

1-1

Mobility Changes in Quality and Quantity

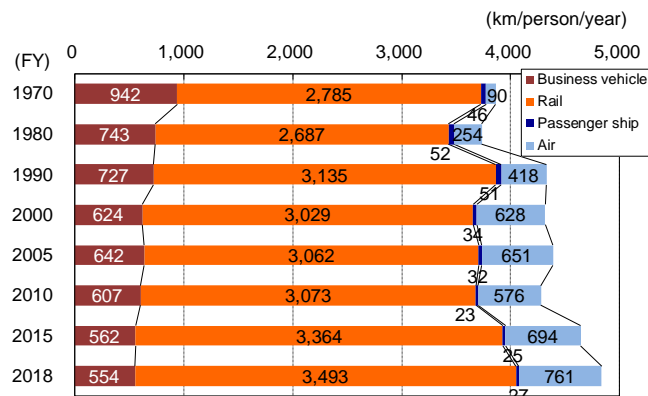
Associate Professor, The University of Tokyo

Kiyoshi Takami

This section shows the basic statistics on the recent trends of passenger and freight transport. Regarding the passenger transport, the distance traveled per capita has risen and fallen in a cyclic manner, and the per capita vehicle-kilometers travelled by private cars has begun to increase again after remaining flat briefly. From the latest nationwide person trip survey, interesting trends are observed such as increases in the trip generation rate of the elderly and in the car modal shares for the elderly and females, rise in the number of private trips, and decrease in the car modal share for young males. Regarding freight transport, both tonnage and ton-kilometer transported per capita have decreased over the last several decades.

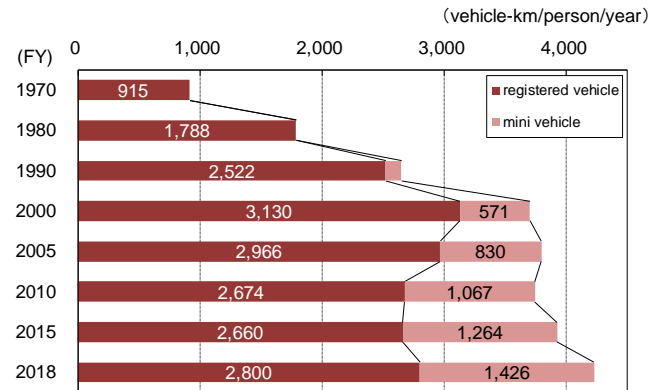
- Annual passenger-kilometers traveled per capita are on the rise for rail and air travel, with the rail in FY 2018 recording highs. Those by business vehicles and passenger ships are in a long and gradual decline, while the latter has remained almost unchanged for nearly a decade. Annual vehicle-kilometers of passenger car increased rapidly until around 2000, and then the growth has slowed down. More than one-third of it is attributed to mini vehicles. (Figures 1 and 2)

Figure 1 Annual Passenger-kilometers Traveled per Capita



Note: Corrected and estimated values are included.
Data source: [Transportation-related statistics](#) (MLIT)

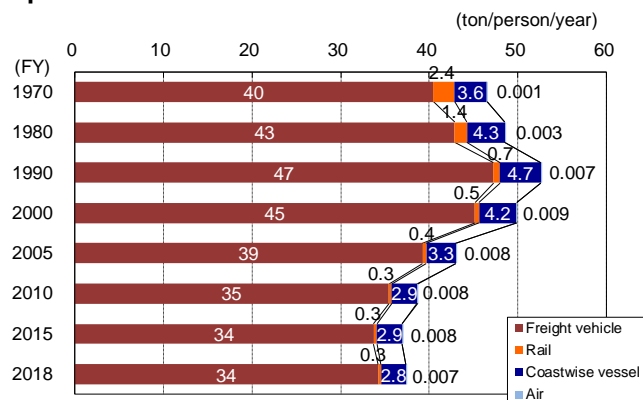
Figure 2 Annual per Capita Vehicle-kilometers Traveled by Private Cars



Note: Statistics on light vehicle did not exist before FY 1986.
Corrected and estimated values are included.
Data source: [Survey on Motor Vehicle Transport](#), [Survey on Motor Vehicle Fuel Consumption](#) (MLIT)

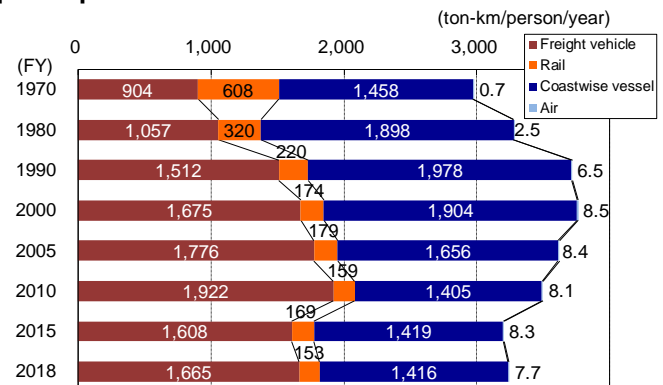
- The freight tonnage per capita by rail has been decreasing since around 1970, those by freight vehicle and coastwise vessel are also in a declining trend since the 1990s, and has remained roughly flat in recent years. The ton-kilometers transported per capita by freight vehicles overtook coastwise vessels in the early 2000s, with small increases and/or decreases for all modes in recent years. (Figures 3 and 4)

Figure 3 Annual Freight Tonnage Transported per Capita



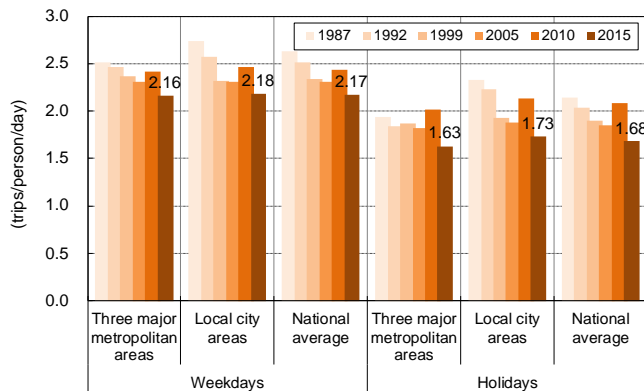
Note: Freight vehicles do not include private light vehicles in any year, and include business mini vehicles since FY 1987. Corrected and estimated values are included.
Data source: [Transportation-related statistics](#) (MLIT)

Figure 4 Annual Freight Ton-kilometers Transported per Capita



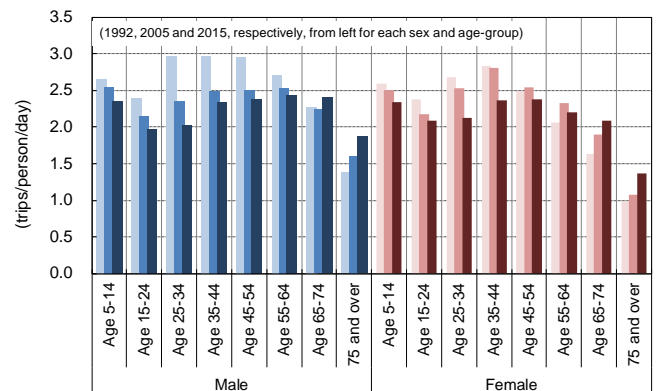
- Trip generation rate from the Nationwide Person Trip Survey has been decreasing, except for the 2020 survey which shows a different tendency. By age-group, it has been decreasing among males under 65 years old and females under 45 years old and increasing among the older age-groups. (Figures 5 and 6)

Figure 5 Trip Generation Rate



Data source: [The 6th Nationwide Person Trip Survey](#) (MLIT)

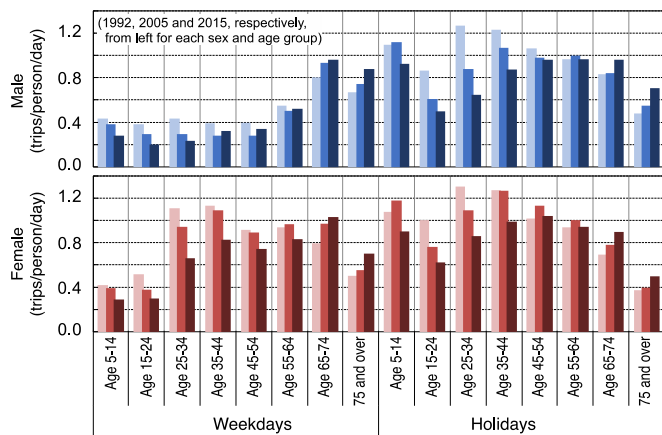
Figure 6 Trip Generation Rate by Age-group (Nationwide, Weekdays)



Data source: [The 6th Nationwide Person Trip Survey](#) (MLIT)

Figure 7 Trip Generation Rate for Private Purpose by Age-group (Nationwide)

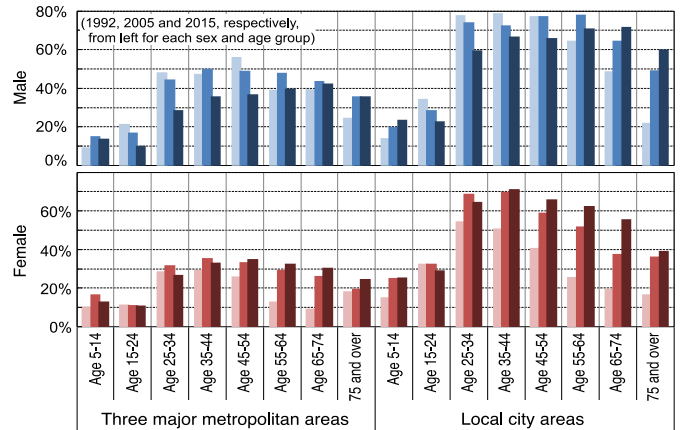
- Declining for the young and middle-aged and increasing for the elderly, regardless of sex and weekdays/holidays.



Data source: [The 6th Nationwide Person Trip Survey](#) (MLIT)

Figure 8 Modal Share of Car by Age-group (All Purposes, Weekdays)

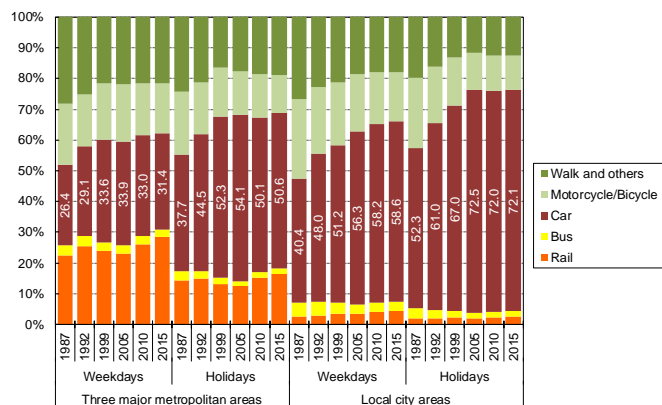
- Increasing for elderly men and for women of wider age-groups and decreasing for young and middle-aged men.



Data source: [The 6th Nationwide Person Trip Survey](#) (MLIT)

Figure 9 Modal Share (Representative Modes, All Purposes)

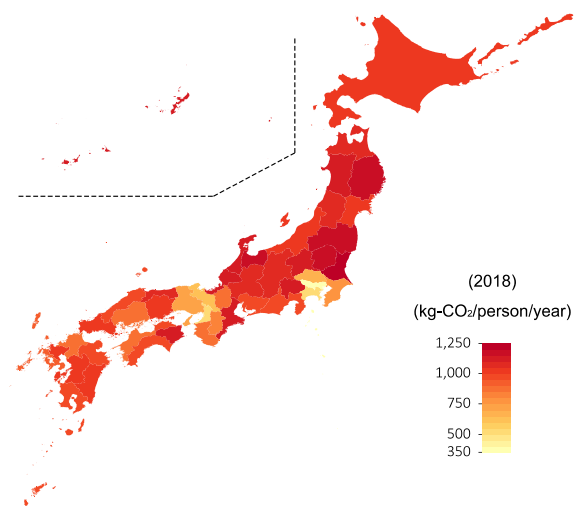
- Car modal share has plateaued, and is already in decline in three major metropolitan areas (especially on weekdays).



Data source: [The 6th Nationwide Person Trip Survey](#) (MLIT)

Figure 10 CO₂ Emissions from Private Cars by Prefectures (per Capita)

- Tokyo, Osaka and surrounding prefectures emit less CO₂. The tendency of “east high, west low” can also be seen.



Data source: [Survey on Motor Vehicle Fuel Consumption](#) (MLIT)

1-2

Road Network Today

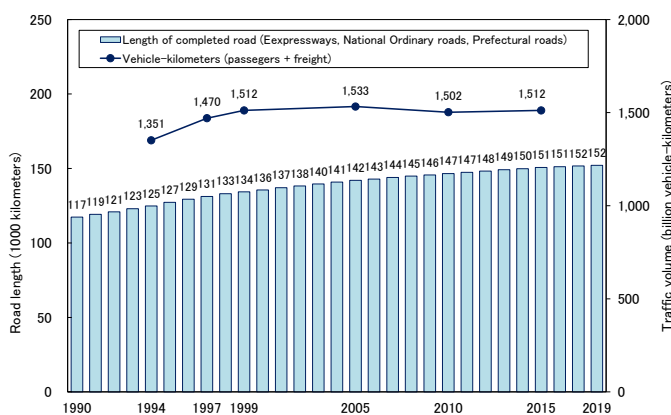
The Institute of Behavioral Sciences

Tsutomu Yabe

The length of our roads has been steadily increasing thanks to ongoing road improvement, yet it is still not sufficient for traffic demand. As a result, the average speed on roads remains unchanged at a lower level. A case in point: in city centers such as Tokyo and Osaka, and in DID areas, there is still chronic traffic congestion. Given that background, road network improvements (e.g., the ring road improvement plans that are proceeding in the major metropolitan areas) are obviously playing a significant role. The road subcommittee of the Panel on Infrastructure Development has put together a policy for the effective and efficient use of the expressway network and the fare structure within the metropolitan areas.

Figure 1 Changes in Traffic Volume and Road Length

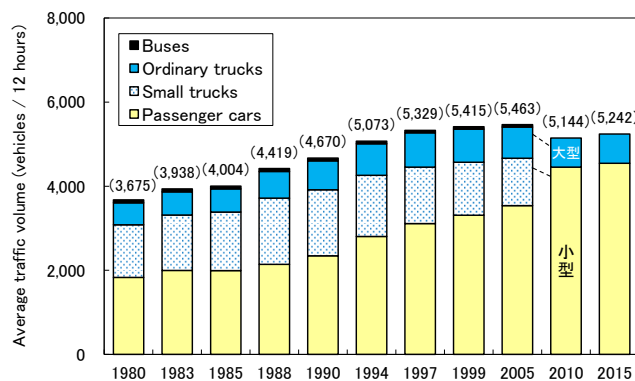
- Traffic volume, measured in vehicle-kilometers, is on a downward trend after peaking in 2005; but the volume of light motor vehicles is on an upward trend. Road length nationwide is steadily increasing.



Source: [Road Statistics Annual Report](#) (MLIT),
[Road Traffic Census](#) (MLIT)

Figure 3 Average 12-hour Traffic Volume on Ordinary Roads in Types of Vehicles

- On ordinary roads, the traffic volume of passenger cars is on an upward trend.

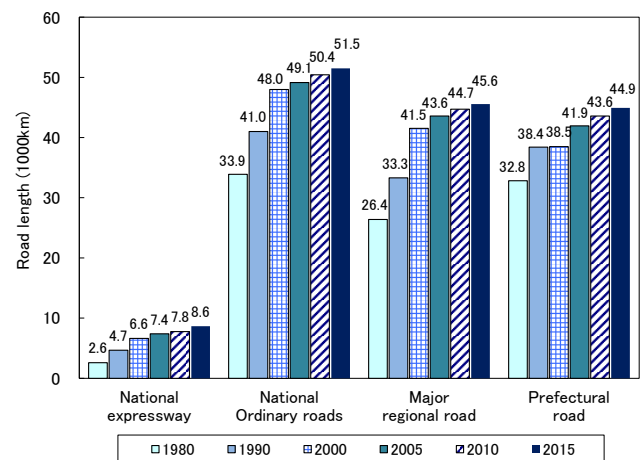


Notes: Figures in parentheses are the average traffic volume of all types of vehicles

Source: [Road Traffic Census](#) (MLIT)

Figure 2 Changes in Length of Completed Roads by Road Type

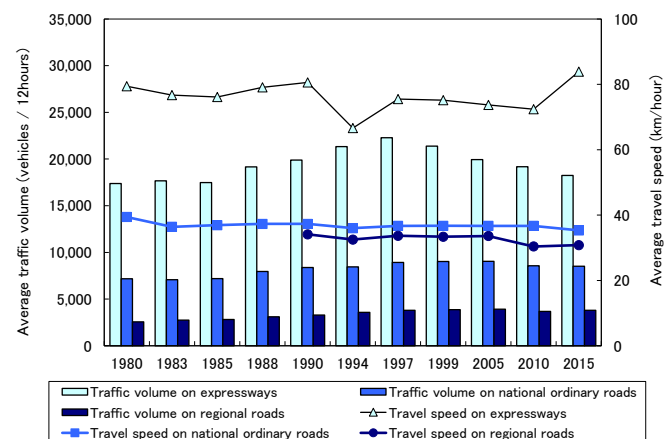
- For all types of road, the length of completed road (i.e., with improvements completed) is increasing steadily.



Source: [Road Statistics Annual Report](#) (MLIT)

Figure 4 Changes in Average Traffic Volume and Average Travel Speed by Type of Road

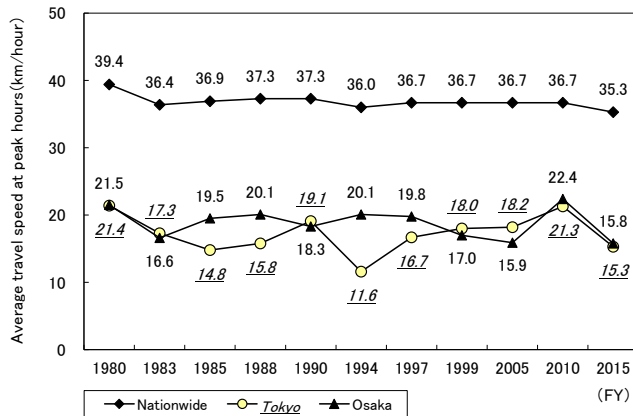
- The average traffic volume on expressways has been on a downward trend since 1997, partly because the newly constructed ones has less traffic. The average travel speed for either type of road remains at the same level or is on a slightly downward trend.



Source: [Road Traffic Census](#) (MLIT)

Figure 5 Average Travel Speed on National Ordinary Roads (Nationwide, Tokyo, Osaka)

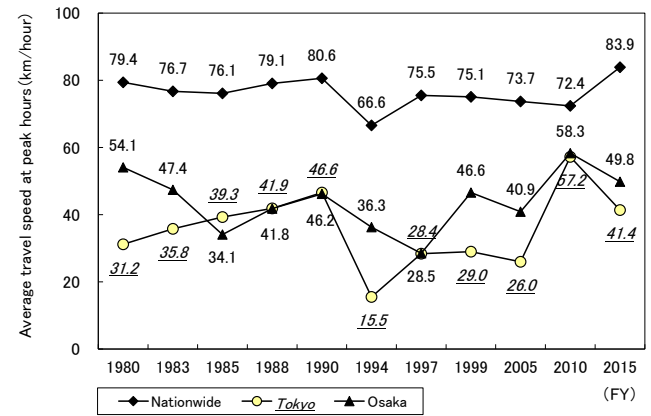
- There has been almost no changes in the nationwide average. The average travel speed in the wards of Tokyo and in Osaka City is about half of the nationwide average; there is still severe traffic congestion.



Source: [Road Statistics Annual Report](#) (MLIT)

Figure 6 Average Travel Speed on Expressways (Nationwide, Tokyo, Osaka)

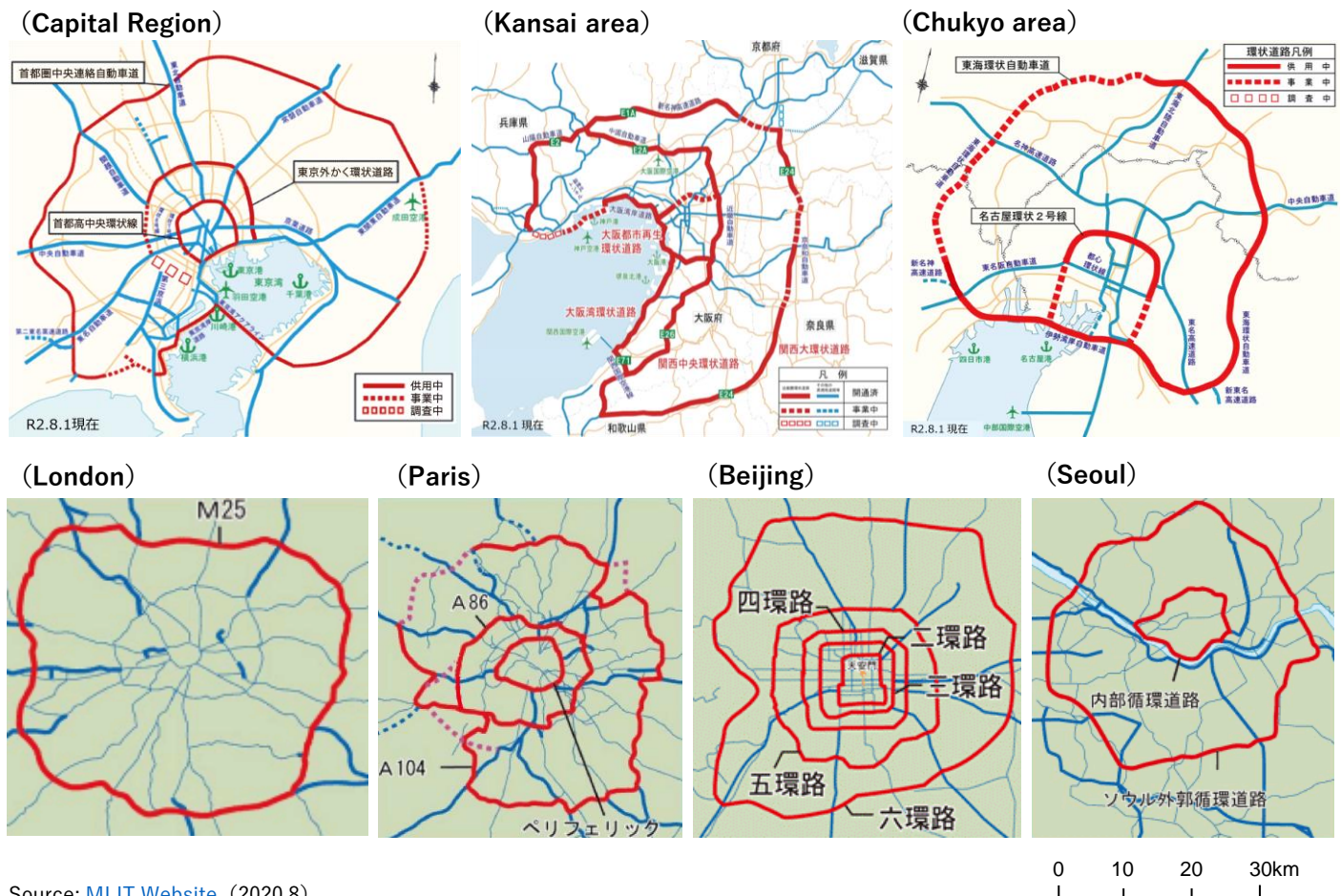
- The nationwide average has been on a slightly downward trend. Though there had been changes in the average speed in the wards of Tokyo and in Osaka City, both speed levels remain lower than the nationwide average.



Source: [Road Statistics Annual Report](#) (MLIT)

Figure 7 National Comparison of Expressway Network Condition

- Many cities have implemented ring roads, and its construction is completed in London, 90% done in Paris. For major cities in Asia (Beijing, Seoul), it is almost completed as well. In Tokyo, to make alternative expressway routes, the policy for “Smart use of infrastructure” with a focus on expressways is being implemented (e.g. metropolitan expressway Shinagawa-line, Ken-O expressway).



Source: [MLIT Website](#) (2020.8)

1-3

Freight Road Transport Today

Professor, Senshu University

Eiichiro Iwao

This section shows the basic statistics on the recent trends of freight road transport. Regarding the freight transport, both tonnage and ton-kilometer transported per capita have decreased over the last several decades. The number of commercial trucks increased until 2007. From 2008, there is a decrease. The number of private trucks have been declining since 1990. The number of large size motor vehicle license holders between the ages of 18 and 29 continued to decline until 2018. However, the number of large size motor vehicle license holders over the age of 70 continues to increase.

- Cargo weight by vehicle type for ordinary vehicles (commercial) has been increasing since FY2009. However, from FY2012 onward, it has continued to decrease with the exception of FY2016. Cargo ton-kilometers of ordinary vehicles (commercial) has been decreasing from 2007 to 2015 except for 2013. However, it started to increase after FY2016.

Figure 1 Changes in Cargo Weight, by Vehicle Type

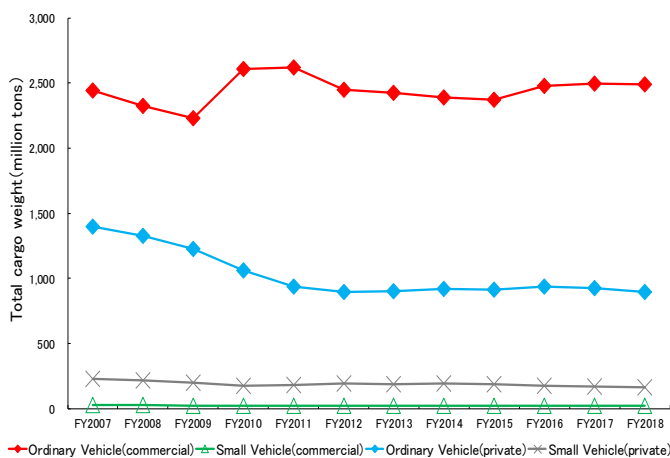
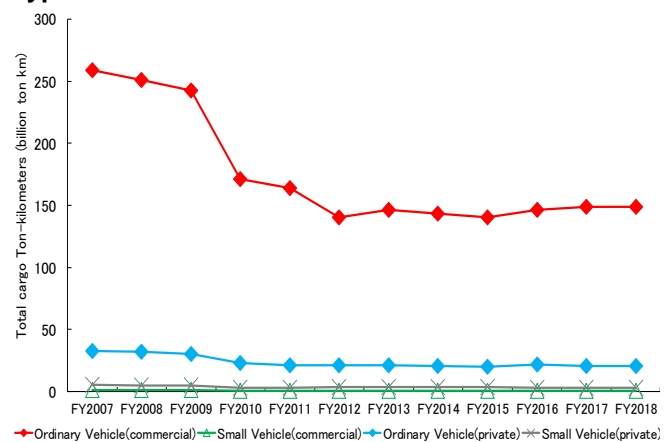


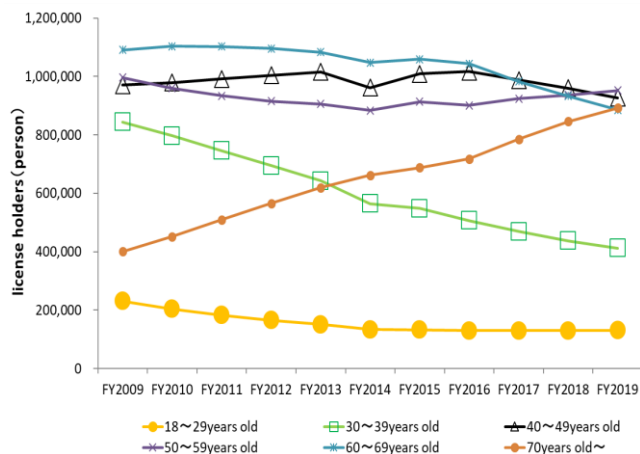
Figure 2 Changes in Cargo Ton-kilometers, by Vehicle Type



Note: It doesn't include Hokkaido District Transport Bureau and Tohoku District Transport Bureau numbers of March 2011 and April
Source : Annual Statistical Report on Motor Vehicle Transport (Information Policy Division, Policy Bureau, MLIT)

Figure 3 Changes in Large Size Motor Vehicle License Holders

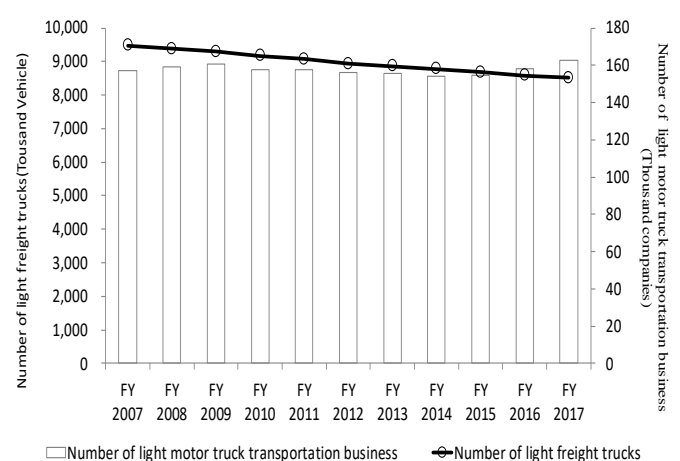
- The number of large size motor vehicle licenses between the ages of 18 and 29 continued to decrease until FY2018. However, it increased in FY2019. The number of licenses for the 30-39 age group continues to decrease, while increasing for the over 70 group.



Source: Driver's license statistics (National Police Agency)

Figure 4 Changes in Number of Light Freight Trucks and Light Motor Truck Transportation Business

- The number of light freight trucks owned continues to decrease since FY2007. The number of light truck business decreased from FY2010 to FY2015, with the exception of FY2011. However, it has been increasing since FY2016.

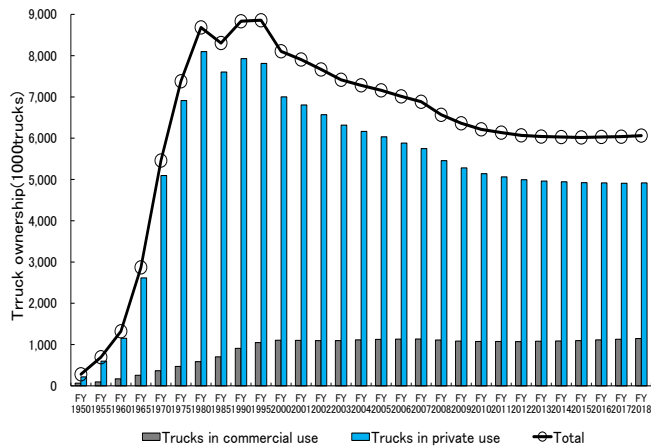


Note: The number of light freight trucks includes hearses and motorcycles.

Source : Transportation-related statistics data collection (Information Policy Division, Policy Bureau, MLIT), Statistical data (Japan Light Motor Vehicle and Motorcycle Association)

Figure 5 Changes in Private and Commercial Truck Ownership

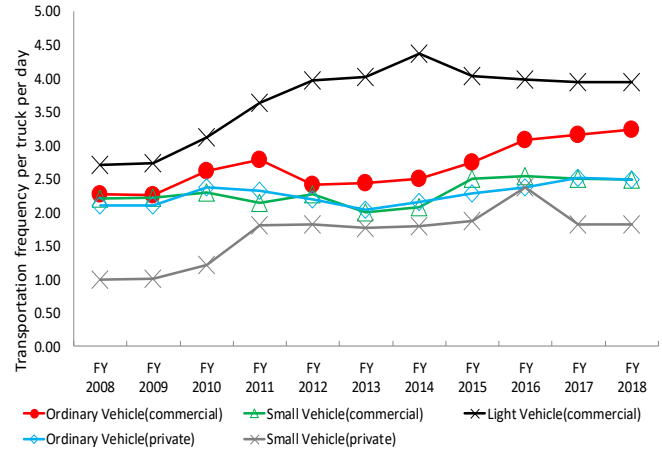
■ The number of trucks in commercial use increased until FY2007, but decreased from FY2008 to FY2011. After that, it increased from FY2012.



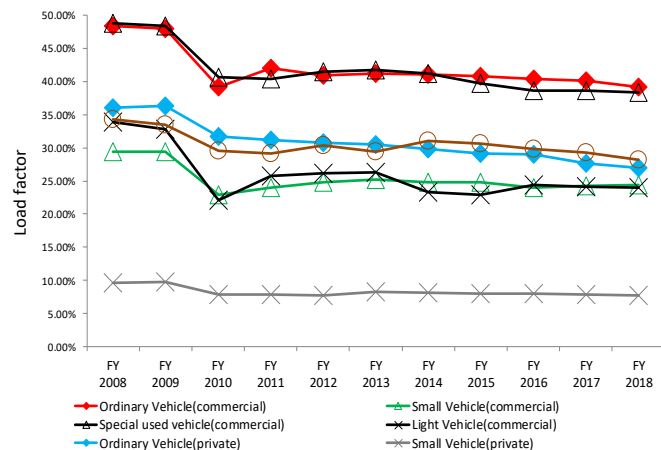
Note: It doesn't include Hokkaido District Transport Bureau and Tohoku District Transport Bureau numbers of March 2011 and April 2011.
Source: Transportation-related statistics data collection (Information Policy Division, Policy Bureau, MLIT)

Figure 6 Changes in Transportation Frequency per Truck per Day

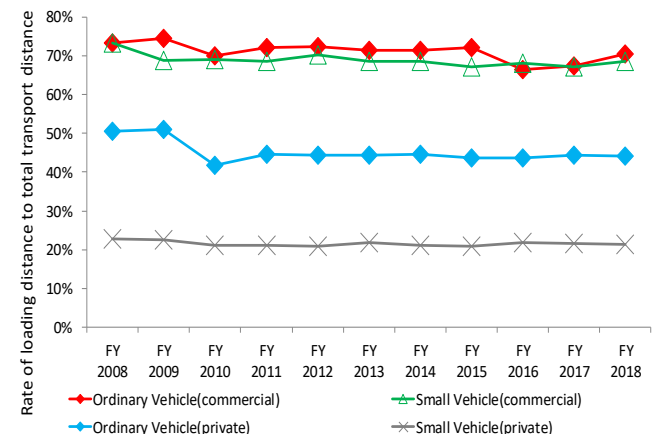
■ The transportation frequency per truck per day in actual use by ordinary truck (commercial) increased except for FY2012.



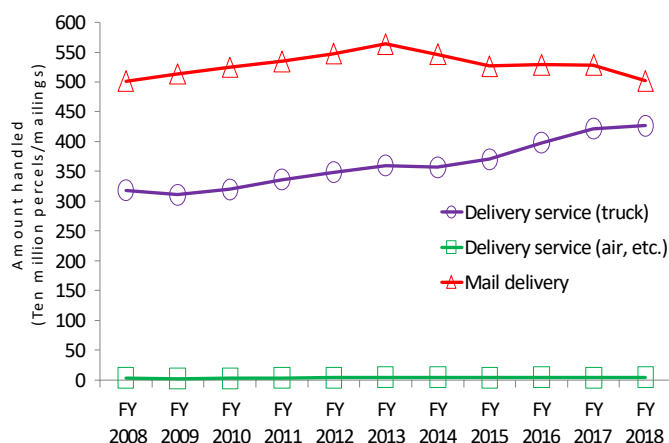
Source: Annual Statistical Report on Motor Vehicle Transport (Information Policy Division, Policy Bureau, MLIT)

Figure 7 Changes in Load Factor, by Type of Use (Private vs. Commercial)

Note: It doesn't include Hokkaido District Transport Bureau and Tohoku District Transport Bureau numbers of March 2011 and April 2011.
Source: Annual Statistical Report on Motor Vehicle Transport (Information Policy Division, Policy Bureau, MLIT)

Figure 8 Changes in Rate of Loading Distance to Total Transport Distance, by Type of Use (Private vs. Commercial) Type

Source: Transportation-related statistics data collection (Information Policy Division, Policy Bureau, MLIT)

Figure 9 Changes in the Amount of Package and Mail Handling, as Well as Regular Parcel Post Delivery

Source: website of MLIT

Table 1 Trends in Courier Redelivery Rates

■ Redelivery rates are higher in urban area than in Local area. Comparing the 2017 and 2019, the redelivery rate is decreasing everywhere except for urban areas.

	Oct-17			Oct-19		
	Total number of deliveries	Number of Redelivery	Redelivery rate	Total number of deliveries	Number of Redelivery	Redelivery rate
Urban area	884	151	17.1%	839	139	16.6%
Suburban area	1,354	199	14.7%	1,325	190	14.3%
Local area	119	16	13.5%	131	15	11.5%
Total	2,357	366	15.5%	2,295	344	15.0%

Note: The unit of total number and redelivery number is 1,000. This number is the total of Sagawa Express: Hikyaku Express Courier, Japan Post: Yupack, Yupacket, Yamato Transport: Takkyubin. The October 2017 term is from October 1st to October 31st. The October 2019 term is from October 1st to October 31st.
Source: website of MLIT

1-4

Public Transport Today

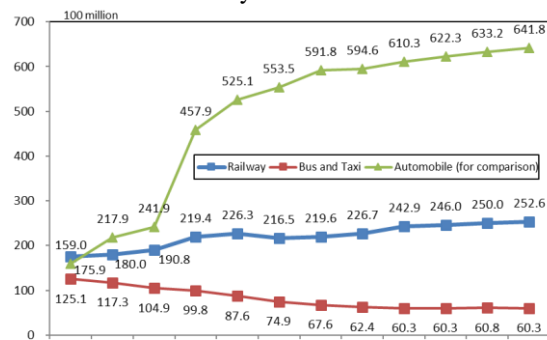
Professor, Ryutsu Keizai University

Kazuya Itaya

In recent years, the downward trend in the use of public transportation is slowing down. On the other hand, the use of private cars is on a recovery trend. From the statistical data, it can be said that the mobility in Japan has improved overall. In the three major metropolitan areas the utilization of railway is increasing. But the congestion rate of trains has continued to decline. In the Chukyo and Kansai areas, congestion is being relieved. The bus business has become unprofitable for a long time. The balance ratio has been improving. As a whole, the public transport safety has been maintained. However, many of the railway lines destroyed by the disaster are difficult to recover.

Figure 1 The Number of Passengers of Railways and Buses

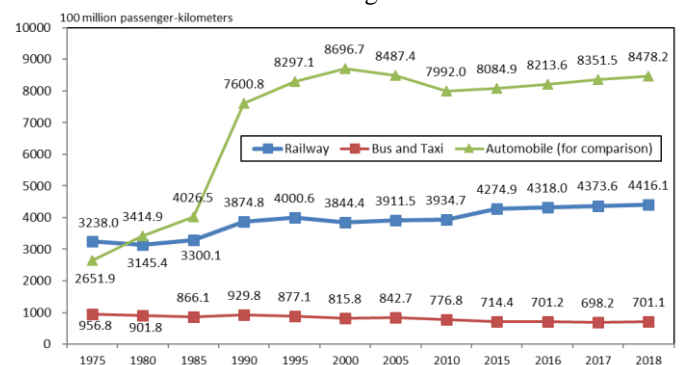
■ The use of Railways and buses remains almost unchanged.



Source: [Annual Statistical Report on Motor Vehicle Transport](#), [Annual Statistics Report on Railway Transport](#)

Figure 2 Railway and Bus Passenger Kilometers

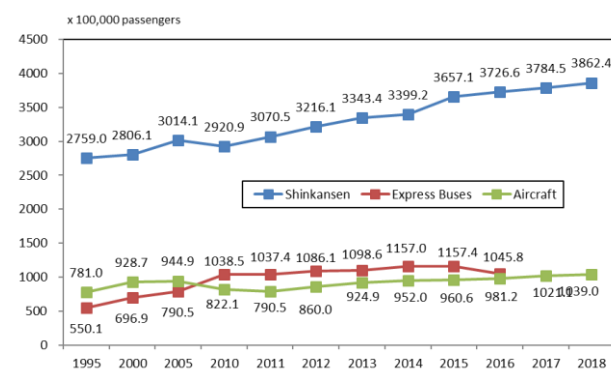
■ The use of railways has been gradually increasing, but the use of buses is almost unchanged.



Source: [Annual Statistical Report on Motor Vehicle Transport](#), [Annual Statistics Report on Railway Transport](#)

Figure 3 The Number of Intercity Passengers, by Mode

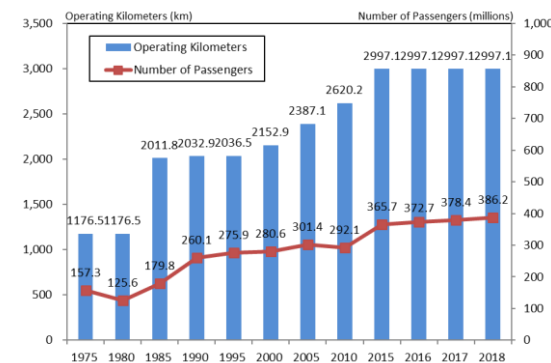
■ The use of Shinkansen, aircraft and express buses continues to increase.



Source: [Annual Statistical Report on Railway Transport](#), [Bus Business in Japan](#), [Annual Statistical Report on Air Transport](#)

Figure 4 Operating Kilometers and Number of Passengers of Shinkansen

■ Since 2010, the use of Shinkansen has increased.

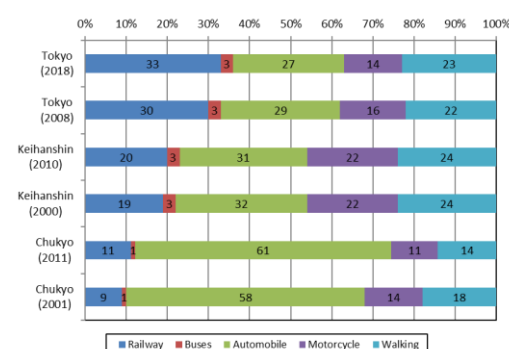


Source: Before 1985: Railways 2008: the Numbers.

After 1990: [Annual Statistical Report on Railway Transport](#)

Figure 5 Modal Share in the Three Metropolitan Areas

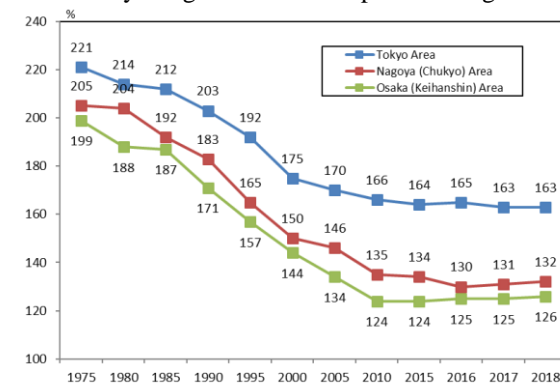
■ The use of railway tends to increase and automobile tends to decrease in each area.



Source: Urban Area Person Trip Survey Results in [Tokyo](#), [Osaka \(Keihanshin\)](#), [Nagoya \(Chukyo\)](#) Area

Figure 6 Railway Congestion Rates in the Three Metropolitan Areas

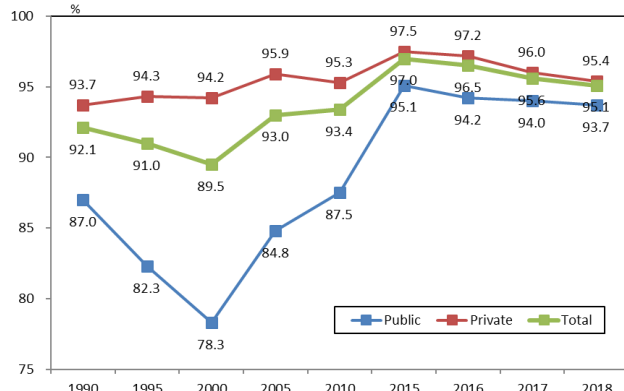
■ Railway congestion rates keep decreasing in all three areas.



Source: Railways 2019: the Numbers

Figure 7 Bus Industry Incomes vs. Expenditures

- In the past 20 years, the balance ratio overall has never exceeded 100. [Balance ratio = (current income / current expenditure) × 100]

Source: [Bus Industry Income and Expenditures](#)**Table1 Long-Term Suspended Railway Lines Due to a Disaster**

- Many railway lines have been suspended for a long time due to disasters. There are some lines that are unlikely to be restored due to the great damage.

Names and Section of Lines	Period	Details of the Disaster
JR East Tadami Line (Aizu-Kawaguchi - Tadami)	2011/Jul/30-	July 2011 Heavy rain in Niigata and Fukushima
●JR Hokkaido Hidaka Line (Mukawa - Samani)	2015/Jan/8-	Sediment runoff due to high waves
Minami-Aso Railway Takamori Line (Tateno - Nakamatsu)	2016/Apr/14-	The 2016 Kumamoto Earthquake
●JR Hokkaido Nemuro Line (Higashi-Shikagoe - Shintoku)	2016/Aug/31-	2016 Typhoon No. 10
●JR Kyushu Hitahikosan Line (Soeda - Yoake)	2017/Jul/5-	July 2017 Heavy rain in northern Kyushu
JR East Suigun Line (Fukuroda - Hitachi-Daigo)	2019/Oct/12-	2019 Typhoon No. 19
Abukuma Express Line (Tomino - Marumori)	2019/Oct/12-	2019 Typhoon No. 19
Ueda Kotsu Line (Ueda - Shiroshita)	2019/Oct/12-	2019 Typhoon No. 19

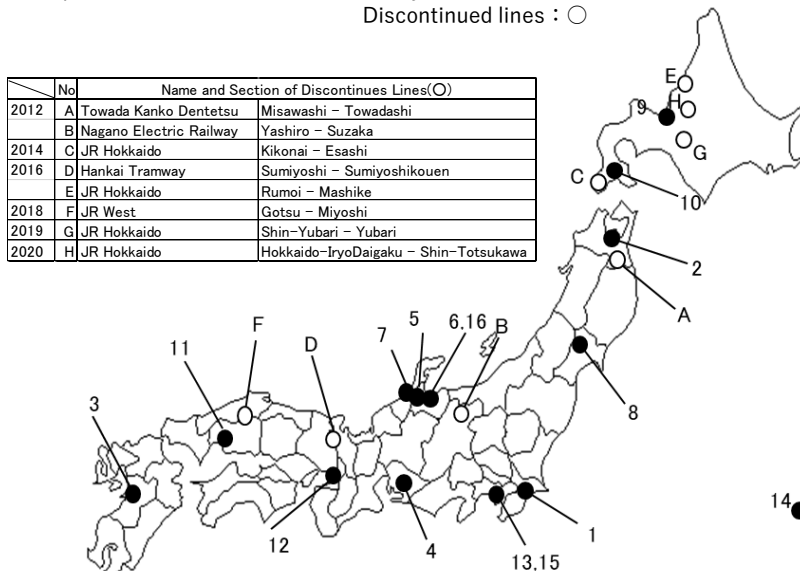
Note: As of August 2020, lines that have been suspended for over a year due to a disaster are listed.

● has no plans to restore.

Source: Author's Investigation

Figure 10 Newly Established / Discontinued Railway Lines

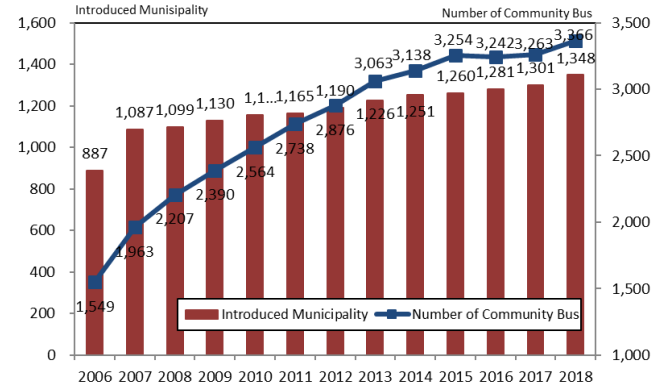
Examples between 2010 and 2020 Newly-established lines : ●
Discontinued lines : ○



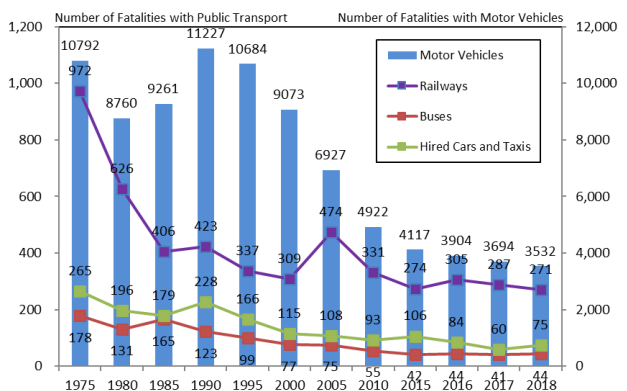
Source: Author's Investigation

Figure 8 The Number of Municipalities Introduced Community Bus

- Mainly in the areas where bus operators withdrew, the community bus routes are continuing to increase.

Source: [White Paper on Transport Policy 2020](#)**Figure 9 The Number of Traffic Fatalities with Public Transport**

- The number of fatalities with buses, hired cars, and taxis continues to decrease. Compared to the number of traffic fatalities with motor vehicles (3532 in FY 2018), public transport safety is outstanding.



Source: (Railway and Automobile): [White Paper on Traffic Safety in Japan](#), (Bus, Hired Car and Taxi): [Statistics on Traffic Accidents of Motor Vehicles for Business Use](#)

- There are many newly established lines in the Hokuriku region. The case of the JR West in 2017 is a revival of a line that was once abolished. At the same time, the number of discontinued lines has been on a downward trend over the past several years.

No	Name and Section of New Lines(●)
2010	1 Keisei "Narita Airport Line" Keisei Takasago - Narita Airport
	2 JR East "Tohoku Shinkansen" Hachinohe - Shin Aomori
2011	3 JR Kyushu "Kyushu Shinkansen" Hakata - Shin Yatsushiro
	4 Nagoya City Transportation Bureau Nonami - Tokushige
2014	5 Manyosen Takaokaeki - Takaokaekimae
2015	6 Toyama Chihou Tetsudou Toyamaeki - Dentetsu Toyamaeki-Esta Mae
	7 JR East West "Hokuriku Shinkansen" Nagano - Kanazawa
	8 Transportation Bureau City of Sendai Yagiya Zoological Park - Arai
	9 Sapporo City Transportation Susukino - Nishi yon chome
2016	10 JR Hokkaido "Hokkaido Shinkansen" Shin-Aomori - Shin-Hakodate-Hokuto
2017	11 JR West Kabe - Aki-Kameyama
2018	12 JR West Shin-Osaka - Hanaten
2019	13 Yokohama Seaside Line Kanazawa Hakkei Station extension
	14 Okinawa Urban Monorail Shuri - Tedako-Uranishi
2020	15 JR East, Setetsu Nishiya - Hazawa Yokohama-kokudai
	16 Toyama Chihou Tetsudou Toyama Station north-south direct service started

1-5

Recent Trends in New Urban Transport Systems

Professor, Yokohama National University
Fumihiko Nakamura

New technology has been meeting the diverse needs of mobility and responding to policy issues. Vehicle design with advanced technology has been applied to several cases in LRT and BRT. BHLS (Bus with High Level of Service) has been popular in EU. One-way car sharing with electric vehicles has been demonstrated. Innovations in bicycle sharing systems have enhanced management efficiency. Ropeway systems and escalators have been applied for mobility needs in hilly urbanized areas.

Table 1 Summary of Trends in New Urban Transport Systems

Modes	Environment, Safety	Social Welfare, Social Inclusion	Planning, landscape
LRT and trams	Low floor and low emission		No catenary tram
BRT and buses	Fuel cell, EVs	Low floor, community buses	Designers' involvement
Bicycles	Bicycle sharing		
Automobiles	Car sharing		
Pedestrian support	Personal mobility		
Service Integration	MaaS (Mobility As A Service)		
Others	Ropeways, escalators, elevators		

Figure 1 Catenary-less Tram



Anges (France)

Source: <http://www.angers.fr/actualites/photos/>

Figure 2 Rubber-tyre Tram



Medelline (Colombia)

By the author

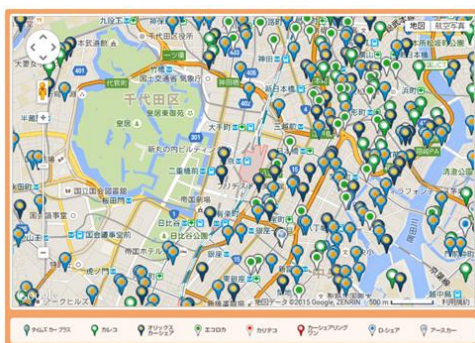
Figure 3 Bus with High Level of Service



Metz (France)

By the author

Figure 4 Car-sharing Station Map in Tokyo



Source: <http://www.carsharing360.com/site.html>

Figure 5 One-way Car-sharing Demonstration at Yokohama



Source: <http://www.smart-j.com/smaco/>

Figure 6 Cancellation of EV Sharing in Paris (Auto'lib) Due to Problems



By the author

Figure 7 Increase of Bike Sharing Projects

Shang-Hao I (xqchuxing)
 By Ms. Hanako Kaminokado



Figure 8 E-scooter Demonstration Initiated by Share-taxi Operator in Jakarta

By Mr. Akira Hosomi



1-6

Easy-to-use Transportation for Everyone

Specified Nonprofit Corporation
Healthy town development

Atsushi Matsubara

Six years have passed since the Government of Japan ratified the Convention on the Rights of Persons with Disabilities in 2014. The Olympic and Paralympic Games were about to be held, but there remain problems because Japanese Government has not admitted "the right to transport". Elderly people and people with disabilities, who are vulnerable, are refraining from going out due to fear of COVID-19 infection. There is a problem that the measures to encourage going out that have been tackled so far are not useful. Not going out is associated with deterioration in physical strength. Even when traveling by private car, which can be expected to prevent infection, driving errors due to deterioration in cognitive function of elderly drivers is becoming a social problem.

Figure 1 Future Population by Age Group

■ Japan's total population and productive population are steadily decreasing.

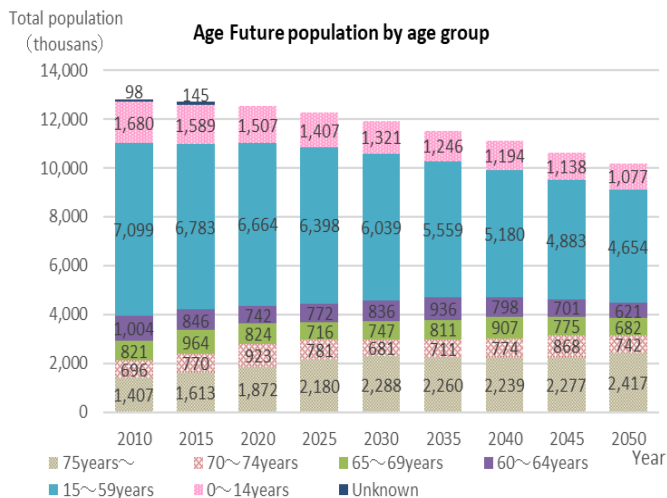
Source: [Statistics Bureau of Japan : 2020](#)

Figure 2 Changes in the Elderly Population over Time

■ Aging rate (over 65 years old) is 28.4%. The proportion of people aged 75 and over is 14.7%. From 2018, the number of late-stage elderly exceeded the number of early-stage elderly. Super-aging is progressing.

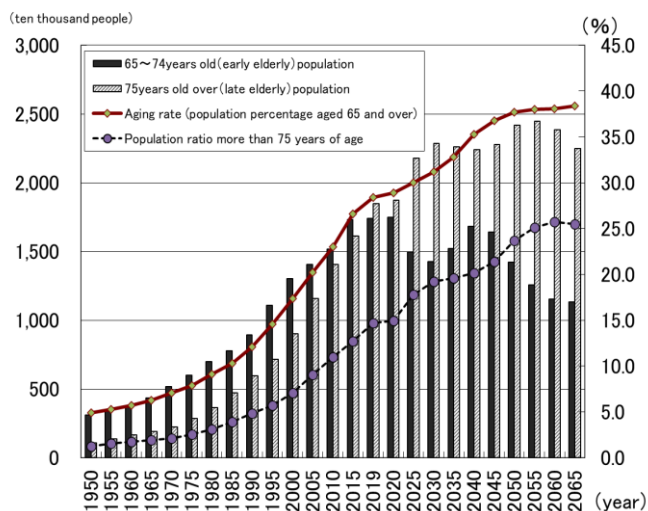
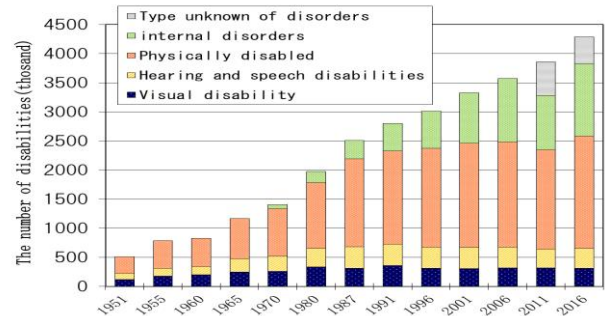
Source: [2020 version of "aging society White Paper"](#)

Figure 3 The Number of the Persons with Disabilities



Source: MHLW "in 2016: Survey on the difficulty of life (nationwide home handicapped Survey)"

Table 1 The Number of Persons with Disabilities at Home

Fault type	Total number
Physically disabled	4.36 million people
Intellectually disabled	1.09 million people
Mentally disabled	4.19 million people

Source: [Annual Report on Government Measures for Persons with Disabilities 2019](#)

Figure 4 Breakdown of Japan's Total Population (126 Million People)

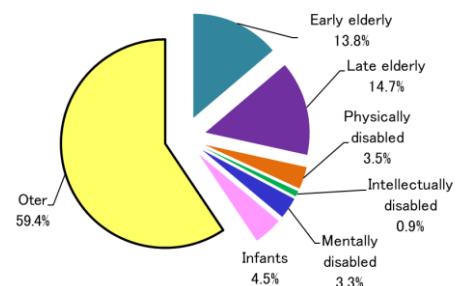
Source: [Annual Report on the Aging Society: 2020](#), [Annual Report on Government Measures for Persons with Disabilities 2019](#)

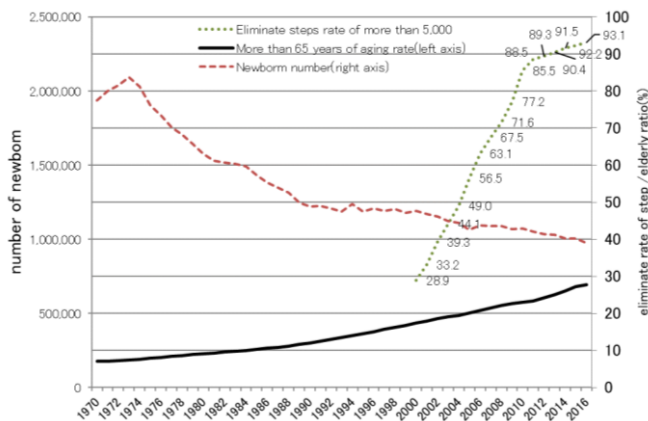
Table 2 The Compliance of Standards Stipulated in the Transportation Barrier-Free Law

	2020 year-end target	2018 year-end	Year-on-year
Railway vehicle	70%	73.2%	2.0p+
Low-floor bus	70%	58.8%	2.8p+
Welfare taxi	28,000 vehicles	28,602 vehicles	8,489 vehicles+
Passenger ship	50%	46.2%	2.4p+
Aircraft	90%	98.2%	0.4p+

Source: Compiled from MLIT documents

Figure 5 Rate of Elimination of Grade Disparities in Railway Stations

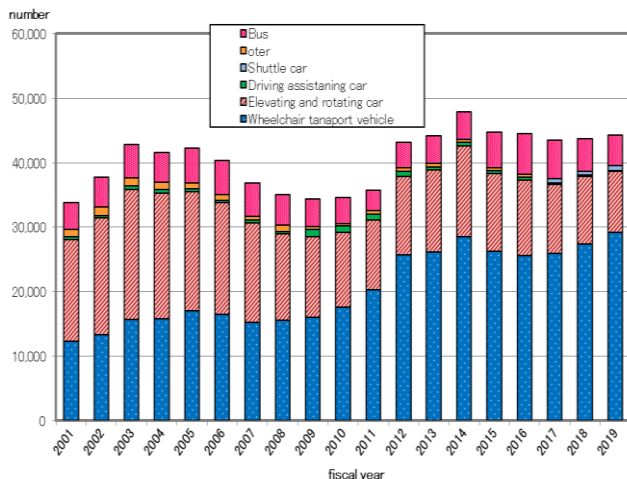
- As the population ages, stations are becoming barrier-free. The number of newborns using strollers is decreasing.



Source: Compiled from MLIT, MHLW of documents

Figure 6 Trends in the Sales of Welfare Vehicles

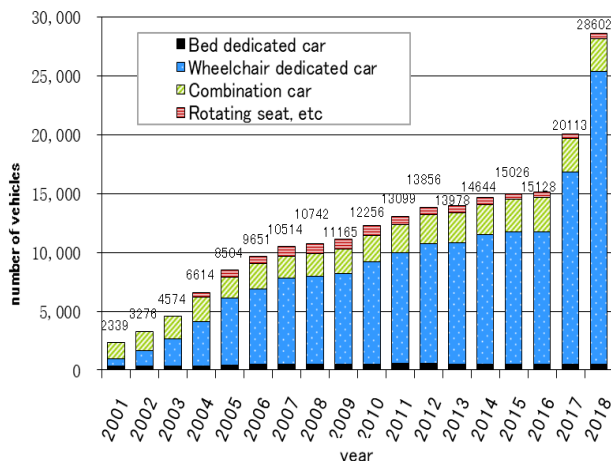
- Sales of welfare vehicles are picking up.



Source: Compiled from JAMA documents

Figure 7 The Number of the Welfare Tax

- With the introduction of wheelchair-friendly vehicles, welfare tax number is increasing rapidly.



Source : Compiled from MLIT document

Table 3 The Number of Driver License Holders by Gender and Age Group

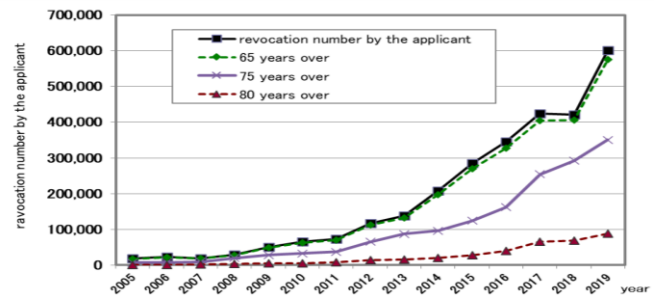
- Decrease in driver's license possession among young people.

age	2017 year-end		2018 year-end		2019 year-end		2018-2019 increase or decrease ratio	
	men	women	men	women	men	women	men	women
16~19	547,135	378,755	520,310	363,264	508,314	356,736	-2.3	-1.8
20~24	2,565,106	2,174,669	2,567,301	2,174,090	2,531,713	2,140,939	-1.4	-1.5
25~29	2,935,654	2,590,231	2,874,219	2,536,875	2,867,111	2,530,227	-0.2	-0.3
30~34	3,445,970	3,112,442	3,353,104	3,019,729	3,239,191	2,908,120	-3.4	-3.7
35~39	3,858,449	3,543,644	3,766,712	3,457,413	3,695,692	3,389,708	-1.9	-2.0
40~44	4,607,085	4,520,685	4,433,462	4,090,554	4,256,783	3,927,731	-4.0	-4.0
45~49	4,656,760	4,294,527	4,755,227	4,392,762	4,818,948	4,454,490	1.3	1.4
50~54	3,974,943	3,640,619	4,086,014	3,756,213	4,177,627	3,850,087	2.2	2.5
55~59	3,622,611	3,251,334	3,650,321	3,298,832	3,711,229	3,373,090	1.7	2.3
60~64	3,566,117	3,054,565	3,519,656	3,064,001	3,490,170	3,078,885	-0.8	0.5
65~69	4,299,868	3,367,040	4,066,902	3,271,012	3,793,321	3,105,198	-6.7	-5.1
70~74	3,124,570	1,997,104	3,368,967	2,289,675	3,598,414	2,528,031	6.8	10.4
75~79	2,177,322	1,006,977	2,262,875	1,110,327	2,329,766	1,211,247	3.0	9.1
80~84	1,240,107	380,742	1,242,698	407,636	1,232,337	430,319	-0.8	5.6
85~	512,074	78,090	526,934	87,839	528,080	94,924	0.2	8.1
total	45,133,771	37,391,424	44,994,702	37,320,222	44,778,696	37,379,732	-0.5	0.2

Source: [National Police Agency "driver's license statistics 2019 version"](#)

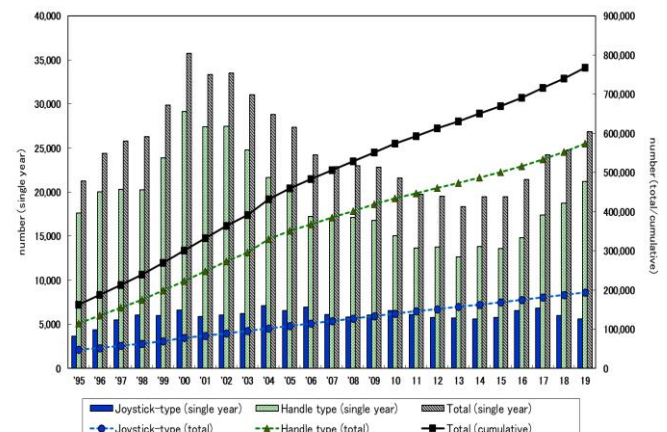
Figure 8 The Number of Persons Who Voluntarily Return Their Driver's Licenses

- By conducting a driver's license aptitude test, the number of people returning licenses is increasing rapidly.



Source: [National Police Agency "driver's license statistics 2019 version"](#)

Figure 9 Electric Wheelchair Shipments



Source: [Electric wheelchair safety Promotion Association material](#)

Figure 10 The Advent of Wheelchair-accessible Taxi

- Before the Olympic and Paralympic Games, wheelchair-accessible taxis were introduced by Japan Taxi in 2017.

And to improve the time to get on and get off the wheelchair, the special temporary slope was added in 2019.



1-7

The Future of the Transport Infrastructure

The Institute of Behavioral Sciences

Yuichi Mohri

The table summarizes transportation policies and other initiatives from 2015 to 2018. In addition, for 2019, the following plans were formulated and laws were issued. 1) Promulgation of the "Law for Partial Amendment of the Road Vehicles Act", 2) Formulation of the "Draft Basic Plan for Safety and Security on Expressways", 3) Promulgation of the "Anti-Monopoly Law Special Provisions for Buses and Regional Banks", 4) Implementation of road pricing (additional charge of 1,000 yen) on the Metropolitan Expressway during the Tokyo 2020 Olympic and Paralympic Games, 5) Formulation of Road Policy Vision: "Changing Road Landscape in 2040".

Table 1 Transportation Policy and Other Initiatives in 2015-2018

Year and month	Transportation policy and other initiatives in 2015-2018
August 2015	Based on the National Spatial Planning Act, the Cabinet approved the new National Spatial Strategy, the seventh national plan in the post-war era.
September 2015	Based on the Act on Priority Plan for Infrastructure Development, the Cabinet approved the Fourth Priority Plan for Infrastructure Development for the planning period from FY2015 to FY2020.
December 2015	The "Report on the Basic Direction of Future Logistics Policy" which indicates the way to proceed with future initiatives and concrete measures to achieve them was compiled.
March 2016	New Regional Plans for each of the eight blocks across the country have been finalized in light of the National Spatial Strategy of August 2015.
April 2016	In light of the progress of the development of the three ring roads, an expressway toll scheme that promotes its use via a distance-based system was introduced in the Metropolitan Area.
June 2017	A part of the Environmental Action Plan of the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) has been revised, and the inspection results of the MLIT's environment-related measures for the period up to 2020 have been presented.
June 2017	As in the Metropolitan Area, a new toll scheme was introduced for the Kinki region's expressways, using a distance based system to promote its use.
July 2017	In addition to setting out guidelines for logistics policies and administration, the Cabinet approved the Comprehensive Logistics Policy (FY2017-2020), which aims to promote comprehensive and integrated logistics policies in cooperation with the relevant ministries and agencies.
July 2017	A (draft) proposal "Road/Transport Innovation: Realizing affluent lifestyles by pursuing functional improvement and utilization of "Michi"" was presented as a road policy that should be pursued in the future.
July 2017	The national government, the Tokyo Metropolitan Government, and the Metropolitan Expressway Company Limited, in coordination with the development of the Nihombashi area, jointly presented a proposal of burying the Metropolitan Expressway underground, including its alignment, structure, and expressway sections of the project.
January 2018	A (draft) proposal for transportation management of the Tokyo 2020 Olympic and Paralympic Games was presented.
February 2018	The Cabinet has approved the "Bill to Revise a Part of the Road Law", which takes measures such as the obligation to maintain and manage properties occupied by the road and the establishment of an important logistics road system for the purpose of further improving safety by enhancing road management and strengthening the function of important road networks for logistics.
June 2018	Based on the Bicycle Utilization Promotion Act, the Cabinet approved the Bicycle Utilization Promotion Plan, which is a basic plan for the comprehensive and systematic promotion of measures to promote the bicycle use.
November 2018	An interim report of the Ministry of Land, Infrastructure and Transport (MLIT) has been published, which shows the directions of the Ministry's technology policy and the main technology policy.
December 2018	"Ministry of Land, Infrastructure, Transport and Tourism's Future Efforts toward the Realization of Autonomous Driving" was published toward the solution of various problems involving automobiles and roads.

Promulgation of the "Law for Partial Amendment of the Road Vehicles Act".

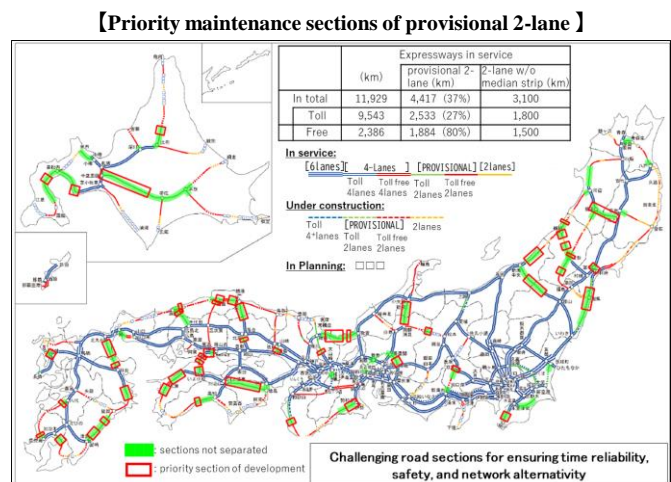
- The Bill of Partial Amendment of the Road Vehicles Act, which establishes a system to ensure the safety of automated vehicles and other vehicles in an integrated manner from design and manufacturing to their use, while promoting the safe development, commercialization, and dissemination of automated vehicles and other vehicles, was approved by the Cabinet in March 2019 and promulgated in May 2019. The bill (1) adds automatic navigation devices to the devices subject to safety standards, (2) organizes the legal entities that will be required to perform administrative tasks related to the management of technical information necessary for the electronic inspection of vehicles, (3) expands the scope of overhaul and require the provision of necessary technical information for inspection and maintenance, and (4) establish a licensing system to modify automatic navigation devices and other devices by modifying the embedded programs. Based on this bill, the targets are the commercialization of automated driving on expressways (level 3) (by 2020), the commercialization of unmanned automated driving services (level 4) in limited areas (by 2020), and the installation rate of automatic braking in new passenger cars (over 90% by 2020).

Source: [MLIT](#)

Figure 1 Draft Basic Plan for Highway Safety and Security

■ In September 2019, the Draft Basic Plan for Safety and Security on Expressways was formulated including the level of service to aim for, in order to steadily promote measures in safety and security of the expressway network from the perspective of improving safety, reliability and user-friendliness. The specific measures in the Basic Plan are (1) elimination of the provisional two-lane sections, (2) evolution of the expressway in response to innovations such as automated driving, (3) realization of the safest expressway in the world, (4) dramatic improvement of network reliability, and (5) improvement of user-friendliness based on user needs. In particular, in the provisional two-lane section, the number of provisional two-lane toll sections is to be reduced by half in 10 to 15 years (this will be fully eliminated in the long term), and in order to promote the systematic conversion of the sections with provisional two-lane into four-lane in the tolled sections, priority is given to sections with major problems (priority maintenance sections), which will be projected and maintained.

Source: [MLIT](#)



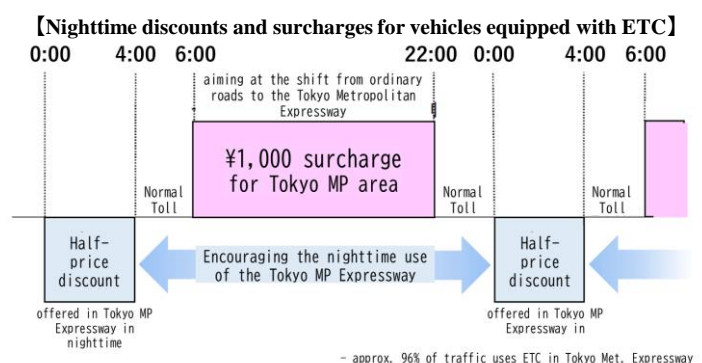
Promulgation of the "Anti-Monopoly Law Special Provisions for Buses and Regional Banks"

■ The "Act on Prohibition of Private Monopolization and Maintenance of Fair Trade for the Purpose of Maintaining the Provision of Fundamental Services Related to the General Ride-by-Bus Transportation Business and Banking Business in the Region", which establishes special provisions of the Private Anti-Monopoly Law, has been introduced to maintain the services provided by bus companies and regional banks. The law was approved by the Cabinet in March 2020 and promulgated in May 2020. This special law enables (1) setting fares and charges that allow users to use regional public transportation within its network (e.g., flat-rate for unlimited travel, etc.), (2) joint and shared operation of routes and systems within the network (e.g., restructuring "hub-and-spoke" network, etc.), and (3) The Anti-Monopoly Act was exempted from the application of the Anti-Monopoly Act to the conclusion of a joint management agreement that includes the setting of the number of buses and schedules of services (e.g., evenly spaced services, patterned schedules, etc.) of routes and systems within the network, allowing for the necessary actions such as fare pooling.

Source: [MLIT](#)

Figure 2 Tokyo Metropolitan Expressway Tolling Policy for the Tokyo 2020 Olympic and Paralympic Games

■ In the summer of 2019, one year before the Games, the Tokyo 2020 Olympic and Paralympic Games Organizing Committee, with the cooperation of traffic and road managers and other relevant organizations, conducted an experiment on easing congestion during the Games, mainly on expressways and a part of ordinary roads, to congestion levels close to the target levels during the actual Games. Specifically, in addition to TDM measures such as telework, staggered working hours, and so-called "Smooth Biz" measures (by the Tokyo metropolitan government) such as changing the delivery time of goods and equipment, traffic restrictions were implemented for vehicles flowing into the city from mainline toll booths on expressways and for vehicles flowing into the city from Ring Road (Beltway) 7 on ordinary roads on Wednesday, July 24 and Friday, July 26. Based on these results, it was concluded that additional TDM measures should be taken to further reduce traffic volume and implement additional measures in preparation for the Games, and after considering the economic burden of the fees, a half-price discount should be introduced during nighttime to encourage the shift to nighttime in the use of the Tokyo Metropolitan Expressway and to discourage the shift from ordinary roads to the Tokyo Metropolitan Expressway. In order to do so, Japan's first full-scale road pricing (1,000 yen surcharge) will be implemented for the first time in the country.



Source: [Bureau of Tokyo 2020 Olympic and Paralympic Games Preparation](#)

Formulation of Road Policy Vision: "Changing Road Landscape in 2040"

■ In February 2020, the Basic Policy Working Group of the Roads Subcommittee of the Council of Infrastructure Development proposed a vision for the society of 2040, with an eye on new post-COVID-19 lifestyles and socio-economic changes, and the direction of medium- and long-term policies to achieve this vision through road policies (2040, Changing the Landscape of Roads - Towards Roads That Lead to People's Happiness) was developed.

Source: [MLIT](#)

1-8

Funding Japan's Highways Following the Tax-Earmarking

Professor, Keio University
Kazusei Kato

Though more than ten years have passed since highway earmarked funding system ended in 2009, automobile users are still burdened by several taxes in Japan. In FY 2020, the total amount of revenue from automobile-related taxes is 6.1 trillion yen. Highway expenditure remains constant, the national highway budget is earmarked for disaster prevention and reduction, and national resilience. Based on the national inspection, the national subsidy increased because the subsidy projects were established for extending the life of highway and other structures of local governments. In the US, the highway condition in urban areas have worsen in recent ten years, though there are no permanent measures to increase the revenue of Federal Highway Trust Fund.

- The System of Revenues Earmarked for Highway ended the end of March 2009. All taxes has been remaining as the general tax, but revenues have been decreasing.

Table 1 Automobile-Related Taxes

Tax Items(Government)	Implementation Year	Earmarked for Highway in 2008	Main Rules	Temporary Tax Rate (FY2008)	Temporary Tax Rate (FY2015)	Revenue (FY2008)	Revenue (FY2019)	Revenue (FY2020)
Automobile Acquisition Tax (Local)	1968	All	3% of Acquisition Cost(private)	5% of Acquisition Cost(private)	3% of Acquisition Cost(private)	402.4	84.0	(※3) —
Motor Vehicle Tonnage Tax (National)	1971	77.5% of National Tax Revenue(=2/3 of Total Revenue)	2,500yen per 0.5t	6,300yen per 0.5t	4,100yen per 0.5t (less than 13years)	554.1	376.0	393.0
Motor Vehicle Tonnage Transfer Tax (Local)	1971	1/3 of Total Revenue	593/1000 of the revenue from the tax is credited to the General Accounts of the Central Government(above). The remaining 407/1000 is granted to local Governments.			360.1	274.2	284.5
Gasoline Tax (National)	1954	All	24.3 yen/ℓ	48.6yen/ℓ	48.6yen/ℓ	2,729.9	2,303.0	2,204.0
Liquefied Petroleum Gas Tax (National)	1966	1/2 of Revenue	17.5 yen/kg	—	—	14.0	7.0	6.0
Local Gasoline Tax (Local)	1955	All	4.4 yen/ℓ	5.2yen/ℓ	5.2yen/ℓ	299.8	246.4	235.8
Liquefied Petroleum Gas Transfer Tax (Local)	1966	1/2 of Revenue	1/2 of the revenue from the tax is credited to the General Accounts of the Central Government. The remaining 1/2 is granted to local Governments.			14.0	7.2	6.3
Light Oil Delivery Tax (Local)	1956	All	15.1yen/ℓ	32.1yen/ℓ	32.1yen/ℓ	991.4	953.7	958.6(※4)
Total (billion yen)						5,365.7	4,251.5	4,088.2

※1 Total may not match sum of the number due to rounding off.

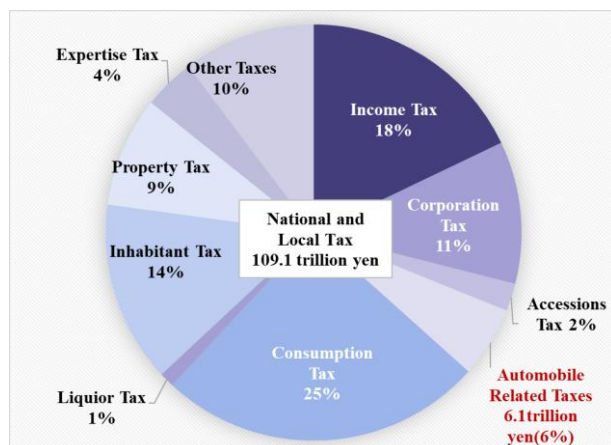
※2 The consumption tax is imposed as a national tax at the time of acquisition. The automobile tax is imposed as prefectural resident tax and the light vehicle tax is imposed as municipal inhabitant tax in the possession stage.

※3 Automobile acquisition tax was abolished from October 2019 and "environmental performance-based tax break" was introduced.

※4 The taxation system of the gas oil delivery tax was revised in 2018. The number is the expected income under the existing law , However, the expected income under the revised law is 964.1 billion yen.

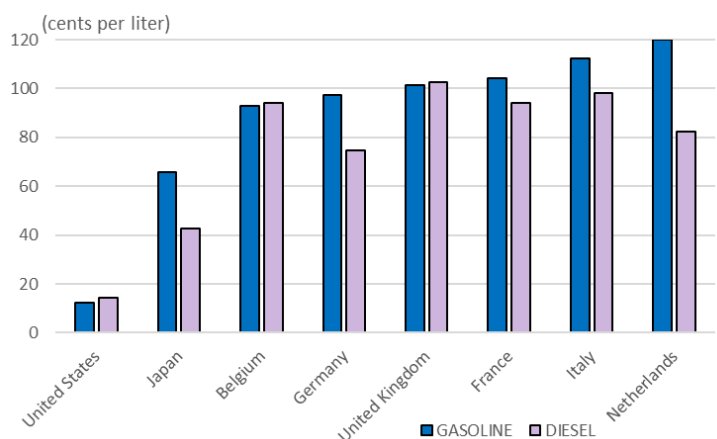
Data source: MOF, MIC, Japan Automobile Manufacturers Association, Inc.

Figure 1 Tax Revenue and Automobile-Related Taxes (FY2020)



Data source: MOF, General Account Budget, (Initial Budget) ; MIC, Revenue Estimates of Local Taxes and Local Transfer Taxes

Figure 2 Motor Fuel Tax Rates for Selected Countries (2019)

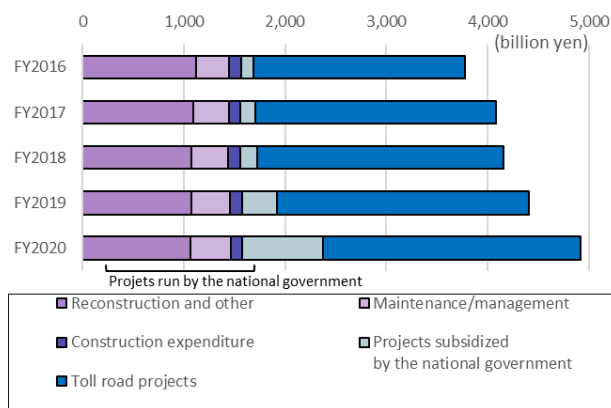


Note US includes the weighted average of state fuel taxes plus the federal fuel tax.

Data source: [USDOT, Federal Highway Administration](https://www.transportation.gov/USDOT)

Figure 3 Highway Budget in Recent 5 Years

- The national highway budget is earmarked for disaster prevention and reduction, and national resilience. The national subsidy increased because the subsidy projects were established for extending the life of highway and other structures of local governments.

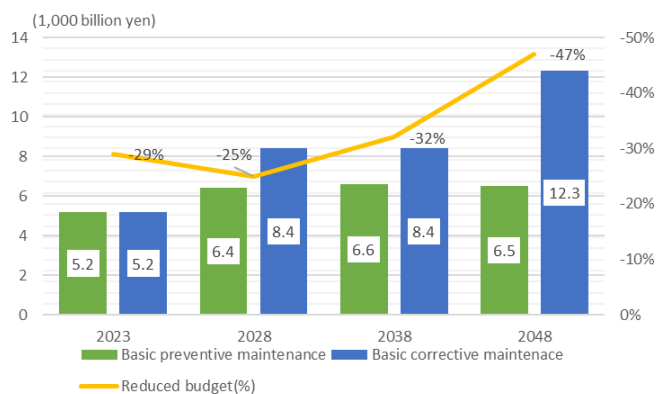


Note In addition to these, there are comprehensive social infrastructure maintenance grants and disaster prevention/safety grants that can be used for road maintenance in response to the needs of local governments.

Data source: MLIT, Road Bureau and City Bureau, Budget Summary

Figure 5 National Inspection of Facilities

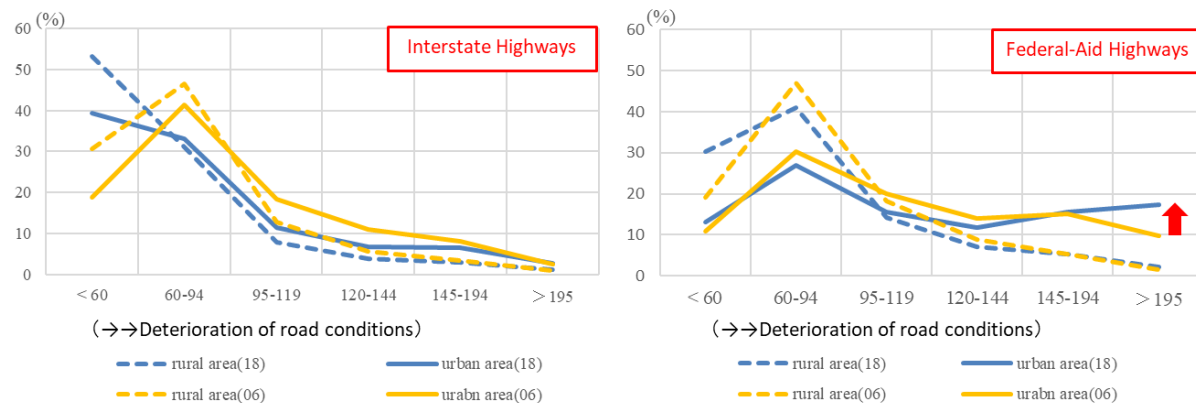
- The cost of preventive maintenance will be reduced by about 50% after 30 years compared with the case of corrective maintenance (FY2018 estimation).



Data source: MLIT, Infrastructure Maintenance Information.

Figure 7 Highway Conditions in the US Based on the International Roughness Index (Comparison between 2006 and 2018)

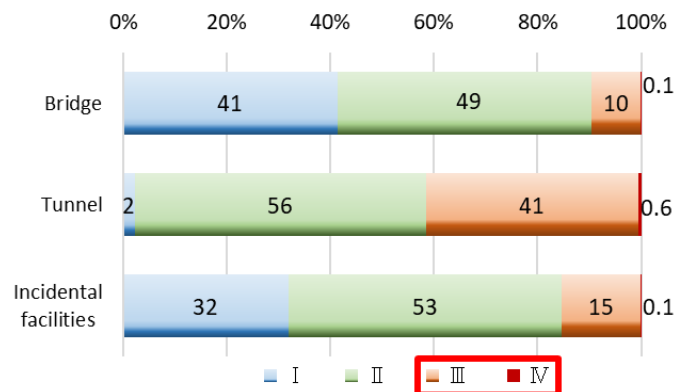
- The larger the International Roughness Index (IRI), the worse the highway condition. The condition of the Interstate Highway System is generally maintained and improved (left). Federal-Aid highways in urban areas are deteriorated (right).



Data source: USDOT, Highway Statistics 2006,2018, HM – 47

Figure 4 National Inspection of Facilities

- As a result of nationwide inspection, 10% of the bridges (about 70,000) and 42% of tunnels require repairs.



I : No Deterioration of the function of the structure

II : No Deterioration of the function of the structure, but action is required.

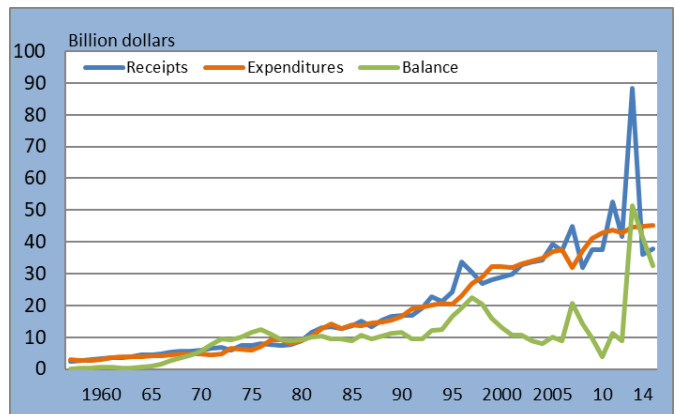
III : Deterioration of structural functions, requires repairs.

IV : Deterioration of structural functions, requires immediate repairs.

Data source: MLIT, Road Bureau and City Bureau, Budget Summary

Figure 6 Balance of Federal Highway Trust Fund in the US

- The balance of the Federal Highway Trust Fund was decreasing. In 2015, \$70 billion were transferred from the general account, improving the balance.



Data source: USDOT, Highway Statistics, Fe-210c