公益財団法人 国際交通安全学会
International Association of Traffic and Safety Sciences

April 10, 2026
Keidanren Kaikan

[Inter-Agency & Multi-Stakeholder Collaboration]
Project 2509C: FY2025 Annual Research Progress Report

Research on Accelerating the Dissemination of Japanese-style Roundabouts

PL: Hideki Nakamura (Nagoya University)




509C Project Members (As of March 2026)

IATSS Members

- Project Leader (PL) Hideki Nakamura (Professor, Graduate School of Environmental Studies, Nagoya University)
- Miho Iryo (Professor, Graduate School of Engineering, Nagoya University)
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- Sachiko Ohashi (Director, Road Traffic Safety Division, National Institute for Land and Infrastructure Management (NILIM))
- Hiroshi Okushiro (Senior Lead Engineer, Tohoku Branch, Central Consultant Inc.)
- Nan Kang (Associate Professor, School of Transportation Engineering, Nanjing Tech University)
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- Kenichi Takahashi (General Manager, Road Dept. I, Mitsui Joint Consultants Consultants Co., Ltd.)
- Yumi Takemoto (Senior Senior Researcher, Japan Institute of Country-ology and Engineering (JICE))
- Anrei Tatsuda (Deputy Director, Planning Division, Road Bureau, MLIT)
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Research Collaborators

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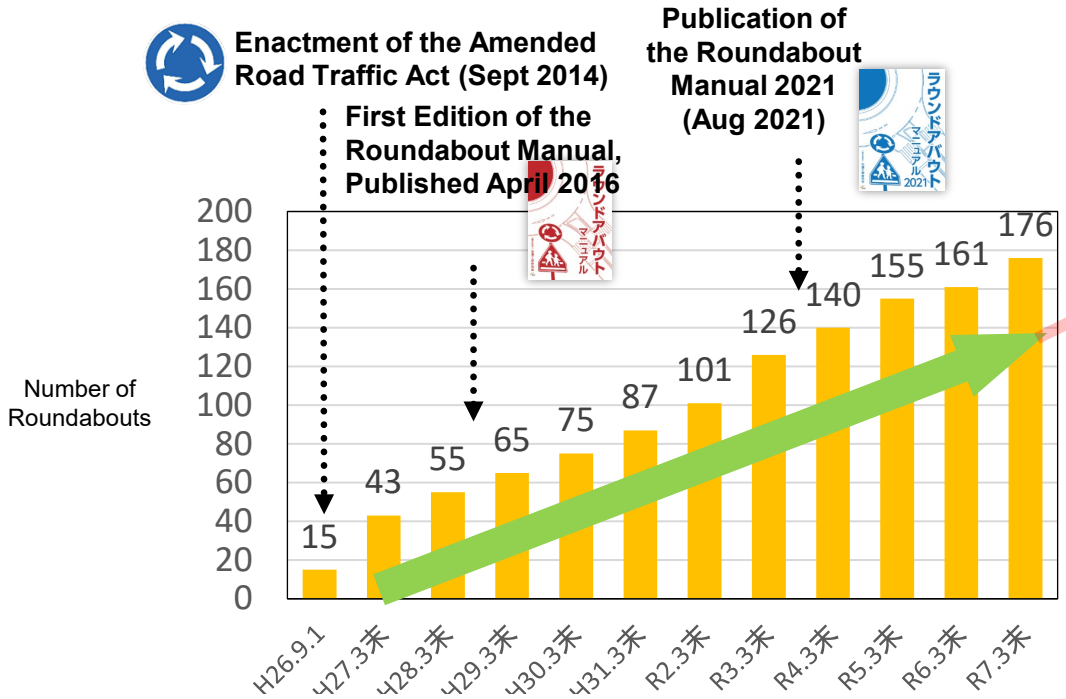
- Ryosuke Takahashi (Manager, Road Maintenance Division, Greenification & Public Works Bureau, City of Nagoya)
- Makoto Kani (Deputy Director, Road Maintenance Division, Greenification & Public Works Bureau, City of Nagoya)
- Takatomo Nakayama (Manager, Engineering Dept., Road Planning Co., Ltd.)
- Shin Tada (Researcher, Japan Institute of Country-ology and Engineering (JICE))
- Michiko Matsumura (Representative, Town Creator / Advisor to IATSS)

Background and Problem Awareness: The Need for Accelerated Deployment

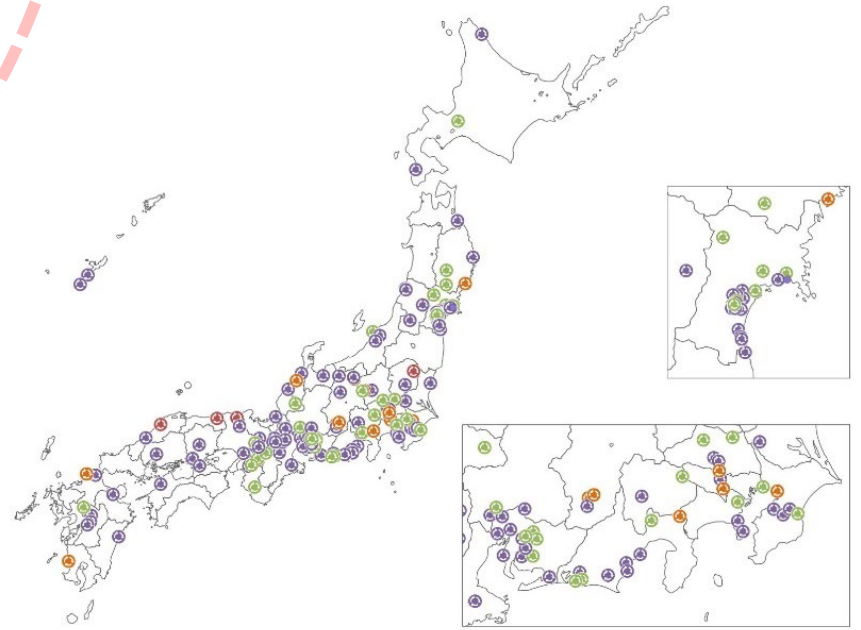
- In 2009, IATSS launched a dedicated project on Roundabouts (RAB), initiating continuous research and investigation
  →Through feasibility studies, social experiments, and social implementation, the project has moved toward full-scale deployment following legislative amendments

- Despite numerous benefits, the number of roundabouts in Japan remains at approximately 170 locations
  - Compared to other developed nations, the level of adoption in Japan is still in its infancy and cannot yet be considered a familiar roadside feature for the general public
  - Adoption is increasing exponentially in other countries (eg, the United States has reached approximately 10,000 locations over 20 years; South Korea has installed over 1,500 locations since 2010)

- It is essential to promote the deployment of roundabouts that are tailored to the Japanese context while maintaining an international perspective



Compiled from National Police Agency data (Status of Roundabout Implementation)

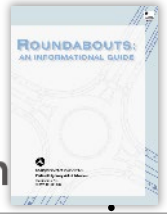


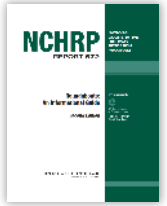
Source: IATSS Project 2220, Roundabout Database

Current Status in the United States

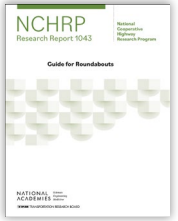
- Implementation began at the end of the 20th century, and the total number has now surpassed 10,000 locations
  - Design guides have been updated regularly, and various research projects have been conducted continuously throughout this period

Roundabouts:
An informational guide (2000)

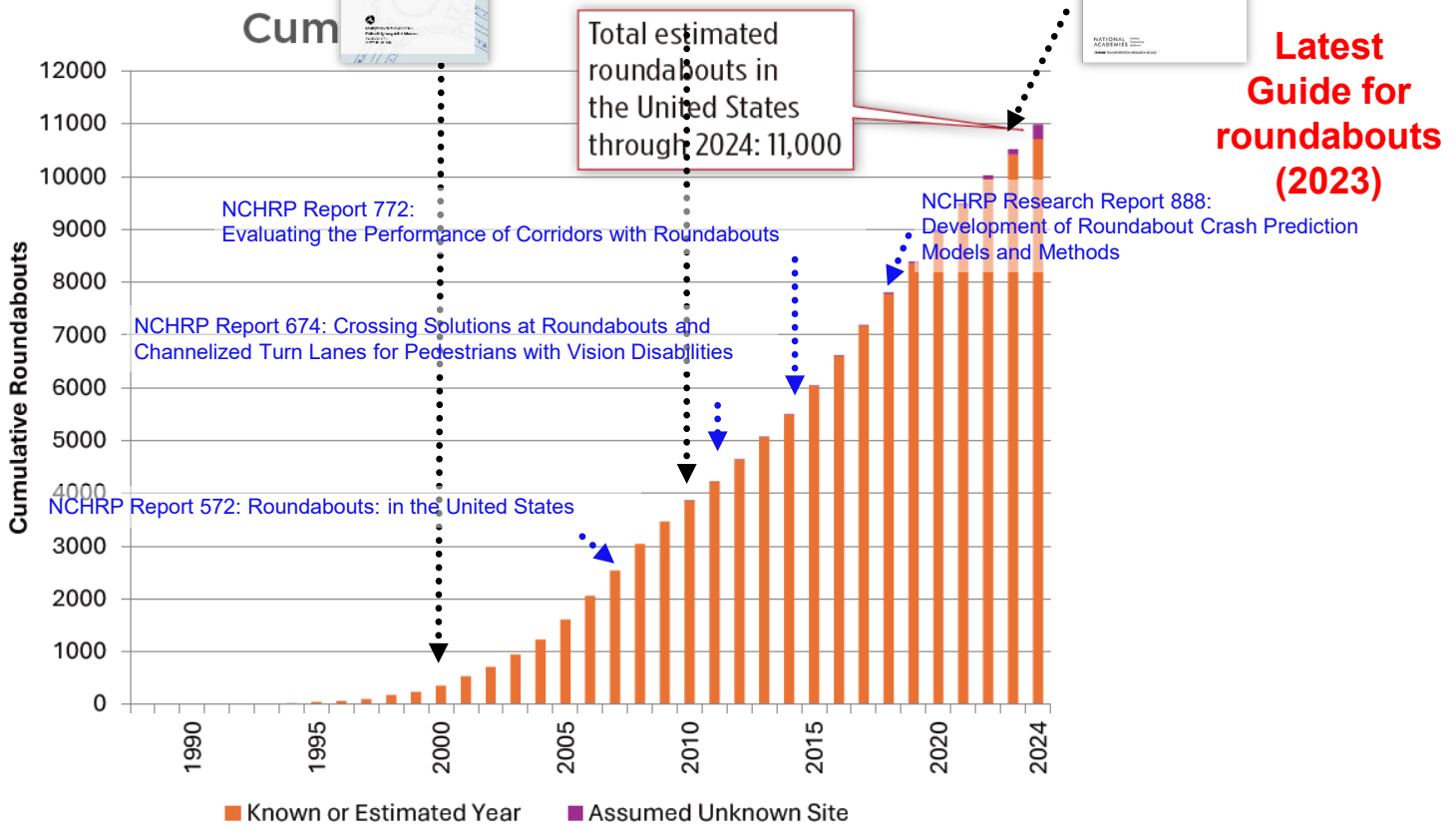




2nd Eiditon (2010)



Latest Guide for roundabouts (2023)



出典： Lee Rodegerdts, Status of Roundabouts in United States and Canada - 2025 Edition, https://trb.secure-platform.com/a/solicitations/184/sessiongallery/schedule/items/2637/application/14055

Research Objectives

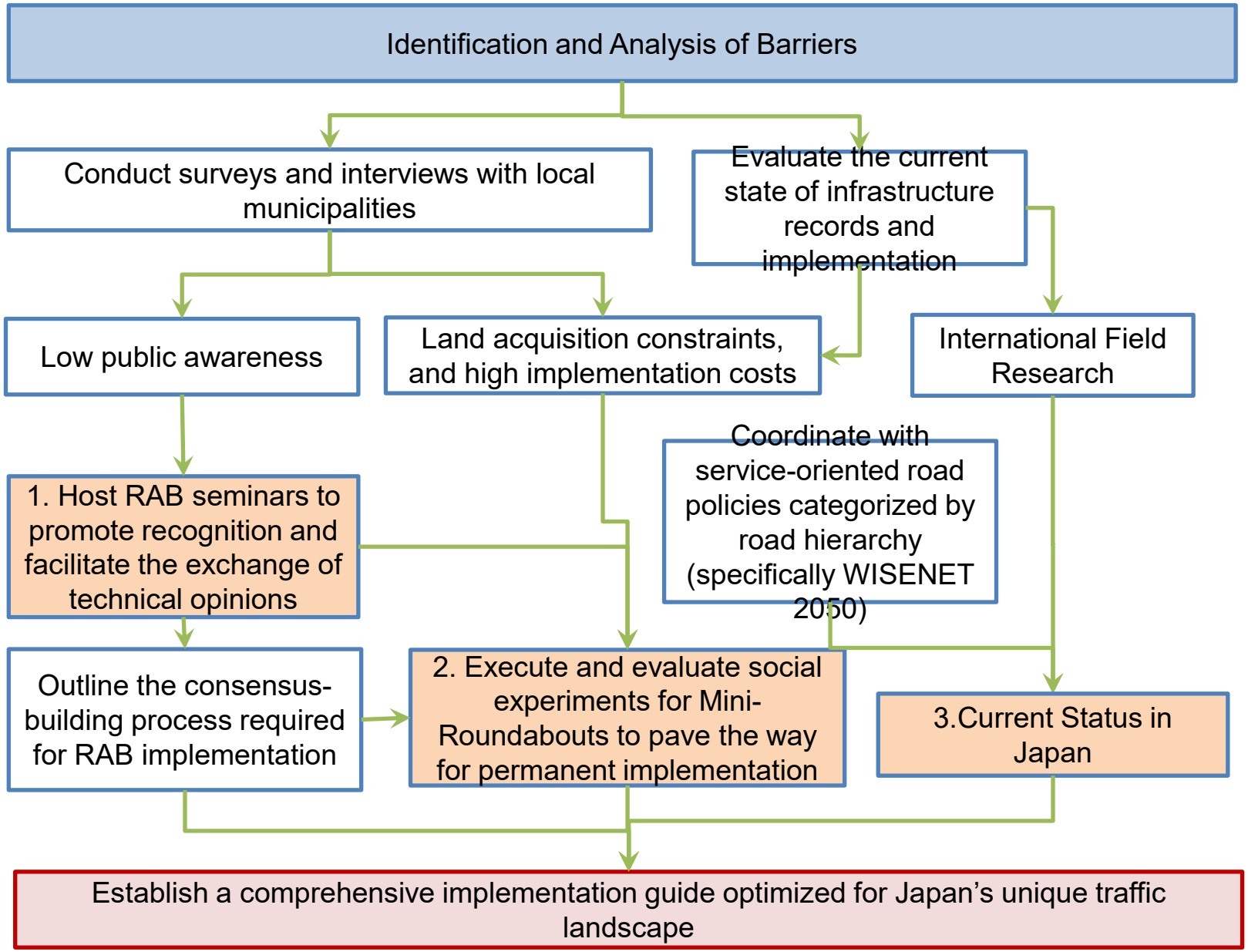
- To identify the factors hindering the widespread adoption of Roundabouts (RAB) in Japan and to develop strategies for their removal or mitigation

1. Promotion of Awareness
   - Conduct awareness surveys and factor analysis
   - Host seminars in regions where recognition of RRFBs/RABs remains low
   - Enhance and analyze the existing database (DB)

2. Space-Saving and Cost-Effective Mini-Roundabouts
   - Demonstrate effectiveness and collect empirical data through social experiments on collector roads and residential streets

- To present a strategic implementation policy tailored to the specific needs and constraints of the Japanese road environment

3-Year Research Project Flow



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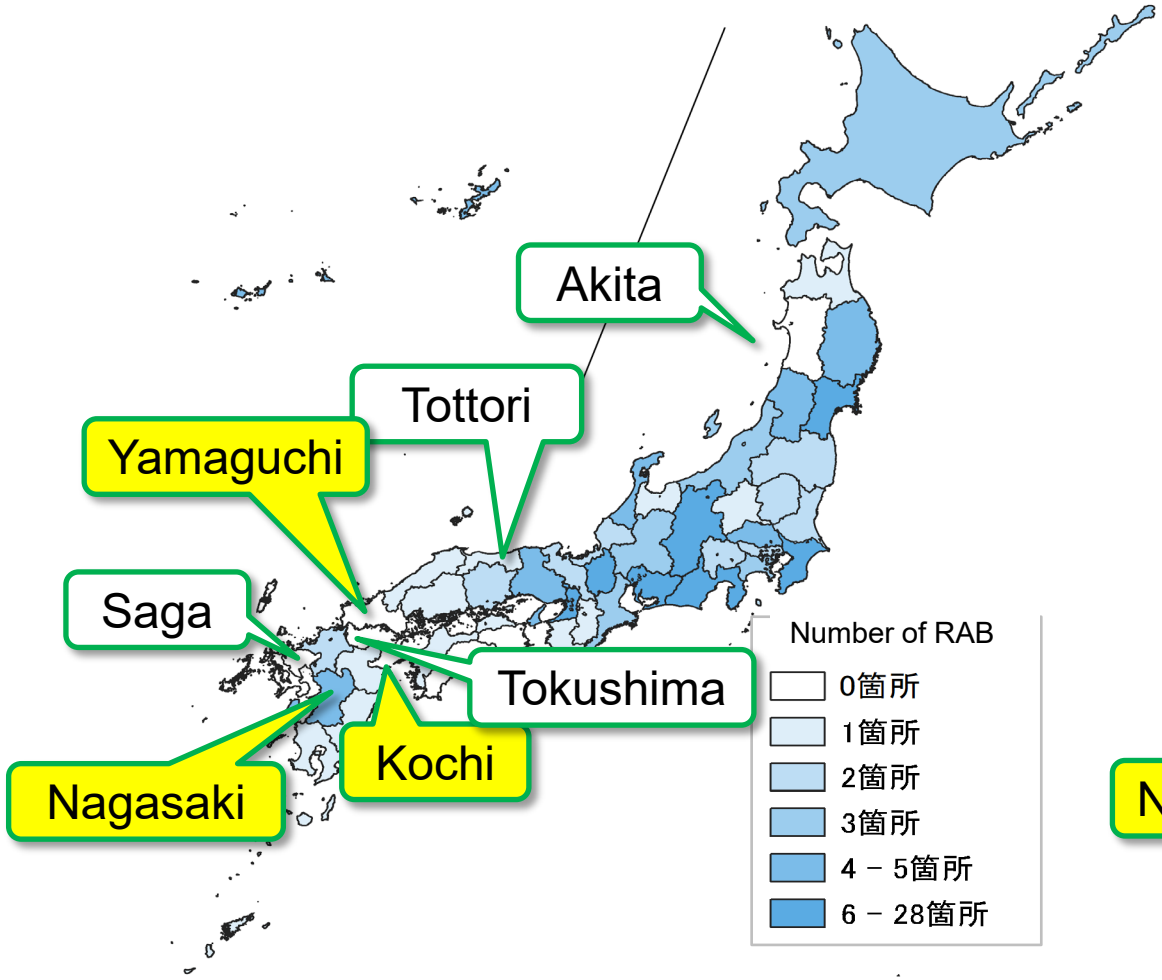
1. Promoting Awareness and Facilitating Dialogue through RAB Seminars

National Municipal Survey Results (2023)

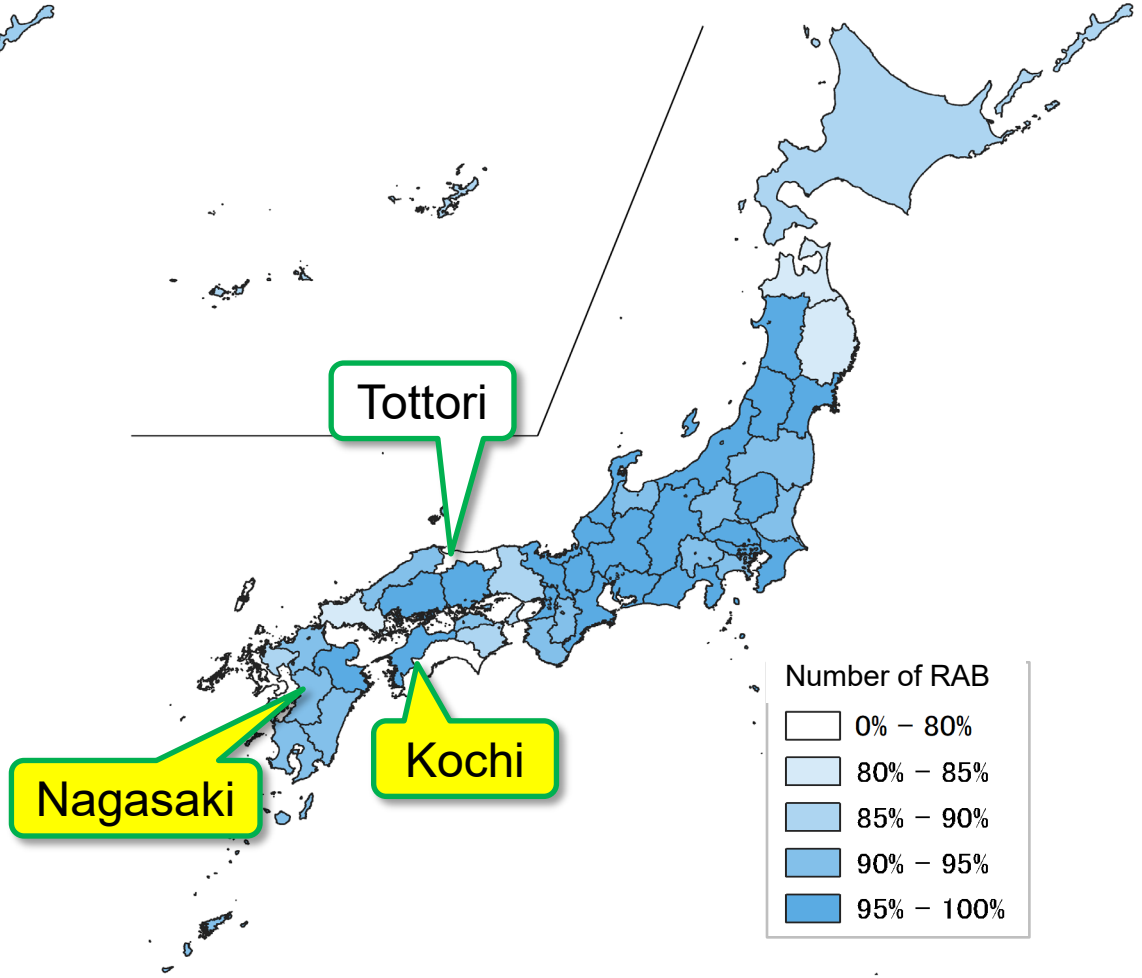
➢ RAB Locations (As of 2023)

(Source: IATSS Roundabout Database)



➢ RAB Awareness (2023)

(Source: Municipal Survey Results)



Yamaguchi Seminar (July 29, 2025)

プログラム

13:30 開会挨拶	国土交通省 中国地方整備局 道路部長 大江 真弘
13:35 趣旨説明	(公財)国際交通安全学会(IATSS) 2509Cプロジェクトリーダー 名古屋大学大学院 環境学研究科 教授 中村 英樹
13:40~14:00 国からの情報提供	「ラウンドアバウトとは？」 国土交通省 道路局 環境安全・防災課 道路交通安全対策室 企画専門官 北村 明政 警察庁 交通局 交通規制課 課長補佐 水 誠治
14:00~15:00 ラウンドアバウトの解説	「ラウンドアバウトはどんな箇所への導入がよいか」 2509Cプロジェクト 特別研究員 吉岡 慶祐 「設計のポイント」 2509Cプロジェクト 特別研究員 久坂 直樹 「交通運用上のポイント」 2509Cプロジェクト 特別研究員 神戸 信人
15:00 質疑応答	
15:15 閉会挨拶	山口県警察本部 交通部 交通規制課 課長(警視) 繁本 政志
	＝＝＝＝＝ 休 憩 ＝＝＝＝＝
15:30~17:00 意見交換会	ラウンドテーブルミーティング形式 会場：研修室 101

■主催：(公財)国際交通安全学会(IATSS)2509Cプロジェクト
■後援：国土交通省、警察庁、(一社)交通工学研究会、ラウンドアバウト普及促進協議会

●お問い合わせは●
(公財)国際交通安全学会 担当：今泉 E-mail: imaizumi@iatss.or.jp
TEL: 03-3273-7884

1. Information Dissemination from National Agencies

(1)MILT

・Detailed explanation of RAB characteristics (expected benefits) and case studies of infrastructure development

(2) National Police Agency

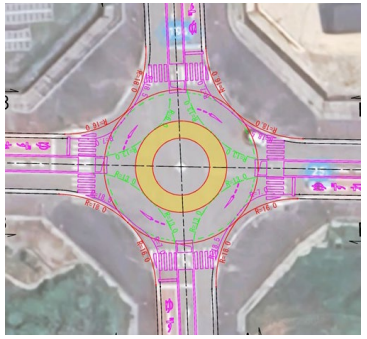
・Operational Guidelines & Safety Data: Introduction to traffic rules for roundabouts, trends in the number of installations nationwide, the impact on reducing traffic accidents, case studies of implementation, and safety measure examples

2. Technical Overview of Roundabouts

・Explanation of optimal deployment scenarios based on road functional classification, illustrated with domestic and international case studies. In-depth analysis of essential technical points regarding geometric design and traffic flow management.

Roundtable Meeting

- Conducted interactive, case-study-based discussions
  - Project members prepared conceptual design plans for six specific intersections within the prefecture to coordinate focused discussions
  - Participants were divided into Working Groups A and B to facilitate in-depth dialogue

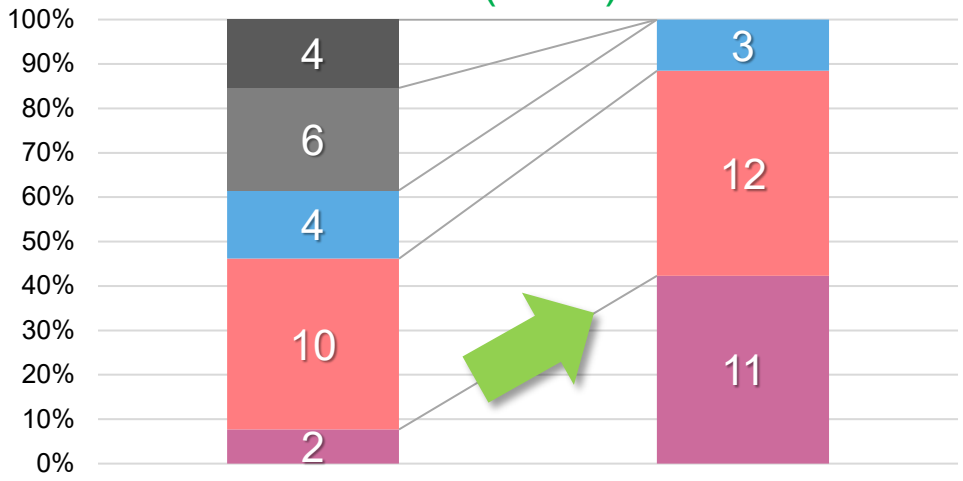


Interest Levels in RAB (Pre- vs Post-Seminar Comparison)

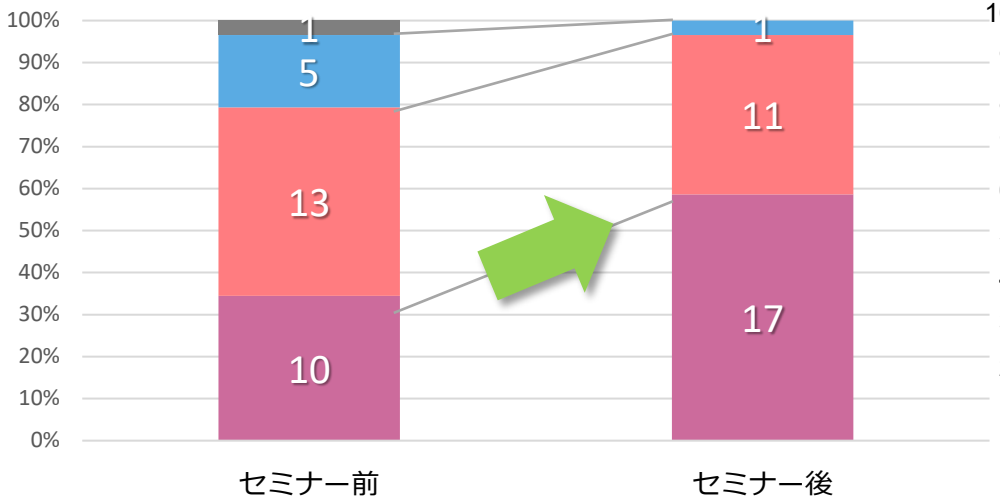
➢ Changes in Interest Levels

– The 2025 Yamaguchi Seminar showed a higher trend in participant interest compared to the 2024 seminars held in Kochi and Nagasaki

▼Kochi Seminar (2024)

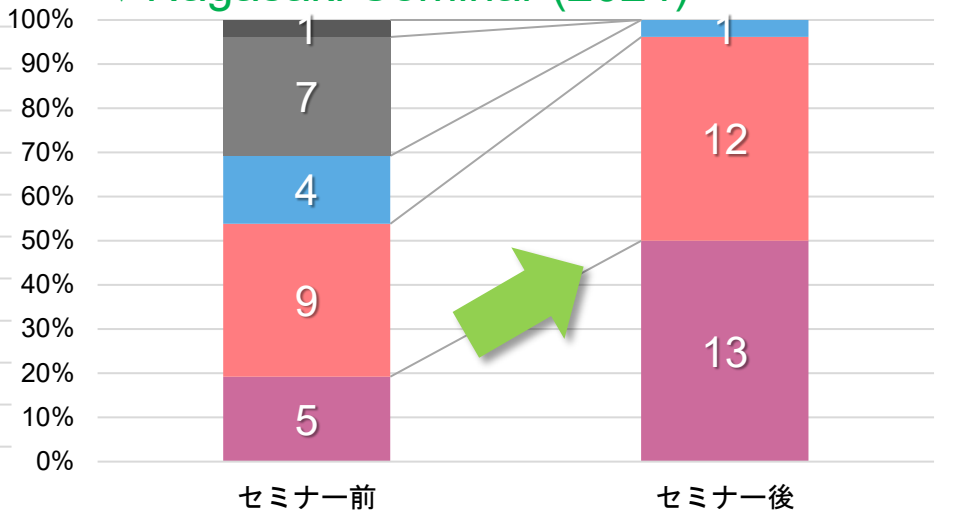


▼Yamaguchi Semijnar (2025)



Number of Valid Response N=29

▼Nagasaki Seminar (2024)

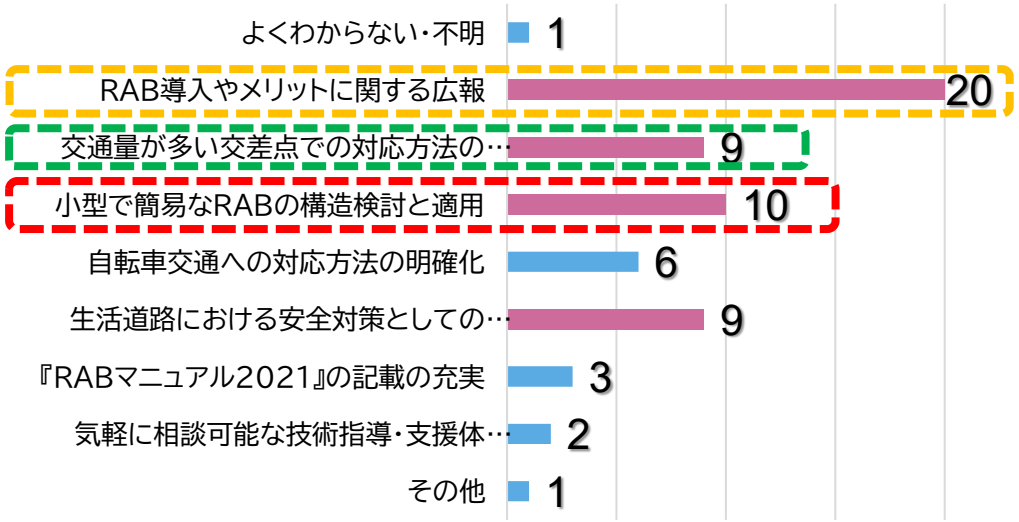


Number of Valid Response N=26

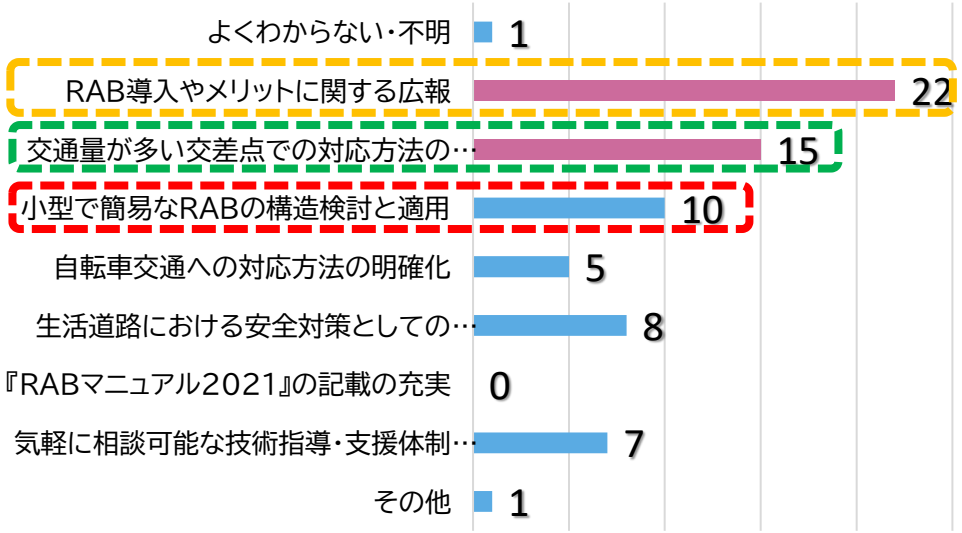
Key Requirements for RAB Implementation and Expansion

- Consistently high response rates across all regions regarding the need for "Publicity on RAB implementation and its benefits"
- Identified strong demand for "Expanding solutions for high-volume intersections" and "Design studies and applications for compact, simplified RAB structures"

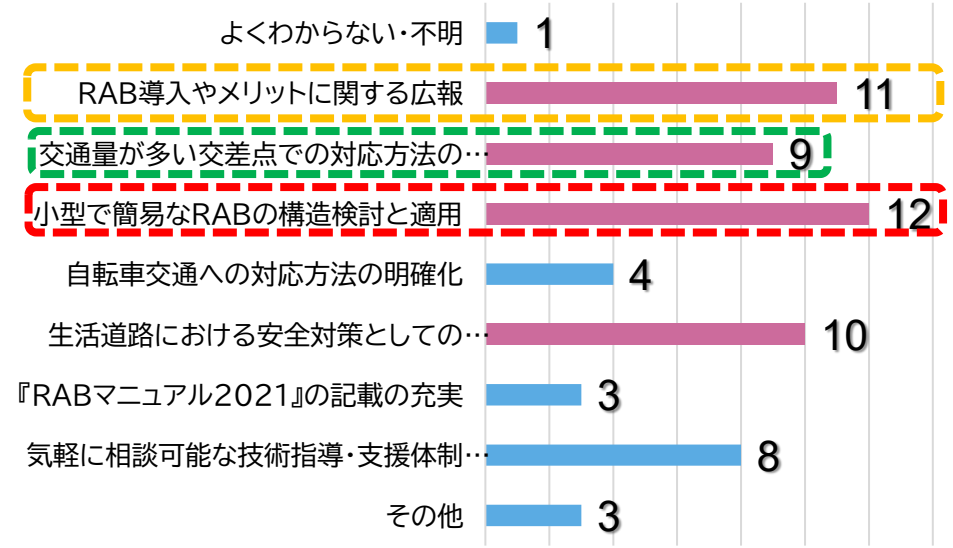
▼ Kochi Seminar (2024)



▼ Yamaguchi Seminar (2025)



▼ Nagasaki Seminar (2024)



Post-Seminar Follow-up

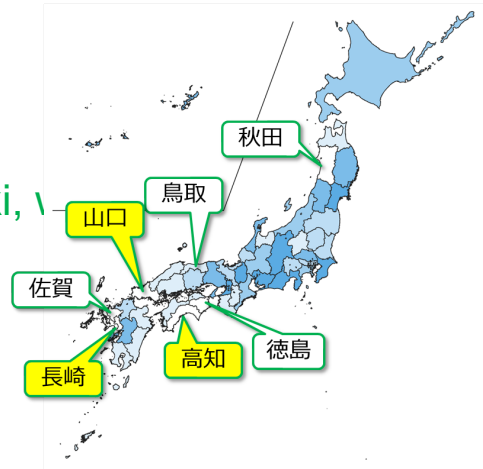
- Following the seminars conducted under this project, plans for RAB social experiments and full-scale implementations have been initiated across various regions

  – Kochi Seminar (July 19, 2024)
    - A social experiment is currently being planned at the Goshi signaled intersection in Shimanto Town, Takaoka District, Kochi

  – Nagasaki Seminar (July 26, 2024)
    - Continuous social experiments for Mini-RABs are underway in Isahaya City, Nagasaki, \ now in progress

  – Yamaguchi Seminar (July 29, 2025)
    - Yamaguchi Prefecture has commenced the formal RAB design for the Aio-Higashi intersection in Yamaguchi City
    - Further feasibility studies are being conducted for irregular intersections in Shunan City

- Number of RAB (2023)



- The activities of this project, including the seminars, are effectively translating research into real-world social implementation
- The results underscore the profound significance and necessity of continuous follow-up activities to sustain this momentum

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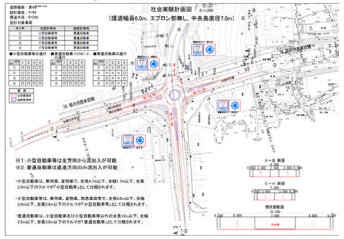
2. Implementation and Deployment of Mini-Roundabout (Mini-RAB) Social Experiments

Isahaya City Mini-RAB Social Experiment

- **Objectives ：To demonstrate the functionality of Mini-RABs within the footprint of existing intersection boundaries, to collect empirical data on user behavior**
- **Location ：**
  - Seibudai Residential Area, Warigoi-machi, Isahaya City
  - Intersection Type: Municipal road / Unsignalized four-leg intersection



- **Experiment Overview**
  - Collaboration: Isahaya City, Nagasaki Prefectural Police HQ, Isahaya Police Station, and Nagasaki Prefecture Housing Supply Corporation
  - Infrastructure: Mini-RAB on a residential collector street
  - Dimensions: Inscribed Circle Diameter (ICD) D=20m (maximum diameter within existing road boundaries)
  - Commencement: Friday, February 14, 2025, at 12:00 PM

Warigoi-machi, Isahaya City: Small RAB Social Experiment

➢ Before

➢ 2025.2.14.～ Outer Diameter =20m

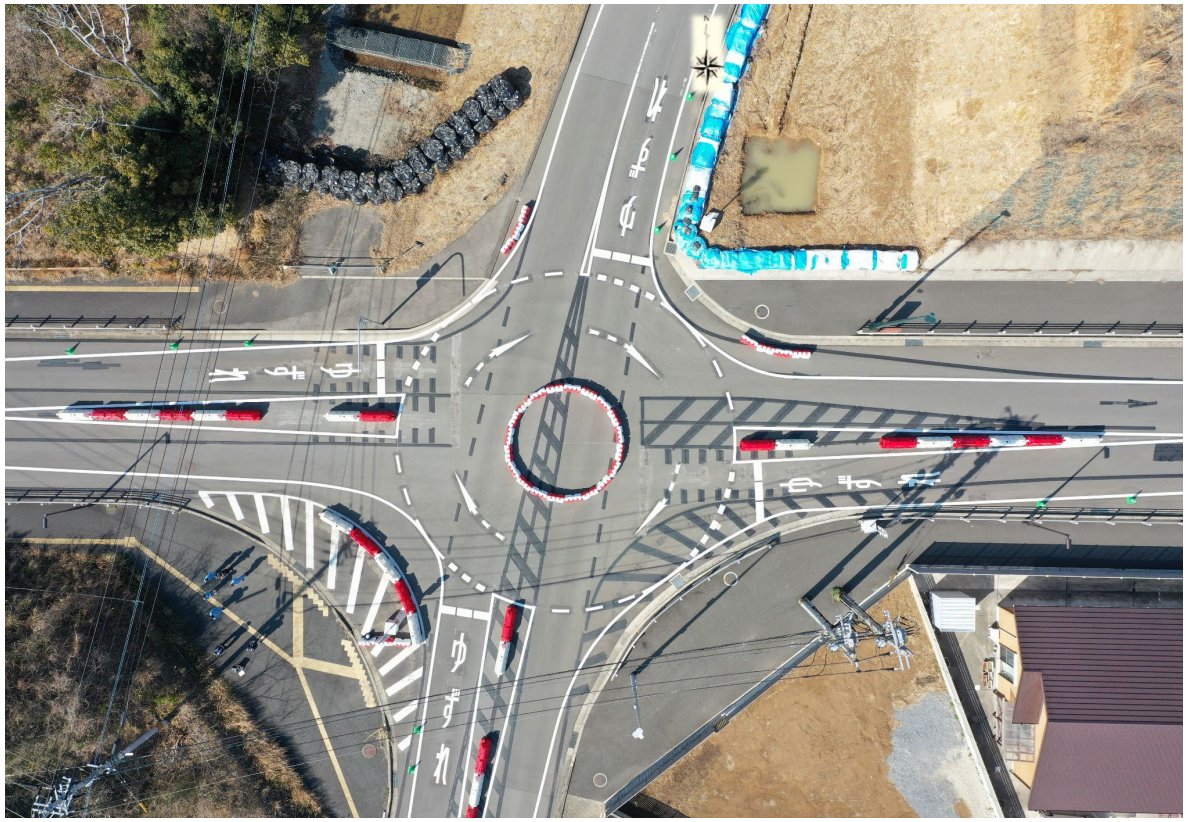
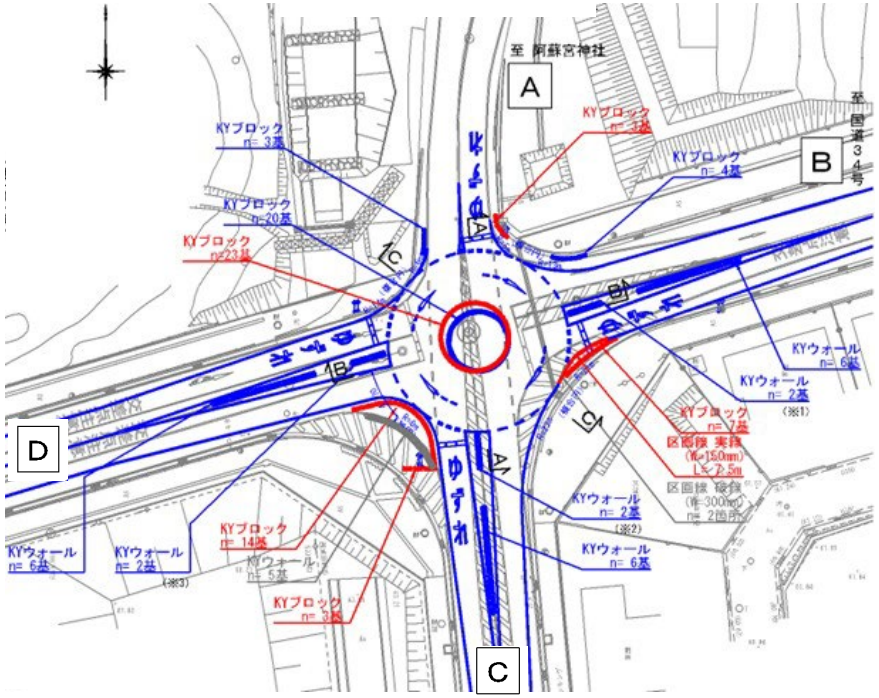


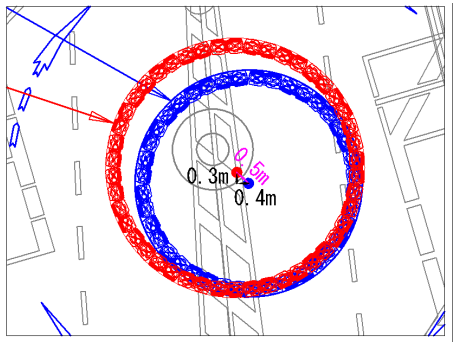
Photo: Road Division, Isahaya City Hall

➢ Geometric structural improvements implemented in FY2025

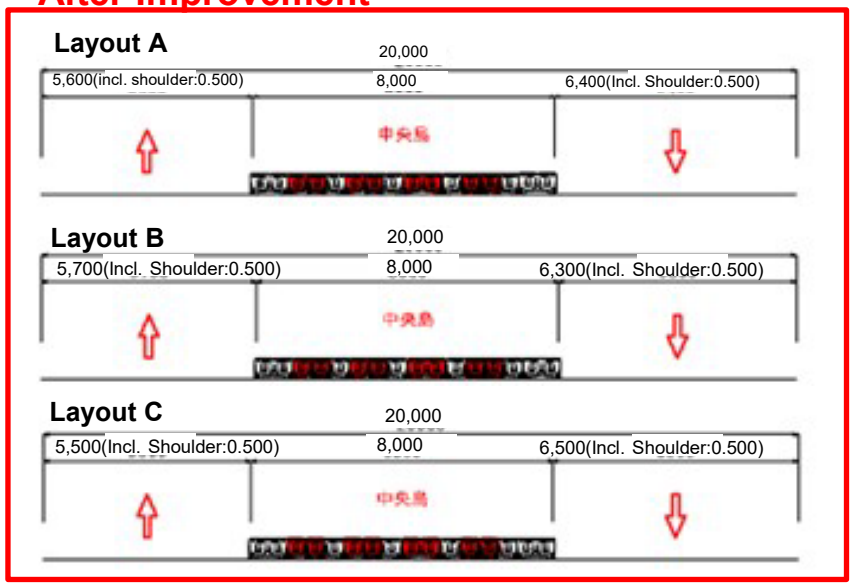
1. Change in central island outer diameter (7m→8m) and center position: Suppression of circulating speed by reducing center eccentricity
2. Additional installation of KY blocks at corners: Suppression of entry speed by narrowing entry width



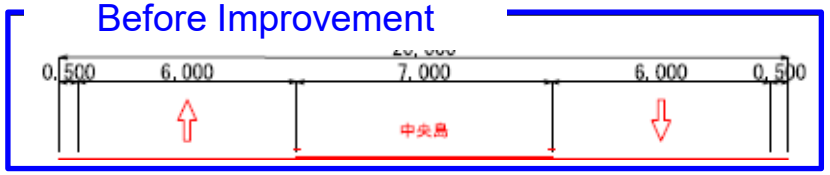
Blue：Before Improvement
Red：After Improvement



After Improvement



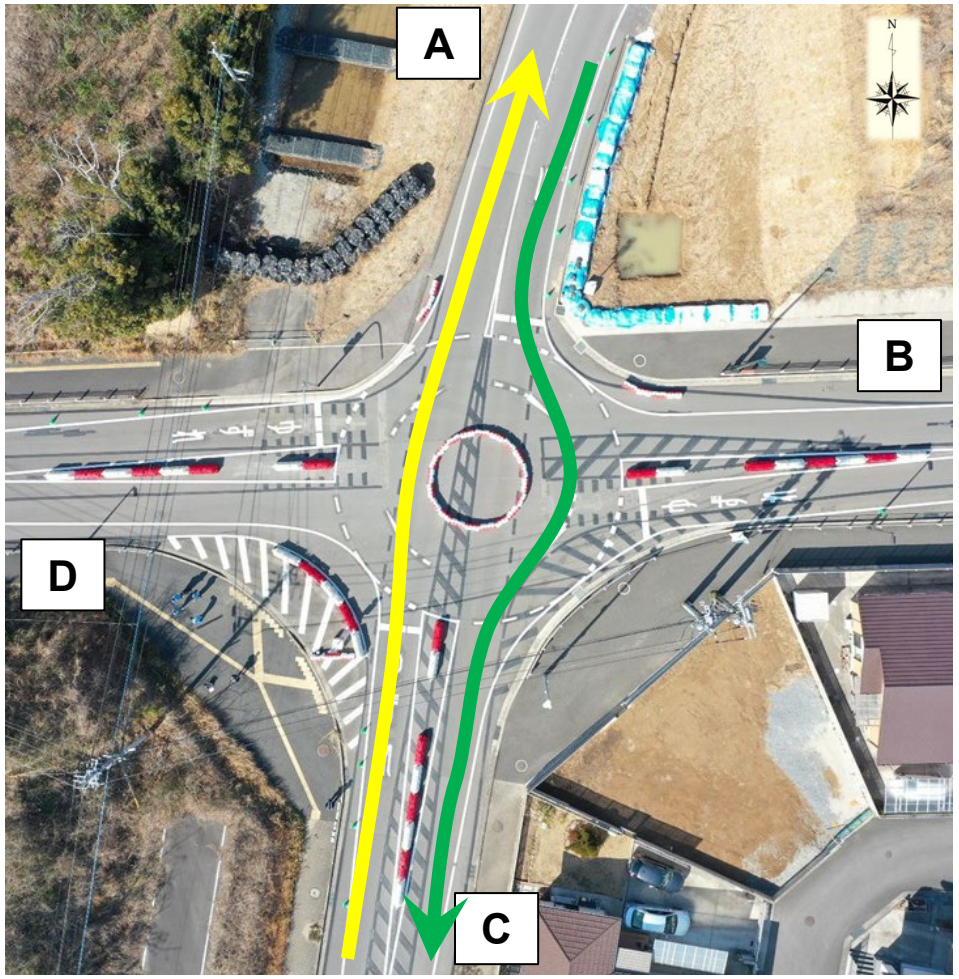
Before Improvement



Correction of small RAB (D=20m) structure

- Control of trajectory and speed for the former priority side, South (C) → North (A) straight-through direction, is necessary
  - Because the RAB center is eccentric to the east

▼Before Improvement: 2025.2.14 (Fri) – 7.23 (Wed)



▼After Improvement: 2025.7.24 (Thu) – 2026.3.4 (Wed)

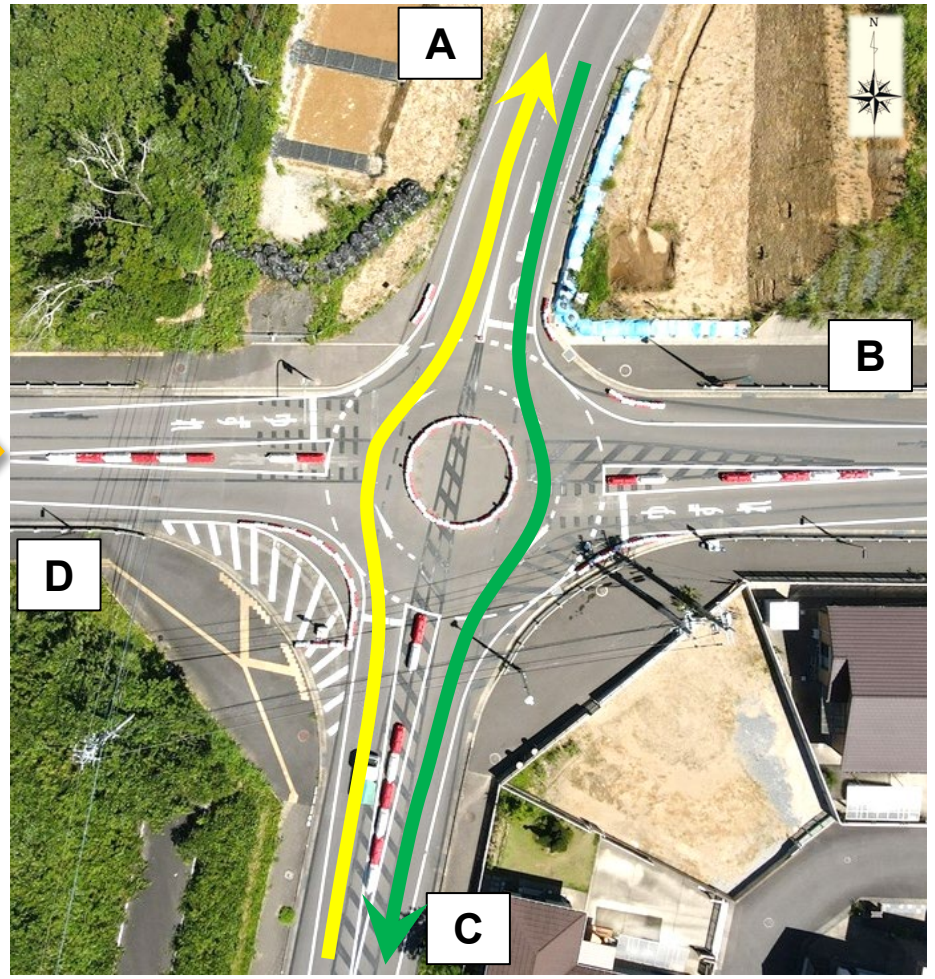
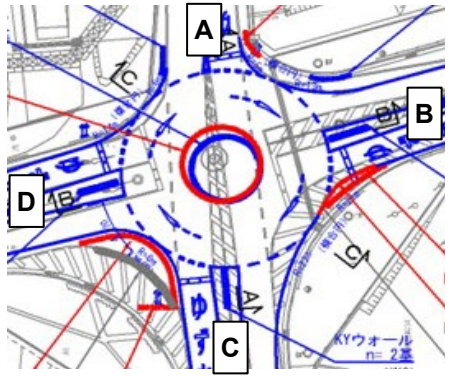
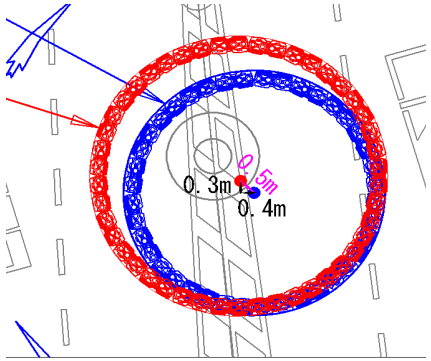


Photo: Road Division, Isahaya City

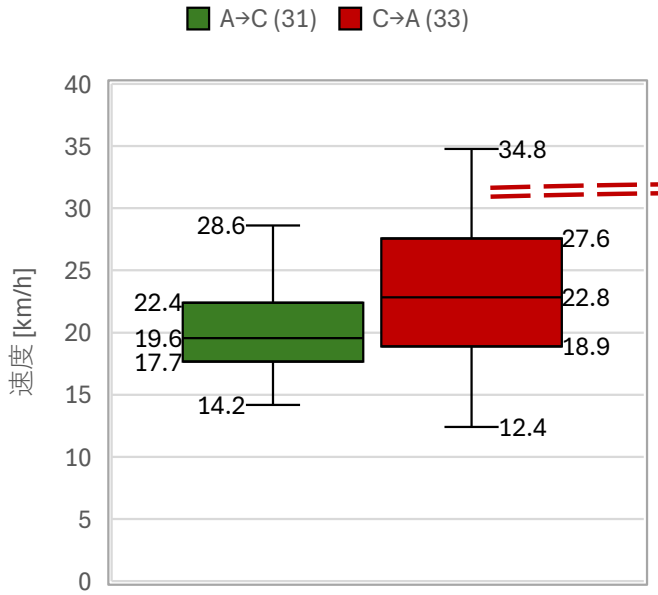
Comparison of Circulating Speed and Entry Speed Distributions Before and After Improvement

- Circulating speed distribution for South (C) → North (A)
  - Median decreased
  - Reduction in circulating speed variation, improvement in speed stability

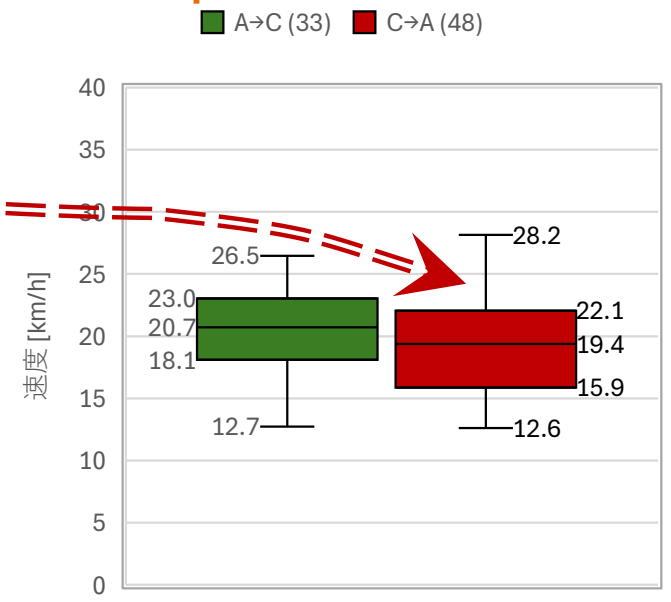


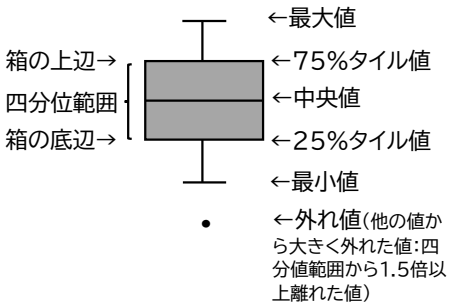


Before Improvement



After Improvement

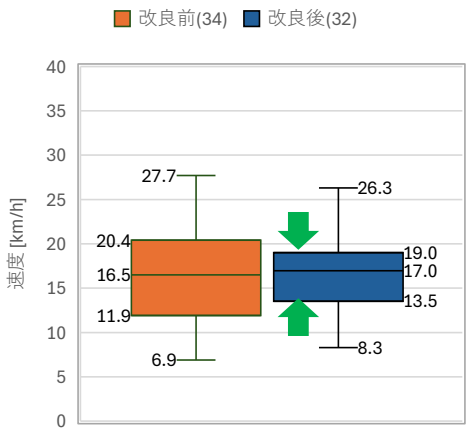




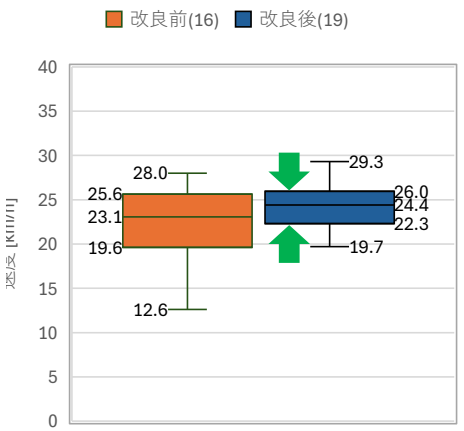
Comparison of Entry Speed Distribution Before and After Improvement

- Speed distribution for entry points A, B, and C where KY blocks were installed on the left side of the entry
  - Compared to before improvement, for a median of a similar level, variation in entry speed was reduced, and stability of entry speed improved

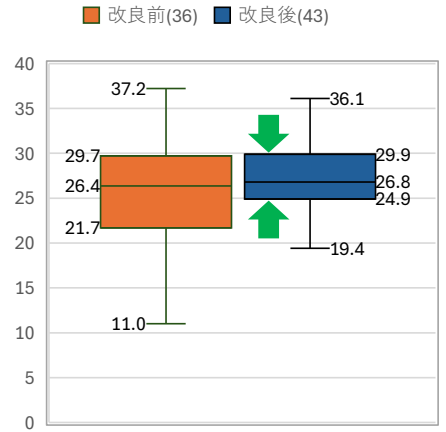
■ Entry Point A



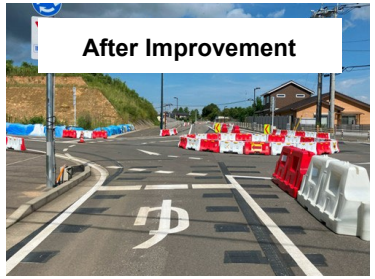
■ Entry Point B

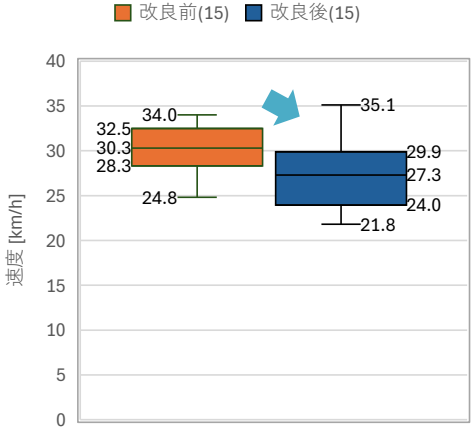


■ Entry Point C



■ Entry Point D





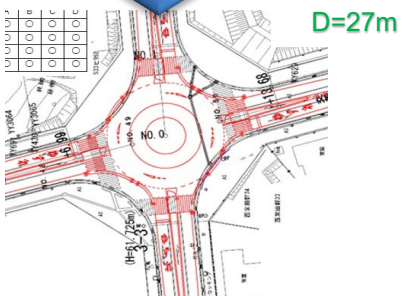
Results and Future Outlook of the Small RAB Social Experiment in Isahaya City

- Realized a simple social experiment for a small RAB within existing road space, triggered by seminars and opinion exchanges
  - Serves as a case study for the consensus-building process between road administrators, traffic administrators, and users

- Demonstrated the feasibility of installing small RABs within existing intersection spaces
  - Proved that an outer diameter of D=20m functions sufficiently
  - In residential areas with limited large vehicle traffic, this size is more than adequate

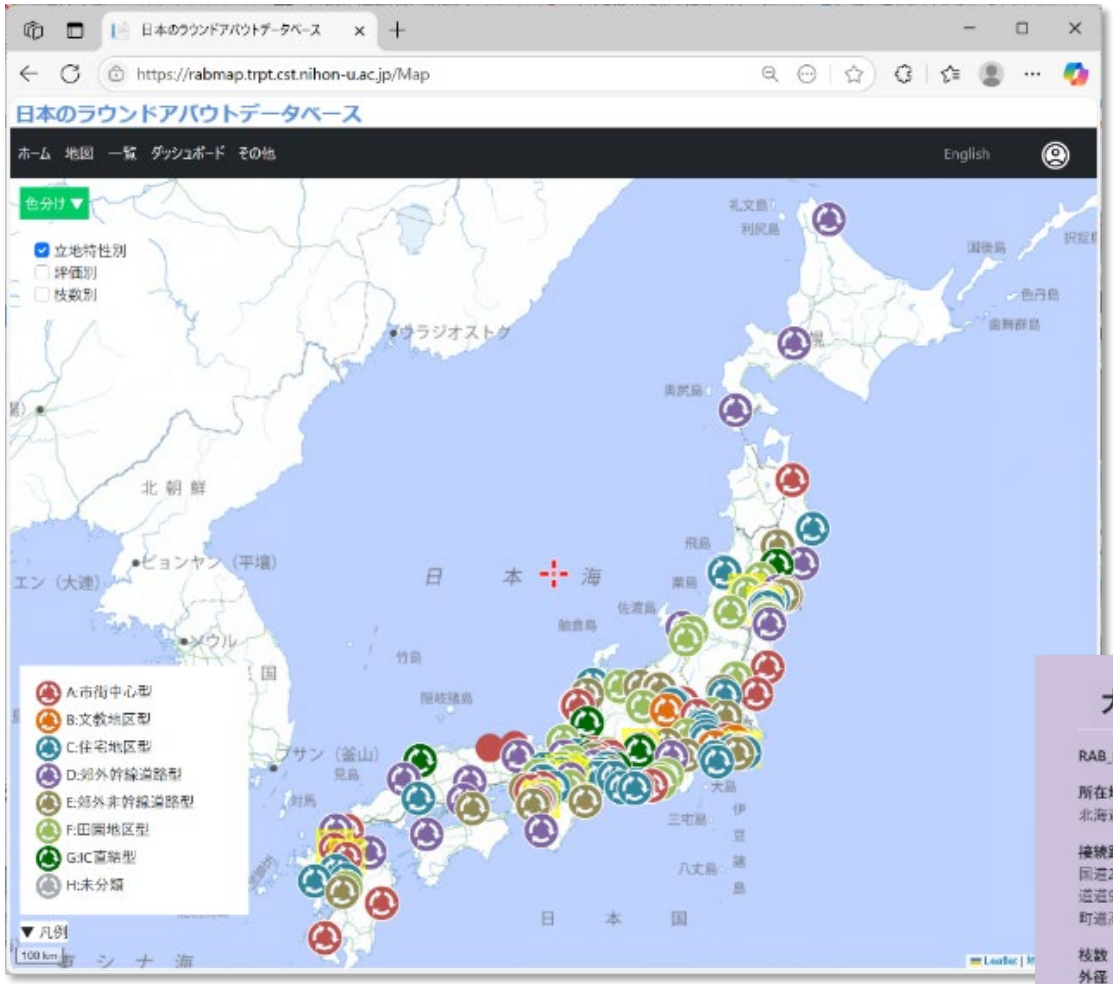
- Obtained empirical data on geometric structural elements necessary for speed suppression and stabilization following structural changes
  - This case provides useful insights for the future creation of technical guidelines for small RABs

- Future Plans
  - From March 4, 2026: Continue the social experiment and data collection by expandir outer diameter to D=25m
  - From FY2026 onwards: Plan for permanent installation as an RAB with an outer diameter of D=27m
  - A valuable and rare case where user data can be collected for three different outer diameters at the same intersection



3. Current Understanding in Japan and Concept for Necessary RAB Introduction Policy (Japanese-style RAB)

Roundabout Database (RAB_DB)



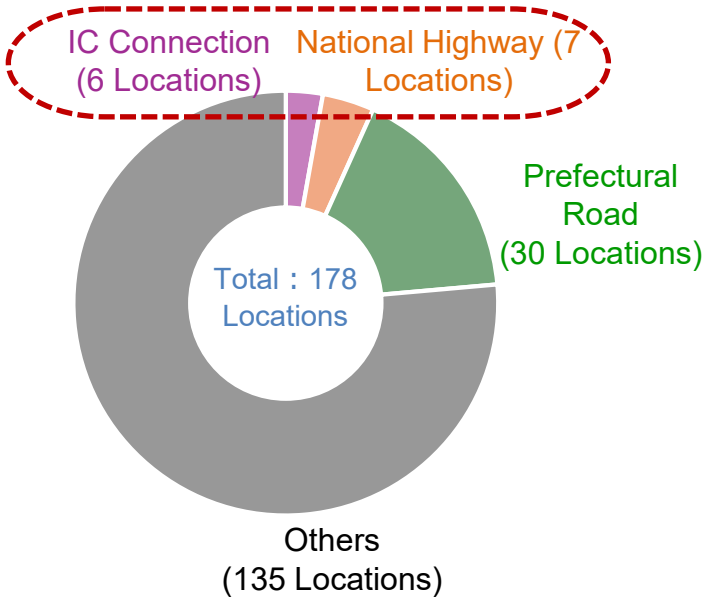
Developed in IATSS 2220 Project
Updated and operated since then

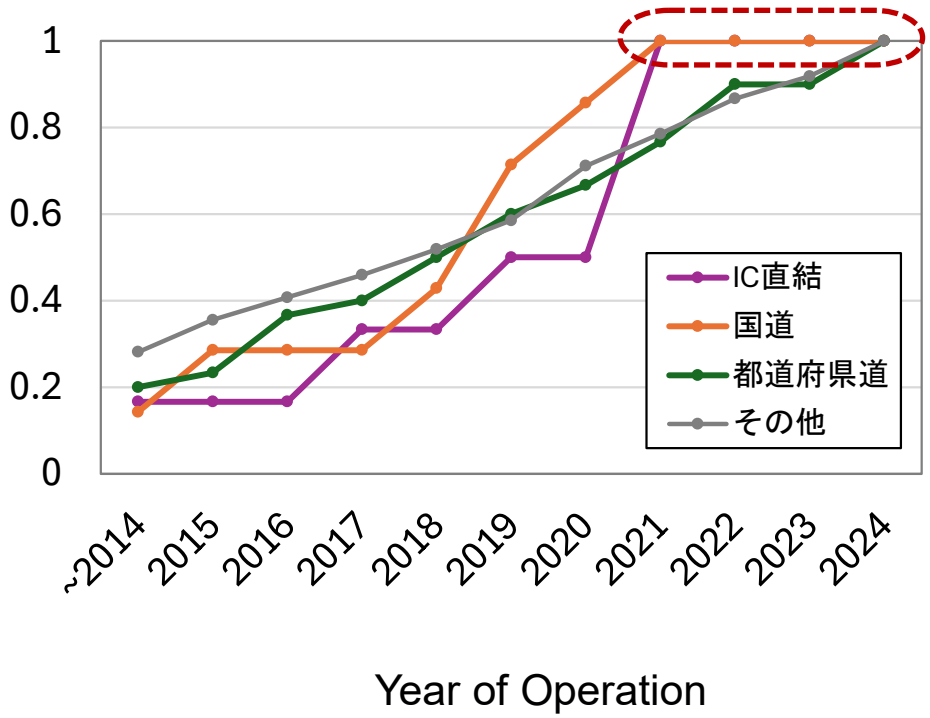
https://rabmap.trpt.cst.nihon-u.ac.jp/

Analysis of RAB Introduction Status in Japan Using DB

➢ Road Category x Fiscal Year of Operation

– Applications on higher-tier roads such as national highways and IC connections had several cases from FY2018–2021, but have since ceased





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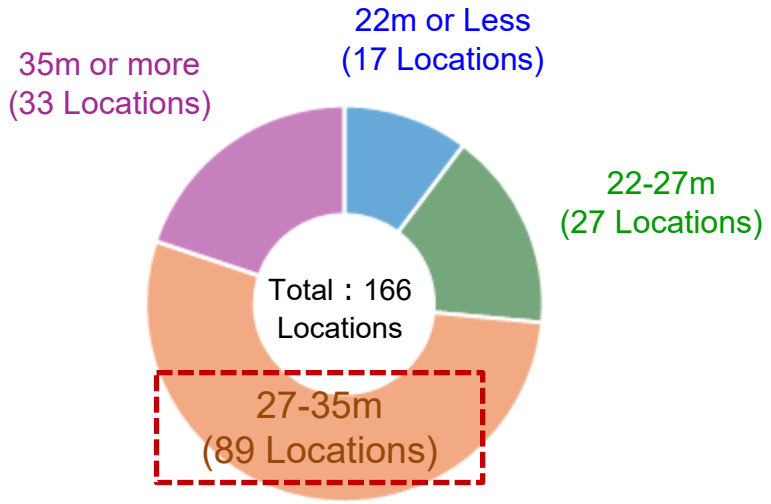
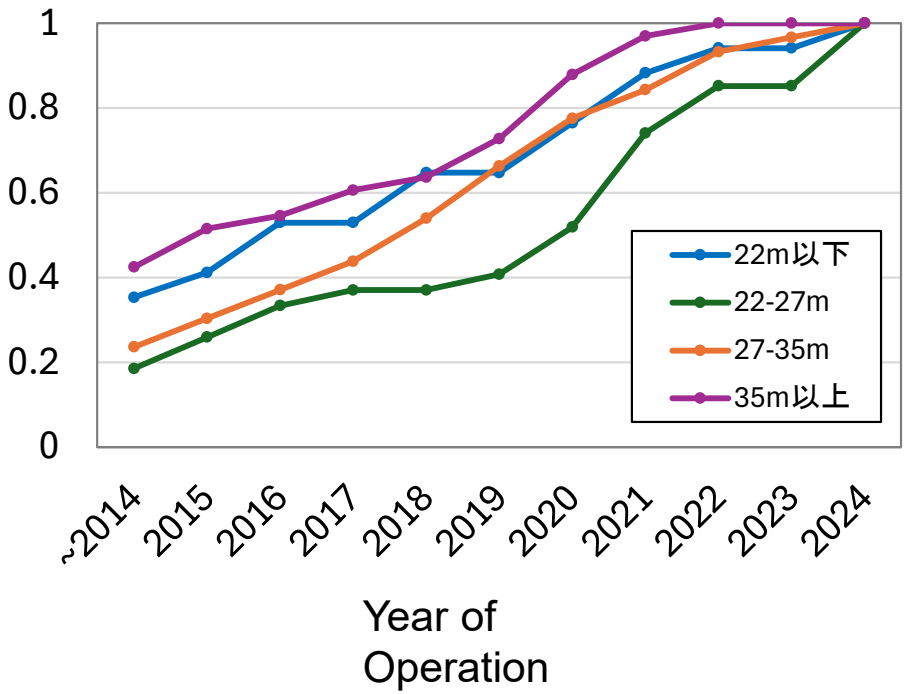
Japan: Roundabout Database (178 locations as of end of FY2024)

Analysis of RAB Introduction Status in Japan Using DB

➢ Outer Diameter x Fiscal Year of Operation

- Outer diameters 27–35m account for more than half
- Since 2020, cases of small RABs with less than 27m diameter have increased recently





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Roundabout Database (Among 178 locations, 166 locations with outer diameter information)

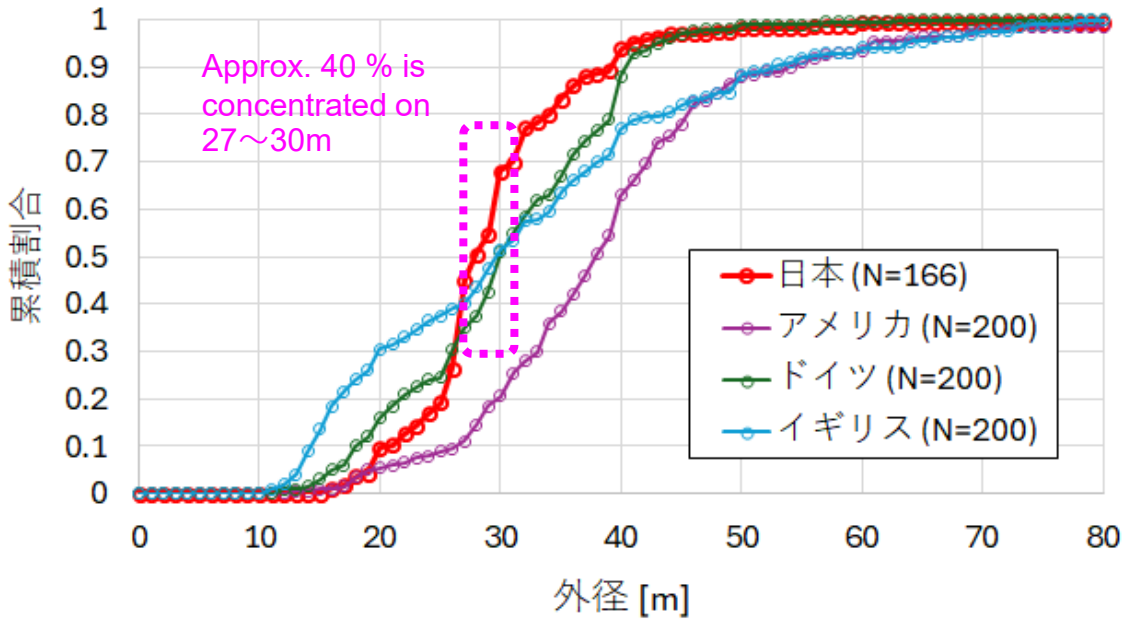
Representative RAB Operation Timing (2025 Additional Edition)

適用場面		～2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
(1) Motorway Interchange Connections (IC)		Toyota City (Tokai-Kanjo Expressway, Kuragaike Smart IC) *3						Expansion following the implementation at Oda-Asayama IC		Anpachi Town (Meishin Expressway, Anpachi Smart IC) Oda City (San-in Expressway, Oda-Asayama IC)	Iida City (San-en Nanshin Expressway, Tenryukyo IC)		Ono City (Chubu-Jukan Expressway, Arashima IC) Oyama Town (Shin-Tomei Expressway, Oyama Smart IC) Taki Town (Ise Expressway, Taki Vison Smart IC) Hiraizumi Town (Tohoku Expressway, Hiraizumi Smart IC)				
(2) Arterial Roads	Suburban Areas	Sanage-cho, Toyota City *3				Signal Removal (First-of-its-kind cases)		Kashimadai, Osaki City Niigata City Fujinomiya City *1 Asakuchi City	Munakata City	Annaka City *1 Aisai City	Kaminokuni Town Asago City Kibichuo Town Usa City *1	Hamatonbetsu Town Hino Town Tanabe City	Takamori Town Hamada City		Kitahiroshima City	Takashima City Koka City	Utsunomiya City
	Urban Areas	Azuma-cho, Iida City *1 *3		Hitachi City *3	Towa-cho, Iida City	Ichinomiya City Higashi Ward, Sakai City *3	Itoman City *1 (former Itoman Kotsu)		Increasing application to arterial roads, including National Highways			Higashi Ward, Hamamatsu City		Itoman City (Underpass of Itoman Road)	Izumisano City		Ukiha City
(3) Others / Residential Streets	Suburban Areas			Roppontsuji, Karuizawa Town *1		Sekigata, Yaizu City *1 Moriyama City *1 Nobe, Suzaka City	Inage Ward, Chiba City	Nagai City *1 Tagami Town Fujikawa Town Numame, Suzaka City Fukuchiyama City *3	Miyako City Hanyu City Kosuge Village Nose Town	Hachinohe City Bando City (Karyuado, Karuizawa Town)	Higashimatsushima City Shinchi Town Kamiichi Town (Iga City *1) Koshi City	Ofunato City Higashimatsushima City Watari Town Murayama City Otawara City Shimizu Ward, Shizuoka City Shimokosugi, Yaizu City Uki City	Yorii Town Nagara Town Mifune Town	Chosei Village Anjo City Nankan Town	Tajimi City Ritto City Kitakami City Azumino City (City Road Class 1, Line 24) Inazawa City	Utsunomiya City Murayama City	Hikone City Ritto City
	Urban Areas	Ichikikushikino City *3 Kahoku City *3				Hyuga City Tama City *3	Inage Ward, Chiba City *3 Kohoku Ward, Yokohama City	Yokosuka City *3	Chuo Ward, Kobe City *3 Yahatahigashi Ward, Kitakyushu City *3	Izumi City Masaki Town Uruma City	Ichikawa City	Asakita Ward, Hiroshima City Utazu Town Toyohashi City	Utsunomiya City	Gifu City	Iwaki City	Tajimi City Onojo City Kita Ward, Osaka City	Tsukumi City
	Residential Streets					Sendai City *3 (11 Locations) Natori City *3 (5 Locations) Iruma City Hakata Ward, Hamama	Kaga City Kanazawa Ward, Yokohama City	Sanjo City Musashimurayama City Anjo City	Mihama Town	Minoh City	Maibara City	Toyohashi City Nara City	Okazaki City Kusatsu City Kita Ward, Sakai City Taihaku Ward, Sendai City	Ibaraki City	Miyoshi City	Tokai City	Isahaya City Mobara City
Main Activities		JSTE Independent Research (2006–2007) Great East Japan Earthquake				Establishment of the MLIT Roundabout Study Committee Establishment of the Roundabout Promotion Council	Enforcement of the Revised Road Traffic Act	Publication of the Roundabout Manual		Increasing application within residential areas accompanying housing land development			Publication of the Roundabout Manual 2021				
RAB Summit						Iida, Yaizu	Suzaka	Moriyama	Azumino	Karuizawa	Itoman	Ichinomiya		Nagai		Tajimi	

*1 : Organized by the start date of trial operation (social experiments or pilot programs)
*2 : Interchanges marked were under construction at the time of this table's creation
*3 : Organized by the official commencement date as a circular intersection or roundabout

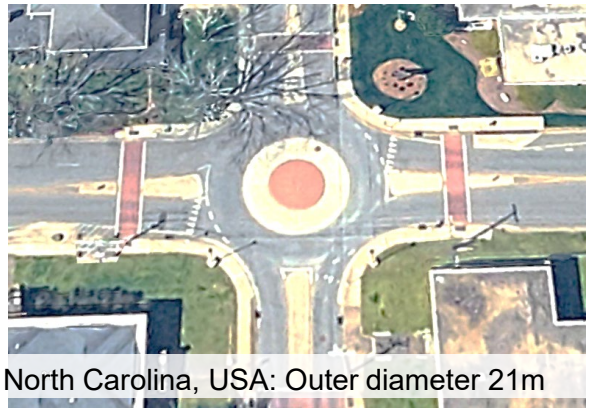
International Comparison of RAB Introduction Status

- Japanese RAB outer diameters are concentrated in 27–30m
- In contrast, overseas shapes and structures are diverse depending on site conditions
  - Highway connections: Multi-lane, large RABs ensure smoothness and safety at diamond ICs
  - Residential areas: Implementation within existing land through simplified structures and small outer diameters



<Data>
Japan: Roundabout Database (166 locations with geometric information)
Overseas: 200 locations randomly selected from US Roundabout Database and OpenStreetMap (Germany/UK), with dimensions estimated via Google Maps aerial photography

Wisconsin, USA: Outer diameter 58m x 2

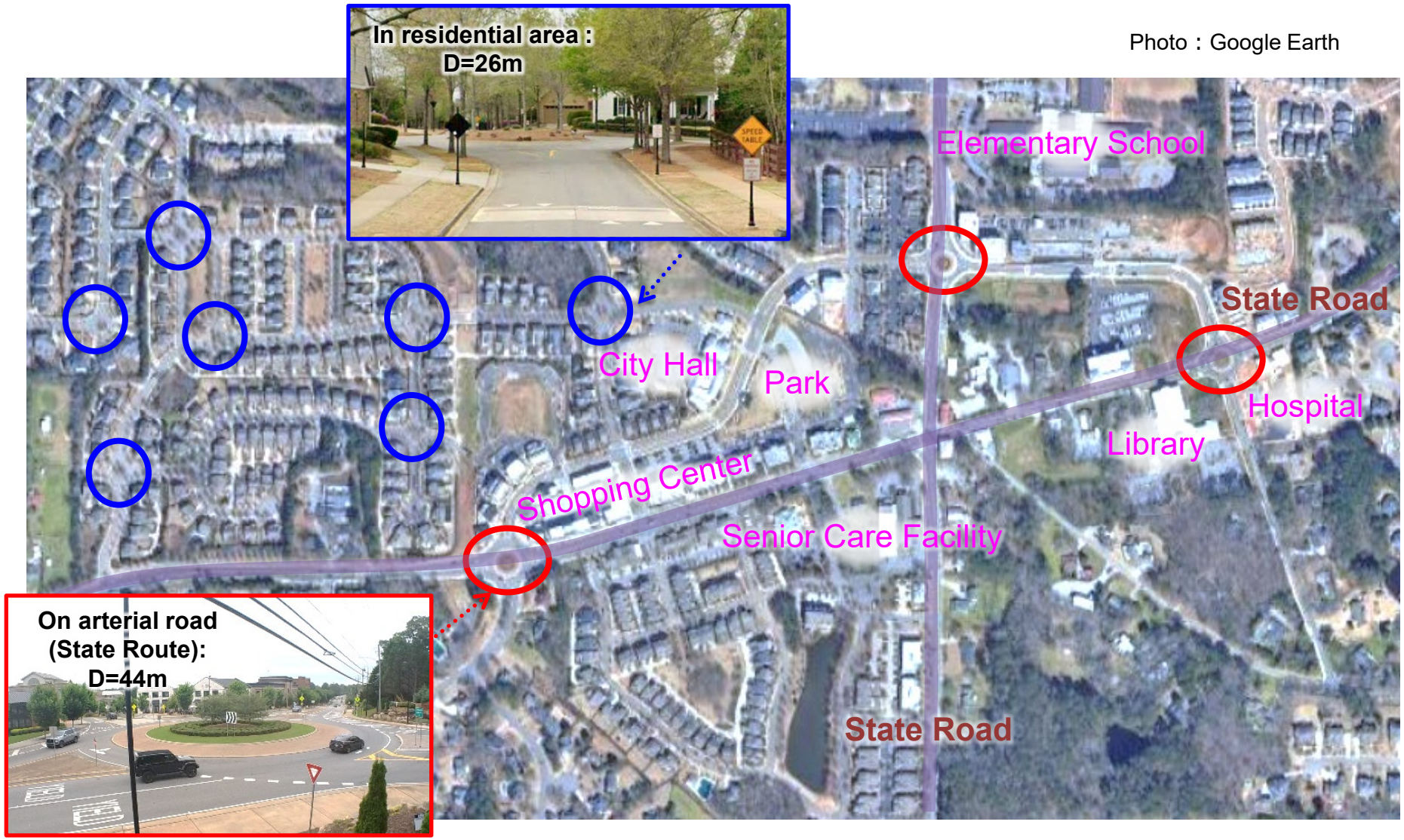


North Carolina, USA: Outer diameter 21m

<写真> Google Earth pro

Differentiation of RAB Geometric Structure According to Road Hierarchy

- Milton (population approx 50,000), suburb of Atlanta, USA

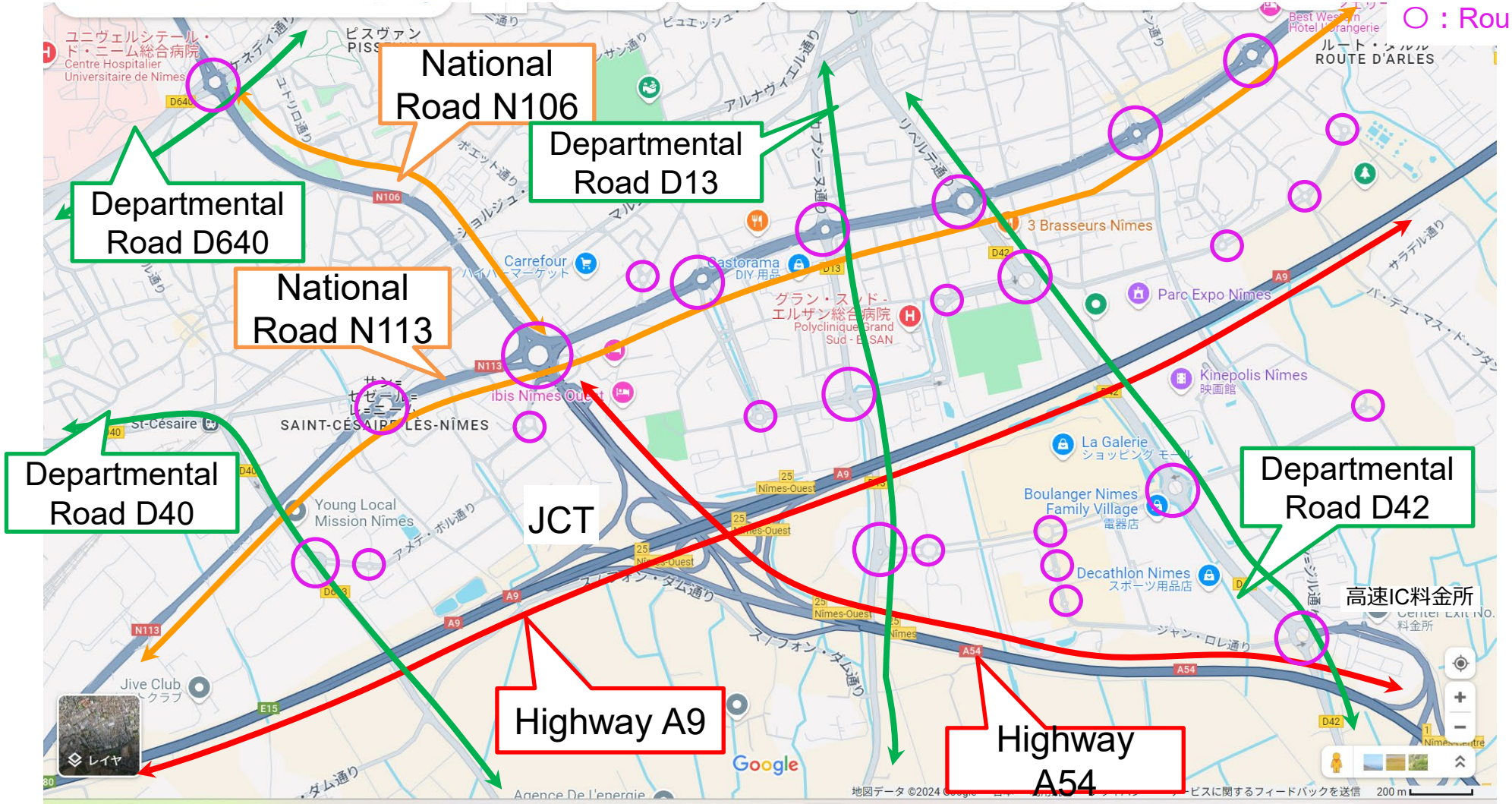


Example of hierarchical road network at city fringe: Nîmes, France

- Provision of seamless speed service on arterial roads accessing highways

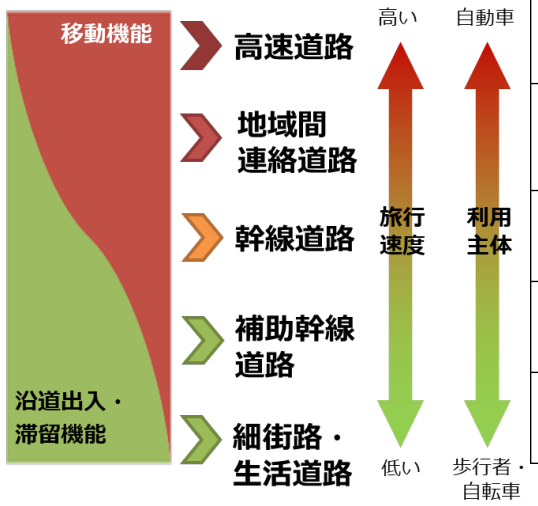
Level crossings use roundabouts instead of signals → improvement of travel speed

A (Autoroute: Highway)，N (Route Nationale: National Road)，D (Route Departmentale: Departmental Road)，C (Voie Communale)



Concept for Necessary RAB Introduction Policy in Japan

Functional Road Hierarchy



道路階層	道路種別の例	大型(含ターボ)	コンパクト	小型	ミニ
A	Highway ・ Multi-lane Motorway				
B	Regional High-standard Highway / 2-lane Motorway	Future Reseach			
C	Arterial Road		Accounts for ¾ of total Implementations		
D	Auxiliary Arterial Road			Accounts for ¼ of total Impleentations	Is it difficult to traverse the central island?
E	Local Road / Narrow Street				

- **Small RAB (Space-saving, Cost-saving)**
  - Needs are high, but technical guidelines are unestablished, and there is a bias/misconception that D=27m or more is the standard
  - Utilization of empirical data from this project, establishment of technical guidelines, and further expansion are required

- **Large RAB (Smoothness-oriented)**
  - Technical study required for higher-tier roads; presented in "WISENET 2050"
  - A powerful tool for improving travel speed service

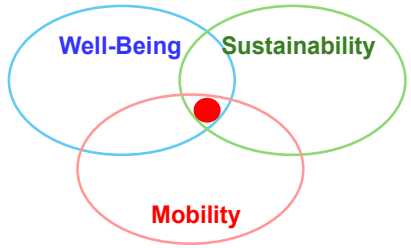
Summary of This Project 1/2

- Clarified challenges hindering spread through questionnaire surveys and hearings with local governments
  - Lack of recognition and understanding
  - **High needs for space-saving and cost-saving types**
- Held seminars including interactive opinion exchanges to promote recognition and understanding
  - Conducted in 3 prefectures with few RAB cases
  - Led to at least **4 social experiments/implementations**
  - Reaffirmed importance of follow-up activities
- Conducted social experiments and **demonstrated functionality**
  - Collected user data for different geometric structures at the same intersection
  - Useful information for technical guidelines

Summary of This Project 2/2

- Based on DB analysis and overseas research, present the concept for the necessary Roundabout introduction policy in Japan (Japanese-style RAB)
  - Japanese RABs tend to be limited to specific forms
  - Need further expansion of cost-saving and space-saving small RABs
  - Need research and study on smoothness-oriented large RABs for higher-tier roads

- RAB is an essential tool for realizing a better traffic society from the perspectives of mobility, sustainability, and wellbeing
  - Continuous efforts to overcome challenges using findings from this project are required
  - Utilization for resilient community and regional development through strategic RAB placement at the road network level



公益財団法人 国際交通安全学会

International Association of Traffic and Safety Sciences