehicles
11	"Slocal Automated Driving" public test demonstration	Nov. 27, 2017; Gotandacho, Toyota, Aichi Pref.	> Institute of Innovation for Future Society of Nagoya University; Asukeai Project; Toyota City	> **Verification of how the service will be received by local community members through observational tours for local residents, students at nearby elementary schools, etc.**
12	Test demonstrations of the Last Mile Self-Driving Transport Service	Nov. 7 – Dec. 24, 2017; Tsukushigaoka, Kita Ward, Kobe, Hyogo Pref.	> Kobe City; Kobe Autonomous Vehicle Research Society; NTT DOCOMO Inc.; Japan Research Institute; Gunma University	> **Test-riding conducted among general test-users, but no specific public initiatives.**
13	Keihanna Public road Experimental Platform (K-PEP)	Scheduled for FY 2017; in centers of the Kansai Science City, including Kyoto Pref.'s Seika City and Seibu, Kizugawa City.	> Planned participation by 9 companies, including Kansai Research Institute as well as Panasonic, Omron, Keihan Bus (Kyoto City), and Mercedes-Benz Japan	> **No specific public initiatives, including test-riding among general test-users.**
14	Test demonstrations and practical implementation project through "No Maps Future Lab"	Oct. 11-13, 2017; in a circuit running from the Former Hokkaido Government Office Building, to the front of the Sapporo City Office, to Odori Park, back to the Former Hokkaido Government Office Building	> Japan Telegraph and Telephone Corporation (NTT); NTT Data; Gunma University	> **Establishment of opportunities for large numbers of general city residents to get a feel for the future potential of self-driving vehicles through the first autonomous driving performances on public roads in the Sapporo urban area.**

1.1 Study on domestic trends in automated driving demonstration tests

Characteristics common to the projects targeted by the study

(1) General features	・The domestic examples (case studies) collected here are examples of test demonstrations that assume use of self-driving for public transportation, and can be broadly classified as either initiatives implemented by local public bodies (Aichi Prefecture, Wajima City), initiatives implemented by universities (Gunma University, Kanazawa University), initiatives implemented by private companies (DOCOMO, DeNA Co), or initiatives implemented by the national government (Cabinet Office, Road Bureau). ・There are also examples (case studies) of general test-riders being given transportation, but these were small in scale. Examples of long-term implementation include R&D-focused projects that aim to resolve technical problems with autonomous vehicles. ・In Aichi Prefecture, the prefectural government has spear-headed the establishment of an environment for test demonstrations, which are implemented with an aim to promote future joint public-private test demonstrations and practical societal implementation in local communities. In connection with that, test-riding and surveys of receptivity among general test-users are conducted on a comparatively large scale. ・ The Road Bureau plans to conduct technology demonstrations and surveys of profitability and receptivity with an aim to study business models for providing everyday transportation in rural mountainous regions and implement a practical transportation service that makes use of roadside rest areas.
(2) Cultivation of receptivity to autonomous vehicles	Examples (case studies) from Aichi Prefecture ・ In Aichi Prefecture (and Ama City), some of the large-scale test demonstrations conducted by the prefectural government are oriented toward promoting receptivity. ・ Media coverage has had a major positive impact, prompting inquiries that lead to requests for tours and lectures. ・ The aim is to showcase routes on which experimental implementation was successfully conducted and advertise to companies how easy it is to demonstrate automated driving. ・ Also considering using public opinion polls and similar to keep a constant eye on changes. ・ The experiment was based on unmanned taxis, and it was difficult to achieve an "unmanned" state. ・ It is important to have people try autonomous driving for themselves. It is believed to be key to be able to research how mindsets are changed by the experience of riding an autonomous vehicle. ・ Many said they were looking forward to the technology. It is believed to be important to first have more people hold such expectations (i.e. how autonomous driving is useful, especially in everyday settings). ・ PR focusing not on functionality but rather on realistic, practical services (visions for the future, lifestyles) may be more effective in society as a whole. ・ Experiments thus far have been confined to limited routes and areas, making it more difficult for test users to recognize the convenience of the technology.
	Examples (case studies) from the Road Bureau ・ In each demonstration, it is planned for questionnaire surveys to be conducted of passengers, local residents, and drivers. ・Primary survey items: Social receptivity to "self-driving transport and shipping services" = Satisfaction with transport and shipping services Social receptivity to "automated driving" = Impact on local traffic surrounding automated driving; trust toward automated driving technology; expectations for automated driving

1.1 Study on domestic trends in automated driving demonstration tests

Domestic study summary

Many test demonstrations focus on the use of the technology as a public service, with surveys assessing receptivity and needs vis-à-vis usage scenarios via the experiences of general residents and related parties.

1 Communication of information

> Tests and demonstrations of self-driving vehicles

> Publication of test demonstration implementation information on websites

1-14 (common to all examples and case studies)

1 Aichi Pref. 15-municipality autonomous vehicle demonstration promotion project

1 Aichi Pref. 15-municipality autonomous vehicle demonstration promotion project

2 Project promoting industry-government-academia collaborative test demonstrations on autonomous vehicles (Ama City Model)

7 Project on next-generational transportation measures

10 Autonomous vehicle service based out of roadside rest areas, etc., in rural mountainous areas

13 Keihanna Public road Experimental Platform (K-PEP)

> Establishment of consortiums of administrative bodies, private companies, and universities

> Establishment of a local discussion and planning framework aimed at practical implementation in society

4 Build together

Cultivation of receptivity to autonomous vehicles

Experiencing self-driving vehicles 2

> Planning of test demonstrations for automated driving at which general residents (test-users) can test-ride self-driving cars

> Planning of test-riding for affiliated parties

1 Aichi Pref. 15-municipality autonomous vehicle demonstration promotion project

7 Project on next-generational transportation measures

2 Project promoting industry-government-academia collaborative test demonstrations on autonomous vehicles (Ama City Model)

9 Experimental operation of driverless buses

3 Test demonstration at Kyushu University's Ito Campus

10 Autonomous vehicle service based out of roadside rest areas, etc., in rural mountainous areas

4 Test demonstrations of self-driving public buses (Nanjo City. Ishigaki City)

11 "Slocal Automated Driving" public test demonstration

5 Autonomous vehicle test demonstrations in National Strategic Special Zones

12 Test demonstrations of the Last Mile Self-Driving Transport Service

1 Aichi Pref. 15-municipality autonomous vehicle demonstration promotion project

2 Project promoting industry-government-academia collaborative test demonstrations on autonomous vehicles (Ama City Model)

4 Test demonstrations of self-driving public buses (Nanjo City. Ishigaki City)

10 Autonomous vehicle service based out of roadside rest areas, etc., in rural mountainous areas

11 "Slocal Automated Driving" public test demonstration

> Interviews with people who have ridden automated vehicles

> Questionnaire surveys of general residents and stakeholders

Listen to opinions and discuss 3

1.1 Study on domestic trends in automated driving demonstration tests

Domestic study summary

Each product is developed based primarily on driving tests and demonstrations as well as test-user experiences. The overall image of the project and its progress are published on websites.

Keys to cultivating receptivity toward the technology in society: Details (1/2)

Key initiatives		Overview and content descriptions	Trends in projects targeted by the survey
1 Communication of information	**Test driving of self-driving vehicles**	> Showcasing of self-driving vehicles and broadly advertising them directly, through events, through press releases, etc. - Unveil the technology to the media and local residents through test drives - Raise recognition of the technology through continuous demonstrational drives	> Test and demonstrational drives are conducted in all projects (incl. some planned projects).
	Publication of test demonstration implementation information on websites	> Initiative status information is collected on websites to communicate the progress of the projects. – Announcement of the latest news and events pertaining to the projects – Deepen others' understanding of self-driving vehicles and the projects by sharing videos and images	> Work done in many projects toward establishing dedicated websites to share information. > Aichi Prefecture and others are building a portal site for all projects that maintains updated progress information on projects in each region.
2 Experience self-driving vehicles	**Planning of test demonstrations for automated driving at which general residents (test-users) can test-ride self-driving cars**	> Local residents are invited to take a test ride in the passenger seat, backseat, etc. of a self-driving vehicle to try the experience. The passengers experience the actual movement of the vehicles and the characteristics of the technology. – Local residents ride as test-users – They experience something close to what an actual self-driving vehicle service would be like	> In many projects, local residents participate as test-users.
	Planning of test-riding for affiliated parties	> Transport operators and administration-affiliated parties are given test rides to deepen stakeholder understanding with an aim toward practical implementation in society. – Plans for affiliated parties to experience the technology for themselves – They experience something close to what an actual self-driving vehicle service would be like	> Transport operators and others take test rides as test-users in projects assuming application of the technology to buses.

1.1 Study on domestic trends in automated driving demonstration tests

Domestic study summary

Interviews and questionnaires conducted regarding impressions and opinions after experiencing the technology first-hand.
A framework oriented toward practical implementation in society is established by local stakeholders.

Keys to cultivating receptivity toward the technology in society: Details (2/2)

	Key initiatives	Overview and content descriptions	Trends in projects targeted by the survey
3 Listen to opinions and discuss	**Interviews with people who have ridden automated vehicles**	> Interviews are conducted with participants on-site to survey receptivity. - Survey of changes in impressions before and after experiencing the technology first-hand. - Survey of receptivity as a passenger (user) of public transportation. - Survey of receptivity toward self-driving technology itself.	> In the case of Aichi Prefecture, experience-based receptivity surveys are conducted systematically and on a large scale. > In the example of roadside rest areas in rural mountainous areas, local residents' opinions are collected with an aim toward practical implementation of the technology in society.
	Questionnaire surveys of general residents and stakeholders	> Broad-ranging questionnaire surveys are conducted via the internet and other sources. – Surveys of local residents' receptivity via the internet.	> In Aichi Prefecture, questions about autonomous driving have been added to the Prefectural Government's Official Public Opinion Poll.
4 Build together	**Establishment of consortiums of administrative bodies, private companies, and universities**	> Private companies, universities, and others collaborate with local communities to establish consortiums to develop technical demonstration projects. – Local public bodies sign agreements as field provision for federations of companies. – Development frameworks are built by federations of companies and universities.	> Consortiums are established for many projects.
	Establishment of a local discussion and planning framework aimed at practical implementation in society	> Community "matching" venues and conferences are established to promote demonstration tests, etc. – Venues are established for interaction between local public bodies and companies – Conferences are established for experts and stakeholders from local public bodies and the community	> In Aichi Prefecture, prefectural government-led initiatives are underway to create venues for the matching of local public bodies and private businesses > In the example of roadside rest areas in rural mountainous areas, local community conferences deliberate business models.

1.1 Study on domestic trends in automated driving demonstration tests

Detailed surveys

Aichi Pref. 15-municipality autonomous vehicle demonstration promotion project

Reason for selection: A focus on cultivating the receptivity of society to the technology through test rides (etc.) by general users, and because surveys have been conducted continuously since FY 2016.

Basic information

> In FY 2016, high-precision 3D maps were created and test demonstrations were conducted in 15 demonstration areas within the prefecture.

> Test-user surveys were conducted at four of these locations using an application with which users can simulate the experience of using a driverless taxi. 119 prefectural residents were surveyed regarding need and social receptiveness vis-à-vis driverless taxis, etc.

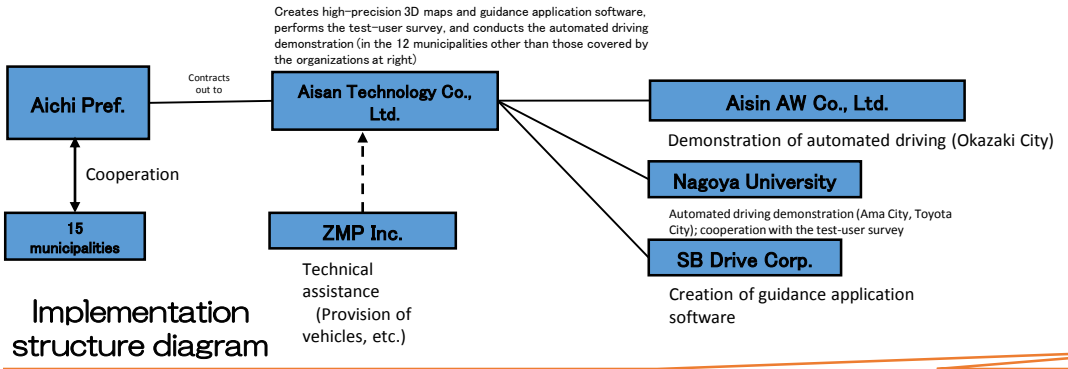
> May 18, 2016 to the present (ongoing in FY 2017)

> Conducted in a variety of environments, including urban areas, mountainous areas, remote islands, etc.

Member composition

> Participating companies were selected through open public recruitment based on the requirements that they possess 3D maps and have the ability to use those maps to implement demonstration projects.

> Telecommunications industry (Aisan Technology Co., Ltd.; SB Drive Corp.), transport equipment (Aisin AW Co., Ltd.), electrical equipment (ZMP Inc.), and universities (Nagoya University)



Implementation structure diagram

Implementing areas

15 Aichi Prefecture municipalities (Kota / Ichinomiya / Minamichita / Nagakute / Kasugai / Miyoshi / Shitara / Okazaki / Kariya / Toyota / Ama / Toyoake / Inuyama / Tahara / Anjo)
The 4 municipalities in which test-user surveys were conducted were selected due to the **inconvenience of transportation there due to their being located in a mountainous rural region, remote island, or similar**; and due to their **markedly aging population that requires a means of transportation**.

Project objective

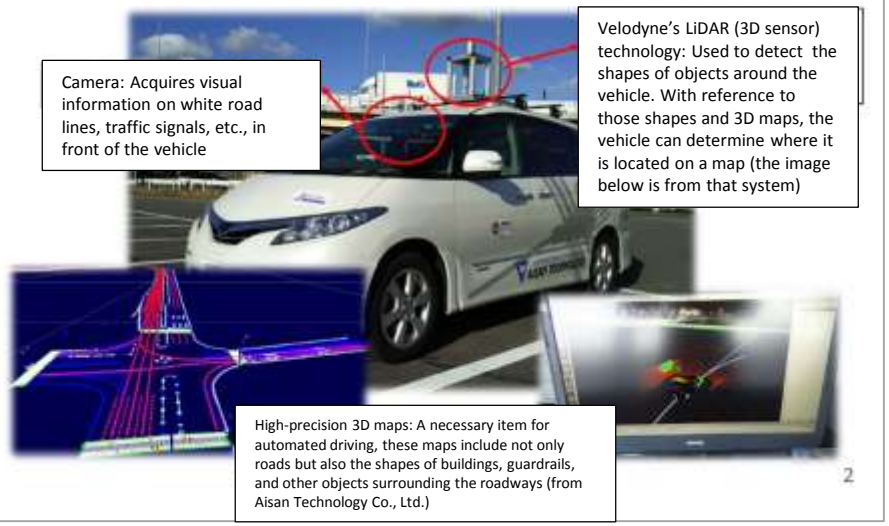
> Promotion of an "automated driving demonstration project" with the aim of creating new services such as self-driving automated taxis.

1.1 Study on domestic trends in automated driving demonstration tests

Detailed surveys

Aichi Pref. 15-municipality autonomous vehicle demonstration promotion project

Test demonstration implementation scheme	> Implemented as a project of the Aichi prefectural government (Aichi prefectural government implemented the project; initial budget: ¥15,335,000) > As a linked initiative in Ama City, implemented test-riding sessions and demonstration tests using subsidies for accelerating regional revitalization.
Driving courses / requirements	> Public roads used > If routes were too narrow or similar, the route was changed, the type of automation was changed (e.g. steering only), or there was a change over to manual driving, etc. > Velodyne's LiDAR (3D sensor) technology was used to detect the shapes of objects around the vehicle. With reference to those shapes and 3D maps, the vehicle could determine where it was located on a map.
Vehicles used; level of automated driving	> Toyota Estima Hybrid, etc. > Level 3: Acceleration, steering, and braking all controlled by the systems, with a driver taking control only when the system requests. > Equipped with Nagoya University's "Autoware" automated driving software. Autoware is control software for automated driving on urban public roads, developed jointly with Nagasaki University, the National Institute of Advanced Industrial Science and Technology, etc. Equipped with steering control functionality that can detect car positioning and the surrounding environment even in high-traffic urban areas as well as obey traffic rules. World-first open source software.
Riding by general users?	> General resident test-users were selected to participate at the discretion of each implementing local public body. Such users were recruited through open public recruitment, appeals via neighborhood associations, etc. (e.g.) Requirements to participate as a test-user in Kasugai: Resident of the Kozoji New Town housing development or a Kasugai City resident. > Participant affiliations: General residents (prefectural resident), administration-affiliated individuals, company-affiliated individuals, media-affiliated individuals



1.1 Study on domestic trends in automated driving demonstration tests

Detailed surveys

Aichi Pref. 15-municipality autonomous vehicle demonstration promotion project

Creative methods used in test demonstrations	■ Creative methods in test-user surveys Prior PR ・PR conducted by the prefectural government through press releases, websites, etc. ・Test-users are recruited by local public bodies, who can call on local communities through neighborhood associations, etc. Survey methodology ・With the participation of Dr. Morikawa of Nagoya University, results are compared with the results of surveys conducted by general insurance companies, etc. ・In the Prefectural Government's Official Public Opinion Poll (http://www.pref.aichi.jp/soshiki/koho/0000000110.html), the topic of automated driving has been added to collect the opinions of general, non-test-user residents' opinions.
Initiatives to foster receptivity toward the technology in society	■ Cultivation of receptivity through test-user surveys of residents ・Test-user surveys conducted with the aim of gathering user assessments of driverless taxis, as well as basic information for policymaking to promote prefectural residents' understanding of automated driving. ・Also a focus on advertising the effectiveness of automated driving to local community residents. ■ Distribution of information via PR, etc. ・Administrative objectives (local community issues that aim to be resolved by automated driving) for each test demonstration target area, as well as test demonstration results, photos, videos, etc., for each municipality are posted to specially-established websites (run by Aisan Technology Co., Ltd.). ・Explanatory information is provided to ITS-promotion councils, prefectural assembly members, etc. ・Requests for lectures and tours increased after media coverage, so media-handling work is underway. ■ Problem recognition ・Opinions on expectations for the technology can be collected from test-user questionnaire results, but those will not necessarily be the opinions of society as a whole. ・It is important to continually monitor changes via public opinion polls, etc.

Outline of test-user survey data

Target region	Number of responses, etc.
Minamichita (Himakajima), Sept. 23	38 ppl (23 males, 15 females), avg. 50.9 years old
Kasugai (Kozoji New Town housing development), Oct. 5-6	35 ppl (21 males, 14 females), avg. 56.3 years old
Shitara [Mountainous rural area], Nov. 4	24 ppl (19 males, 5 females), avg. 50.9 years old
Toyota (Shimoyama region) [Mountainous rural area], Dec. 12	22 ppl (18 males, 4 females), avg. 64.8 years old
4-region total	119 ppl (81 males, 38 females), avg. 55.1 years old

Source:
- Aichi Prefecture, "FY 2016 Automated Driving Demonstration Promotion Project, Results Report (Summary)," April 2017.
- Aichi Prefecture (simultaneously for 15 municipalities), "Toward Completely Automated Driving: Aichi Prefecture's Vision for a Self-Driving Future," Sept. 12, 2017.

1.2 Overseas trend survey regarding automated driving field operational testing Toyota Tsusho

1.2 Overseas trend survey regarding automated driving field operational testing

Selection criteria: Projects in which members of the general public take test rides, etc., with goal of fostering social acceptability
Study methods: Online studies and interviews

List of projects in study scope (1/2)

	Name of project	Period, country	Main members	Measures for fostering social acceptability (partial list)
1	Drive Me	2016 – 2020 Gothenburg, Sweden	> Volvo, Swedish Transport Administration, Swedish Transport Agency, City of Gothenburg, Chalmers University of Technology, Lindholmen Science Park, Autoliv, etc.	Autonomous vehicle driver/passenger acceptability > Installed additional cameras in field operational test vehicles to record behavior of passengers when vehicle was driving in autonomous mode Nearby vehicle driver acceptability > Information was collected by sensors and cameras installed in the autonomous vehicle
2	VENTURER	2015 to 2018 Bristol and South Gloucestershire, U.K.	> Atkins (project management), South Gloucestershire Council, Bristol City Council, University of Bristol, BAE Systems (heavy industries engineering company), etc.	Verification of acceptability during field operational test > Questionnaires administered to project participants, questions asked by safety operators arranged along route, etc. Verification of acceptability outside of field operational test > Opinions are being collected and analyzed through online surveys and interviews with focus groups and stakeholders
3	UK Autodrive	2015 to 2018 Milton Keynes and Coventry, U.K.	> Arup (project management), Coventry City Council, Milton Keynes Council, University of Cambridge, University of Oxford, Ford, Jaguar Land Rover, Tata Motors, etc.	Before field operational test > Study of social acceptability of automated driving among the general public through online questionnaires During and after field operational test > Interviews and studies of general users and stakeholders participating in the field operational test
4	GATEway	2015 to 2017 Greenwich (London), U.K.	> Transport Research Laboratory, The Royal Borough of Greenwich, The University of Greenwich, Royal College of Art, Westfield Sportscars, Oxbotica, etc.	> Workshops, interviews with users and stakeholders > Interviews and mapping analysis by Commonplace Digital Ltd. > Simulator experiments by ordinary drivers

1.2 Overseas trend survey regarding automated driving field operational testing

List of projects in study scope (2/2)

	Name of project	Period, country	Main members	Measures for fostering social acceptability (partial list)
5	Autopilot	2017 to 2019, Five EU cities	> Over 40 IoT related members coordinated by ERTICO (a public-private European partnership for the promotion of ITS) – OEMs: Fiat, PSA	> No methods have been established for evaluating social acceptability. However, in terms of interview-based measures, questionnaires are administered in advance and questionnaires and interviews are conducted during field operational tests.
6	AutoMate	2016 to 2019 EU (Germany, etc.)	> Offis (German research organization), PSA, Continental Automotive Systems, BroadBit (Slovakia), Re: Lab (Italy), etc.	> Questionnaires and social media will be used to perform analysis during the project (study items will focus on the acceptability of autonomous vehicle technologies)
7	City Mobil2	2012 to 2016 EU (12 partner cities)	> 45 participants throughout Europe > Governments of individual partner cities, Robosoft and EasyMile, ERTICO, Zurich Insurance Group, etc.	User studies > Interviews with 1,500 users of automated shuttles in five cities (comfort, safety, etc.) Community member studies > Interviews with 2,000 users in four cities (operation schedules, etc.) Stakeholder studies > Interviews with stakeholders in four cities
8	SmartShuttle * Local demo test completed	2015 to 2017 Sion City, Switzerland	> Valais Canton, Sion City, Sion City Next Generation Mobility Research Organization, Swiss Federal Institute of Technology in Lausanne , NAVYA (France), Bestmile (Switzerland), PostBus Switzerland Ltd. (Swiss bus operator), etc.	> HES-SO Valais-Wallis verified social acceptability through interviews with and monitoring of the general public and stakeholders - Semi-structured interviews were conducted with local shop owners, residents, pedestrians, smart shuttle passengers, and drivers of other vehicles in order to assess their impressions of and opinions regarding smart shuttles - Interviews with people on board autonomous vehicles responsible for their safety (Grooms) - Smart shuttle passengers were recruited as collaborators and monitored/action cameras were mounted in vehicles, used to record conditions inside and outside vehicles, and the recordings were analyzed - Investigators observed users and the surrounding environment as fieldwork

1.2 Overseas trend survey regarding automated driving field operational testing

Summary of overseas surveys

The keys to fostering social acceptability lie not only in communicating information, but also in deepening mutual communication with the general public and other stakeholders

1 Information communication

> Website creation and use of social media such as Twitter and Facebook
> Regular issuing of project progress reports, newsletters, and fliers
> Participation in international trade shows and media events, etc.

2 Experiencing autonomous vehicles

> Planning of automated driving field operational tests in which members of the general public can ride in vehicles
> Holding of public demonstration events

3 Listening and engaging in dialog

> Interviews with autonomous vehicle passengers
> Interviews with members of the general public and stakeholders
> Holding of special events and workshops for members of the community

4 Creating together

> Participation by members of the general public in mapping analysis, joint creation of automated driving suitability map
> Mutual communication such as immediate reflection in route designs of feedback obtained through studies involving the general public

Fostering of social acceptability

1.2 Overseas trend survey regarding automated driving field operational testing

Summary of overseas surveys

Active communication of information by individual projects through methods such as websites, social media, issuing of newsletters, etc.

Keys to fostering social acceptability: Details (1/3)

	Key measures	Overview and contents	Trends in studied projects
1 Information communication	**Creation of project websites and regular updates**	> Creation of project websites providing information such as project objectives, study scopes, applied technologies, etc. > Websites were regularly updated with latest event information, press releases, etc.	> All projects opened their own websites and worked to communicate information – In particular, the GATEway and UK Autodrive projects had well-developed websites providing extensive information
	Use of social media such as Twitter and Facebook	> YouTube, Facebook, Twitter, and other accounts were opened and used to communicate information – Notifications of latest project news and events – Videos and images were used to deepen understanding of autonomous vehicle and projects – Used due to ability to communicate with everyone at little cost	> All projects had at least one social media channel > Extensive use of Twitter, which is especially conductive to mutual communication with users
	Timely issuing of project output (including progress reports)	> Progress reports were issued not only in the form of a final report when the project was completed, but also upon reaching individual milestones, such as the completion of field operational tests > The status of field operational tests and initial findings obtained from them were released in a timely fashion even if work was still in progress, deepening the public's understanding	> Projects such as Venturer, UK Autodrive, GATEway, and CityMobil2 regularly released detailed study reports while the projects were in progress
	Regular issuing of newsletters and fliers	> Creation of newsletters, fliers, and other promotional materials > Regularly issued to provide information about major upcoming events and project progress status. These materials also urged the general public to participate in events. > There were also projects with systems that provided email to those interested in the projects	> CityMobil2 issued eight newsletters. AutoMate also plans to issue newsletters > SmartShuttle used promotional materials such as fliers to create greater awareness of the project and promote participation by the general public

1.2 Overseas trend survey regarding automated driving field operational testing

Summary of overseas surveys

The projects draw cities and members of the general public into field operational tests and plan public demonstrations, creating opportunities for people to learn more about and experience automated driving

Keys to fostering social acceptability: Details (2/3)

Key measures		Overview and contents	Trends in studied projects
Information communication	**Participation in international trade shows and media events, etc.**	> Participation in ITS conferences, motor vehicle trade shows, and other international events and conferences – Use of presentations to introduce projects and technologies – For completed development, conduct technology demonstrations > Use events to boldly announce new technology development and field operational test approaches, etc., increasing amount of media coverage	> Many projects actively participate in international events – In particular, projects receiving EU funding, such as AutoMate & Autopilot, participate in numerous international conferences – Volvo used the Auto Expo to announce the first family to operate its self-driving car
2 Experiencing autonomous vehicles	**Drawing cities and members of the general public into field operational tests**	> Provide opportunities for members of the general public to use autonomous vehicles as passengers or operators, enabling them to experience automated driving technologies > When there are verification projects in which members of the general public use autonomous vehicles, local governments publicize them as community events, creating posters and eye-catching shuttle stations to increase awareness	> The CityMobil2 and Smart Shuttle projects enabled many members of the public to experience autonomous vehicles. These became community events. > In the Drive Me project, members of the general public will operate self-driven vehicles. This is planned to become a major community event.
	Planning and holding of public demonstration events	> Open autonomous vehicle demonstrations > Holding of workshops, etc., in which stakeholders and residents participate	> Projects such as SmartShuttle, CityMobil2, GATEway, and Venturer disclosed the automated driving technologies used in the projects and held events that allowed the general public to learn about and experience automated driving technologies

1.2 Overseas trend survey regarding automated driving field operational testing

Summary of overseas surveys

Interviews and questionnaires are effective methods for contacting large numbers of people. The GATEway project is using new bidirectional methods.

Keys to fostering social acceptability: Details (3/3)

	Key measures	Overview and contents	Trends in studied projects
3 Listening and engaging in dialog	**Interviews and questionnaires with autonomous vehicle riders, members of the general public, and stakeholders**	> Deepening of communication with members of the general public that participated in field operational tests through interviews and questionnaires > Creating points of contact throughout the general public with people that did not participate in tests through online surveys, etc. > Conducting interviews with a broad range of stakeholders, such as other government agencies and public transport operators, to understand diverse acceptability perspectives	> The City Mobile 2 project conducted interviews with 1,500 automated shuttle users in five cities. Interviews were also conducted with stakeholders (public transport operators, local governments, government agencies, citizens' associations, automobile manufacturers, etc.) in four cities
	Holding of special events and workshops for members of the community	> Create greater dialog with the community and alleviate fears and concerns of community members regarding automated driving by holding special events and workshops for members of the community Promote greater and more accurate understanding of safety and technologies > Carry out field operational test smoothly by creating solid networks with communities	> The CityMobil2 project has dedicated particular effort to this, holding workshops with community residents in multiple cities in which field operational tests were held > The CityMobil2 project held events such as drawing contests for local elementary school students through its "Future Passenger Project"
4 Creating together	**Participation by members of the general public in mapping analysis, joint creation of automated driving suitability map**	> One of the activities of the GATEway project was to create an automated driving suitability map by having members of the general public indicate locations suited to autonomous vehicle use and the reasons for their suitability, and locations unsuited to autonomous vehicle use and the reasons for their lack of suitability, on a map displayed in a questionnaire on its website > The results were viewable in real-time, and respondents were able to communicate with each other	> The mapping study conducted by the GATEway project and Commonplace gathered opinions from over 1,000 members of the general public
	Immediate reflection of feedback obtained through surveys in project design	> Gathering of feedback from a wide range of sources, active reflection of analysis results in autonomous vehicle route frameworks, etc., and strengthening of mutual relationships between projects and the general public	> The GATEway project is releasing the results of the above study and reflecting feedback in route design and envisioned autonomous vehicle uses

Summary (1. Study of Japanese and foreign field operational test methods related to automated driving)

Characteristics of initiatives to cultivate social receptivity toward self-driving technology

- Initiative status information and project progress status information are distributed through websites.
- Those who have tried the technology are interviews on-site to assess receptivity.
- Local residents are invited to take a test ride in the passenger seat, backseat, etc. of a self-driving vehicle to try the experience.
- Community “matching” venues and conferences are established to promote demonstrations, etc.

Initiative proposals to cultivate social receptivity through test demonstrations

The following are thought to be effective initiatives to improve the cultivation of social receptivity:

- Active communication about the technology and project progress via easy-to-understand images and videos posted to dedicated project websites and SNS.
- General city residents serve as test-users for automated vehicles. Their feedback is directly collected and published to broadly communicate information about projects.
- Issues and problems in the cultivation of receptivity are researched through the surveying of test-riding event participants and the surveying of surrounding uninterested population groups, together with the management of test-ride events and media exposure.

＊In test demonstrations for which participants are openly recruited, there is a concern that participating residents will be predisposed to have a high interest in or awareness toward the subject. It is important to implement test demonstrations that involve typical residents as much as possible.

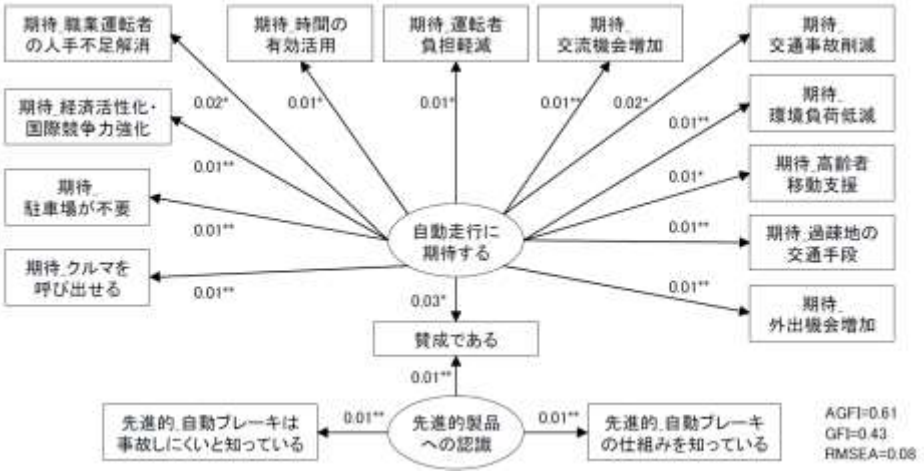
2. Study of social acceptability evaluation methods and indices

Nagoya University
NIKKEN SEKKEI Research Institute

2.1 Social acceptability survey on Japanese and overseas autonomous driving

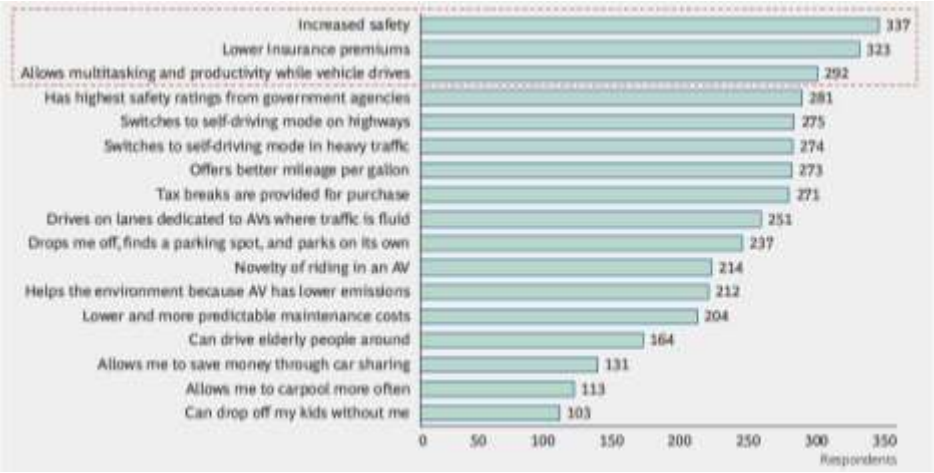
Criteria and measuring methods for social acceptability were reviewed by past studies of domestic and overseas past research.

Consciousness of approval / disapproval for autonomous driving system with relevant parties involved in transportation business, Tomio, Taniguchi, Enoch, Ieromonachou, Morikawa



Structural model of approval / disapproval consciousness for autonomous driving

Revolution in the Driver's Seat: The Road to Autonomous Vehicle（BCG）



Reason for purchase of autonomous driving vehicle

2.2 Identification of evaluation indicators and evaluation methods

Focus group interview

In order to precipitate social acceptability evaluation indicators on automatic driving, focus group interviews were conducted for the following groups.

Date and time
① 17th March, 2018 (Saturday) 10: 00 ~ 12: 00
② 17th March 17, 2018 (Saturday) 13: 30 ~ 15: 30
③ 18th March, 2018 (Sunday) 10: 00 ~ 12: 00

Target group
1-1: Men in their 30yrs – 40yrs (residents in cities)
1-2: Men in their 30yrs to 40yrs (residents in suburban)
2-2: Housewife (residents in suburban)
3-1: Senior citizens aged 75 or older (residents in cities)
3-2: Senior citizens aged 75 or older (residents of suburban)

Group interview

Summary of interview survey

As for autonomous vehicle, there is a strong image for technical distrust. There is also a tendency to focus on topic of technology and accidents. On the other hand, there are no use scenes of autonomous vehicle. It would be possible to form a image based on accident report such as newspaper. And there was a tendency that the expensive image is strong.

Interview theme	Discussion
①Impression of autonomous driving	Making driving comfortable (11), Safety improvements (7), Technical words (7), Senior citizens / Remote area(5), Unreliable (18), Anxiety for accidents (3), Vulnerability (4), expectation (2), expensive (6), fragile (4), Relationship with license (5)
②Contact to autonomous operation	Every attendance has no experience of riding. There are not many people who saw traveling video of autonomous driving, including news. Majority of people imagine CM by some automakers.
③Life changing by autonomous driving	Because there is strong doubt about safety, they would like only to try autonomous bus or taxi (Acceptability of autonomous driving systems can be increased the acceptability of autonomous vehicle from the point of MaaS).
④Price image and purchase intention	Regarding LV 3, it is about + 30 - 500 thousand yen compare with the current owned vehicle. About LV 4 and LV 5, it is roughly 500 - 10 million yen, and Majority of attendance think that it is unnecessary.
⑤Expected effect	It is difficult to think as part of own life about traffic mitigation and environmental issue.
⑥Issues to be examined	Cyber Attack, Anxiety about Maintenance (Fragile, Computer Sense)
⑦Confirming image by video	Since few people saw the image of autonomous driving, they showed interest. At the same time, he have talked about impressions such as inconvenience and fear.

2.3 Comparative study on efficiency of investigation method

Based on the characteristics of social acceptability indicated by the past research and the findings obtained from the focus group interview carried, the characteristics of social acceptability are summarized as follows.

Definition of acceptability

None of them provided a clear definition of social acceptability regarding automatic driving. In general, it regards acceptance of purchase intention of automatic driving and approval/disapproval attitude in society as acceptability, mainly targeted to citizens.

Characteristic of acceptability

(general citizen)

It was grasped the acceptability to autonomous driving by sex and age and presence of driver's license. Also, it has been shown that the attitude of acceptability for autonomous driving varies depending on the experience of a traffic accident.

(Taxi · Bus operator)

Automatic driving up to level 3 seems favorably from the viewpoint of reduction of traffic accidents and labor shortage, but at level 4 or higher, many operators have sense of crisis comparable to syngularity.

- There is an opinion that its acceptability will be enhanced by letting the exact knowledge of the performance and development situation of the autonomous driving vehicle. It is also important to increase the sense of security at the time of an accident by clarifying the responsibility for a traffic accident.
- Furthermore, there is an opinion concerning the adverse effect on road traffic, and it is necessary to clarify the actual condition causing traffic problems.
- Furthermore, it is pointed out that the experience test drive increases the acceptability for autonomous driving.

2.4 Survey of evaluation methods and indices for social acceptability of AVs

It is the purpose of this survey to examine the information that raises social acceptability and the transmission method, and to show its effectiveness.

In newspapers and news, the number of times that coverage on automatic driving is picked up is increasing, and social acceptability is also increasing. Therefore, it is assumed that there are many people who answered that they agreed relatively to automatic driving, and the number of samples on the opposite side is reduced.

【Screening items】

1. Do you agree with the arrival of a society in which automatic driving has been realized?
2. Do you want to purchase a car equipped with autonomous driving technology?
3. Do you want to use driverless taxis, buses and car sharing vehicles equipped with autonomous driving technology?

【Attributes etc. of respondents】
Gender: Male Female
Age: 20yrs to 79yrs
Region: Metropolitan area (Tokyo and 6 prefectures)
Number of responses: 30,000

In order to investigate measures to increase receptivity, it is necessary to have a certain number of opponent samples, so in this survey we decided to screen respondents with acceptability of automatic driving.

WEB Based Questionnaire Survey

Purpose	To investigate the type of information required about AVs and identify how to release the information to enhance social acceptability. To evaluate the effects of social experiments on AVs and/or affairs related to AVs.
Data	【Pre Survey】 February 2018 【Survey】 March 2018
Respondents	【Pre Survey】30,000 samples 【Survey】900 samples 【Target Area】Tokyo Metropolitan （Tokyo, Kanagawa, Chiba, Saitama, Tochigi, Gunma, and Ibaraki）
Question	【Pre survey】 • Social Acceptability of AVs • Intention to buy AVs • Intention to use AVs 【Survey】 • Attribute • Traffic accidents • Usage of vehicles with Safety Assistant technologies • Intention to attend events or social experiments involving trial AV rides • How to obtain information about new technologies and AVs • Expectation and worries about AVs • Knowledge of AVs

2.5 Internet reputation survey

3.5.1 Analysis of newspaper articles

The similarities between newspaper reporting and Twitter or blogs will be investigated from the viewpoint of whether or not there is a trend in which more exposure for subjects or terms in newspaper reporting leads to increased exposure on Twitter or blogs as well. From the results, we aim to determine what other subjects and expressions are linked to autonomous driving and autonomous driving technology and how they are handled in internet media and the social consciousness.

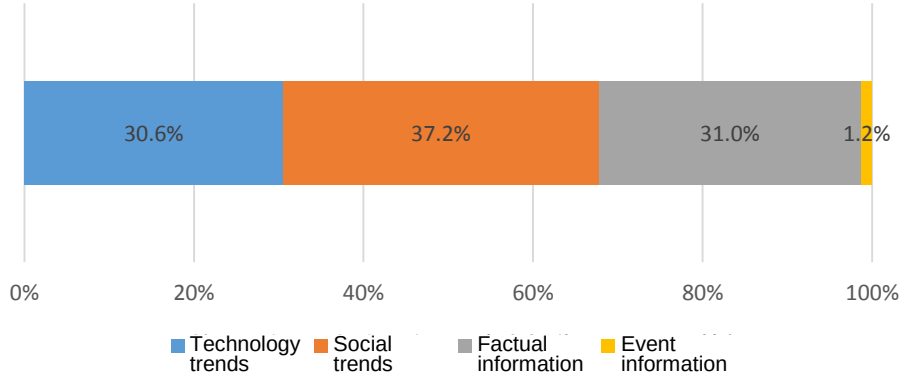
To create the files used for analysis, we extracted articles containing the term "autonomous driving" from all articles appearing in The Nikkei between June 1, 2015 and December 15, 2017. This resulted in 242 articles to be used for analysis.

■ Themes

As the first step for analyzing the content of newspaper articles, the article content was classified as described below in order to understand the overall image of the kinds of articles that had been extracted for analysis.

Social trends occupied 37.2% or almost 4/10 of articles, so that a clear characteristic for newspaper articles was that overall a good balance of the various themes was being published.

Technology trends	74 items	30.6%
Social trends	90 items	37.2%
Factual information	75 items	31.0%
Event information	3 items	1.2%
Total	242 items	100.0%

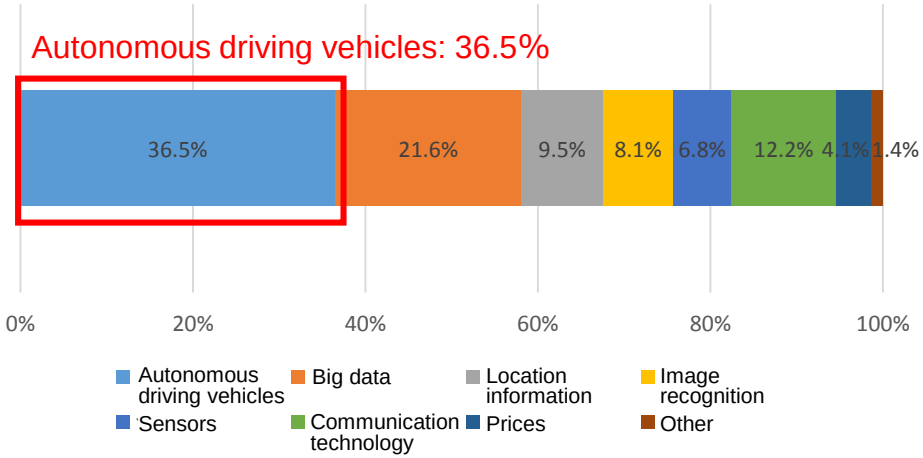


For each theme, content analysis of the newspaper articles was performed by organizing the subjects and keywords.

■ Technology trends

For technology trends, the most prevalent were articles related to levels and functions of autonomous driving vehicles at 36.5%, followed by articles related to big data together with the keywords AI and IoT at 21.6%. Aside from these, for articles related to elemental technology, a trend to discuss the evolution of communication technology such as 5G, etc. was found.

Autonomous driving vehicles	27 items	36.5%
Big data	16 items	21.6%
Location information	7 items	9.5%
Image recognition	6 items	8.1%
Sensors	5 items	6.8%
Communication technology	9 items	12.2%
Prices	3 items	4.1%
Other	1 item	1.4%
Total	74 items	100.0%



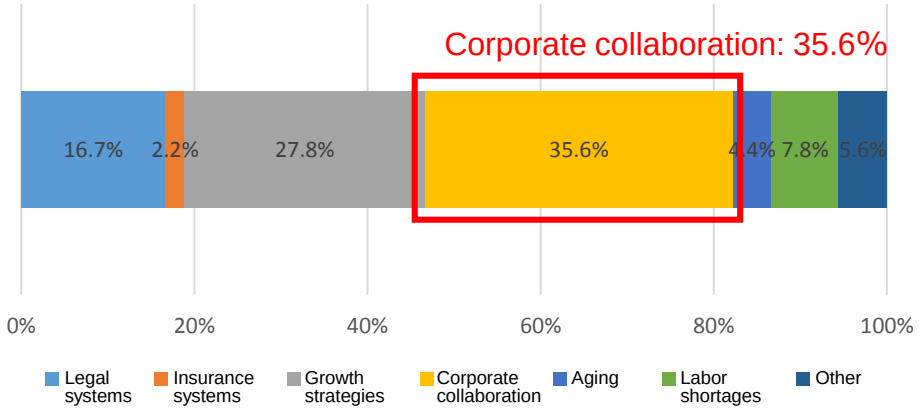
Main article contents

- Big data trends such as artificial intelligence (AI), IoT, etc.; Evolution of communication technology such as 5G, etc.
- Discussions related to autonomous driving car levels, etc. and how people should be involved
- Information related to the popularization of autonomous driving technology, such as reductions in selling price, etc.

■ Social trends

For social trends, the most prevalent were articles related to corporate collaboration such as capital alliances, acquisitions, etc. at 35.6%, and it was understood that reorganization in the automotive industry which had anticipated autonomous driving is progressing. The next most prevalent were articles related to growth strategies at 27.8%, and activities by Japan and other countries for strategic positioning of autonomous driving could be seen. Furthermore, articles related to legal systems such as safety standards and relaxation of regulations for autonomous driving vehicles were also numerous at 16.7%, and articles related to the risks of autonomous driving such as revising insurance systems could also be seen.

Legal systems	15 items	16.7%
Insurance systems	2 items	2.2%
Growth strategies	25 items	27.8%
Corporate collaboration	32 items	35.6%
Aging	4 items	4.4%
Labor shortages	7 items	7.8%
Other	5 items	5.6%
Total	90 items	100.0%



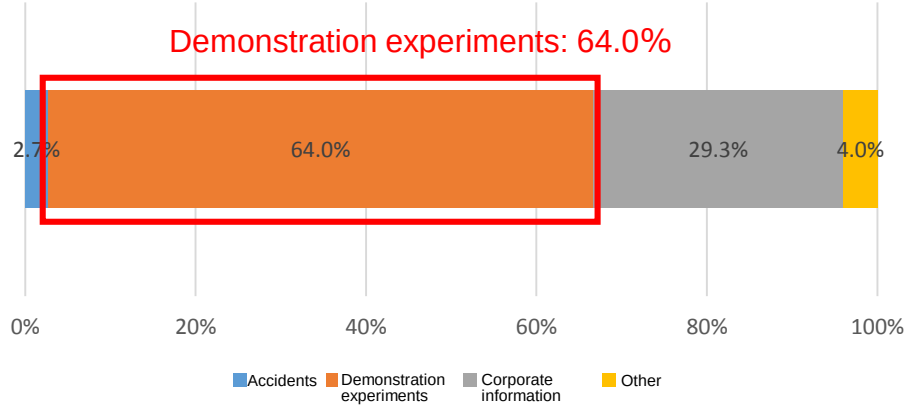
Main article contents

- Preparations of laws such as safety standards, etc. and arrangements regarding legal responsibilities in case of accidents, etc.
- Information on acquisitions and alliances of companies which had anticipated the development of autonomous driving technology
- Expectations regarding autonomous driving as a solution to the problems of aging, labor shortages, etc.

■ Factual information

For factual information, the most prevalent were articles related to implementation of demonstration experiments, etc. at 64.0%, and it was understood that various regions in Japan were making progress on activities toward the realization of autonomous driving. In addition, corporate information related to new vehicle announcements, exhibitions, etc. occupied 29.3%, and it appeared that involvement toward the theme of autonomous driving was becoming more active in all kinds of fields.

Accidents	2 items	2.7%
Demonstration experiments	48 items	64.0%
Corporate information	22 items	29.3%
Other	3 items	4.0%
Total	75 items	100.0%



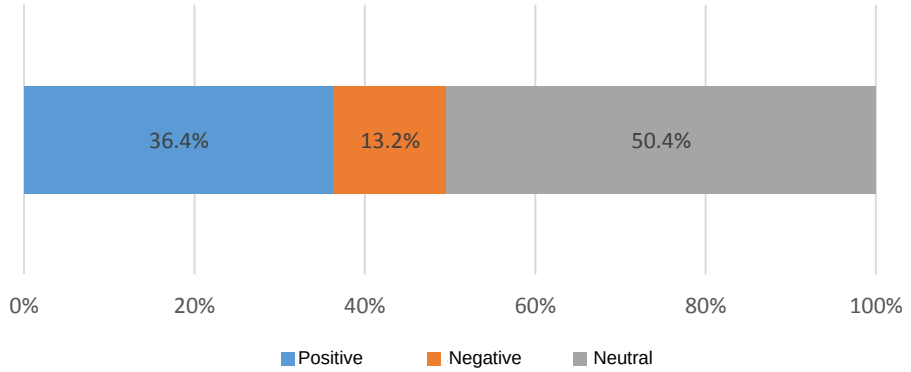
Main article contents

- Reporting on implementation of demonstration experiments in various regions throughout the world besides Japan
- Information related to corporate activities such as announcements of concept models or new vehicles, exhibitions, etc.
- Activities such as facilitation of procedures at administrative offices, collaborative research at universities, etc.

■ Pros and Cons

For newspaper articles, overall each subject was covered in a well-balanced manner, and many of the articles had the characteristic of being written from a neutral position, such as objective reporting of facts, etc.

Positive	88 items	36.4%
Negative	32 items	13.2%
Neutral	122 items	50.4%
Total	242 items	100.0%



Main article contents

- Expectations regarding improved convenience for the elderly and utilization in regions with inconvenient transportation such as mountainous regions, etc.
- Expectations that the autonomous driving business is connected to the growth strategies of countries and companies
- Issues regarding the necessity of preparing laws, reviewing the risks of autonomous driving, and revising insurance systems
- Concerns about the safety of autonomous driving technology and the assignment of responsibility in case of accident

Summary

- For autonomous driving, attention is being given to pointing out issues associated with the popularization of autonomous driving, including expectations for solving issues such as aging, labor shortages, traffic jams, etc. as well as concerns regarding security in a big data society and the necessity of preparing laws, etc. In order for autonomous driving to be accepted by society, it appears that clarification of autonomous driving evaluation indices and proceeding with preparation of legal and regulatory systems, etc. will be important.

3.5.2 Analysis of Twitter posts

- Analysis period: 2016/10/1 to 2017/12/15
- Searched media: Twitter (10% sampling) / Blogs
- Number of items

2016/10/01 to 2017/9/30

	Twitter	Blog	Total
Number of extracted items	27,718 items	5,852 items	33,570 items
Number of subject items	14,379 items (71.1%)	5,852 items (28.9%)	20,231 items
Number of read items	150 items	150 items	300 items

2017/10/1 to 2017/12/15

	Twitter	Blog	Total
Number of extracted items	95,680 items	28,086 items	123,766 items
Number of subject items	32,040 items (53.3%)	28,086 items (46.7%)	60,126 items
Number of read items	50 items	50 items	100 items

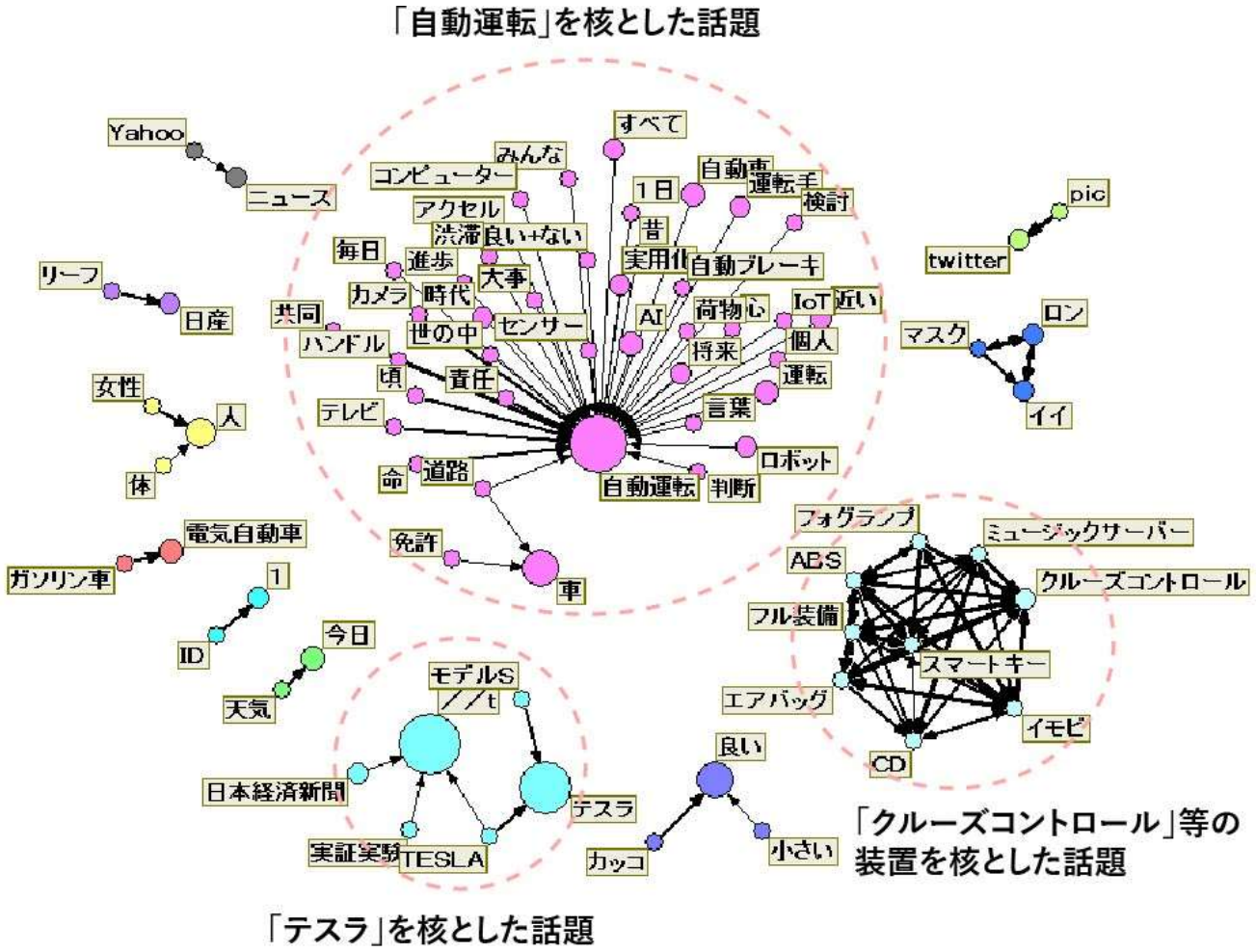
* For Twitter, of the extracted items, posts with 51 characters or more were used as subject items.
* The values in parentheses are the media ratios of the subject items.

- Search terms

autonomous driving, automatic traveling, unmanned driving, unmanned traveling, self driving, auto pilot, smart drive, safety support car, tesla, Toyota safety sense, propilot, Honda sensing, eyesight, cruise control

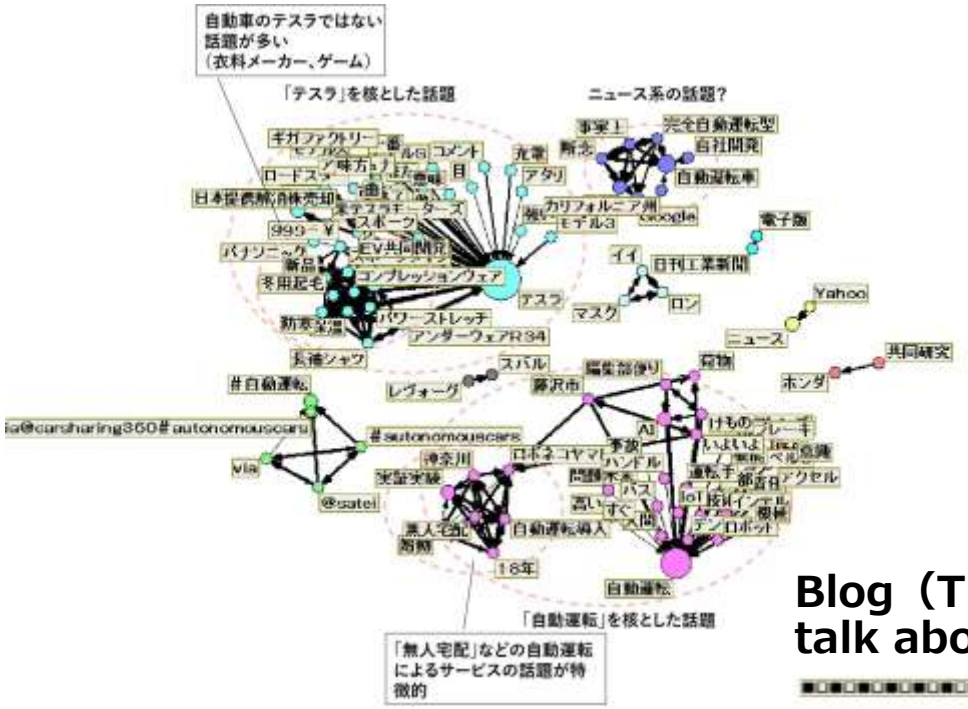
Macro analysis of Social Network Service

- It categorize Technical postings such as Autonomous vehicle, Tesla and Cruise control system.
- Most of the Information is foreign topic like Tesla and Google rather than Japan.



Macro analysis of Social Network Service

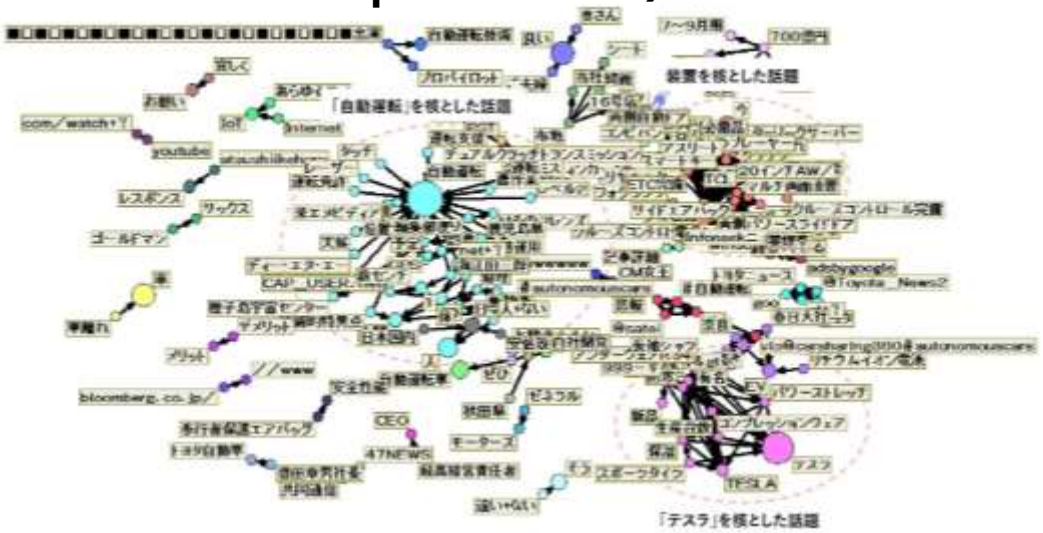
Twitter（It is said that there are many users of young people）



- There are many information about Tesla, news reports and comments on autonomous vehicle, ‘Awesome’ and ‘at last’.
- Among them, although there are comment on services such as unmanned home delivery, the contents are only related to logistics.

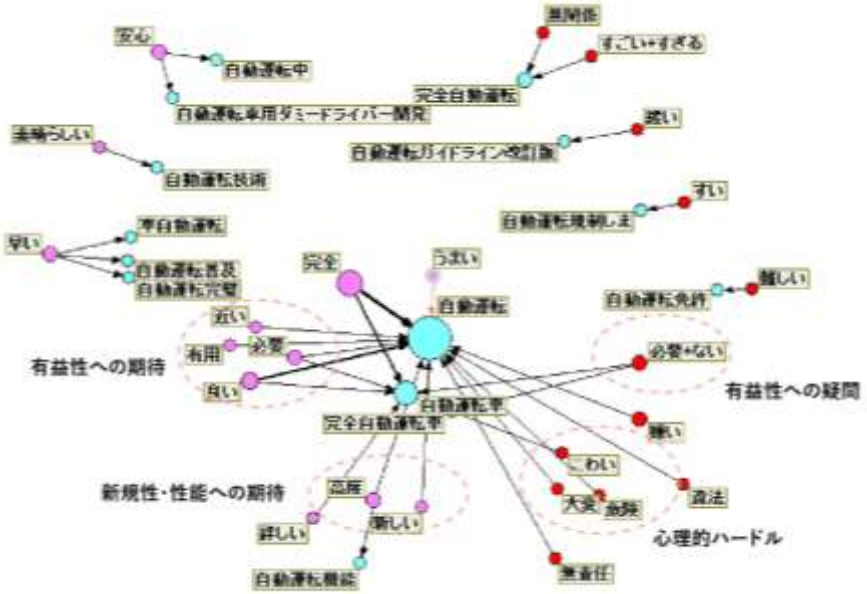
- In major categories, there are many descriptions about the trend of equipment and manufacturers such as Cruise control in addition to the topic related to Tesla.

Blog（There are many people who want to talk about semi-professional）



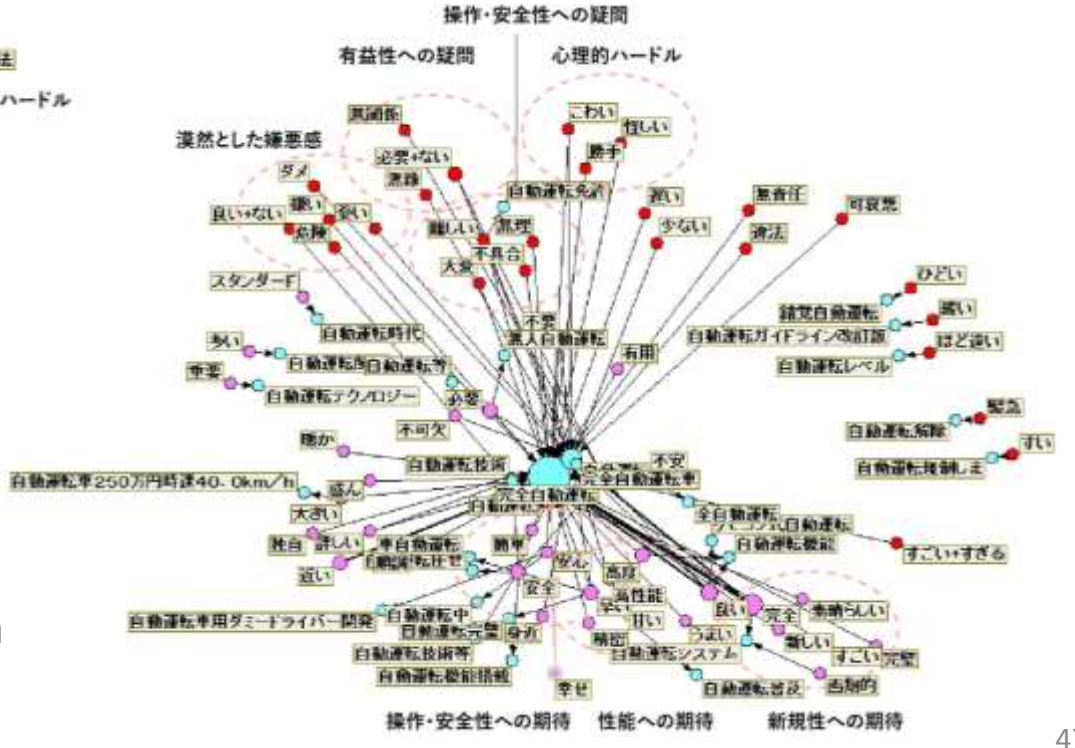
Macro analysis of Social Network Service

Twitter（It is said that there are many users of young people）



- According to the analysis, there are many evaluations for the necessity, psychological hurdle, and expectation.

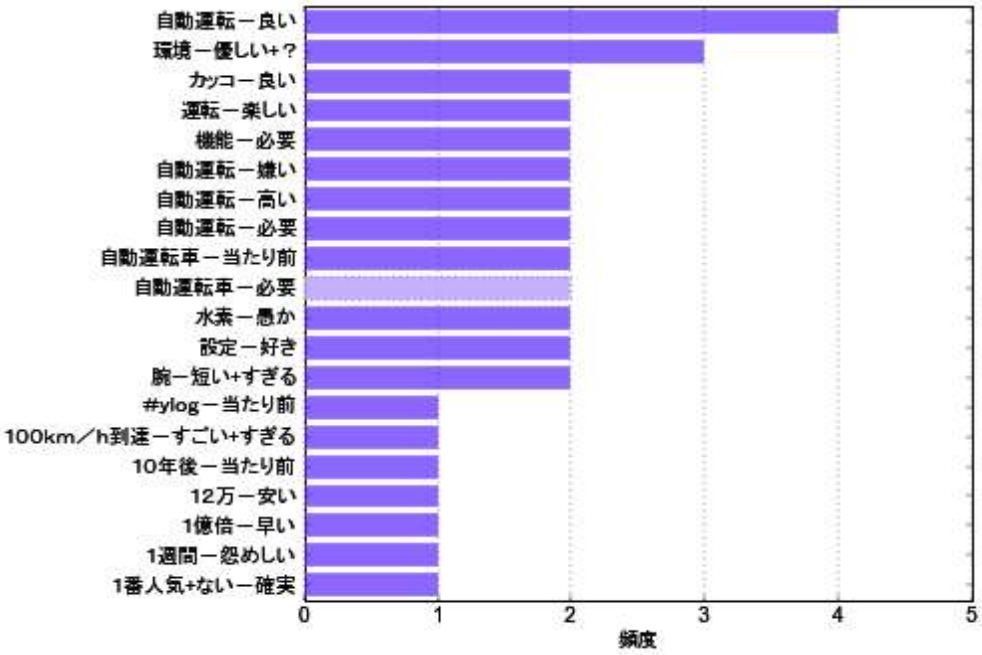
Blog（There are many people who want to talk about semi-professional）



- Like Twitter, there are many evaluations for necessity, psychological hurdles and expectations, while there are also many other information related technologies such as evaluation on operations.

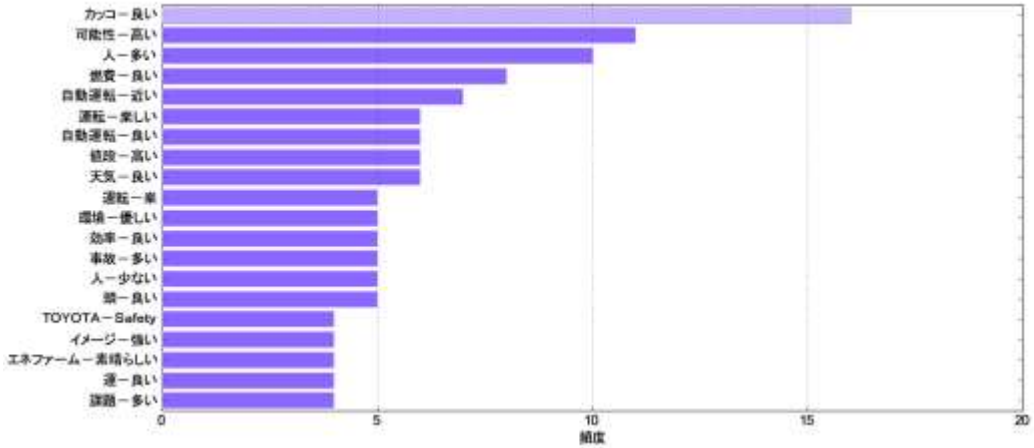
Macro analysis of Social Network Service

Twitter（It is said that there are many users of young people）



- In addition to pros and cons evaluation of autonomous vehicle, there are many evaluation comments such as environment, price, cool, high price and easy driving and so on.

Blog（セミプロ等語りたい人が多いとされる）



Summary of macro analysis for Social Network Service

- It seems that there are many technical topics of autonomous vehicle. In addition, this information are based on the contents of news reports, mainly the topics of foreign trends such as Tesla, and domestic automakers' topics are limited.

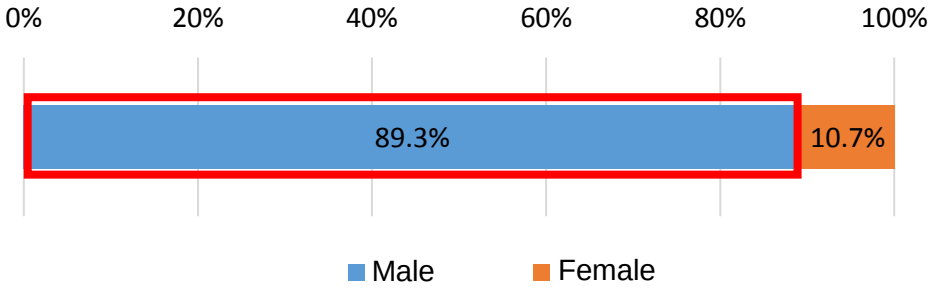
- Although many technical comments can be seen on blogs, there are few interests in the dreams in terms of the autonomous driving society such as civic life and city shape. For comments on the services, only about the topics for logistics.

- Autonomous driving can be mainly told about technical issue.

- **Sex:** The ratio of males was approximately 90%. It is speculated that this is because originally interest in autonomous driving was higher in males
- **Age:** 50% were in their 20's and 80% were in their 20's to 40's. Interest is higher in younger groups.
- **Positive/negative judgment:** The number of negative posts was somewhat higher.

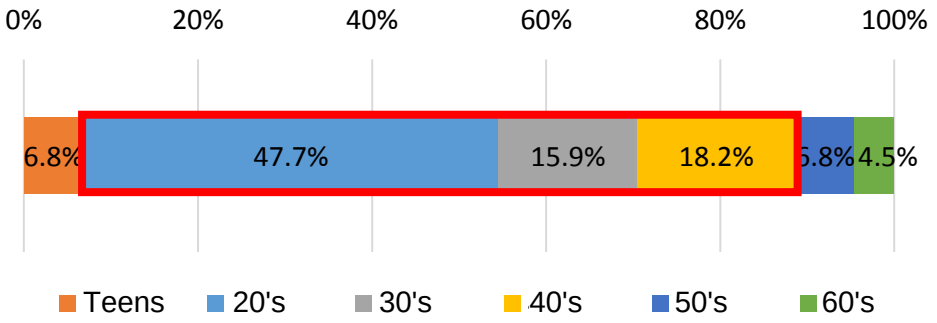
- **Sex**

Male	108 items	89.3%
Female	13 items	10.7%
Total	121 items	100.0%



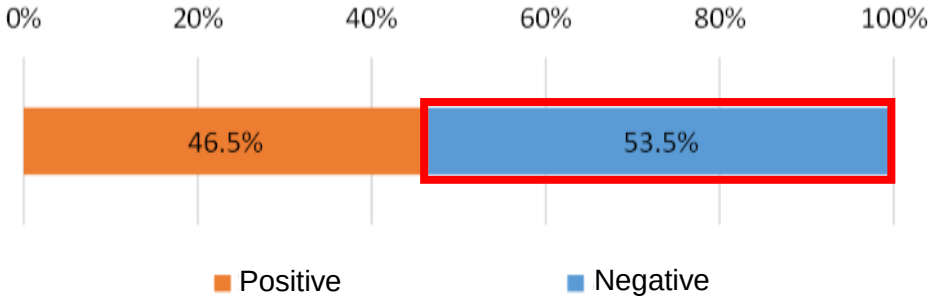
- **Age**

Teens	3 items	6.8%
20's	21 items	47.7%
30's	7 items	15.9%
40's	8 items	18.2%
50's	3 items	6.8%
60's	2 items	4.5%
Subtotal	44 items	100.0%
Unknown	156 items	



- **Positive/negative judgement**

Positive	106 items	46.5%
Negative	122 items	53.5%
Total	228 items	100.0%

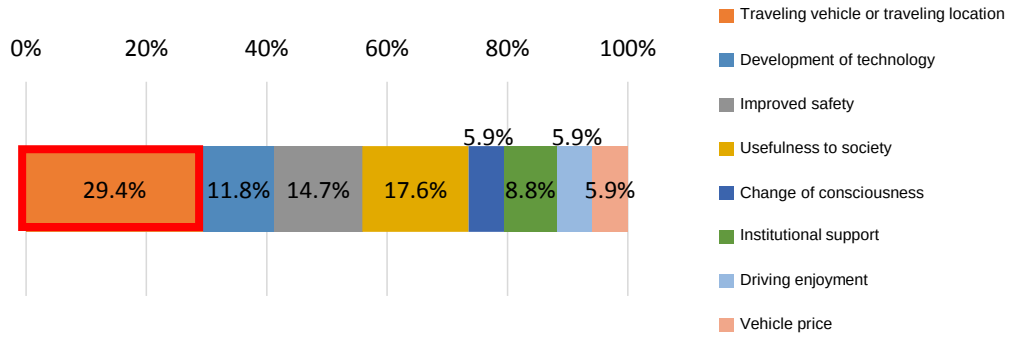


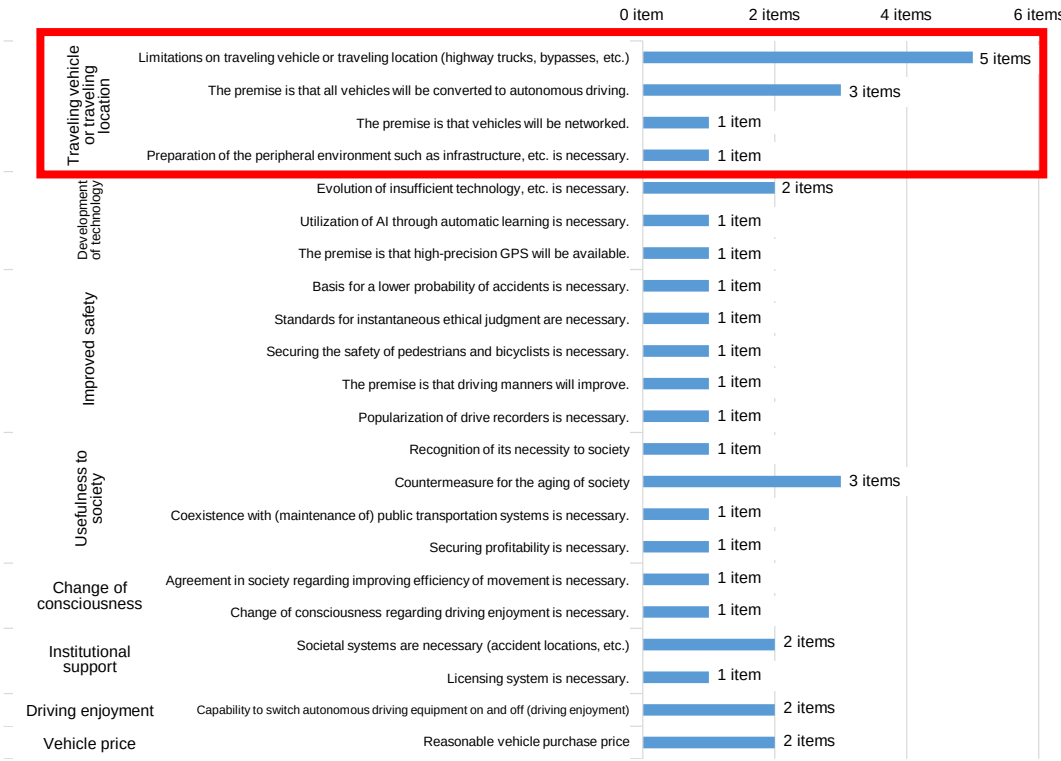
* Posts which included both positive and negative content were included in both groups.

- **Details of posts which included conditions**

- 34 posts which included conditions were used as subjects, and detailed analysis of the conditions was performed.
- Opinions related to the **traveling vehicle and traveling location** were the most common, followed by usefulness to society, improved safety, etc.

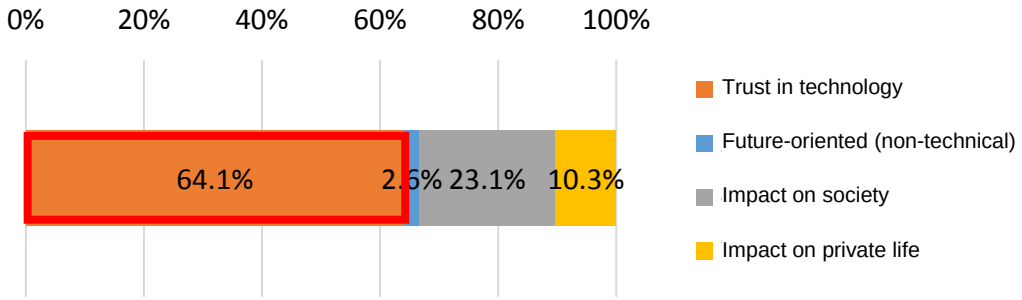
Traveling vehicle or traveling location	10 items	29.4%
Development of technology	4 items	11.8%
Improved safety	5 items	14.7%
Usefulness to society	6 items	17.6%
Change of consciousness	2 items	5.9%
Institutional support	3 items	8.8%
Driving enjoyment	2 items	5.9%
Vehicle price	2 items	5.9%
Total	34 items	100.0%



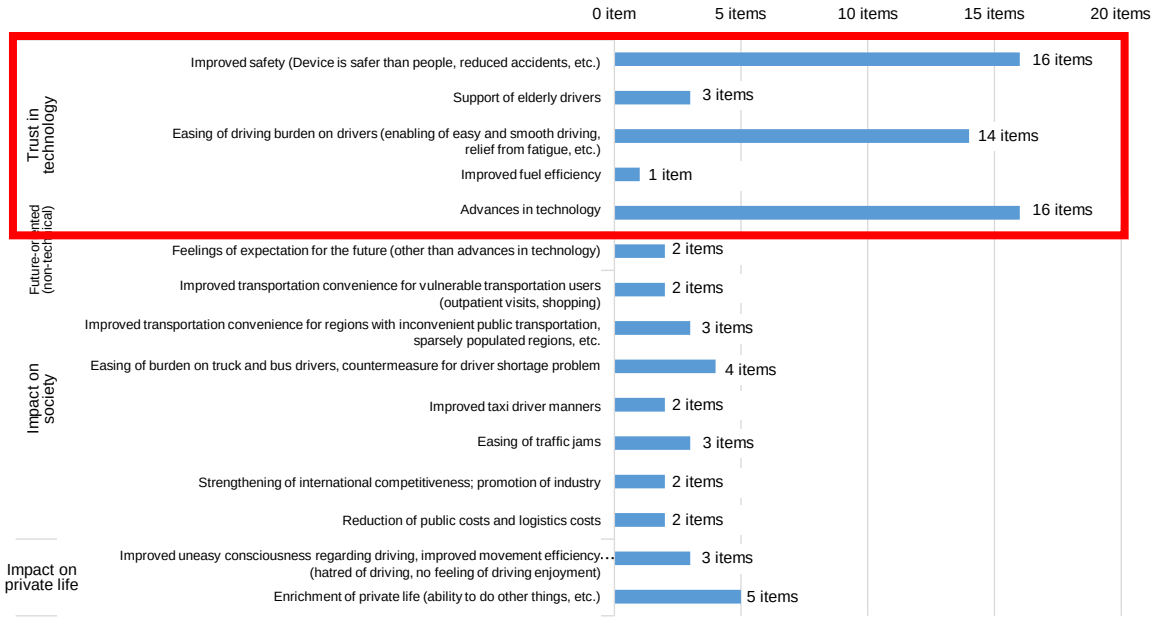


- **Detailed analysis of reasons for positive posts**

- Of the 106 positive Twitter posts, the 78 posts which included reasons were used as the subjects, and detailed analysis of the reasons was performed.
- Opinions regarding **<u>trust in technology</u>** were the most common, followed by impact on society, impact on private life, etc.

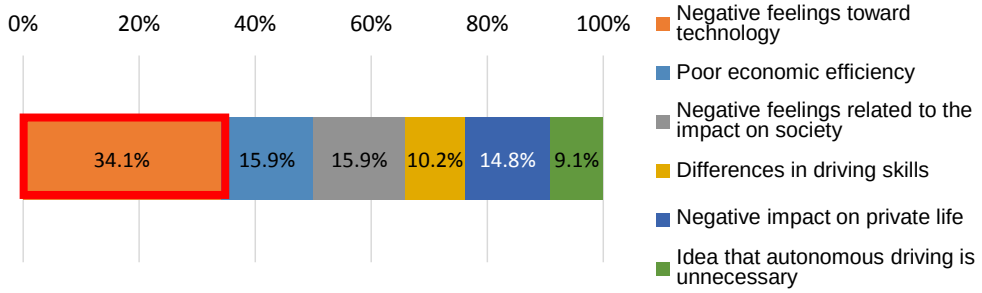


Trust in technology	50 items	64.1%
Future-oriented (non-technical)	2 items	2.6%
Impact on society	18 items	23.1%
Impact on private life	8 items	10.3%
Total	78 items	100.0%

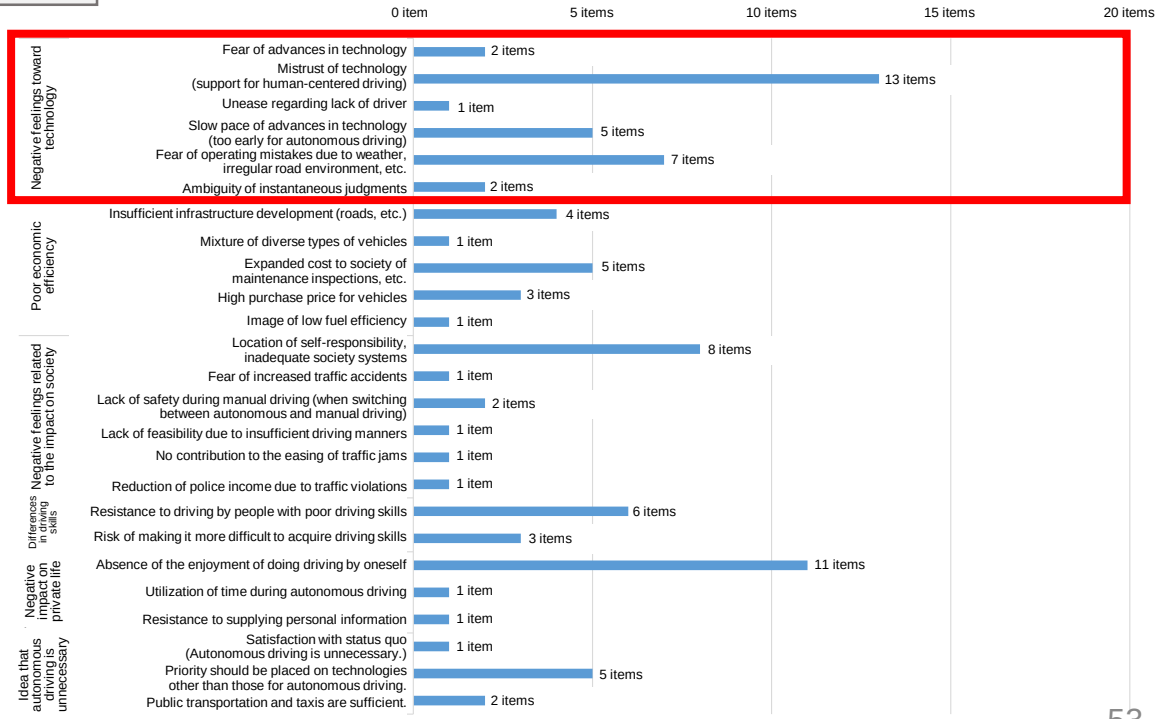


- **Detailed analysis of reasons for negative posts**

- Of the 122 negative Twitter posts, the 88 posts which included reasons were used as the subjects, and detailed analysis of the reasons was performed.
- Opinions regarding **<u>negative feelings toward technology</u>** were the most common, followed by poor economic efficiency, negative feelings related to the impact on society, etc.



Negative feelings toward technology	30 items	34.1%
Poor economic efficiency	14 items	15.9%
Negative feelings related to the impact on society	14 items	15.9%
Differences in driving skills	9 items	10.2%
Negative impact on private life	13 items	14.8%
Idea that autonomous driving is unnecessary	8 items	9.1%
Total	88 items	100.0%



2.6 Remarks for social acceptability

Autonomous driving systems are expected to be realized in cities all over the world including Japan, as various problems can be solved in urban and remote areas. However, its implementation is not easy in practice as Tesla's accident. Especially in Japan, the exposure of autonomous vehicles is normally less and it tend to worry about technical issues.

Regarding the autonomous driving systems, it is difficult to form a national consensus in introducing the system, and it can only be implemented after forming consensus within some social and policy circumstances. Therefore, it seems to be important to enhance the image to autonomous driving systems as a part of our own life through events and media strategies.

It is also important to explore improving the acceptability of new services such as MaaS and the strategic promotion of autonomous driving systems.

Hypothesis for improving acceptability

- Increase the chance to experience autonomous driving systems
  (Improving exposure level, opportunity to know neutrally)

- Our own life = Proposal of Lifestyle using autonomous driving system
  Changes in the environment of the city and our own life
  Appeal from the idea of "automation of unpleasant things"

3. Display of driving status in large-scale demonstration tests of automated driving systems (implementation of movement management systems and performance of movement management)

NIPPON KOEI

3. Display of driving status in large-scale demonstration tests of automated driving systems (implementation of movement management systems and performance of movement management)

Proposal of methods of displaying driving conditions

Studied the implementation of movement management systems for large-scale dynamic map and HMI test demonstrations based on surveys and survey results, with the aim of implementing such a system to support safety and progress management in experiments by the experiment executive office

The study procedure was as follows:

1) To organize a comparison of functions of the displaying of driving conditions by a movement management system in terms of experiment safety, proper experiment management, and accident/incident response.

Points of comparison

- Whether test safety can be maintained through the display of driving conditions
- Whether proper test management can be achieved through the display of driving conditions
- Whether a movement management system can be used effectively in the event of an incident/accident

2) Compare movement management system products under consideration as candidates for use.

3) Collect opinions from large-scale test demonstration contractors, WG, and other affiliated parties.

4) Select a system to implement.

3. Display of driving status in large-scale demonstration tests of automated driving systems (implementation of movement management systems and performance of movement management)

Comparison of movement management systems

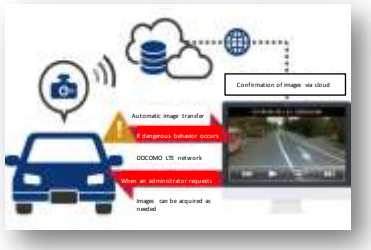
This study focused on the four movement management system products described below, organizing examples (case studies) of their implementation and summaries of their features and functionality based on publicly available information and interviews with the respective service providers, etc.

Opinions collected from large-scale test demonstration contractors, WGs, and other affiliated parties revealed that in addition to meeting their functional requirements, there was demand for equipment installed in test vehicles to be not a camera-equipped multifunctional smartphone, but instead a single-function device that can only acquire location data.

On the basis of comparisons conducted and opinions collected, DOCOMO Systems' "DoCo desu Car" was selected as the movement management system to be used due to its general satisfaction of functional requirements and the aforementioned demand, as well as its comparative low implementation cost and usage fees.

DOCOMO Systems, Inc.

Use of DOCOMO's LTE service



Improvement of operations through movement management

Implementation examples

● **Sharing of visualized transport status information via cloud among relevant companies**
Possible to remotely monitor progress of transport status via the DoCo desu Car control panel screen. Transport delays can be noticed in a timely manner, contributing to higher-quality customer service.

● **Higher operational efficiency in the logistics/distribution industry**
Speeds improved in the logistics / distribution industry as the operator themselves receives orders, while simultaneously delivery instructions can be sent out by searching for nearby LIDAR.

Overview of features

● **Movement management**
Real-time management of vehicle location and status

● **Supports safe driving**
Centralized cloud-based management of driving records

● **Transportation and delivery progress management service**
Real-time management of the progress of the transportation and delivery plan, helping to improve the quality of transport

* **Source:** https://www.docomo-sys.co.jp/products/doco-car/

3. Display of driving status in large-scale demonstration tests of automated driving systems (implementation of movement management systems and performance of movement management)

Comparison of movement management systems

Legend: ○ = Functionality present
△ = Conditional functionality

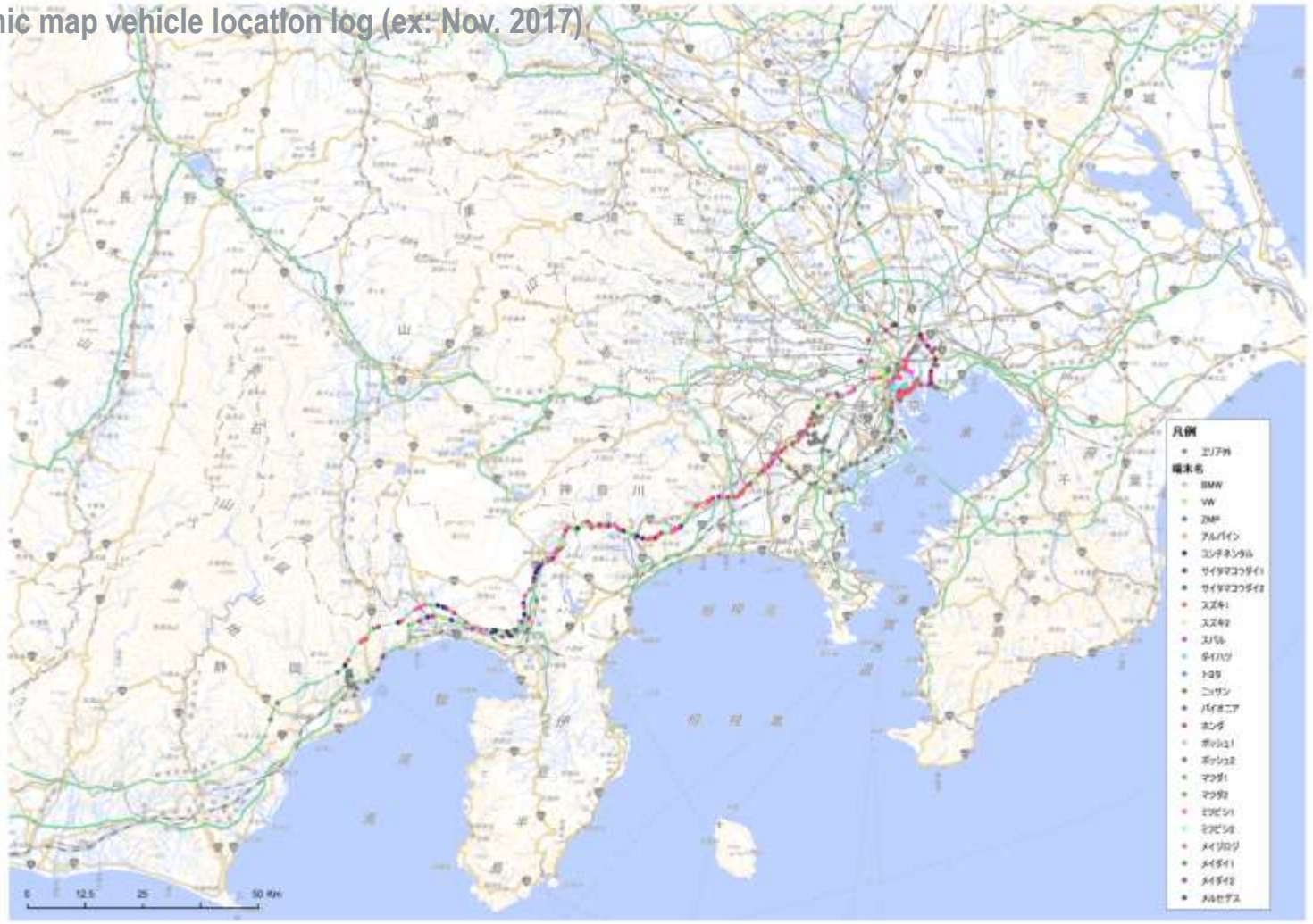
	DOCOMO Systems, Inc.	Online Consultant	Nichibei Denshi Co., Ltd.	PASCO
Real-time vehicle position	○ Periodic notifications	○	○	○
Real-time speed data	○	△ Acquired via smartphone		○
Real-time continuous distance driven	×	△ Calculated by distance in a straight line		○
Travel logs	○	○	○ Keeps detailed records of vehicle behavior	○
Organized register of driving records, etc.	○	○	△ Possible if managed via dedicated PC	○ Daily report output
Real-time vehicle status notifications	○ Possible to add a status notification button	△ Notification of whether present or not present in a specified location	○ Optional for inclusion as an on-board feature	△ Notification of whether present or not present in a specified location
Alarm functionality in the event of an abnormal occurrence	○ Has an emergency switch		△ As an optional feature, it is possible to contact the administrator	
Camera video in the event of an abnormal occurrence	△ Can be equipped with a drive recorder			
Installation costs and usage fees	Smartphone app: ¥1,800 per unit, ¥500 for administrator ID Year-long contract	Android app: ¥950 per unit	(Varies by price quote)	¥3 million per year (30 units, 5 administrator accounts)
Usage environment (devices, etc.)	A GPS device can be provided A smartphone can also be used	The user can arrange to use a smartphone	In general, a dedicated device is used for the on-board device	The user arranges to use a smartphone
Account	Control panel screen is viewed via a web browser	Control panel screen is viewed via a web browser	Managed via dedicated PC and viewed via web browser	Control panel screen is viewed via a web browser

3. Display of driving status in large-scale demonstration tests of automated driving systems (implementation of movement management systems and performance of movement management)

Movement management system logs of vehicle locations

Log data on vehicle locations, accumulated by the movement management system during demonstration tests, is output periodically for storage.

Dynamic map vehicle location log (ex: Nov. 2017)

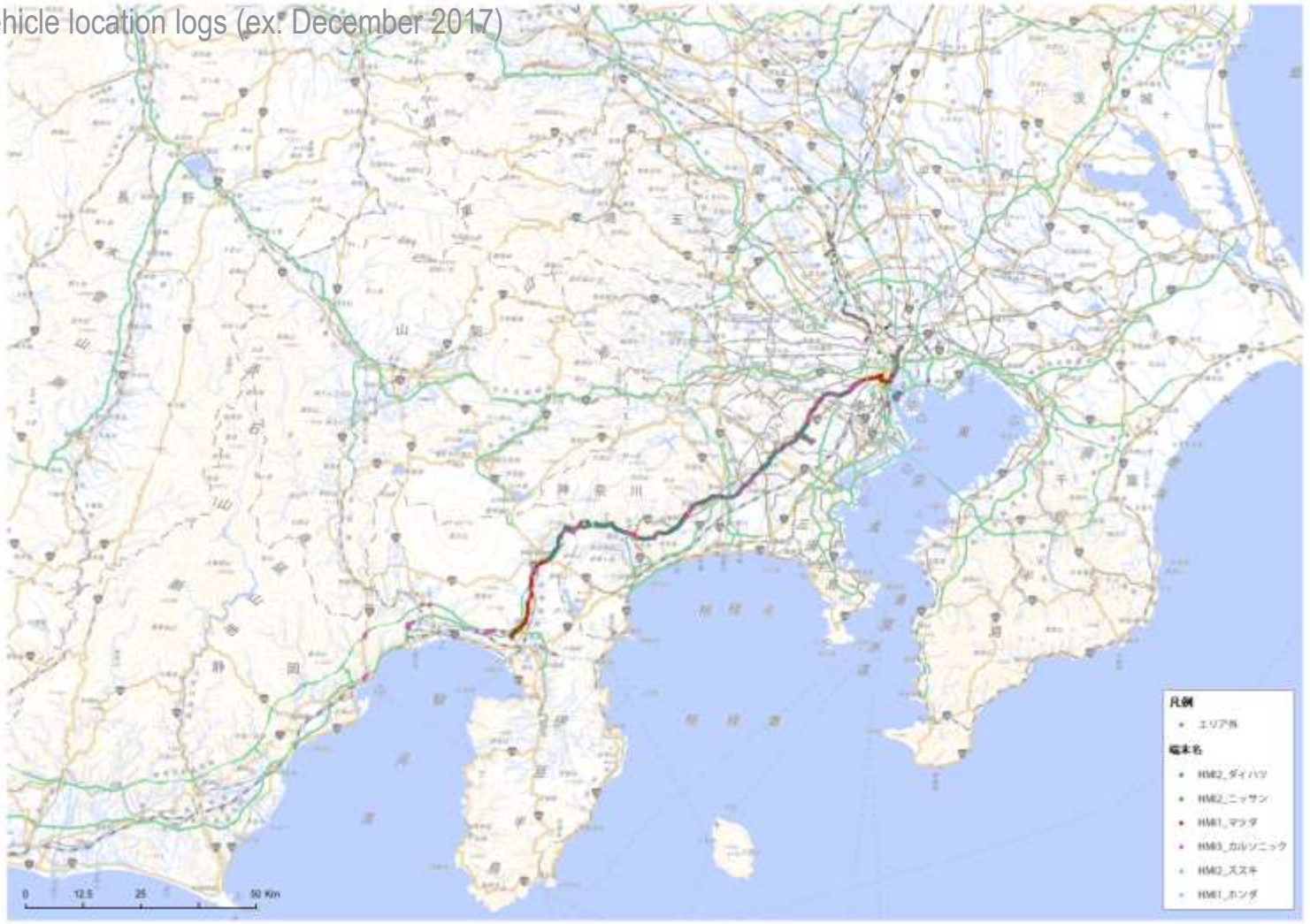


3. Display of driving status in large-scale demonstration tests of automated driving systems (implementation of movement management systems and performance of movement management)

Movement management system logs of vehicle locations

Log data on vehicle locations, accumulated by the movement management system during demonstration tests, is output periodically for storage.

HMI vehicle location logs (ex. December 2017)



3. Display of driving status in large-scale demonstration tests of automated driving systems (implementation of movement management systems and performance of movement management)

Assessment of the effectiveness of movement management system implementation

The effectiveness of movement management system implementation was assessed in terms of the following points, based on findings and test participants' opinions acquired through system implementation and management.

- **Whether test safety can be maintained through the display of driving conditions**
  An explanation of the movement management system and the data it collects was provided to test participants prior to the system's implementation, so that they understood that NEDO and/or other test administrators would be monitoring the vehicle's location for reporting purposes in the event of an accident or similar. This preparation ensured the safety of the tests.
- **Whether proper test management can be achieved through the display of driving conditions**
  In the event that no vehicle movement is detected on the test date, the safety management executive office contacts test participants to inquire about test schedule changes, etc. Test management is achieved based on this operational information.
- **Whether a movement management system can be used effectively in the event of an accident/incident**
  No accidents or incidents occurred during test demonstrations, but the implementation of a movement management system throughout the test period enabled the continuous monitoring of vehicle locations at every instant, meaning that the situation could be observed in the event that an accident or incident were to occur.
- **Whether there are features that should be added to the movement management system for vehicle operational management**
  In the interest of ensuring safety, it would be effective to add functionality such as the ability for the vehicle's on-board equipment to report to the administration in the event of an accident or other emergency, and the ability to measure movement speeds.

4. Study of methods for improving social acceptability by communicating information such as automated driving system/large-scale field operational testing events and public relations materials, etc.

Toyota Tsusho
NIPPON KOEI
Nagoya University
NIKKEN SEKKEI Research Institute

4.1 Test ride sessions by those involved in formulating policies and plans

Toyota Tsusho
NIPPON KOEI
Nagoya University
NIKKEN SEKKEI Research Institute

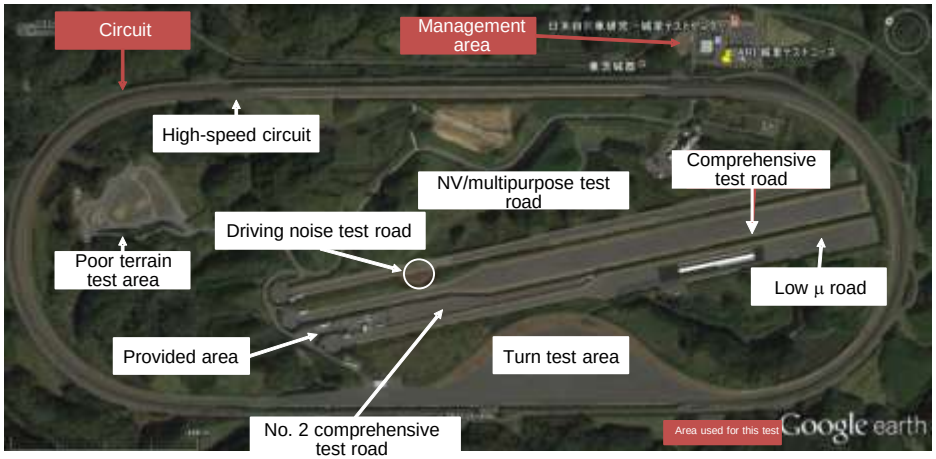
Implementation overview, course, vehicles used

Implementation overview

Objectives	Before performing the field operational test, conduct test rides of advanced driving support vehicles by those involved in formulating policies and plans in order to develop findings regarding issues related to future policies and planning and to invigorate discussion regarding future direction.
Date/time	Preliminary driving test: August 8, 2017 (Tuesday) Test drive session: August 9, 2017 (Wednesday)
Scale	34 members involved in formulating policies and plans, 10 vehicle models
Location	JARI Shirosato Test Center

Course

JARI Shirosato Test Center outer ring road



Vehicles used

Ten vehicles with level 2 advanced driving support systems


Mercedes Benz E-Class


Audi A4


NISSAN SERENA


Tesla Model X


Tesla Model S


BMW 7 Series


HONDA ACCORD

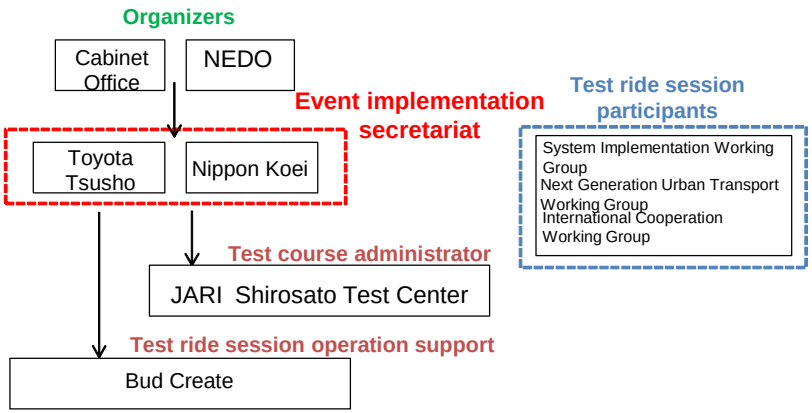

Mazda CX-5


SUBARU LEVORG

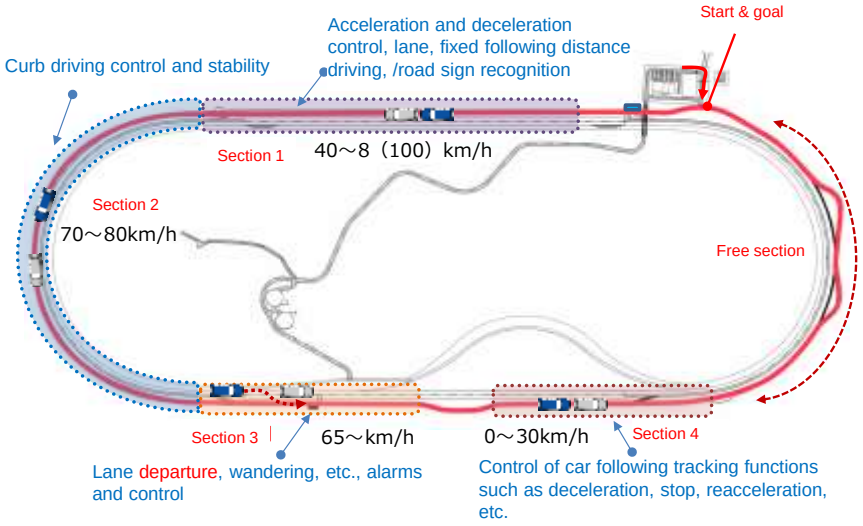

LEXUS RX

Implementation organization, implementation contents

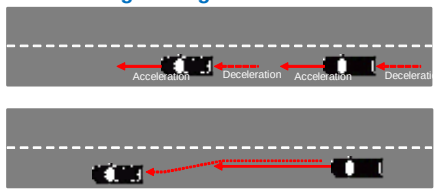
Implementation organization



Implementation contents



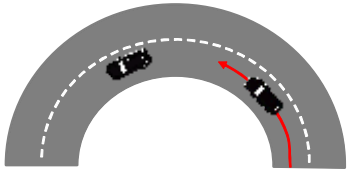
Section 1 Acceleration and deceleration control, lane, fixed following distance driving, road sign recognition



Test items

- Confirmation of tracking speed control through adjustment of speed (medium speed)
- Confirmation of following distance when preceding vehicle accelerates/decelerates
- Confirmation of ease of operation of setting switches, etc.
- Confirmation of maintaining of center position within white lines
- Confirmation that vehicles maintain center position within white lines when tracking preceding car, using steering assist
- Confirmation of cautions/warnings regarding speed limit signs

Section 2 Curb driving control and stability



Test items

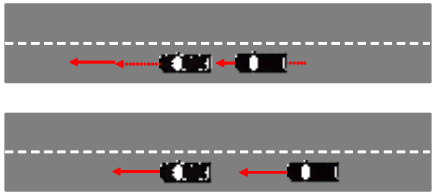
- Use of steering assist without tracking preceding vehicle with ACC set, confirmation of steering wheel control and maintaining of center position
- Confirmation of vehicle behavior in case of outer side expansion and inside turn steering wheel correction
- Confirmation of alarm function when automated steering wheel control is cancelled (different for each manufacturer)
- Confirmation of response when driver intervenes and automatic control is resumed

Section 3 Lane departure, wandering, etc., alarms and control

Test items

- Confirmation of alarm function when vehicle is likely to depart from lane (different for each manufacturer)

Section 4 Control of tracking functions such as deceleration, stop, reacceleration, etc.



Test items

- Confirmation of tracking driving at low speeds (traffic congestion)
- Confirmation of function for reacceleration from a stop
- Confirmation of steering assistance tracking preceding vehicle when no white lines can be confirmed

Test ride session photos

Orientation

Test driving

Boarding vehicles

Preceding car tracking

Test-riding session questionnaire

Survey background (objective of test-riding sessions)

- To have test-drive sessions for policymakers and affiliated parties whereby they can try out the features of current vehicle products and come to understand future policy issues and problems, simulating discussion on the direction of policy.
- In particular, the sessions serve to deepen understanding of difficult scenarios for automated driving given the technology of current vehicle products, as well as to encourage a shared awareness toward the direction of future issue identification in terms of infrastructure, laws, receptivity of society, etc.

Objective of the questionnaire survey

- To have test-riding session participants try out vehicles equipped with driving-assistance functionality and survey their realizations and reactions regarding the functionality generally, as well as issues they identify regarding the propagation of the technology and any policies required to that end.

Survey target

- All test-riding session participants
- Participants fill out the questionnaire after test-riding but before leaving the venue to go home

Survey items

- Q1. Reactions where riders were able to ride the vehicle with peace of mind
- Q2. Reactions where riders felt uneasy riding the vehicle
- Q3. Whether they came to any new realizations through this test-riding session regarding “their own initiatives on automated driving”
- Q4. Reactions and impressions felt in this test-riding session regarding “issues they identify regarding the propagation of the driving-assistance functionality and any policies required to that end”

Test-riding session questionnaire: Respondent attributes

□ Number of respondents

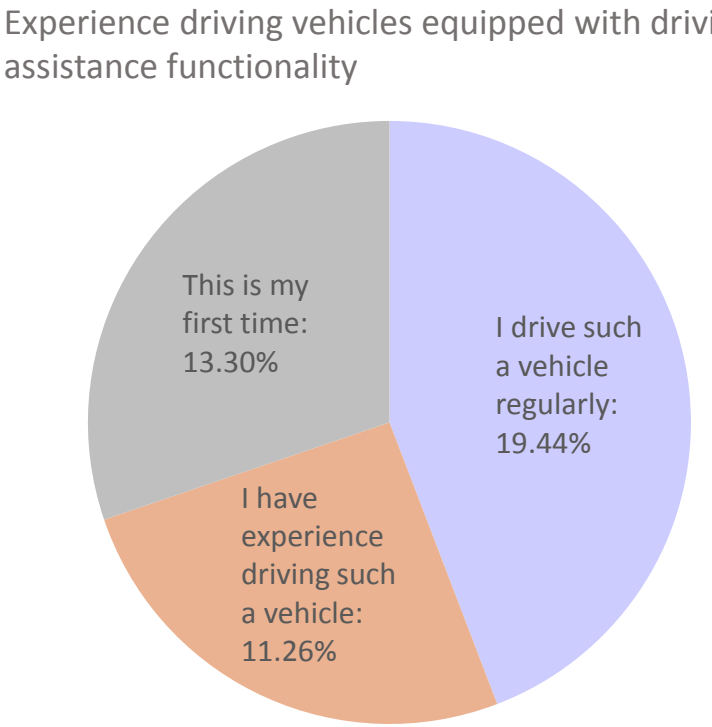
・AM slot: 25 ppl (18 participants, 7 attendants)

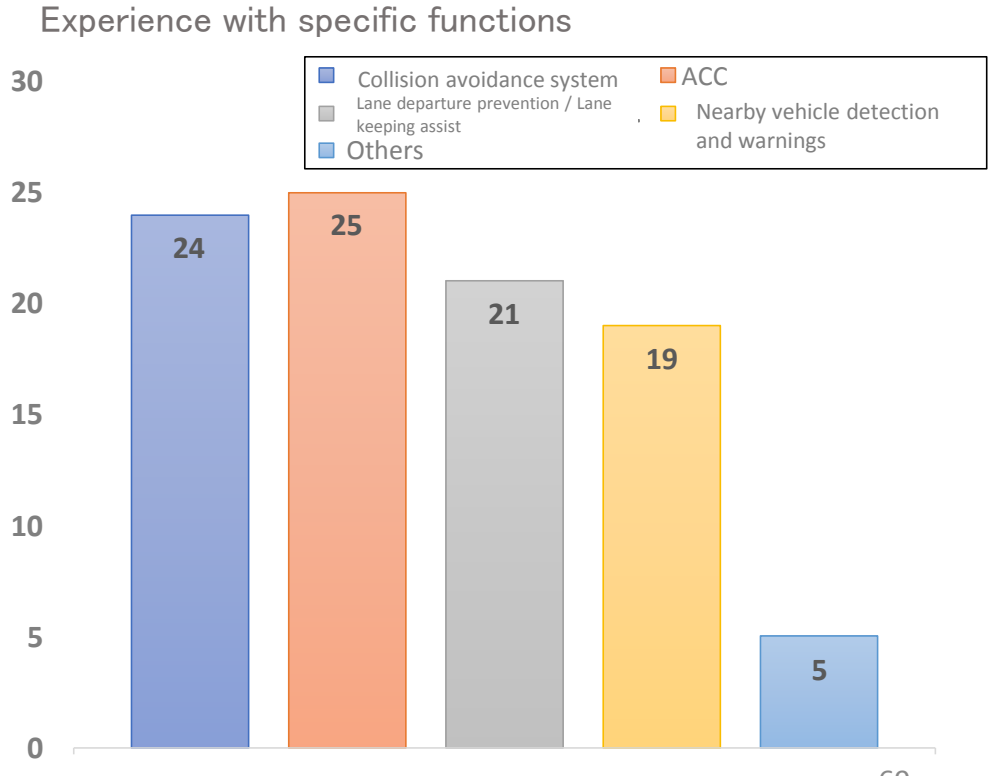
・PM slot: 18 ppl (16 participants, 2 attendants)

Total: 43 ppl

□ Survey results

■ Experience driving vehicles equipped with driving-assistance functionality





Test-riding session questionnaire: Selection of main responses

■ Reactions regarding sense of security or unease when test-riding the vehicle (excerpts)

1) Reactions where riders were able to ride the vehicle with peace of mind

- Easy to understand when the vehicle is in an active and inactive state (deceleration due to detection of vehicle ahead)
- Vehicle functioning is uniform, constant, and easy to predict, making for smooth response to emergency situations.

2) Reactions where riders felt uneasy riding the vehicle

- Difficult to understand the state of the vehicle for vehicles tending toward strong automatic controls, giving me a sense of unease.
- Some vehicles were slow to brake, giving me a sense of unease.

■ Whether they came to any new realizations through this test-riding session regarding “their own initiatives on automated driving” (excerpts)

- I learned that different countries and different manufacturers have different approaches to support functions, and that HMI is important.
- Characteristics unique to each manufacturer arise in the fine details of each service, and I realized that it is important to see that relevant parties (incl. users) have a shared understanding regarding the other parts (i.e. not the fine details) of the services.

■ Reactions and impressions felt in this test-riding session regarding “issues they identify regarding the propagation of the driving-assistance functionality and any policies required to that end” (excerpts)

- Test-rides are extremely easy to understand, and it is important to determine how to extend test-riding to more users.
- We should deepen our consideration and study of non-manufacturer roles, including the role of the dealer, vehicle inspections at repair shops, etc.

Test-riding session questionnaire: Primary opinions regarding issues in propagation of the technology

■ New realizations regarding their own initiatives on automated driving, and issues regarding the propagation of the driving-assistance functionality and any policies required to that end

Issues fell into the following seven categories:

1) Controls should be standardized

2) Opportunities should be created for users to experience and learn about the technology

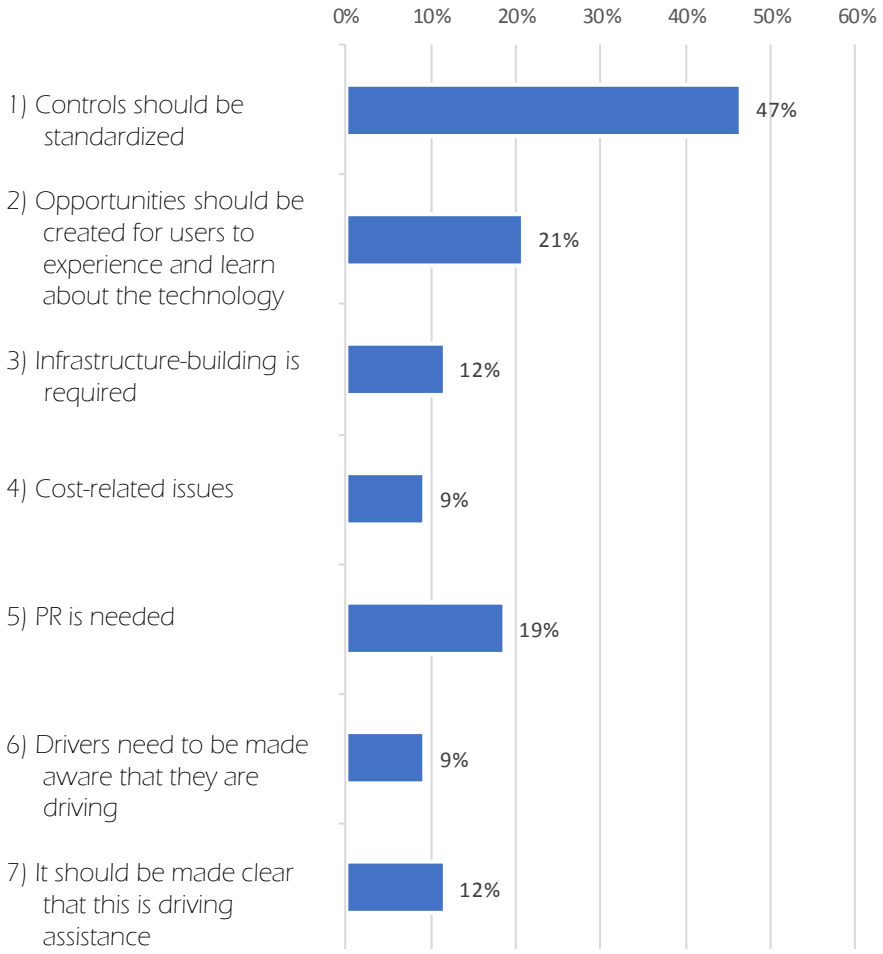
3) Infrastructure-building is required

4) Cost-related issues

5) PR is needed

6) Drivers need to be made aware that they are driving

7) It should be made clear that this is driving assistance



(Because some responses fell in multiple categories, these are proportions relative to the total number of 43 respondents)

4.2 SIP-adus Workshop 2017 and automated driving technology demonstrations and related meetings by Japan-Germany expert meeting attendees

Toyota Tsusho
NIPPON KOEI
Nagoya University
NIKKEN SEKKEI Research Institute

Japan-Germany expert meeting

Implementation overview

Objectives	Foster understanding of automated driving systems and implement international corporation among Japanese and foreign government officials with decision-making authority regarding automated driving policies and planning, technical experts, and members of the media participating in the event.
Date/time	November 13, 2017 (Monday) 6:10 p.m. to 8:00 p.m.
Scale	German participants: 20 Japanese participants: 22 (6 Cabinet Office members, 1 Ministry of Economy, Trade and Industry member, 3 Japan Automobile Research Institute member, 12 other members)
Location	SUBIR AKASAKA TOKYO

Implementation results

Participants exchanged opinions regarding dynamic maps, security, human factors, and the like, cultivating their understanding and engaging in international cooperation in order to produce better results at the demonstration attended by participants the following day.

Meeting

Meeting

Speech by Program Director Seigo Kuzumaki

Autonomous vehicle technology demonstration

Implementation overview

Item	Contents	
Objectives	Foster understanding of automated driving systems and implement international corporation among Japanese and foreign government officials with decision-making authority regarding automated driving policies and planning, technical experts, and members of the media participating in SIP-adus WS 2017.	
Organizers	Cabinet Office, NEDO	
Secretariat	Toyota Tsusho Corporation/Nippon Koei Co., Ltd.	
Operation	TNS Inc.	
Implementation dates	Advance preparation November 13, 2017 Test ride November 14 and 15, 2017	
Location	Tokyo International Exchange Center Plaza Heisei/Times Tokyo International Exchange Center	
Participants	Related governmental ministries: 44, Foreign speakers: 30 Other: 2 (same day participation)	
Contents	Photo session	Commemorative photos of foreign speakers and vehicles supplied by OEMs
	Test ride session	• Viewing of OEM vehicle explanation panels/videos • Co-riding demonstration to participants of functions provided by individual vehicles (advanced driving support systems – advanced automated driving systems)
	Questionnaire	Requested participation in questionnaire regarding drive assist functions experienced by participants during test rides

Vehicles supplied by OEMs

Suzuki Swift Sport

Honda Legend

Nissan Infiniti Q50

Lexus LS 500h

BMW Series 5 (G30)

MB S 560 long 4MATIC

VW Passat GTE

VW Passat GTE variant

Demonstration photos

Photo session

Commemorative photos of foreign speakers in front of vehicles supplied by OEMs

Visit by minister

Minister Masaji Matsuyama test rode a Lexus LS 500h.
He commented that "Lane Change Assist (LCA) is an amazing technology."

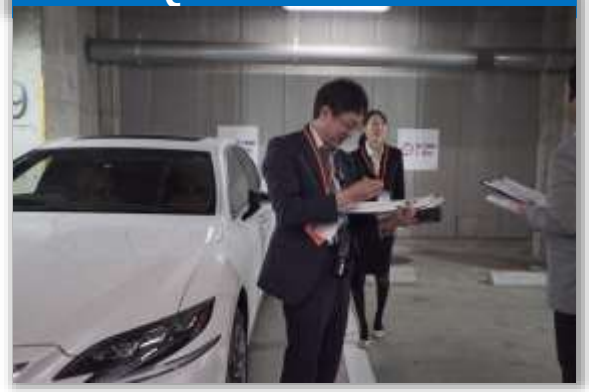
Panel displays/video

Panels and videos were used to explain functions offered by the test ride vehicles

Test ride

Vehicle functions were experienced during test rides on driving routes (public roads) set by individual OEMs

Questionnaire



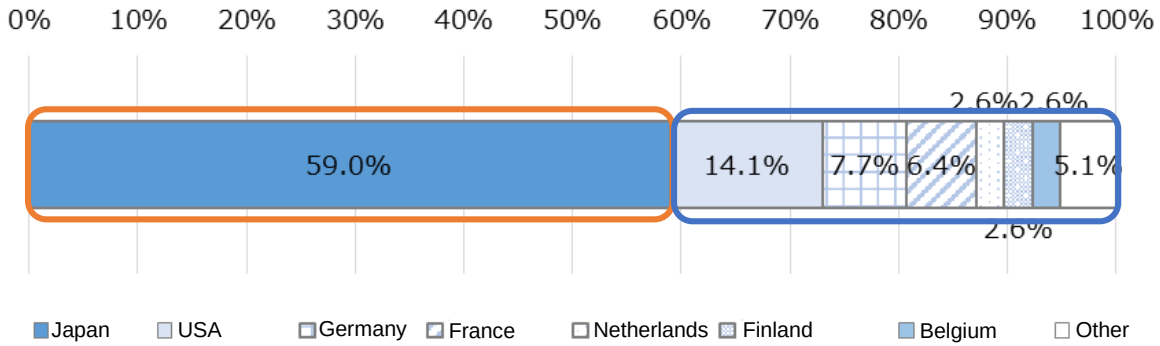
Questionnaires were conducted regarding test rides

Questionnaire

Response ratio

Number of subject questionnaires	78 questionnaires
Number of responses	**78 responses** (Japanese version: 46 responses; English version: 32 responses) 11/14 (Tues.): Japanese version: 13 responses; English version: 9 responses 11/15 (Wed.): Japanese version: 33 responses; English version: 23 responses
Response ratio	**100%**

Country



- Approximately 59% of responses were from Japan and approximately 41% were from overseas.

Detailed list of countries

Japan	46 responses
US	11 responses
Germany	6 responses
France	5 responses
Netherlands	2 responses
Finland	2 responses
Belgium	2 responses
UK	1 response
Australia	1 response
Canada	1 response
Sweden	1 response
Total	**78 responses**

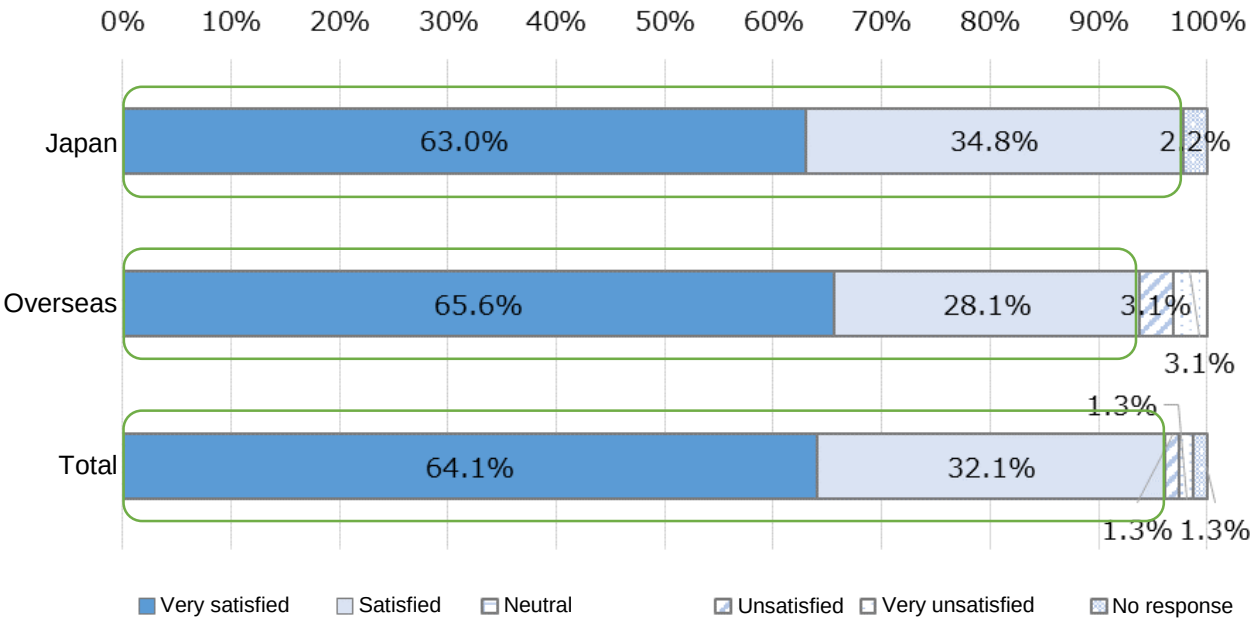
Japan subtotal: 46 responses

Overseas subtotal: 32 responses

(1) Satisfaction with autonomous driving technology trial session

Q1: How satisfied were you with today's autonomous driving technology trial session?

	Very satisfied	Satisfied	Neutral	Unsatisfied	Very unsatisfied	No response	Total
Japan	29	16				1	46
Overseas	21	9		1	1		32
Total	50	25		1	1	1	78

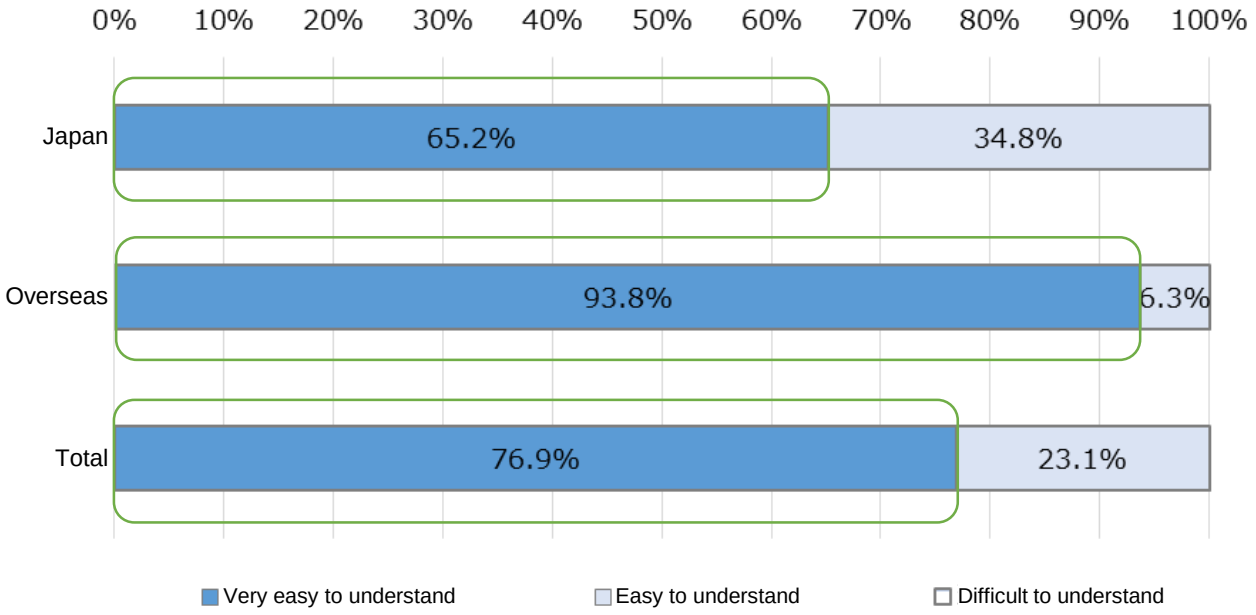


- The total response ratio for "Very satisfied" and "Satisfied" was approximately 96% of all responses, with approximately 98% of Japanese responses and approximately 94% of overseas responses, so it can be said that **the overall level of satisfaction was high**.
  - * There were 2 responses of "Unsatisfied" or "Very unsatisfied" from overseas, and there were opinions regarding the vehicle stopping at Lv2.
    (In the future, it is planned to check the detailed reason for responses.)

(2) Ease of understanding content of autonomous driving technology trial session

Q2: Do you think today's autonomous driving technology trial session introduced autonomous driving technology in a way that was easy to understand?

	Very easy to understand	Easy to understand	Difficult to understand	Total
Japan	30	16		46
Overseas	30	2		32
Total	60	18		78



- The response ratio for "Very easy to understand" was approximately 77% of the total, with approximately 65% of Japanese responses and approximately 94% of overseas responses, and there were no "Difficult to understand" responses, so it can be said that **overall it was an easy-to-understand introduction**.

[List of free opinions] (●: Japanese person; ○: Overseas person)

● There are some points that cannot be understood without using it myself. (But respondent answered “(2) Easy to understand")

○ I felt it was difficult when moving again at a new angle during automatic parking.

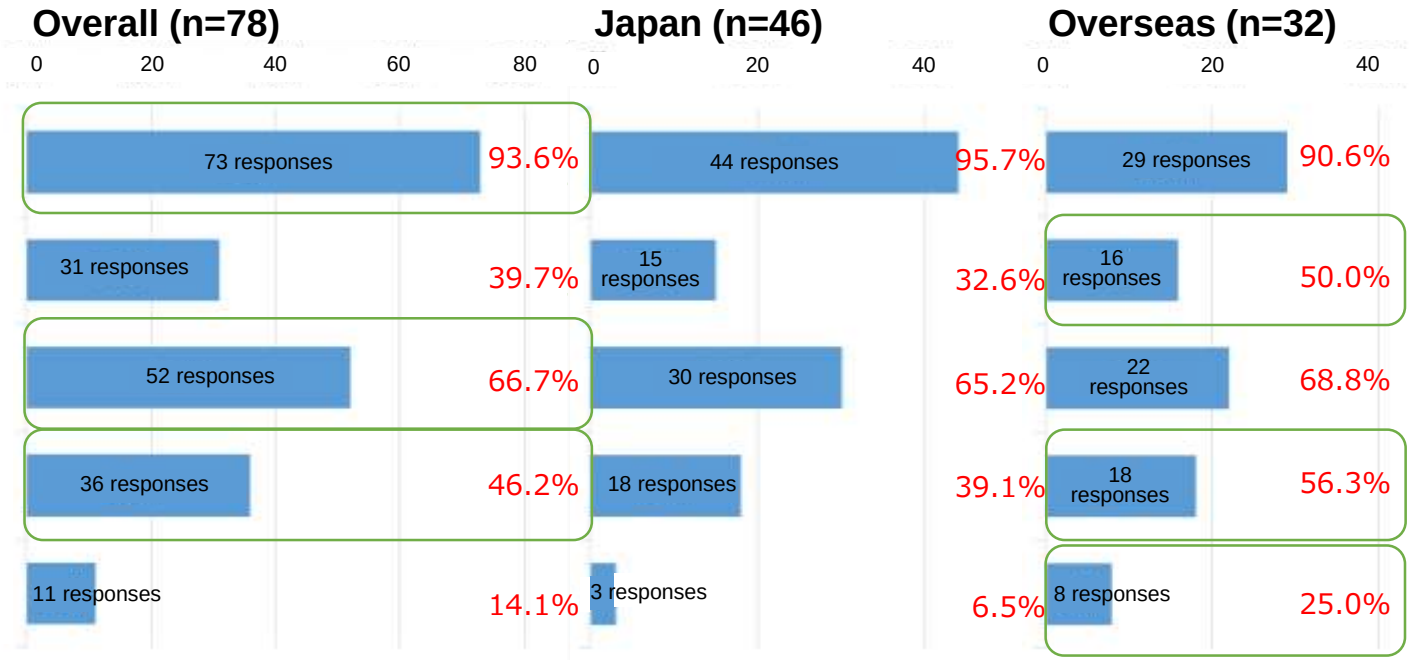
(3) Effective initiatives for popularization of autonomous driving technology

Q3: A variety of methods are being tried as initiatives for promoting citizen understanding of autonomous driving technology. From the choices below, please select up to 3 initiatives which you feel would be effective.

* Multiple answers (<3) possible.

Ratios in red are the ratio of the number of responses to the number of respondents (=n). (Same for following pages.)

(1) Citizen-participation-type demonstration trials (Demonstrations where citizens can ride autonomous driving vehicles)
(2) Performing technology demonstrations with a high degree of exposure to citizens. (Demonstrations where citizens cannot ride vehicles)
(3) Information distribution utilizing mass media such as television, etc.
(4) Information distribution via the internet (utilization of homepages, YouTube, SNS)
(5) Secure opportunities for periodic contact with citizens such as by distributing newsletters, etc.



- **"Citizen-participation-type demonstration trials" had the most responses at 73**, followed by "Information distribution utilizing mass media such as television, etc." (52 responses) and "Information distribution via the internet" (36 responses).
- When comparing the responses from Japan and overseas, although the overall trends were similar, for the ratios of initiative response numbers to respondents, there was less variations between initiatives for overseas respondents. Although it is a fact that "overseas" includes multiple countries, **there is also the possibility that initiatives by overseas countries are more diversified than in Japan.**

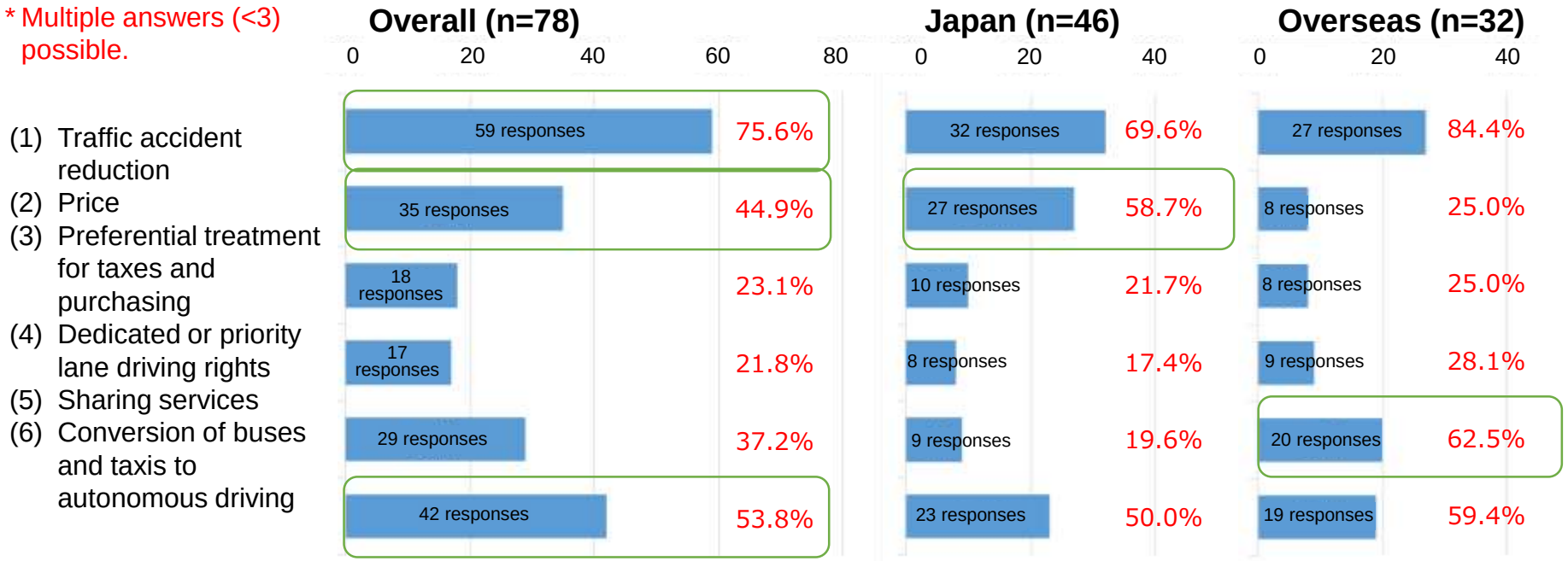
【List of free opinions】 (●: Japanese person; ○: Overseas person)

- ● Diffusion of autonomous driving vehicles (not an initiative)
- ● Foster acceptance by society through holding symposiums and discussing legal issues, etc.
- ● Build understanding and consensus by comparing autonomous driving technology and humans.
- ○ Trial riding events and information distribution via the media
- ○ Cultivate awareness among citizens
- ○ In order to improve ride comfort, it is necessary to impart individual experiences to the vehicle.
- ○ Training for drivers
- ○ Providing information to the government for revising laws.
- ○ Training for consumers
- ○ Academic publications

(4) Key elements for popularization of autonomous driving in society

Q4: What are the keys to the popularization of autonomous driving in society? From the following choices, select up to 3 which most closely match your own opinions.

* Multiple answers (<3) possible.



- **"Traffic accident reduction" had the most responses at 59**, followed by "Conversion of buses and taxis to autonomous driving" (42 responses), and "Price" (35 responses), and overall there were high expectations for improving traffic safety and converting public transportation to autonomous driving.
- Even when comparing Japan and overseas responses, there was a common trend of a high number of responses for "Traffic accident reduction" and "Conversion of buses and taxis to autonomous driving". However, **"Price" was in second place in Japan, but was in the lowest position overseas**. On the other hand, **although "Sharing services" was in fifth place in Japan, it was in second place overseas**. It is possible that in overseas countries, sharing services are more advanced and there is a higher consciousness of **renting instead of owning**.

[List of free opinions]
(●: Japanese person; ○: Overseas person)

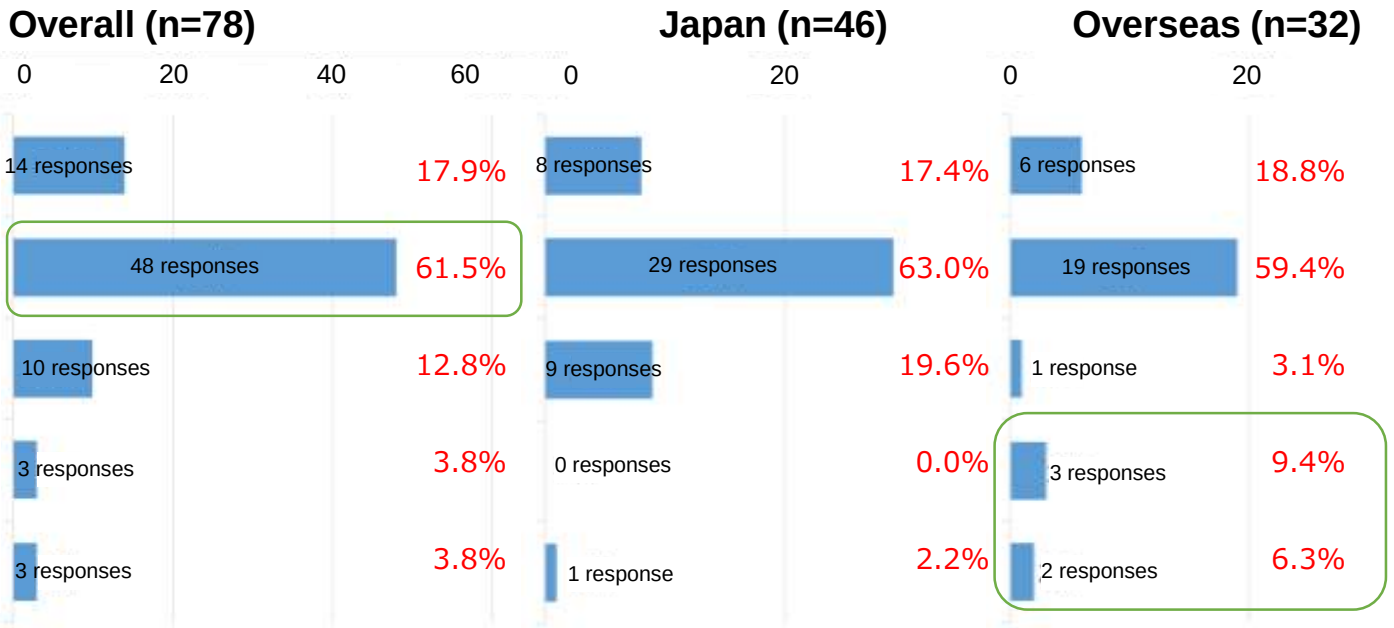
- ● Acceptance by society
- ● Public relations activities
- ● Fostering of correct understanding related to safety
- ● Regional public transportation services
- ● Preparation of rules such as laws, etc.
- ● Performing matching of needs and technologies
- ● It is necessary to try riding it yourself (as an experience to enable confirming that it is safe).
- ● Although it also relates to Q3, I think the key is acceptance by society. If it is not popularized step by step based on correct understanding, there is the risk that a single accident could block its progress.
- ○ Comfort
- ○ Consumer trust
- ○ Acceptance of safety
- ○ Secondary risks
- ○ Doing other things (reading or sleeping)
- ○ Concerns about safety and responsibility need to be resolved.

(5) Tolerance of the occurrence of traffic accidents for Level 4 and higher autonomous driving

Q5: If autonomous driving of <u>Level 4 or higher</u> is assumed, to what level do you think the probability of occurrence of traffic accidents needs to be improved over that of manual driving in order for there to be no problems even if such vehicles are sold?

* Although it is a single-response question, there were 3 cases of multiple responses and 3 cases without response, so all responses were used for analysis.

(1) Zero probability of accident occurrence
(2) It's fine if the accident probability is fairly low compared to current vehicles.
(3) It's fine if it's the same level as current vehicles.
(4) If the accident probability is slightly higher than current vehicles, it can't be helped.
(5) It's fine if the accident probability is higher than current vehicles.



- **<u>"It's fine if the accident probability is fairly low compared to current vehicles" had the most responses at 48</u>**, and "Zero probability of accident occurrence" was limited to only 14 responses. Although this shows that there would be understanding of a few traffic accidents, **<u>it is necessary to show that traffic accidents can be reduced from the current situation.</u>**
- Even when comparing Japan and overseas, there were common trends in "It's fine if the accident probability is fairly low compared to current vehicles" having the most responses, and "Zero probability of accident occurrence" being limited to only several responses.
- However, for overseas **<u>the response ratio for "If the accident probability is slightly higher than current vehicles, it can't be helped." or "It's fine if the accident probability is higher than current vehicles." was high</u>**, and it is suggested that **<u>there is a probability of overseas people having a higher tolerance toward the occurrence of traffic accidents than Japanese people.</u>** (However, since the number of responses is insufficient, for generalizations more data analysis is necessary.)

(6) Is cooperation for interviews, etc. possible?

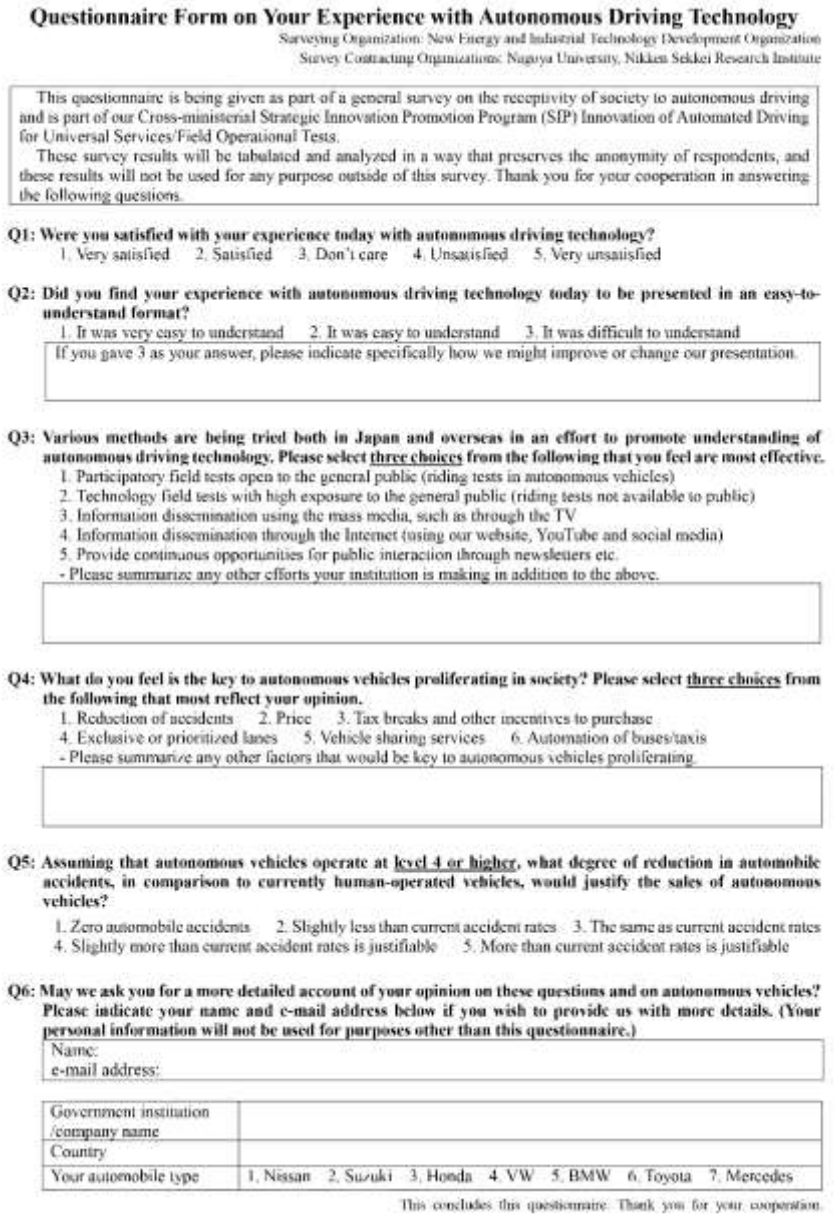
* Reference: Questionnaire survey sheet

Q6: Would you be willing to be contacted by email, etc. for further details related to the above answers or deeper questions regarding your thinking about autonomous driving? If this is acceptable, please fill in your name and email address below.

	Name filled in	Email address filled in	Responses
Japan	Yes	Yes	15
	Yes	No	3
	No	Yes	0
Overseas	Yes	Yes	23
	Yes	No	3
	No	Yes	3

US	6
Germany	5
France	4
Belgium	2
Finland	2
Canada	1
Netherlands	1
UK	1
Sweden	1
Overseas total	**23**

- The number of responses with both the name and email address filled in was **15 responses for Japan** and **23 responses for overseas**, for a **total of 38 responses**.



Questionnaire Form on Your Experience with Autonomous Driving Technology

Surveying Organization: New Energy and Industrial Technology Development Organization
Survey Contracting Organizations: Nagoya University, Nikken Sekkei Research Institute

This questionnaire is being given as part of a general survey on the receptivity of society to autonomous driving and is part of our Cross-ministerial Strategic Innovation Promotion Program (SIP) Innovation of Automated Driving for Universal Services/Field Operational Tests.
These survey results will be tabulated and analyzed in a way that preserves the anonymity of respondents, and these results will not be used for any purpose outside of this survey. Thank you for your cooperation in answering the following questions.

Q1: Were you satisfied with your experience today with autonomous driving technology?
1. Very satisfied 2. Satisfied 3. Don't care 4. Unsatisfied 5. Very unsatisfied

Q2: Did you find your experience with autonomous driving technology today to be presented in an easy-to-understand format?
1. It was very easy to understand 2. It was easy to understand 3. It was difficult to understand
If you gave 3 as your answer, please indicate specifically how we might improve or change our presentation.

Q3: Various methods are being tried both in Japan and overseas in an effort to promote understanding of autonomous driving technology. Please select three choices from the following that you feel are most effective.
1. Participatory field tests open to the general public (riding tests in autonomous vehicles)
2. Technology field tests with high exposure to the general public (riding tests not available to public)
3. Information dissemination using the mass media, such as through the TV
4. Information dissemination through the Internet (using our website, YouTube and social media)
5. Provide continuous opportunities for public interaction through newsletters etc.
- Please summarize any other efforts your institution is making in addition to the above.

Q4: What do you feel is the key to autonomous vehicles proliferating in society? Please select three choices from the following that most reflect your opinion.
1. Reduction of accidents 2. Price 3. Tax breaks and other incentives to purchase
4. Exclusive or prioritized lanes 5. Vehicle sharing services 6. Automation of buses/taxis
- Please summarize any other factors that would be key to autonomous vehicles proliferating

Q5: Assuming that autonomous vehicles operate at level 4 or higher, what degree of reduction in automobile accidents, in comparison to currently human-operated vehicles, would justify the sales of autonomous vehicles?
1. Zero automobile accidents 2. Slightly less than current accident rates 3. The same as current accident rates
4. Slightly more than current accident rates is justifiable 5. More than current accident rates is justifiable

Q6: May we ask you for a more detailed account of your opinion on these questions and on autonomous vehicles? Please indicate your name and e-mail address below if you wish to provide us with more details. (Your personal information will not be used for purposes other than this questionnaire.)
Name:
e-mail address:

Government institution /company name	
Country	
Your automobile type	1. Nissan 2. Suzuki 3. Honda 4. VW 5. BMW 6. Toyota 7. Mercedes

This concludes this questionnaire. Thank you for your cooperation.

4.3 Publicity plan formulation and content creation

Toyota Tsusho Corporation

Publicity promotion video

Implementation overview

Item	Contents
Objective	Foster social acceptability of automated driving systems
Implementation period	September to November 2017
Contents	Provide an overview of the five priority issues needed to accelerate understanding and promotion of automated driving systems, using footage of large-scale field operational test status with 3D computer graphics and motion graphics
Results	Shown at the SIP-adus Workshop 2017 exhibition booth

Content

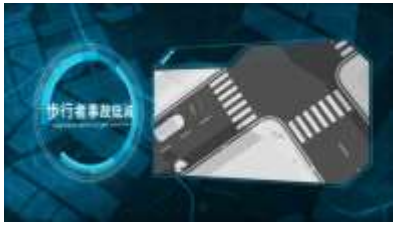
Interview with Program Director Seigo Kuzumaki

Large-scale field operational test

Dynamic map

HMI

Information security



Pedestrian accident reduction

Next generation urban transport

4.4.Survey and evaluation of measures to enhance social acceptability of Avs

Nagoya University
NIKKEN SEKKEI Research Institute

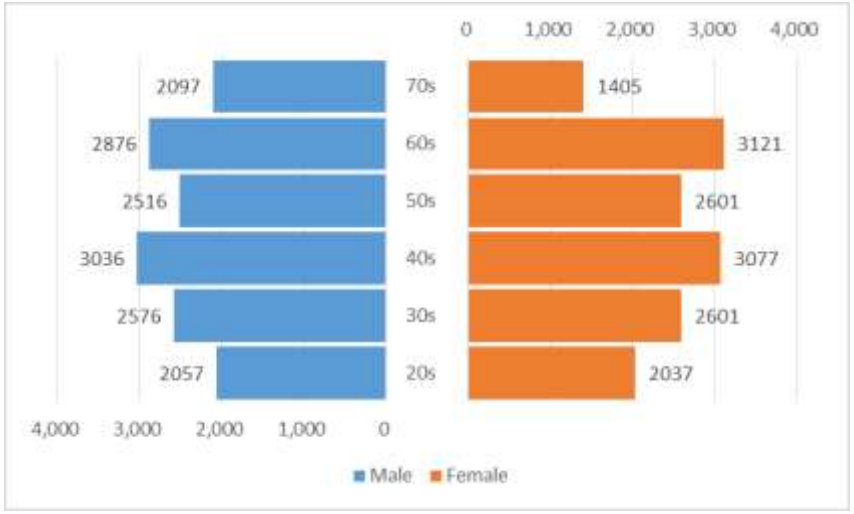
Pre-survey

3 Questions. 5 scales ranging from “Very Likely ” to “Very Unlikely”

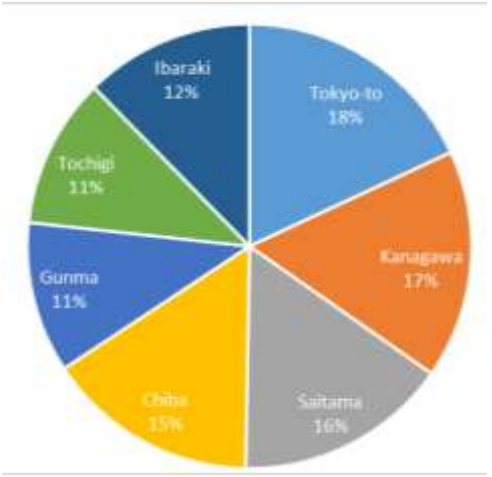
1. Do you accept a society in which AVs are driven?	Social Acceptability
2. Would you like to buy an AV?	Intention to Buy
3. Would you like to use vehicles such as robot taxis, buses, and shared cars?	Intention to Use

# of respondents: 30,000

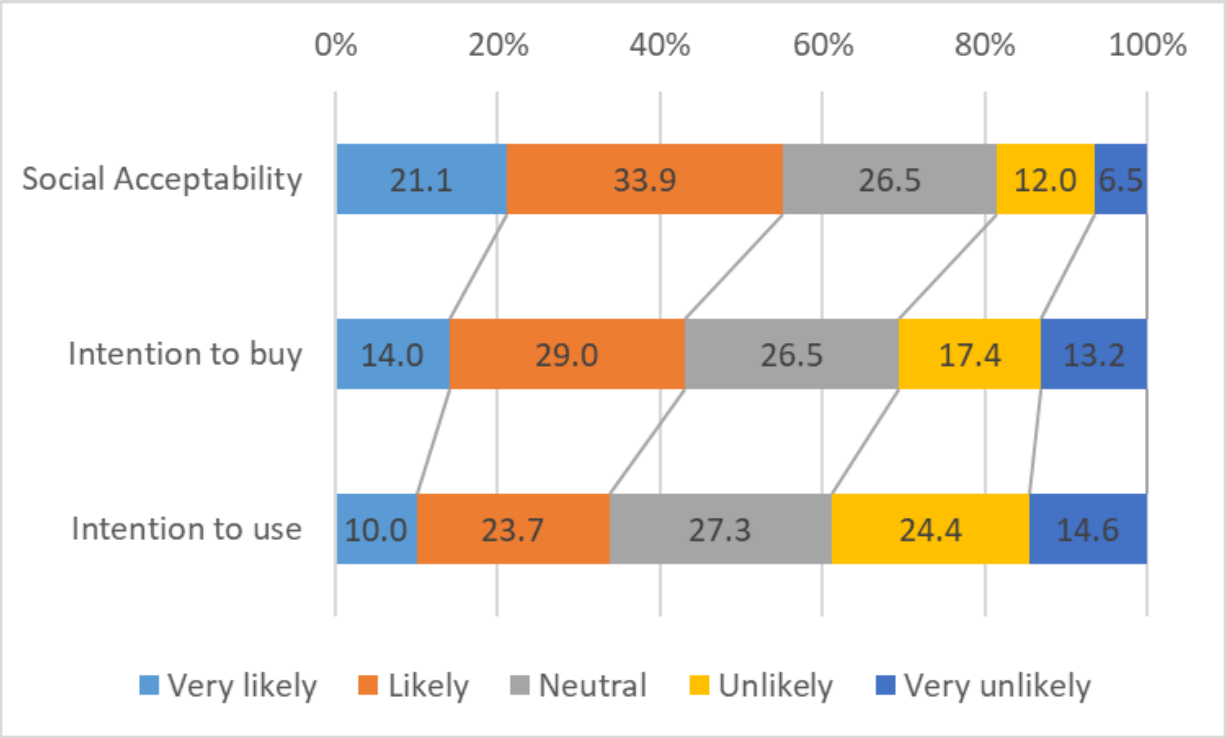
Gender and Age



Residential Area



Pre-survey



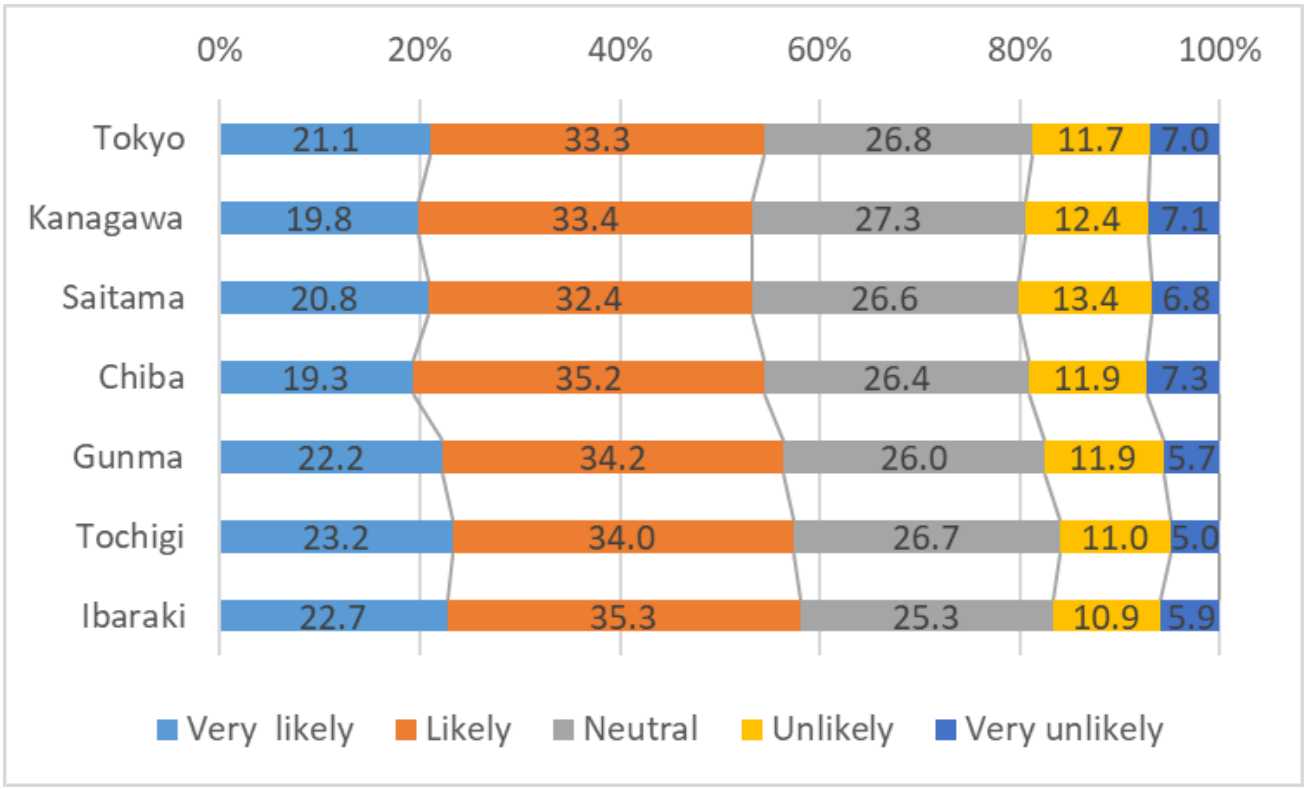
- Half of the respondents are likely to accept a society where AVs are driven.
- Less than 20% are likely to oppose a society with AVs.
- 43% are likely to buy an AV.

→ The level of AVs imagined by the respondents is not clear.

- Only 33.7% want to use AVs.

→ Supposing that the imagined AVs are Level 5, intention to use AVs is lower than that to buy.

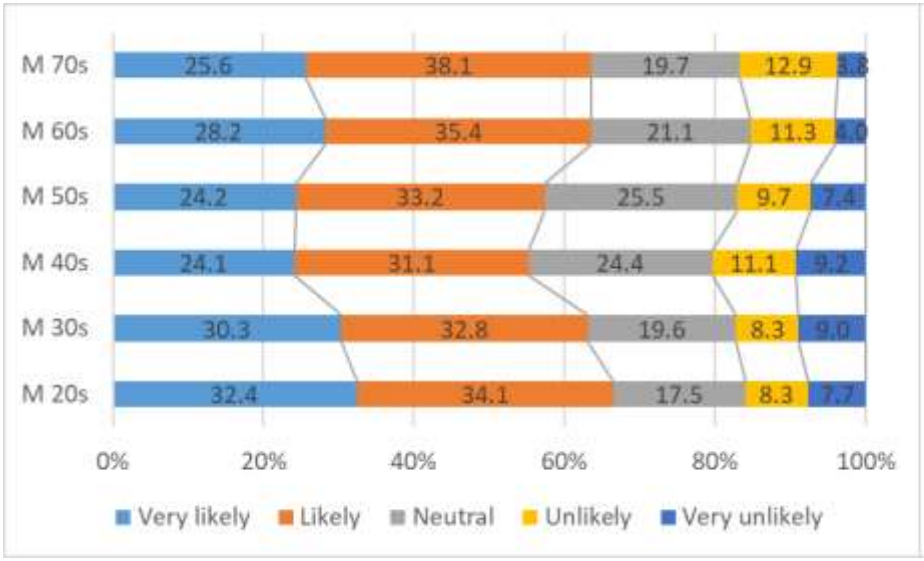
Pre-survey – Social Acceptability and Residential Area

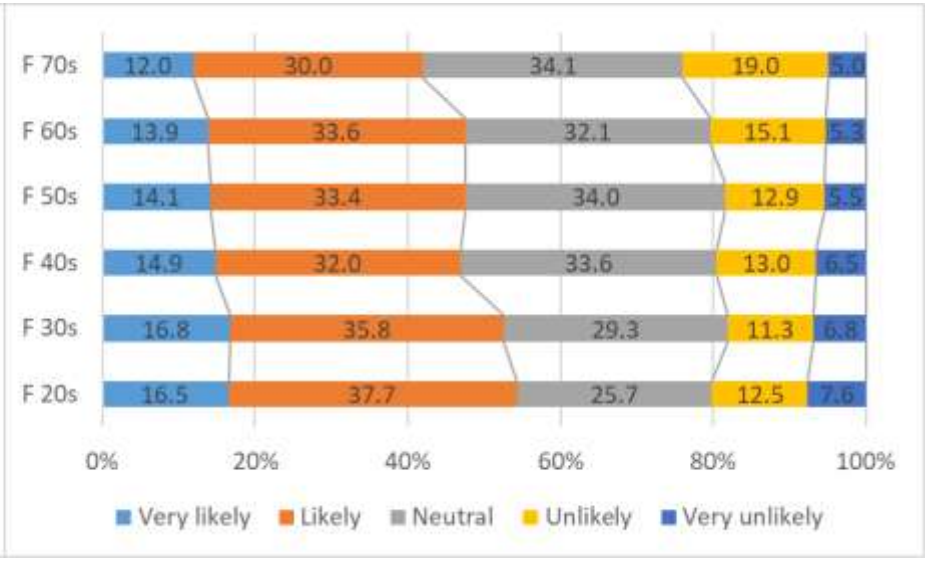


- Residents in Gunma, Tochigi, and Ibaraki Pref. are more likely to accept AVs than those in Kanagawa and Saitama Pref.

→ Residents in areas with less public transportation and/or those who usually use cars have higher acceptance rates.

Pre-survey – Social Acceptability, Gender, and Age





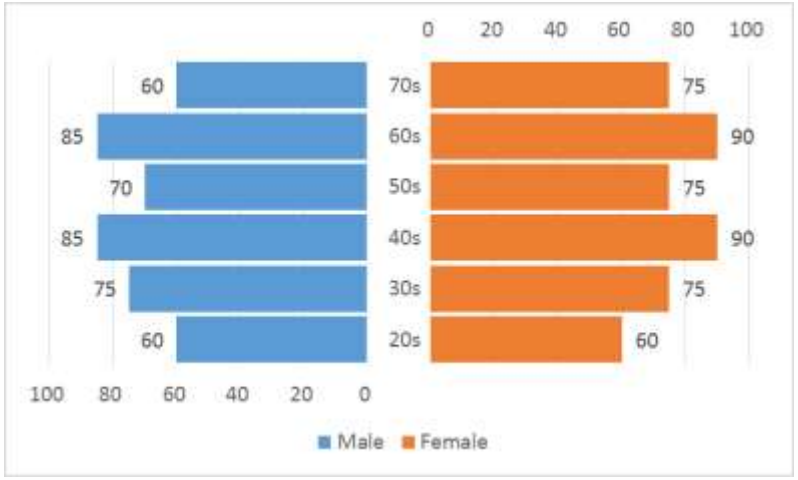
- Males have a higher acceptance rate than females.
- Respondents in their 20s accept a society with AVs the most. For female respondents, acceptance rates lower as age increases.
  →Younger respondents are usually easily able to accept new technologies.
- Males in their 40s and 50s have lower acceptance rates. Males who are older than 60 have higher acceptance rates.
  The following are potential reasons for these findings:
  →Japanese males in their 40s and 50s have a special attachment to owing and driving a car.
  →Males in their 60s and 70s think that they would not drive a car because of health issues caused by aging.

Web-based Survey

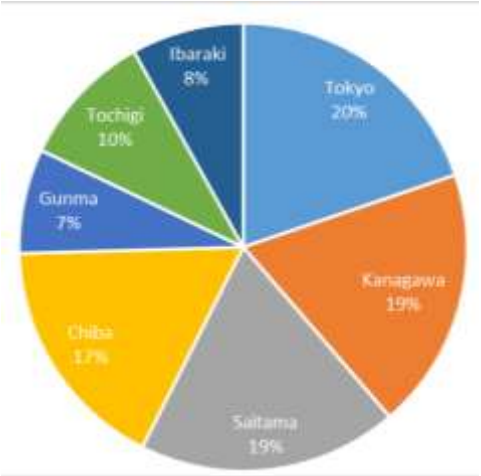
of respondents: 900

The same number of responses were collected from each level of social acceptability from the pre-survey

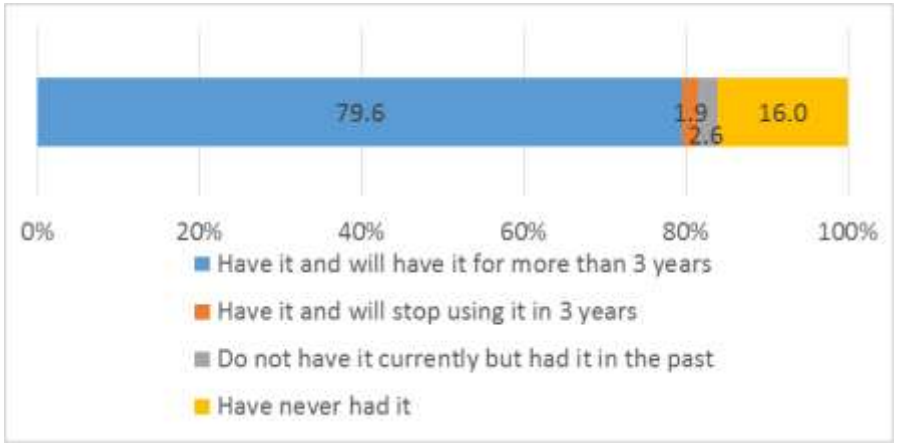
Gender and Age



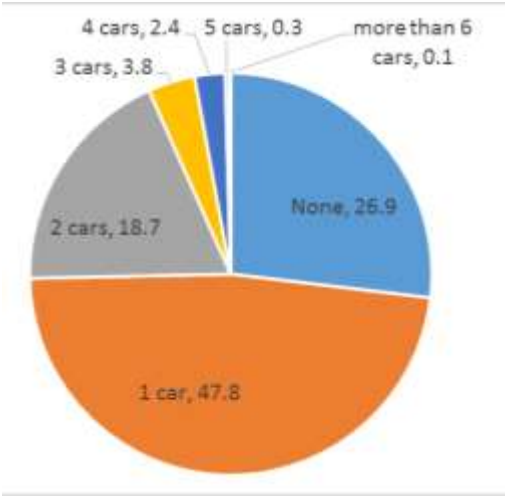
Residential Area



Driver's License

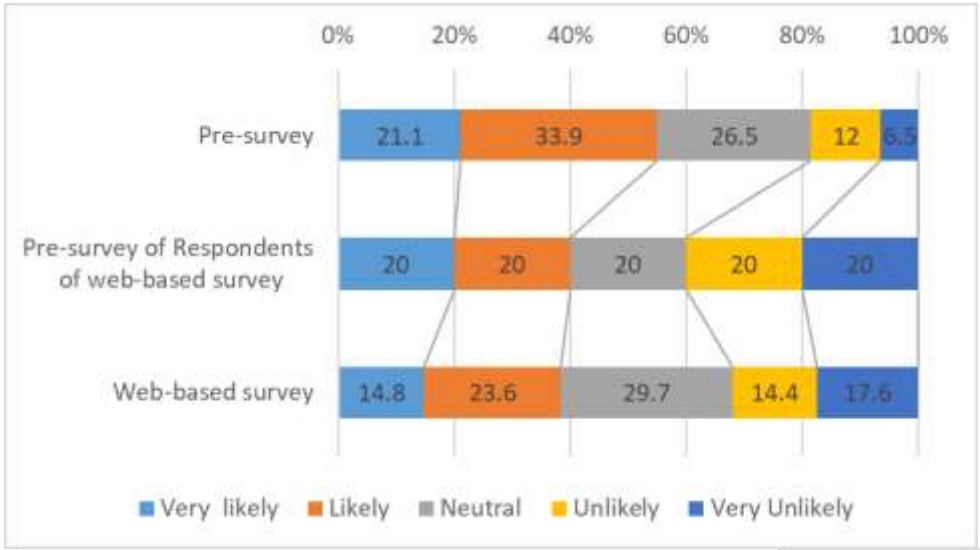


# of vehicles owned by a household



Web-based Survey – Social Acceptability of AVs

Social acceptability(SA) of AVs was asked in not only the pre-survey, but also in the web based survey.

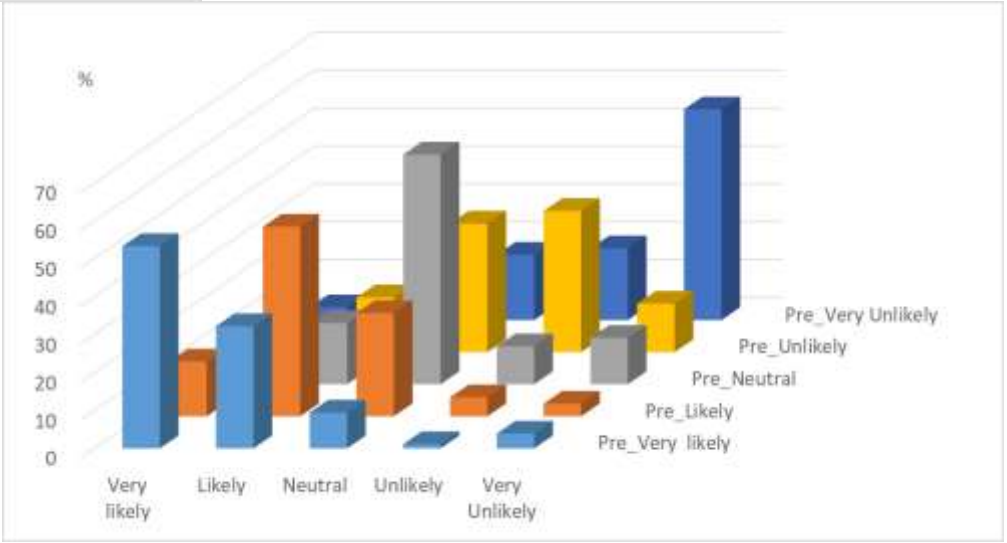


・“Neutral” is 10% higher in the web based survey.

・Almost half of respondents changed their choice.

→SA of AVs is not fixed yet.

→This means that more information or experience could raise SA of AVs.



Web-based Survey - Knowledge of AVs

<The information below was provided in the survey>

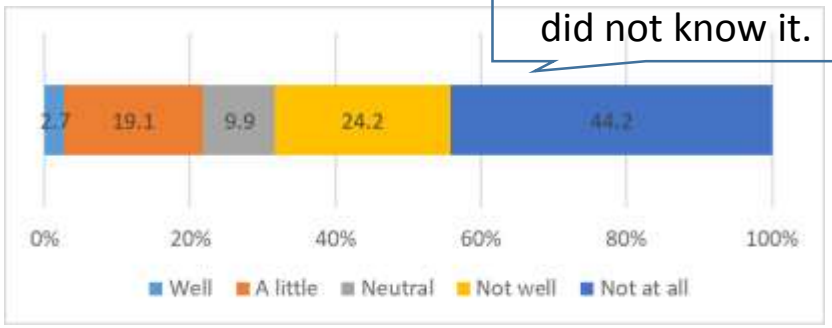
Autonomous Vehicles (AVs) are automated vehicles that do not require human drivers. Nowadays, many companies, such as IT companies and car makers, worldwide compete with each other to develop AVs. The Japanese government defines the level of AV technologies as follows.

Level	Driver	Outline	Monitoring and responsibility for safety
Level 0 No Automation	Necessary	Full-time performance by the human driver	Driver
Level 1 Driver Assistance	Necessary	Driving mode-specific execution of a driver assistance system of either steering or acceleration/deceleration (e.g. lane keep system, automatic breaking system etc.)	Driver
Level 2	Necessary	Driving mode-specific execution by driver assistance	Driver

After providing information on AVs, the following two questions were asked.

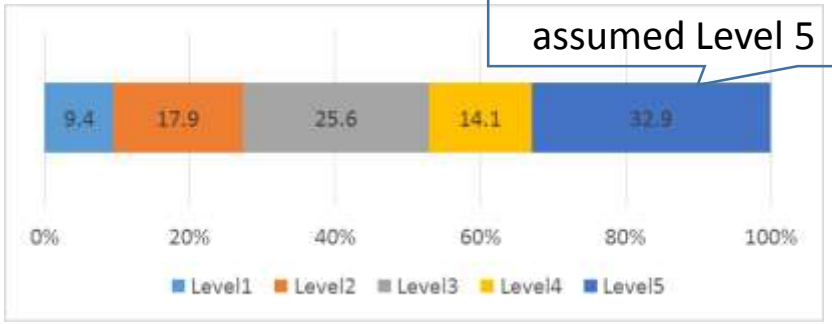
Did you know about the levels of AV technologies?

More than 40% did not know it.



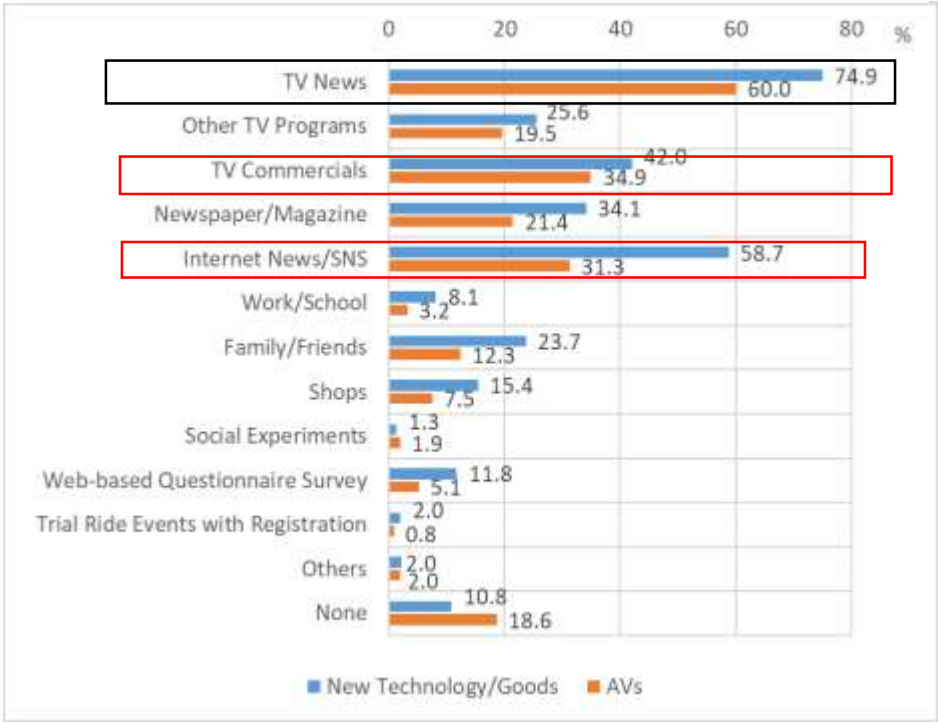
Which level were you assuming when you answered the previous questions?

More than 30% assumed Level 5

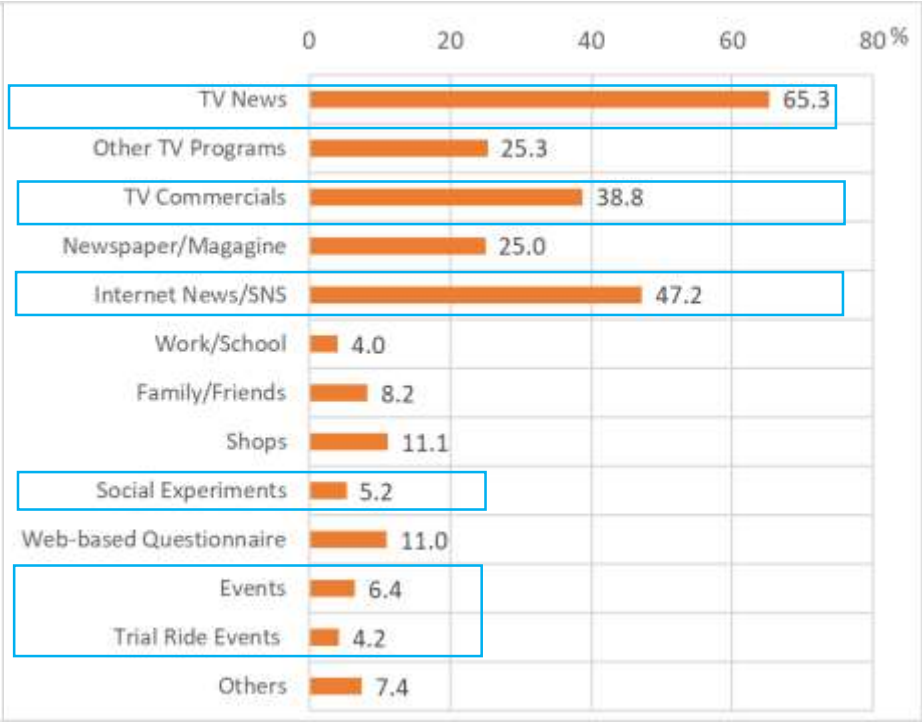


Web-based Survey – How to Get Information on New Goods

Where to obtain information

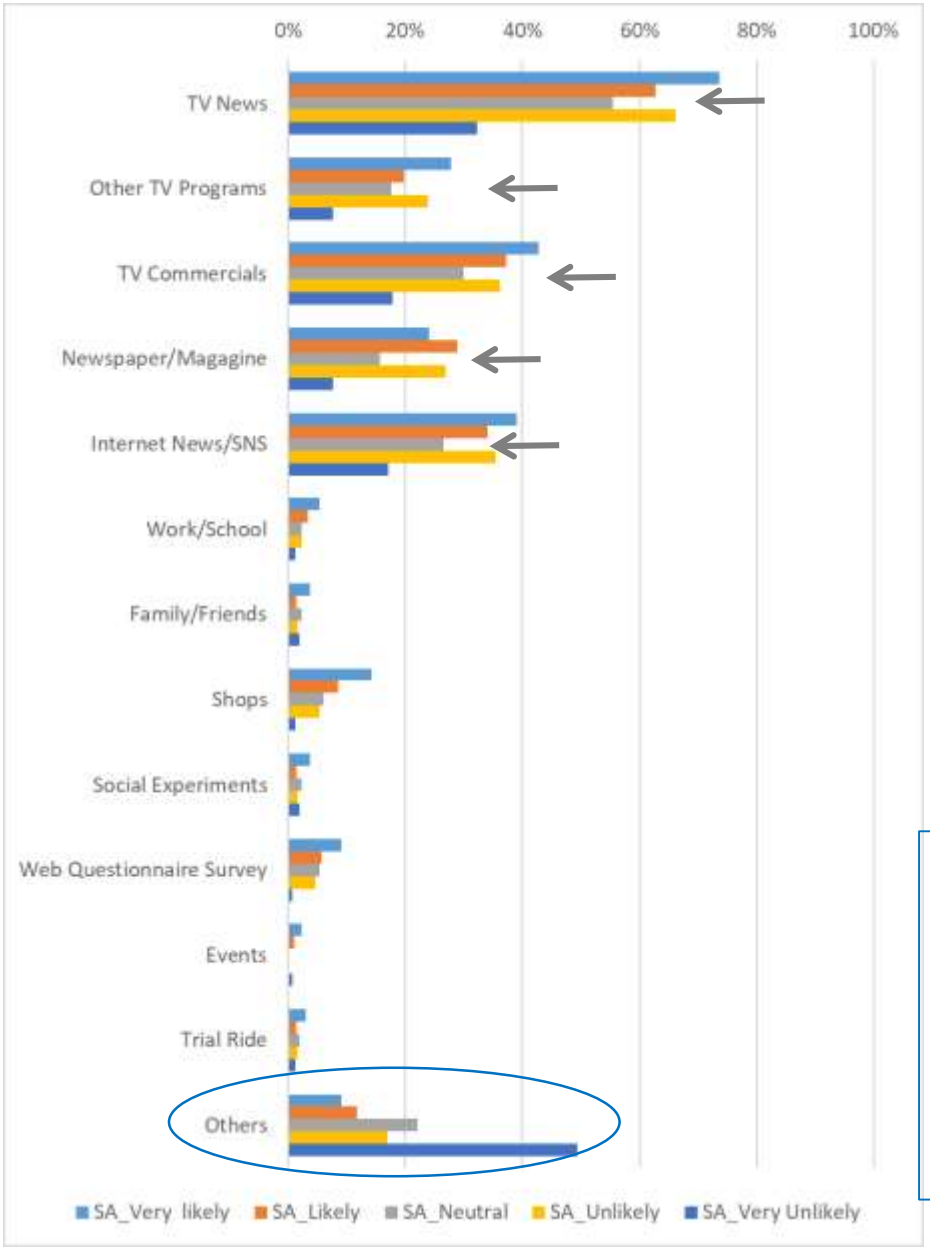


Where would you get info on AVs in the future?



- Information on new technology/goods and AVs comes mostly from TV news.
- Information on new technology/goods spreads secondly via internet news/SNS and thirdly via TV commercials.
- As for information on AVs, TV commercials follow TV news. Internet news/SNS is less used in comparison to other sources of information on new technology/goods.
- More effective tools to spread info on AVs could be events, social experiments, or trial rides with news value.

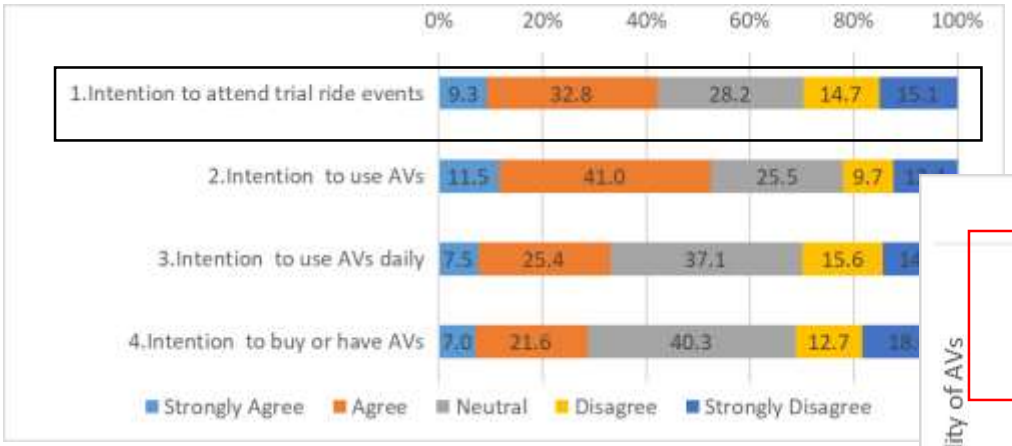
Web-based Survey – How to Get Information on New AVs



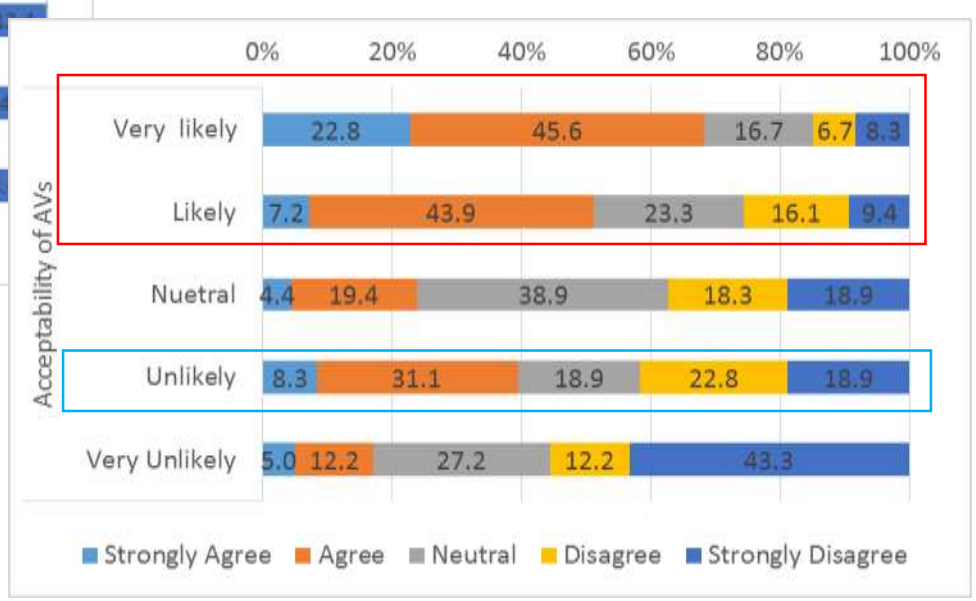
- Respondents answering “Neutral” on Social Acceptability(SA) have less information on AVs. This might be a reason why they chose “neutral”.

- Respondents with the lowest acceptance of AVs do not have much information.
- They don’t have much information on other new goods. They would be in the “laggard” technology adoption group.

Web-based Survey – Willingness to Have a Trial Ride

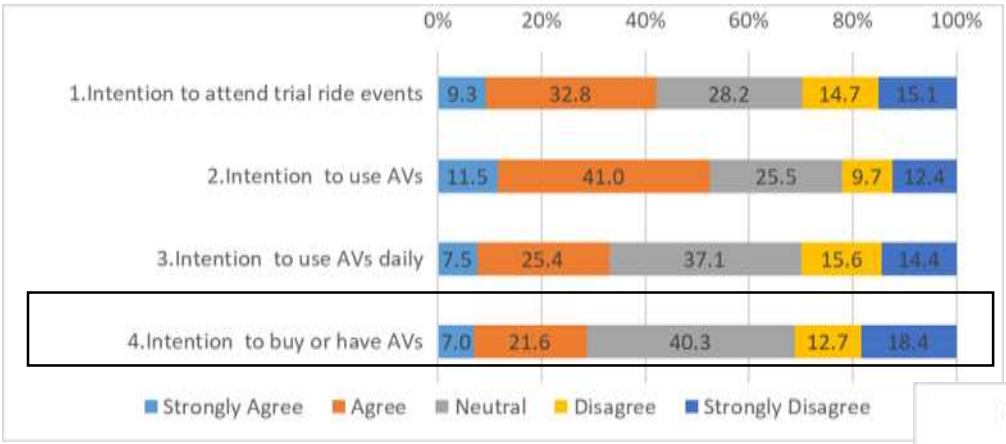


Willingness to have a trial ride and acceptability of AVs in pre-survey



- 40% of the respondents are likely to have a trial ride.
- People with higher acceptability in the pre-survey have more intention.
- Almost 40% of respondents answering “Unlikely to accept AVs” also want to have a trial ride!

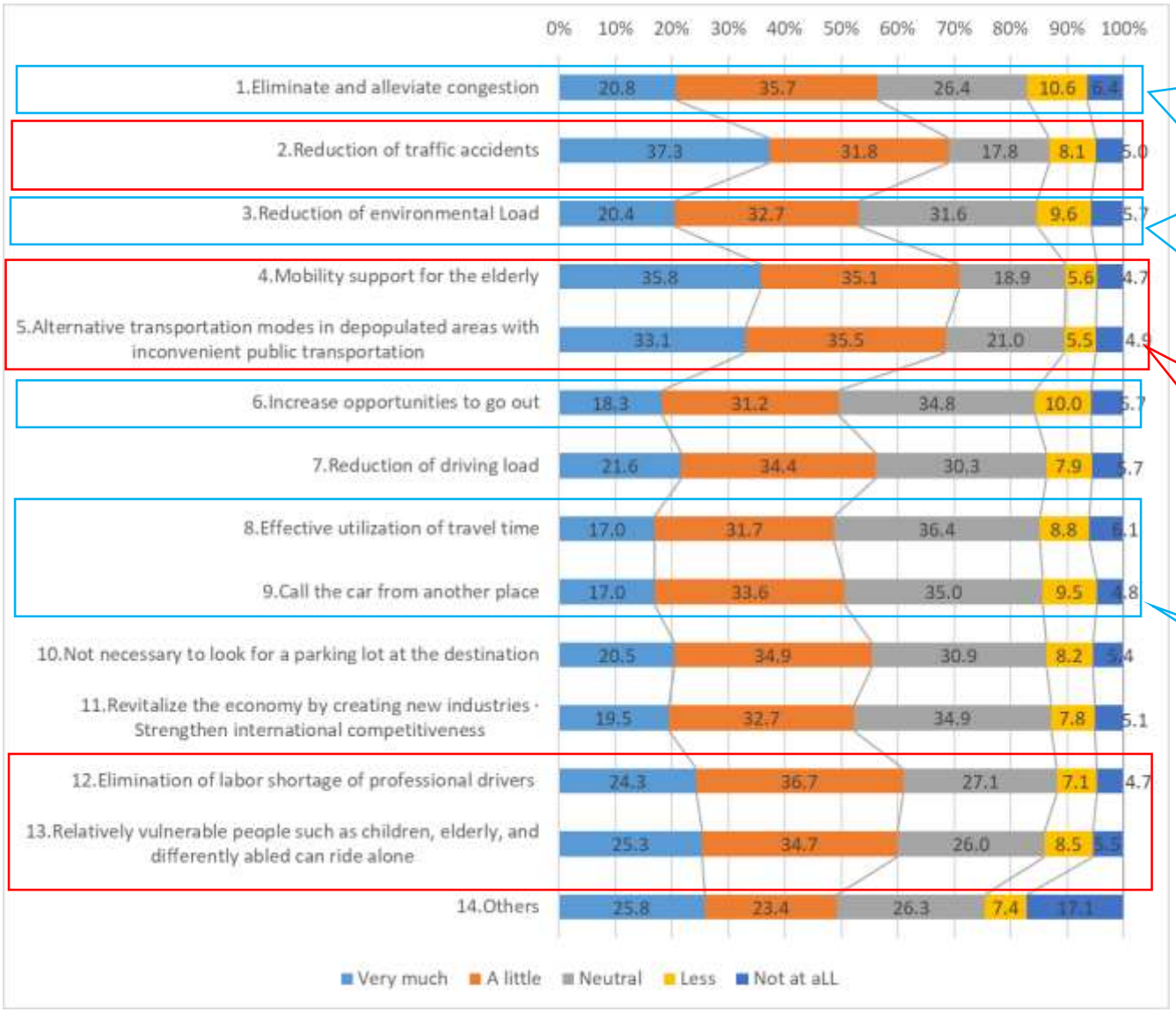
Web-based Survey - Intention to Buy or Have AVs



Willingness to buy or have AVs and imagined technology level of AVs by respondents

- 30% of the respondents would like to buy and own AVs.
- 37% of Respondents who imagined AVs of Level 4 want to buy and own them.
  →Respondents imagining Level 2 or 3 AVs are less willing to buy.
- 45% of respondents imagining Level 5 AVs do not want to buy AVs.

Web-based Survey - Expectation from AVs

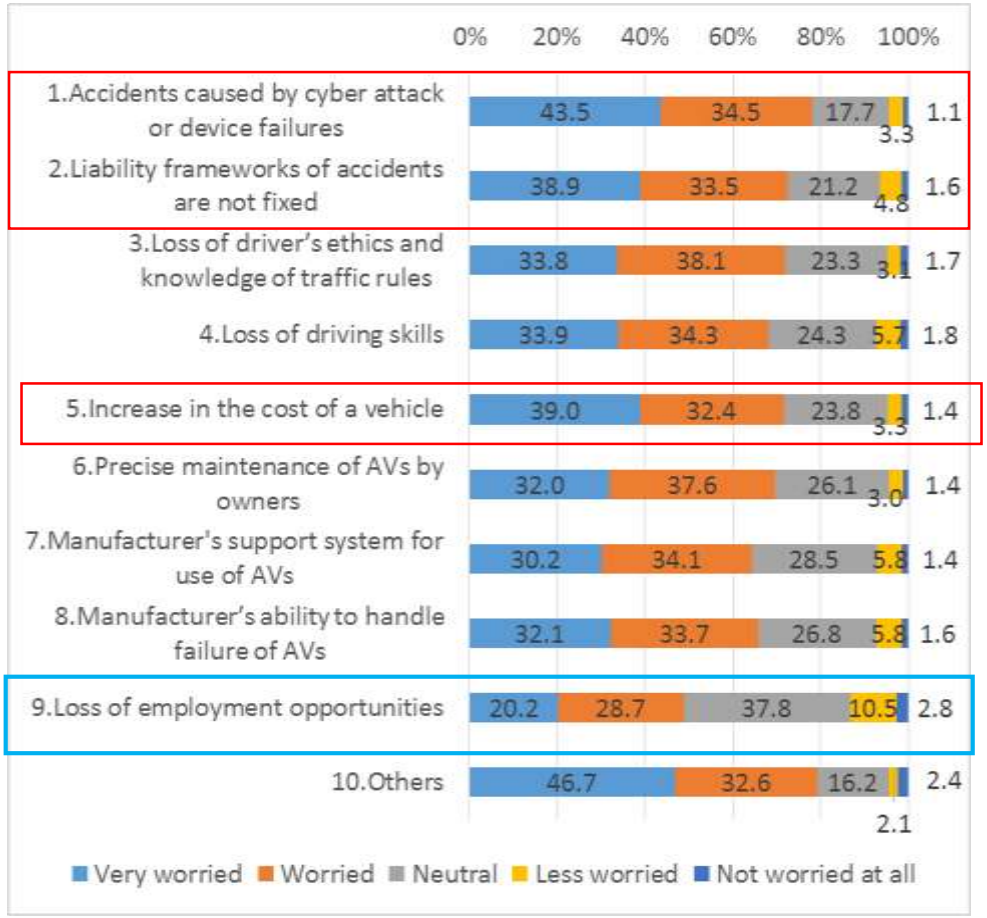


- These items are less expected.
- The relationship between expectations and AVs is not clear.

- Benefits to society are expected to be higher than those to individuals.

- Benefits to themselves are less expected.
- It is possible that they could not imagine how AVs could change their lives.

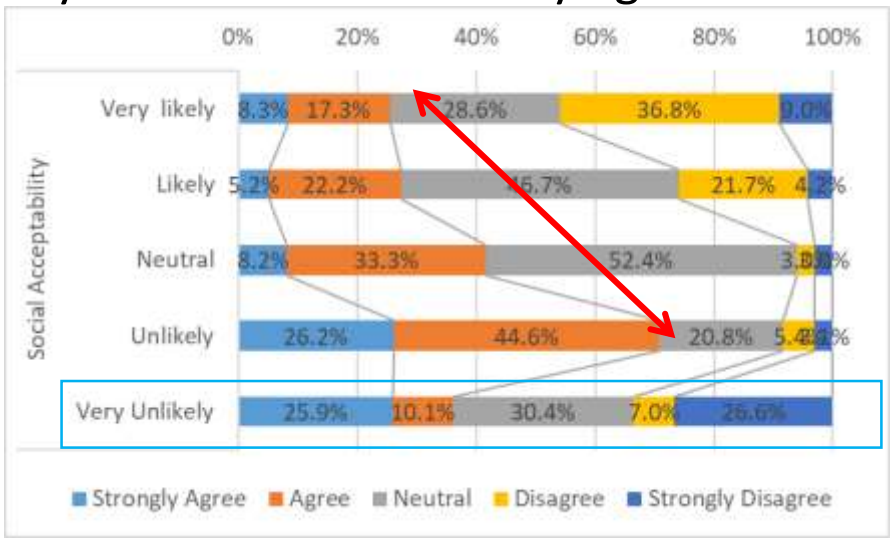
Web-based Survey - Anxiety About AVs



- Over 60% of respondents are worried about all items except "9.Loss of employment opportunities".
- Particularly, "1. Accidents caused by cyber attack or device failures", "2. Liability frameworks of accidents are not fixed", and "5. Increase in the cost of a vehicle" are the items that most people are worried about.

Web-based Survey- Impression of AVs

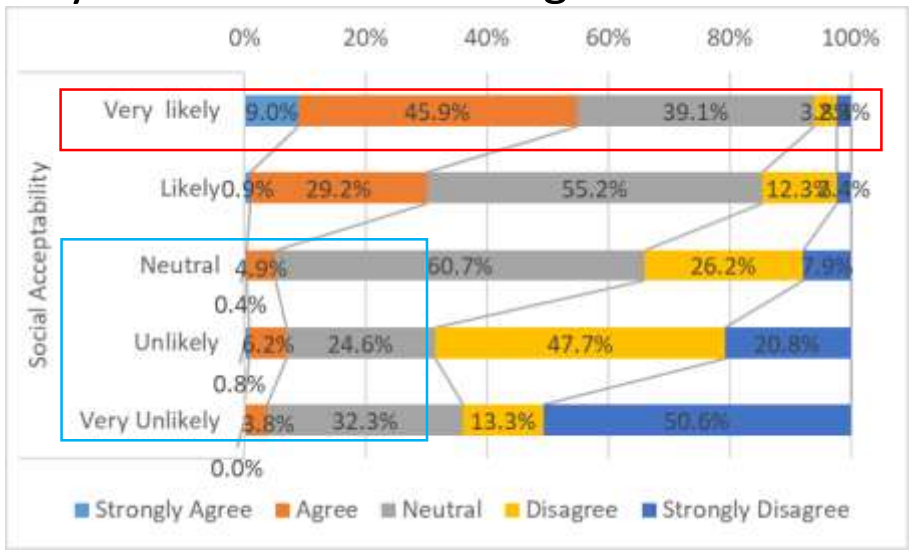
Do you think AVs are terrifying?



・People with lower SA ratings of AVs think AVs are terrifying more than those with higher SA.

・Surprisingly, people with the lowest SA ratings on AVs are less terrified of AVs.

Do you think AV technologies are reliable?



・More than half of people with the highest SA rating on AVs trust AV technologies.

・Most of people with lower SA of AVs think AV technologies are not reliable.

Summary of Results from the Web Survey

Social Acceptability of AVs

- People don't know much about AVs because there are less information in TV news, newspapers, TV shows, etc.
- Therefore, many of them cannot decide if AVs are acceptable or not.
- Some people change their acceptability each time they are asked.

→More information or trial rides could raise their acceptability.

Impressions of AVs

- The lower SA of AVs people report, the more terrifying AVs are believed to be.
- The lower SA of AVs people report, the lower the reliability of AVs is perceived.

→To raise the SA of AVs, information to be decrease anxiety is needed.

Expectations from AVs

- AVs are expected to solve social problems, but are not expected to bring merits to individuals.

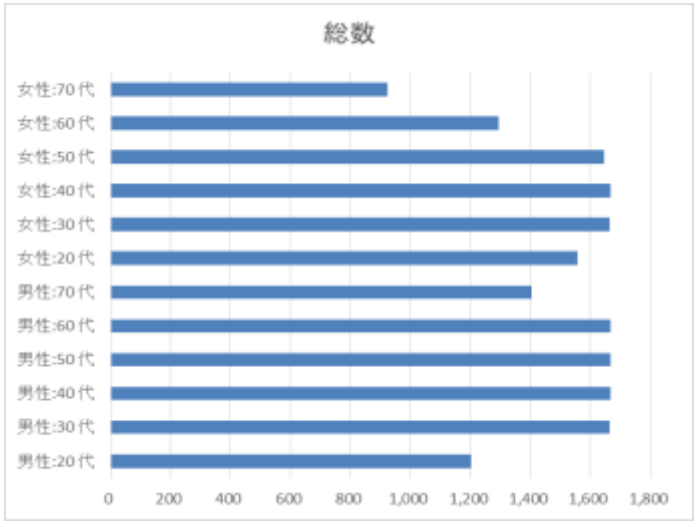
→Intention to buy or have AVs can be increased if people realize AVs are convenient and bring merits from them.

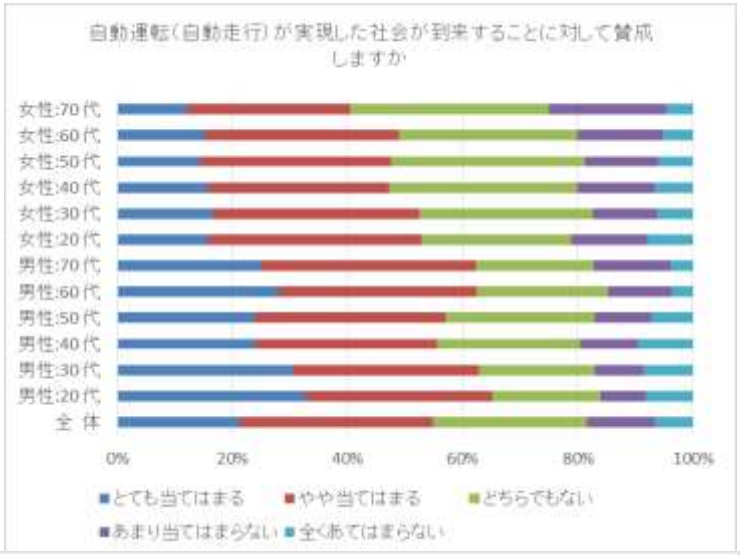
5. Study of social acceptability through the implementation of automated driving system/large-scale field operational testing

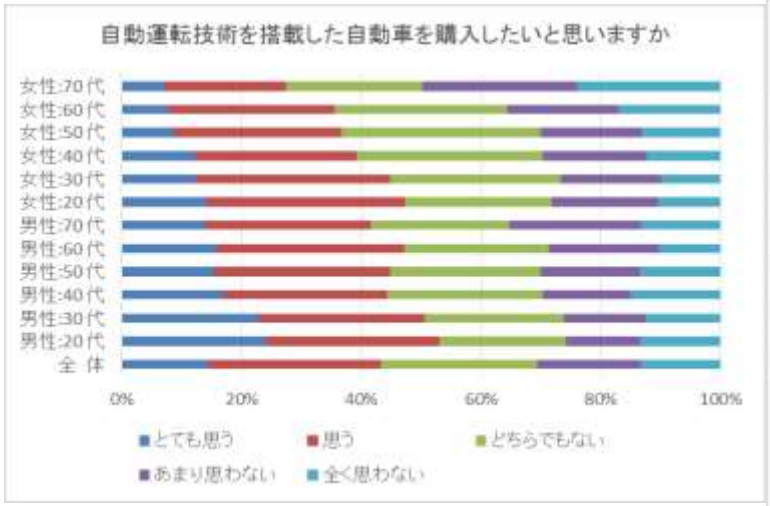
Nagoya University
NIKKEN SEKKEI Research Institute

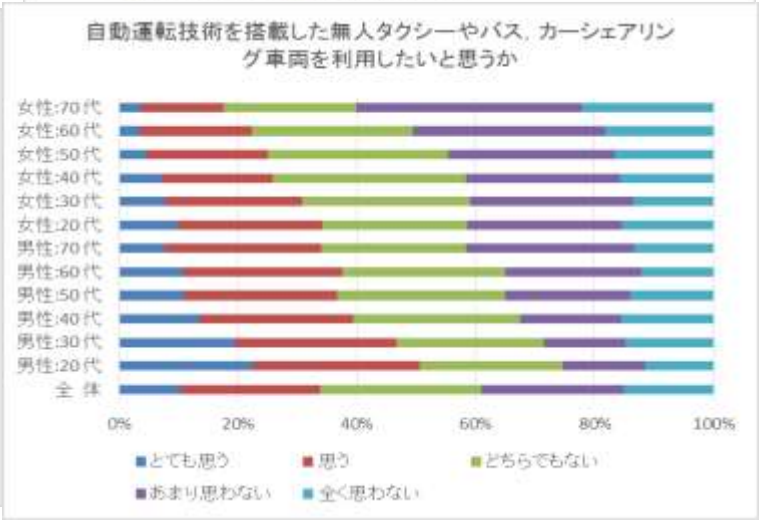
アンケート調査結果

【スクリーニング調査】 データ差し替え予定/コメント等追加予定









アンケート調査結果

【本調査】調査中

Organization regarding information about Autonomous Driving

We reviewed the posting data of Twitter and blog post analysis, confirming the media exposure situation for information transmitted through large-scale Field.

According to the data obtained from the survey, although there was a reaction to the article on "SIP automatic traveling system", no posting through the implementation of this large-scale Field Operational Test was seen.

Organization regarding information about other Large-Scale Field Operational Test

By referring to the article from the newspaper article analysis, 34 items were obtained as a result of extracting items related to "implementation of Large-Scale Field Operational Test ".

Many of them focused on fact reports on the implementation of Large-Scale Field Operational Test, and no articles that served as indicators to consider social acceptability, such as evaluation through implementation of of Large-Scale Field Operational Test, were not found.