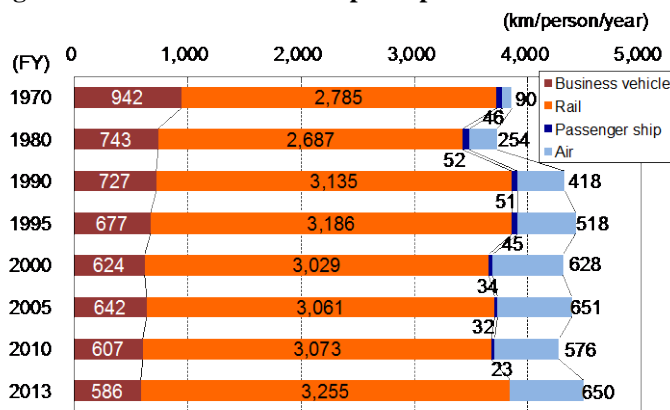


1-1

Mobility Changes in Quality and Quantity

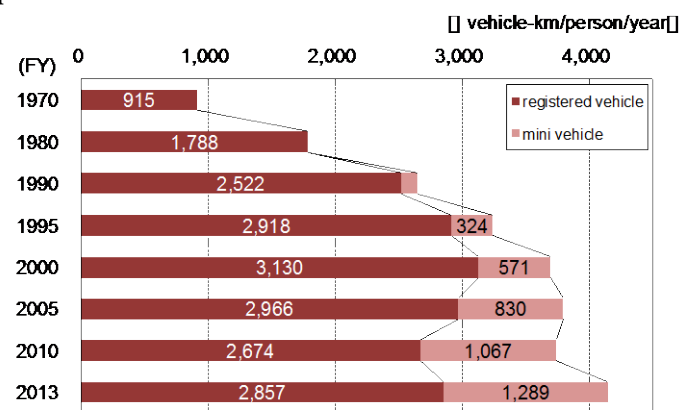
This section shows the basic statistics on the recent trends of passenger and freight transport. Regarding the passenger transport, the distance traveled per capita has risen and fallen in a cyclic manner, and the per capita vehicle-kilometers travelled by private cars has begun to increase again after 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 the freight transport, both tonnage and ton-kilometer transported per capita have decreased for the last several decades.

- The distance traveled per capita by commercial vehicles and passenger ships has been decreasing for a long time, while that by rail recorded the highest in FY 2013. On the other hand, the per capita vehicle-kilometers travelled by private cars began to increase again recently, after it stopped increasing in the latter half of 2000s.

Fig. 1 Annual distance traveled per capita

Note: Corrected and estimated values are included. Data on the passenger ship in FY 2013 is missing.

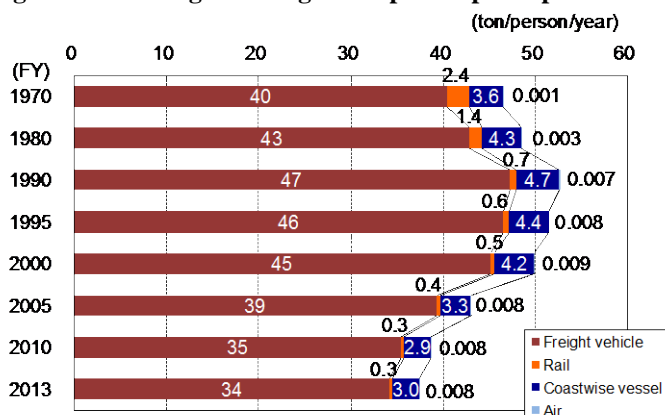
Data source: Transportation-related statistics (Ministry of Land, Infrastructure, Transport and Tourism)

Fig. 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.

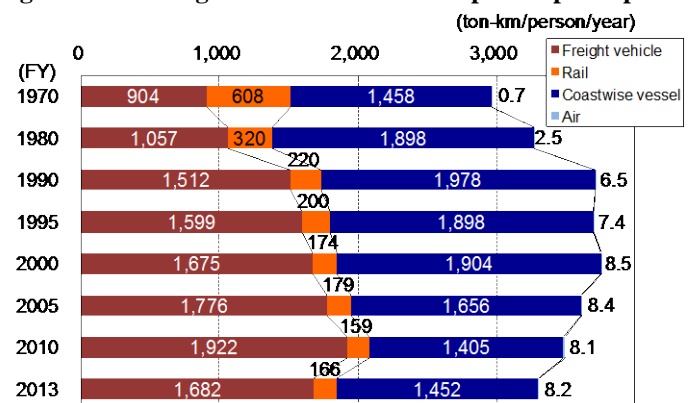
Data source: Transportation-related statistics (Ministry of Land, Infrastructure, Transport and Tourism)

- The freight tonnage and ton-kilometers transported have been decreasing since 1990s and 2000s, respectively. In regards to the latter, ton-kilometers by freight vehicles turned downward and those by coastwise vessels turned upward around FY 2010.

Fig. 3 Annual freight tonnage transported per capita

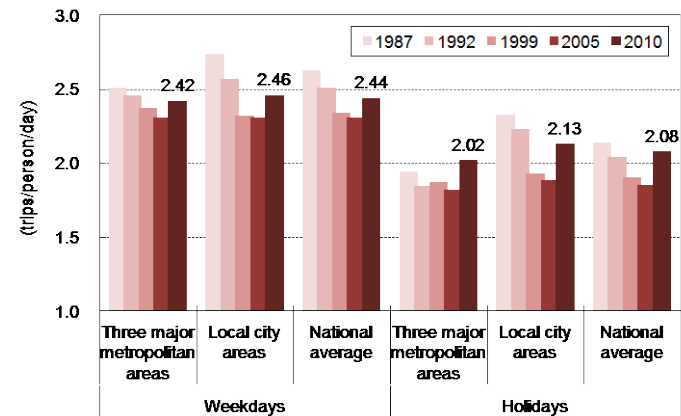
Note: Freight vehicles do not include private light vehicles in any year, and include business mini vehicles since FY 1987. Corrected and estimated values are included.

Data source: Transportation-related statistics (Ministry of Land, Infrastructure, Transport and Tourism)

Fig. 4 Annual freight ton-kilometers transported per capita

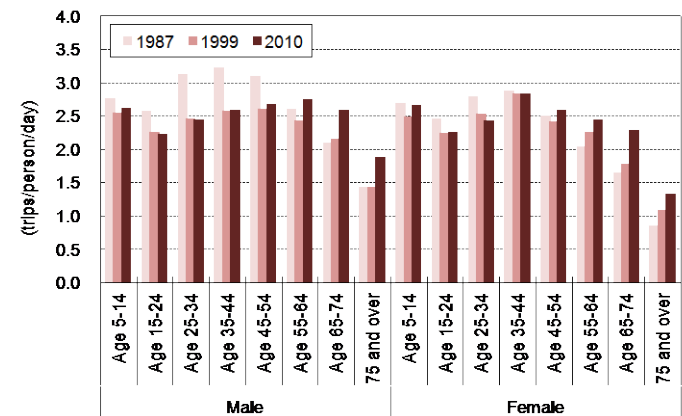
□ Regarding the travel behavior characteristics, it is striking that the trip generation rate of the elderly has been increasing, while that of the young to middle-aged shows an opposite trend. Car modal shares of the aged and the female have been rising especially in local city areas, in contrast to that of the young male showing the downward trend.

Fig. 5 Trip generation rate



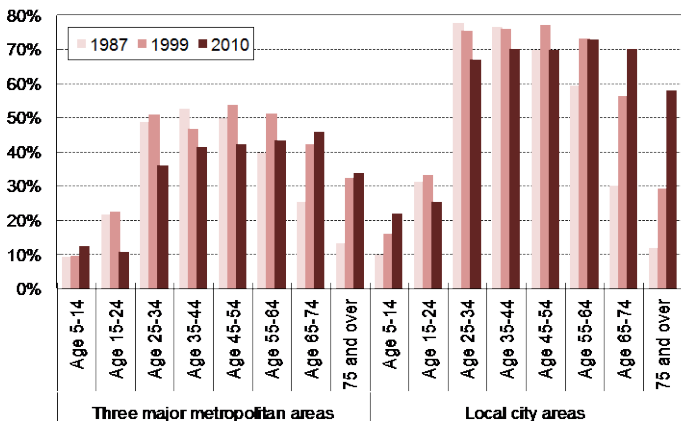
Data source: Nationwide Person Trip Survey (Ministry of Land, Infrastructure, Transport and Tourism)

Fig. 6 Trip generation rate by age-group (nationwide, weekdays)



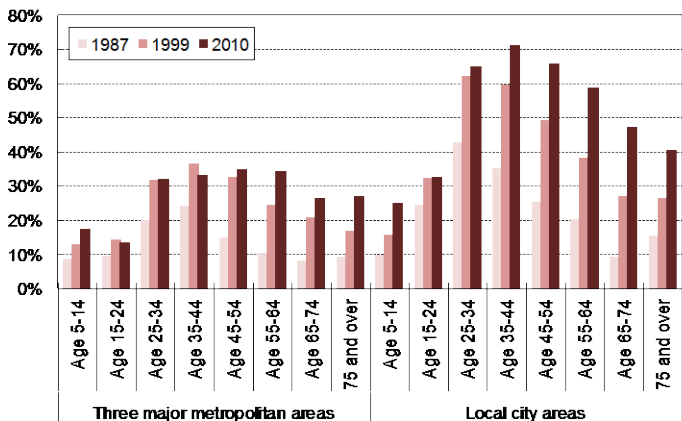
Data source: Nationwide Person Trip Survey (Ministry of Land, Infrastructure, Transport and Tourism)

Fig. 7 Modal share of car by age-group (male, weekdays)



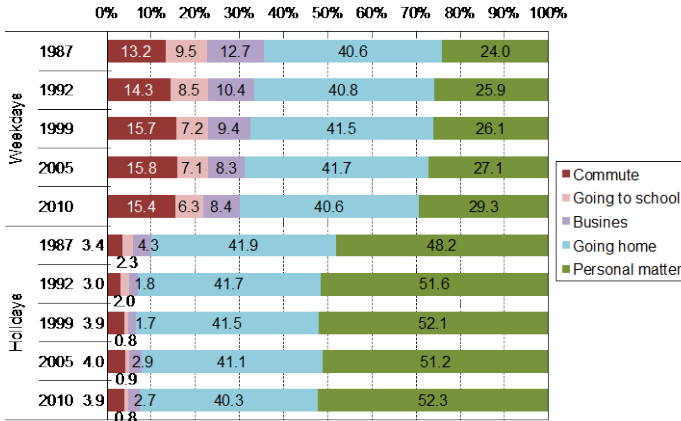
Data source: Nationwide Person Trip Survey (Ministry of Land, Infrastructure, Transport and Tourism)

Fig. 8 Modal share of car by age-group (female, weekdays)



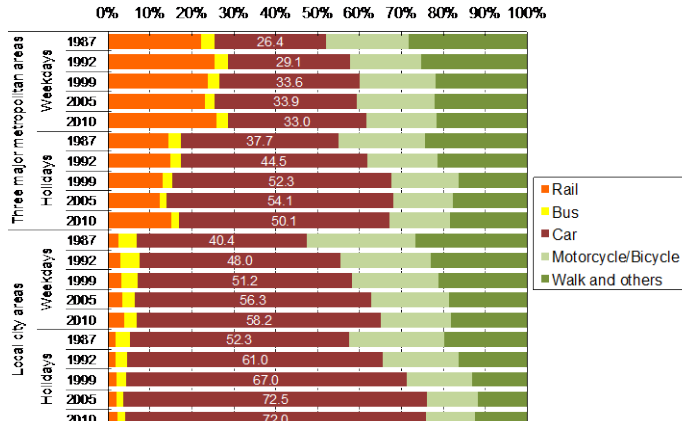
Data source: Nationwide Person Trip Survey (Ministry of Land, Infrastructure, Transport and Tourism)

Fig. 9 Composition of trip purposes (nationwide)



Data source: Nationwide Person Trip Survey (Ministry of Land, Infrastructure, Transport and Tourism)

Fig. 10 Modal share (representative modes, all purposes)



Data source: Nationwide Person Trip Survey (Ministry of Land, Infrastructure, Transport and Tourism)

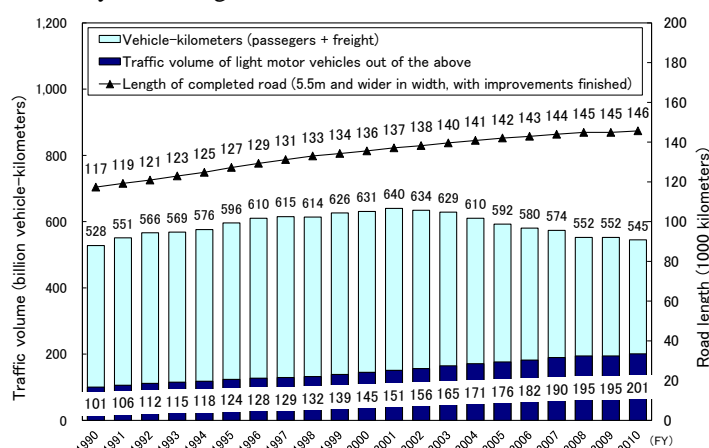
1-2

Road Network Today

Thanks to the steady road maintenance and improvement, a firm growth in the length of roads in Japan has been seen. However, the road networks still do not seem to be sufficient for traffic demand. As a result, the average traffic speed on roads remains unchanged at a lower level. A case in point: in city centers of Tokyo and Osaka, and in DID (Densely Inhabited District) areas, there is still chronic traffic congestion. Given that background, road network improvements (e.g., ongoing ring road improvement plans in the major metropolitan areas) are obviously will play significant role. In January 2015, the road subcommittee proposal of Panel on Infrastructure Development has put together a policy (Fundamental policy for “Smart use of infrastructure” with a focus on expressways) for the effective and efficient use of the expressway network and the fare structure within the metropolitan areas.

Fig. 1 Changes in traffic volume and road length

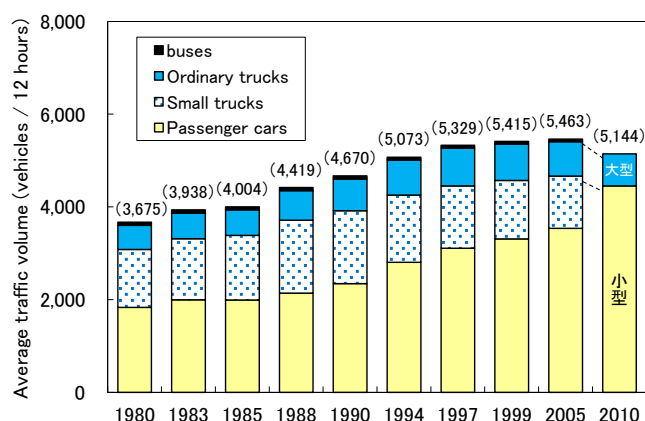
- Traffic volume in vehicle-kilometers, is on a downward trend after peaking in 2001; but the traffic volume of light motor vehicles is on an upward trend. Road length nationwide is steadily increasing.



Source: Transportation-related Statistics Data Collection (Transport Research and Statistics Office, Information Policy Headquarters, Policy Bureau, Ministry of Land, Infrastructure, Transport and Tourism)

Fig. 3 Average 12-hour traffic volume on ordinary roads by vehicle type

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



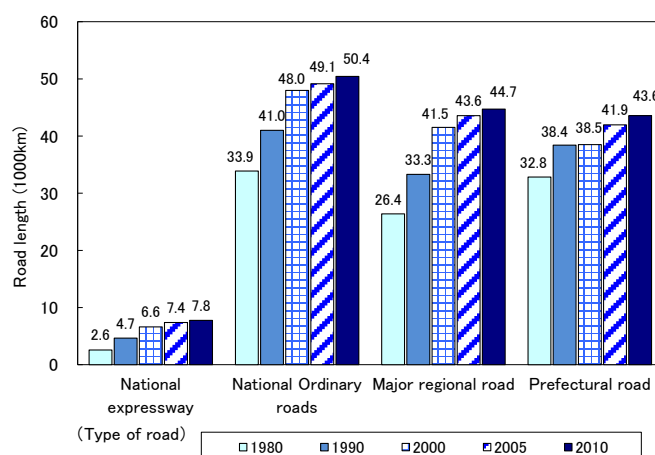
Note: Figures in parentheses are the average traffic volume of all types of vehicles

Source: Road Traffic Census (Website of Ministry of Land, Infrastructure, Transport and Tourism)

Note: For 2010, the types of vehicles are Small (Passenger cars and Small trucks) and Large (Ordinary Trucks and Buses)

Fig. 2 Changes in the length of completed roads by road type

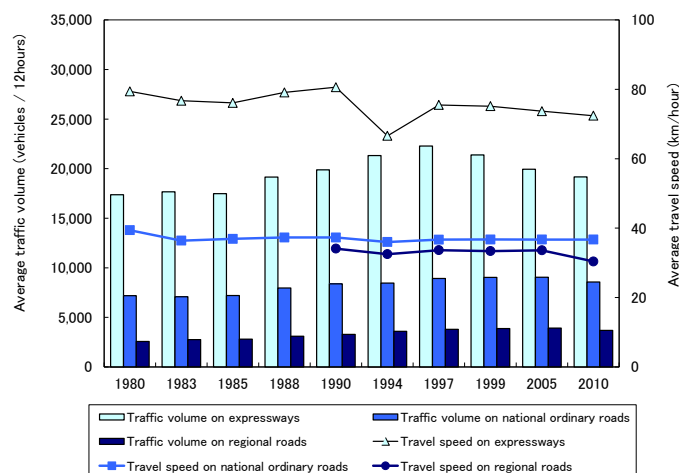
- For all types of roads, the length of completed roads (i.e., with improvements completed) is increasing steadily.



Source: Road Statistics Annual Report (Road Bureau, Ministry of Land, Infrastructure, Transport and Tourism)

Fig.4 Changes in average traffic volume and average travel speed by road type

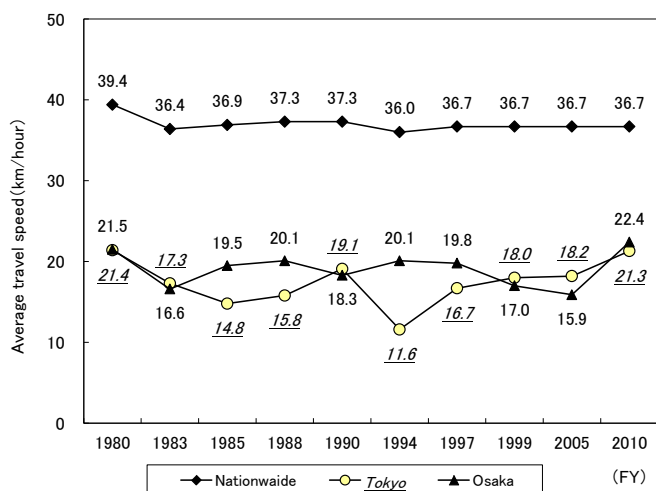
- The average traffic volume on expressways has been on a downward trend since 1997, partly because the newly constructed ones have less traffic. However, traffic is on an upward trend for national ordinary roads and regional roads. The average travel speed on the either type of road remains almost at the same level.



Source: Road Traffic Census (Website of Ministry of Land, Infrastructure, Transport and Tourism)

Fig. 5 Average travel speed on national ordinary roads (Nationwide, Tokyo, Osaka)

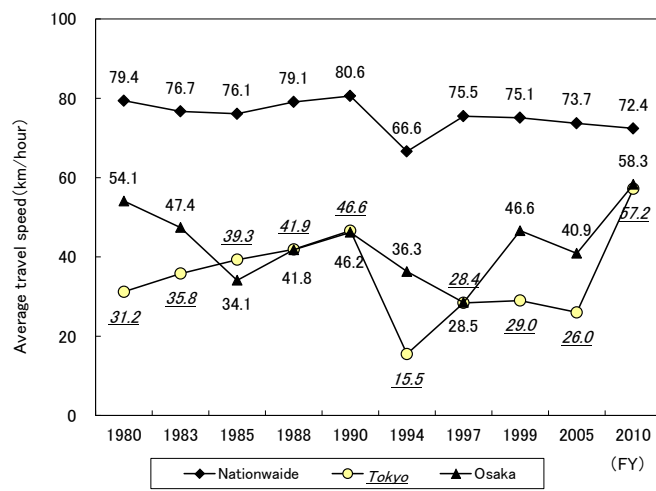
- There have been almost no changes in the nationwide average. The average travel speed in the wards of Tokyo and in Osaka City is about half of the nationwide average; there is still severe traffic congestion.



Source: Road Traffic Census (Website of Ministry of Land, Infrastructure, Transport and Tourism)

Fig. 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 speeds in the wards of Tokyo and in Osaka City, both of the speed levels remain lower than the nationwide average.



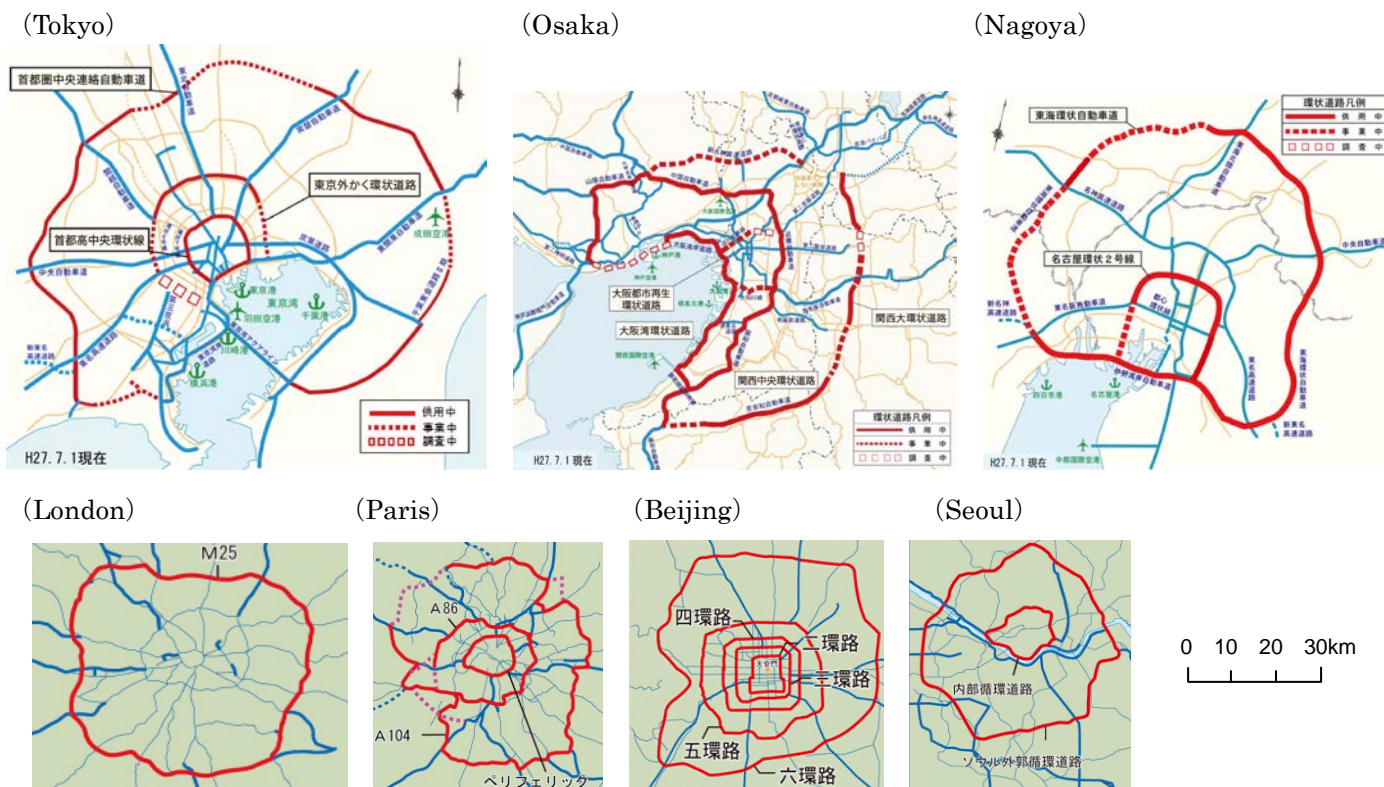
Source: Road Traffic Census (Website of Ministry of Land, Infrastructure, Transport and Tourism)

Note: For expressways in Tokyo and Osaka, the Metropolitan Expressway and Hanshin Expressway include segments managed by NEXCO.

Fig. 7 National comparison of expressway network conditions

- Many cities have implemented ring roads, and the 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 introduced (e.g. metropolitan expressway Shinagawa-line, Ken-O expressway).



Source: Website of Ministry of Land, Infrastructure, Transport and Tourism, Kanto Regional Development Bureau (July, 2015)

Road freight transport today has several features. For ordinary trucks in commercial use, the freight transport ton-kilometers have been on a downward trend in recent years. However, the freight tonnage transported had increase from 2009 to 2011. On the other hand, ordinary trucks in private use, the freight transport ton-kilometers and the freight tonnage transported have decreased in recent years. In the number of trucks owned, there has been a constant decrease of private trucks and an increase in commercial trucks. Such data would indicate that the road freight transport is shifting from private trucks to commercial trucks.

Also, package and mailing delivery, as well as regular parcel post delivery, are increasing. This indicates that small-lot freight transport is on the rise.

- Freight transport ton-kilometers of ordinary trucks in commercial use has decreased from 2007. The total freight tonnage had increased up to 2009. However, in 2012, it started to decline.

Fig.1 Changes in freight ton-kilometers by vehicle type

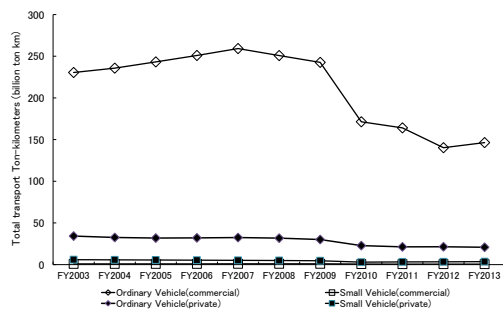
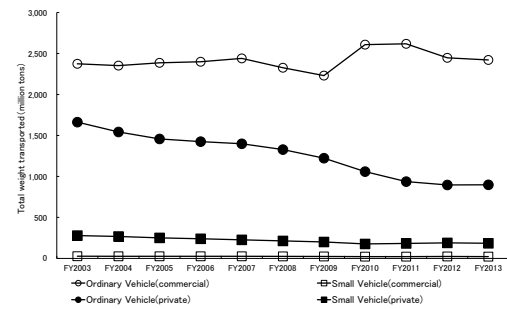


Fig.2 Changes in the freight tonnage by vehicle type



Note: It does not include data of Hokkaido District Transport Bureau and Tohoku District Transport Bureau for March and April 2011

Source : Annual Statistical Report on Motor Vehicle Transport (Information Policy Division, Policy Bureau, Ministry of Land, Infrastructure, Transport and Tourism)

Fig.3 Changes in distance traveled per day worked per vehicle by vehicle type(private vs. commercial)

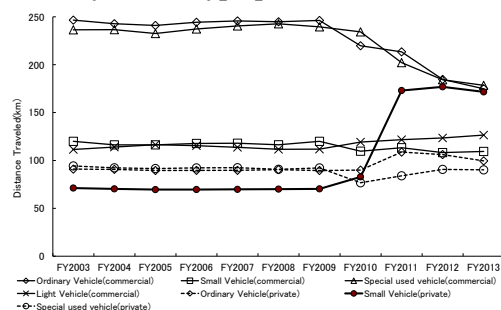
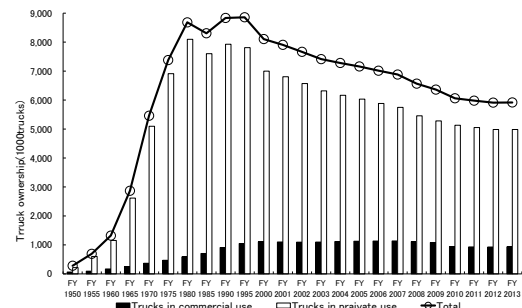


Fig. 4 Changes in private and commercial truck ownership



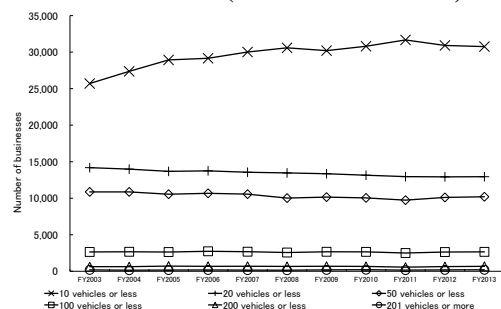
Note: ditto. Note of Figure 1

Source: Transportation-related Statistics Data collection (Information Policy Division, Policy Bureau, Ministry of Land, Infrastructure, Transport and Tourism)

Note: ditto. Note of Figure 1

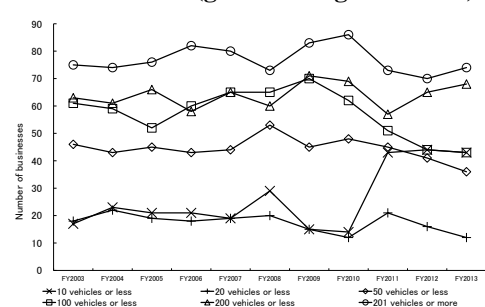
Source : ditto. Source of Figure 1

Fig.5 Number of freight businesses by the number of vehicles owned (mixed load services)



Source : ditto. Source of Figure 4

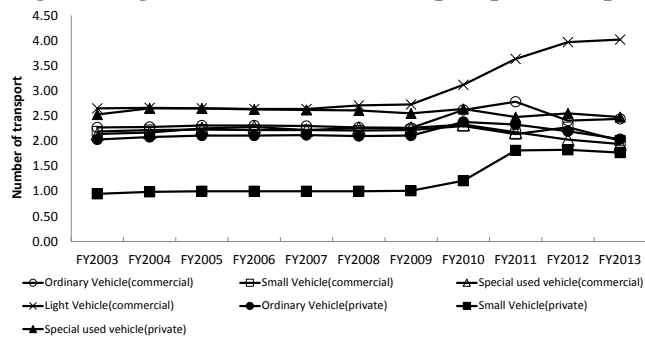
Fig. 6 Number of freight businesses by the number of vehicles owned (general freight services)



Source : ditto. Source of Figure 4

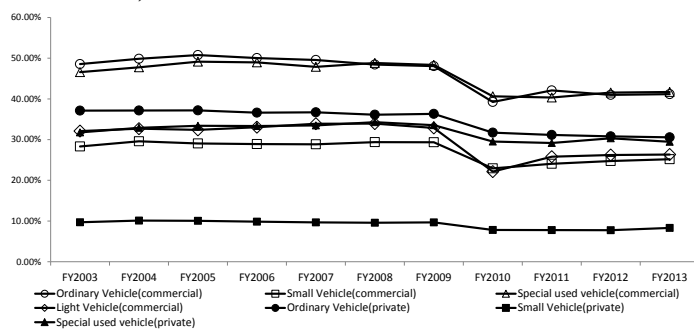
■ Number of transport per light commercial truck per day has increased since 2009.

Fig.7 Changes in the number of transport per truck per day



Note: ditto. Note of Figure 1
Source : ditto. Source of Figure 1

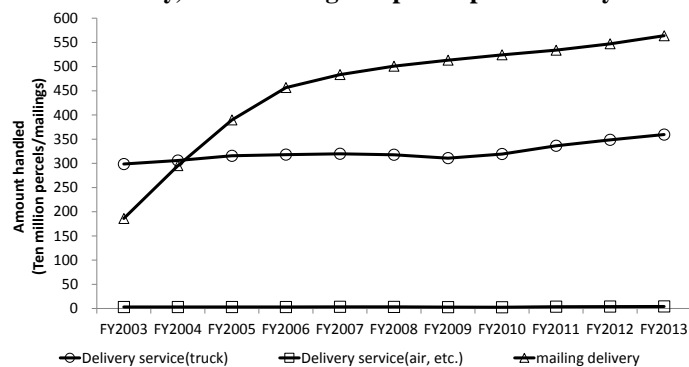
Fig.9 Changes in loading ratio by vehicle type(private vs. commercial)



Note: ditto. Note of Figure 1
Source : ditto. Source of Figure 1

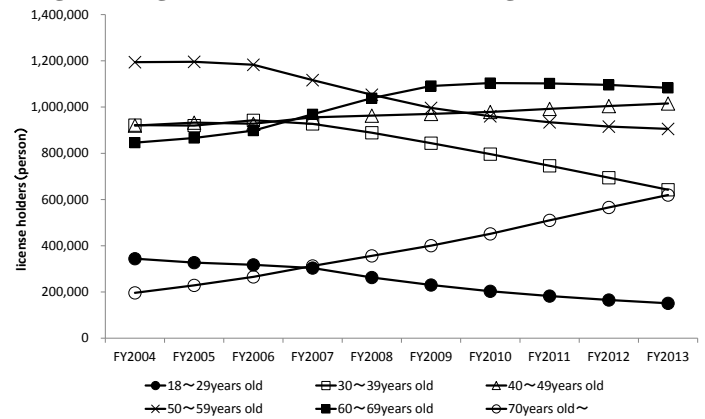
■ Delivery service volume by trucks had declined from 2007 to 2009 and has increased subsequently. In addition, the growth rate of mailing delivery volume has decrease since 2006.

Fig.11 Changes in the amount of package and mailing delivery, as well as regular parcel post delivery



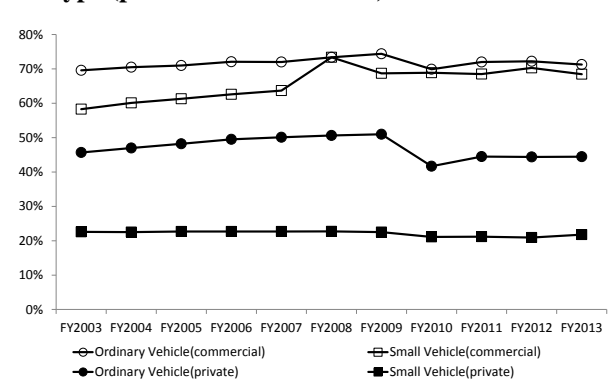
Source : website of Ministry of Land, Infrastructure, Transport and Tourism

Fig.8 Changes in the license holders of large size vehicles



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

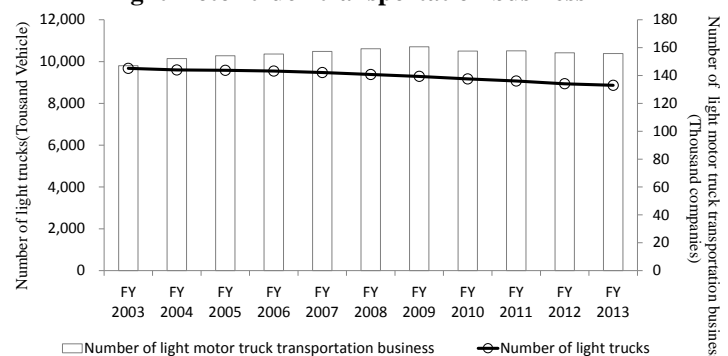
Fig.10 Changes in the ratio of actual travel distance by vehicle type (private vs. commercial)



Note: ditto. Note of Figure 1
Source: ditto. Source of Figure 4

■ The number of light trucks has decreased since 2003. On the other hand, the number of light motor truck transportation businesses had increased from 2003 to 2009. However, it was on a downward trend subsequently

Fig.12.Changes in the Number of light trucks and light motor truck transportation business



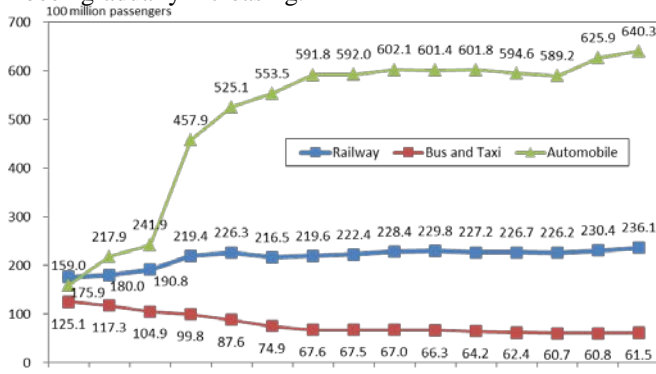
Source: ditto. Source of Figure 4

1-4 Public Transport Today

In recent years, downward trend in the use of public transportation tends to stop. 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(Nagoya) and Kansai(Osaka) areas, congestion is being relieved. On the other hand, the bus business has become unprofitable for a long time. Therefore community buses have continued to increase. As a whole, the public transport safety has been maintained.

Fig. 1 The number of passengers of railways and buses

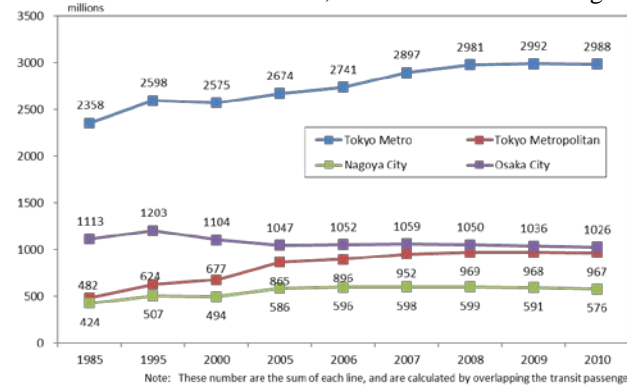
■ In the last two years, the use of railways and buses has been gradually increasing.



Source: Annual Statistical Report on Motor Vehicle Transport; Annual Statistical Report on Railway Transport

Fig. 3 The number of subway passengers in the three metropolitan

■ In Tokyo and Nagoya areas, the number remains at the same level. But in Osaka area, the number is decreasing.

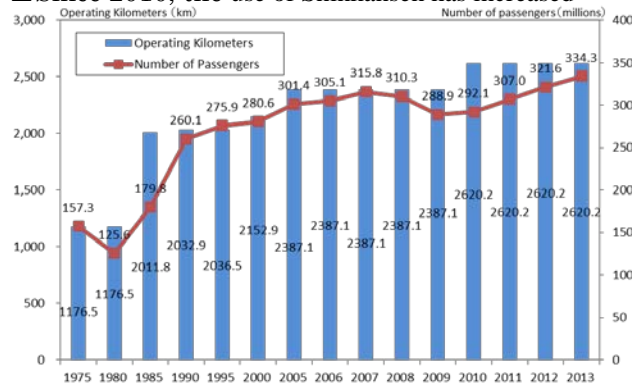


Note: These number are the sum of each line, and are calculated by overlapping the transit passenger.

Source: Annual Report of Urban Transport

Fig. 5 Operating kilometers and number of passengers of Shinkansen

■ Since 2010, the use of Shinkansen has increased

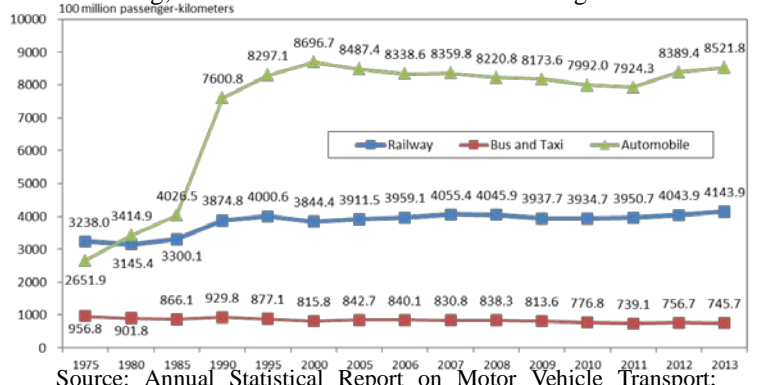


Source: Before 1985: Railways 2008: the numbers.

After 1990: Annual Statistical Report on Railway Transport

Fig. 2 Railway and bus passenger-kilometers

■ In recent years, the use of railways has been gradually increasing; but the use of buses is almost unchanged.

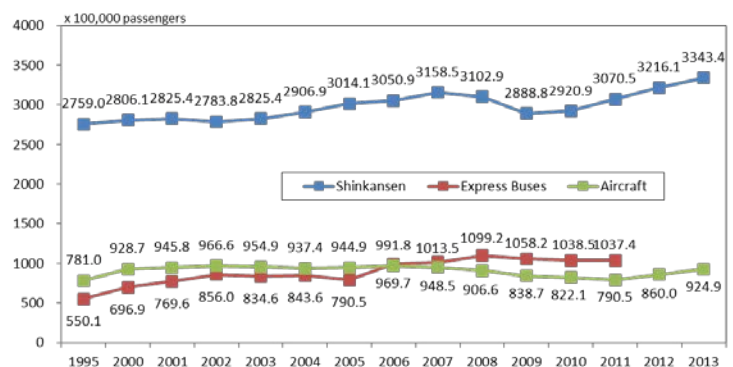


Source: Annual Statistical Report on Motor Vehicle Transport;

Annual Statistical Report on Railway Transport

Fig. 4 The number of intercity passengers, by mode

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

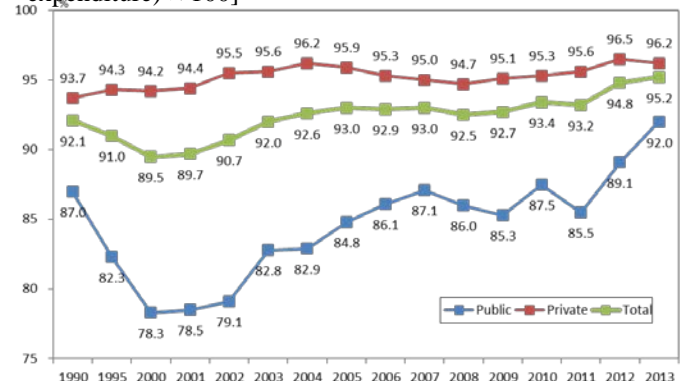


Source: Annual Statistical Report on Railway Transport; Annual

Statistical Report on Air Transport, Bus Business in Japan

Fig. 6 Bus industry income vs. expenditures

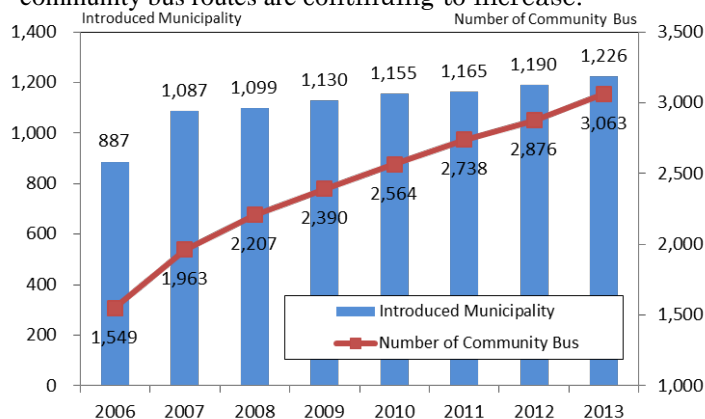
■ In the past 20 years, the balance ratio overall has never exceeded 100. [Balance ratio = (current income / current expenditure) × 100]



Source: Bus industry income and expenditures

Fig. 7 Trend of community bus

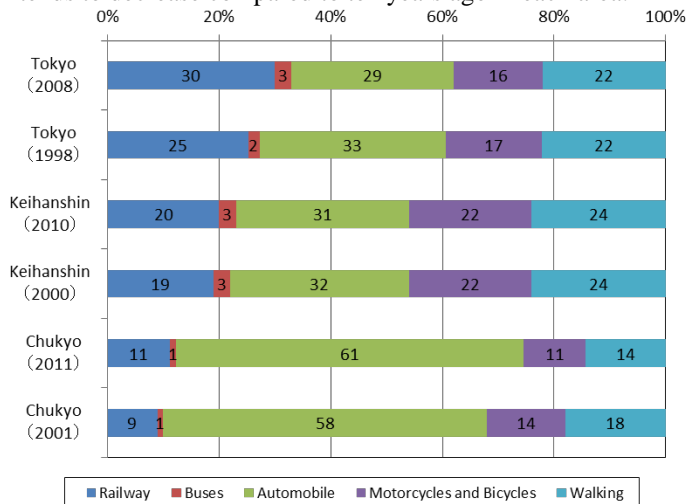
■ Mainly in the areas where bus operators withdrew, the community bus routes are continuing to increase.



Source: White Paper on Transport Policy 2015, Fig1-57

Fig. 9 Modal share in the three metropolitan areas

■ The use of railway tends to increase and automobile tends to decrease compared to ten years ago in each area.



Source: Urban Area Person Trip Survey Results in Tokyo, Osaka (Keihanshin) and Nagoya (Chukyo) Area

No.	Name and Section of New Lines (●)
2007	1 Sendai Airport Transit
	2 Osaka Monorail
2008	3 Kyoto City Transportation Bureau
	4 West Japan Railway
	5 Tokyo Metropolitan Bureau
	6 Yokohama City Transportation Bureau
	7 Tokyo Metro
	8 Keiha Electric Railway
2009	9 Hanshin Electric Railway
	10 Heisei Chikuhō Railway
	11 Toyama Chihou Tetsudou
2010	12 Keisei "Narita Airport Line"
	13 JR East "Tohoku Shinkansen"
2011	14 JR Kyushu "Kyushu Shinkansen"
	15 Nagoya City Transportation Bureau
2014	16 Manyosen
2015	17 Toyama Chihou Tetsudou
	18 JR East, West "Hokuriku Shinkansen"
	Natori - Sendai Airport
	Handaibyoimae - Saitonishi
	Nijo - Uzumasa Tenjingawa
	Hanaten - Kyuhoji
	Nippori - Minumadaishinsuikoen
	Hiyoshi - Nakayama
	Kotakemukaihara - Shibuya
	Nakanoshima - Temmabashi
	Nishikujo - Osaka Namba
	Mojiko Retro Kanko Line
	Marunouchi - Nishicho
	Keisei Takasago - Narita Airport
	Hachinohe - Shin Aomori
	Hakata - Shin Yatsushiro
	Nonami - Tokushige
	Takaokaeki - Takaokaekimae
	Toyamaeki - Dentetsu Toyamaeki-Esta Mae
	Nagano - Kanazawa

Fig. 11 Newly-established / discontinued railway lines

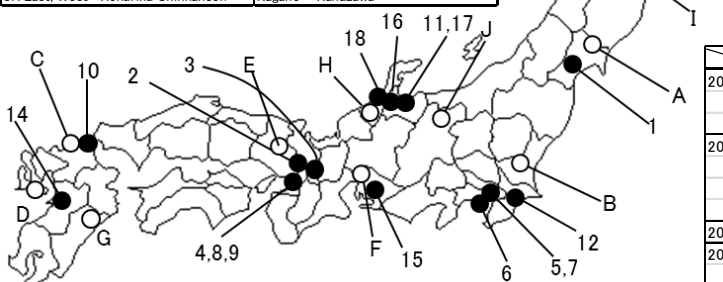
■ New lines in the Tokyo and Osaka areas are quite noticeable. At the same time, the number of discontinued lines has been on a downward trend over the past several years.

Examples between 2007 and 2015

Newly-established lines : ●

Discontinued lines : ○

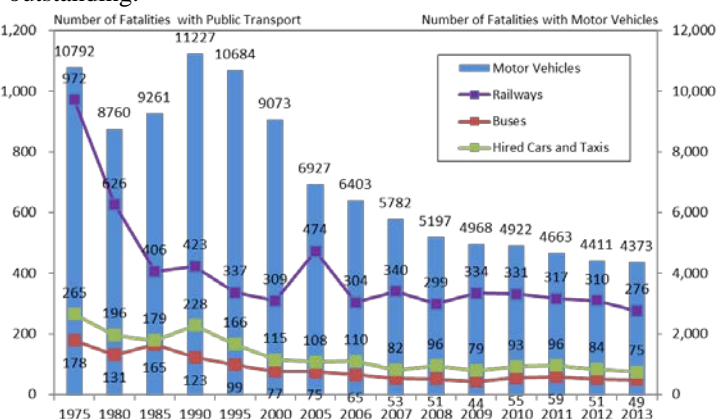
Source: Author's investigation



No.	Name and Section of Discontinues Lines(○)
2007	A Kurihara Denen Railway
	B Kashima Railway
	C Nishi-Nippon Railroad
2008	D Shimabara Railway
	E Miki Railway
	F Nagoya Railway
	G Takachiho Railway
2009	H Hokuriku Railroad
2012	I Towada Kanko Dentetsu
	J Nagano Electric Railway
2014	K JR Hokkaido
	Ishikoshi - Hosokura Mine Park Mae
	Ishioka - Hokota
	Nishitetsu Shingu - Tsuyazaki
	Shimabaraigaiko - Kazusa
	Yakuji - Miki
	Inuyamayuen - Dobutsuen
	Makimine - Takachiho
	Tsurugi - Kaga Ichinomiya
	Misawashi - Towadashi
	Yashiro - Suzaka
	Kikonai - Esashi

Fig. 8 The number of traffic fatalities with public

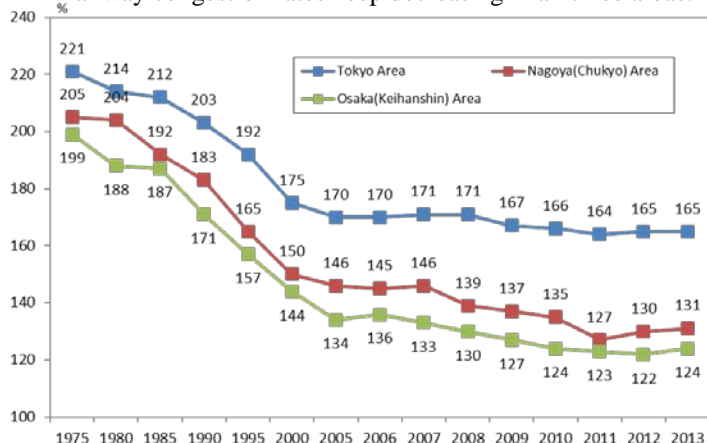
■ The numbers of fatalities with buses, hired cars, and taxis continue to decrease. Compared to the number of traffic fatalities with motor vehicles (4373 in FY 2013), public transport safety is outstanding.



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

Fig. 10 Railway congestion rates in the three metropolitan areas

■ Railway congestion rates keep decreasing in all three areas.



Source: Railways 2015: the numbers

1-5 Recent Trends in New Urban Transport Systems

Professor, Graduate School of Urban
Innovation, Yokohama National University
Fumihiko Nakamura

New technology has been meeting with the diverse needs of mobility and the responses 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. Bicycle sharing systems have also been innovated to enhance 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		
others	Ropeways, escalators, elevators		

Fig.1 Catenary-less Tram (Angers, France) Fig 2 Catenary-less Tram(Kaohsiung, ROC) Fig.3 Well Designed BHLS vehicle(Nancy, France)
(<http://www.angers.fr/actualites/photos/>) (trial run as of July, 2015)



Fig.4 Car-sharing station map

■ Stations in Downtown Tokyo

(<http://www.carsharing360.com/site.html>) (<http://www.smart-j.com/smaco/>).

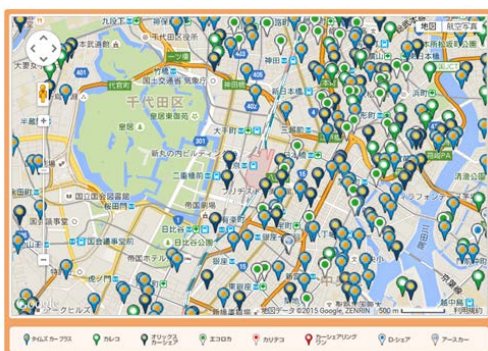


Fig.5 One-way EV car-sharing demonstration in Yokohama

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



Fig.6 One-way EV car-sharing (Auto-lib') (Paris, France)



Fig.7 Access elevator of one Condominium opened for public (Briria-City project, Yokohama)

■ ¥50 for one-ride, paid only by SUICA and Pasma (altitude 60m)



Fig.8 EV bus (made in China) in London

Fig.9 EV bus(made in China) in Kyoto

(<http://www.byd.com/news/news-198.html>)

■ Batteries on upper spaces on front wheels



Fig.10 Hybrid-bus in Curitiba (Br)

Fig.11 EV minibus in Luag Phanbang (Laos)) (made by Japanese Manufacturer in The Philippines) (photos by Dr.Kunihiro Sakamoto)



Fig.12 Bicycle sharing system with rack-less station (COGOO in Yokohama National University) (Photos by Ms.Hanako Kaminokado)

Fig.13 Bicycle-sharing for children (Velib, Paris) (<http://blog.velib.paris.fr/en/ptit-velib/>)

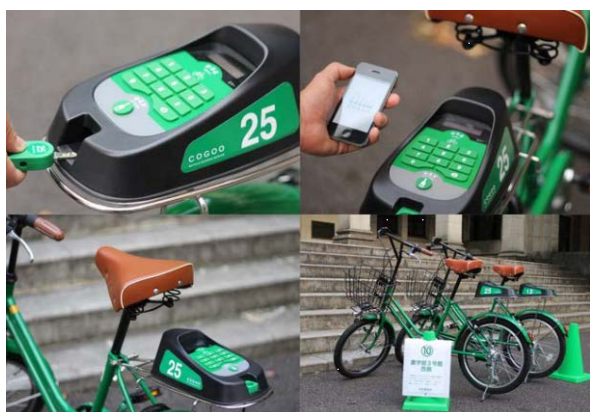


Fig.14 Segway for tourism Demonstration in Tateyama (Chiba) (photo by Prof.Tomoyuki Todoroki)

Fig.15 & 16. Hilly low-income area mobility in Medellin, Colombia (Ropeways (left) and Escalators (right))

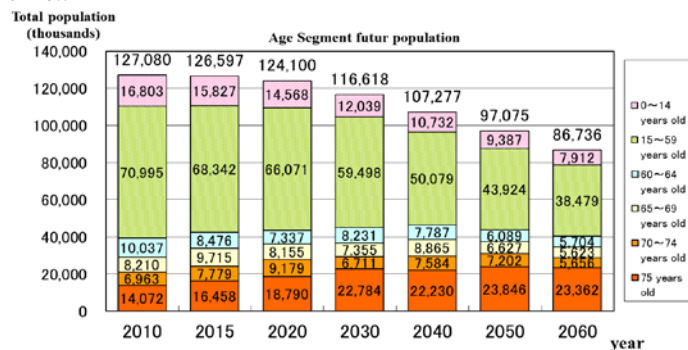


1-6 Toward Universally User-friendly transportation

Concerning the social situation in which the number of the physically challenged and the elderly is increasing, the formulation of an universally user friendly transport system is strongly believed to be effective for facilitating outings (that ensures better maintenance of good health so that contribute to reduction of medical and health care costs) and maintaining the vitality of communities. Amid increasing the number of the elderly driving accidents, the number of the elderly who voluntarily returned their driving licenses has increased rapidly. Hence, securing the mobility of the elderly has become a challenge. Although, there is a large expectation for personal mobility, possible solutions have been discussed. For example, the case of using golf carts as a way of utilizing existing means of mobility. As a turning point of measures for persons with disabilities, the "Act on the Elimination of Discrimination against Persons with Disabilities" will come into force on April 1, 2016. The development of relevant guidelines has been carried out hastily.

Fig. 1 Future population by age group

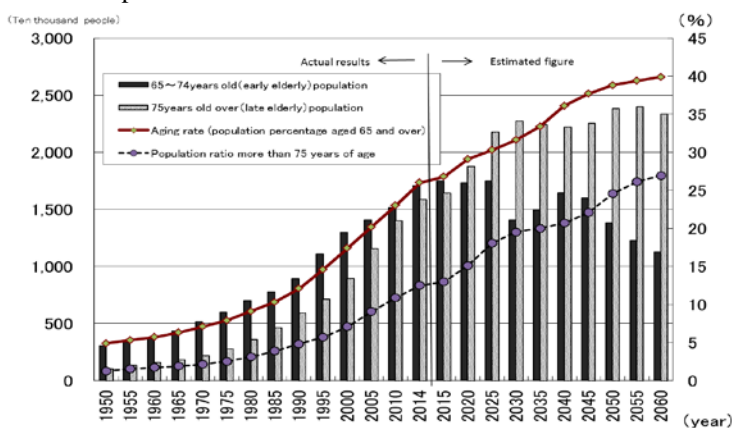
■Japan has been experiencing a population decrease for a long time..



Source: Annual Report on the Aging Society: 2015

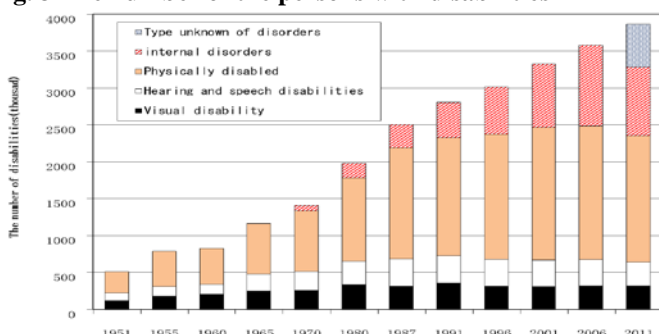
Fig. 2 Transition of the number of the elderly people

■The ratio of people over 65 years against total population is 26% in Japan.



Source: 2015 version of "Aging Society White Paper"

Fig. 3 The number of the persons with disabilities



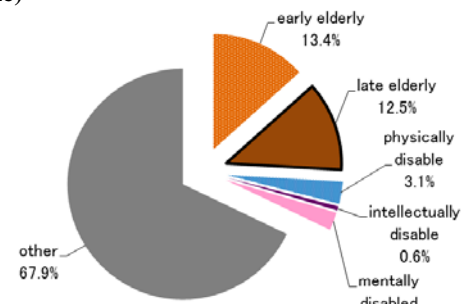
Source: MHLW "in 2011: Survey on the difficulty of life (nationwide home handicapped Survey)"

Table 1 The number of persons with disabilities at home

	Total number	Home's	Facility residents
Physically disabled	3.94 million people	3.86million people	0.07million people
Intellectually disabled	0.74million people	0.62million people	0.12million people
Mentally disabled	3.20million people	2.88million people	0.32million people

Source: MHLW "Survey on persons with physical disability" (2006), "Survey on persons with intellectual disability" (2005), "Health Care and Welfare Measures for People with Physical Disabilities" (2013)

Fig. 4 Breakdown of of Japan's total population (127 million people)



Including multiple disabilities, the overlap of elderly people and handicapped

Source: Annual Report on the Aging Society: 2015, "2006 Persons with Disabilities Survey", "Survey on persons with intellectual disability" (2005), "Health Care and Welfare Measures for People with Physical Disabilities" (2013)

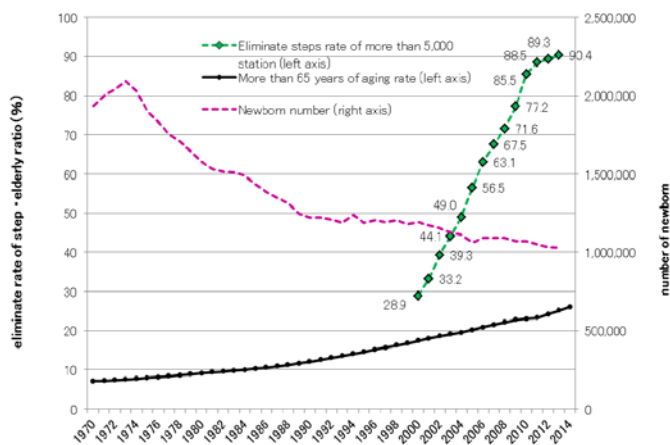
Table 2 The compliance of standards stipulated in the Transportation Barrier-Free Law

	FY 2020 year target	FY 2013 year	Changes from previous year
Railway vehicle	About 70%	59.5%	3.7Point increase
Low-floor bus	About 70%	43.9%	2.9Point increase
Welfare taxi	About 28,000cars	13,978cars	122cars Increasing
Passenger ship	About 50%	28.6%	4.1Point increase
Aircraft	About 90%	92.8%	3.6Point increase

Source : Compiled from MLIT documents

Fig. 5 The elimination rate of differences in levels at railway stations

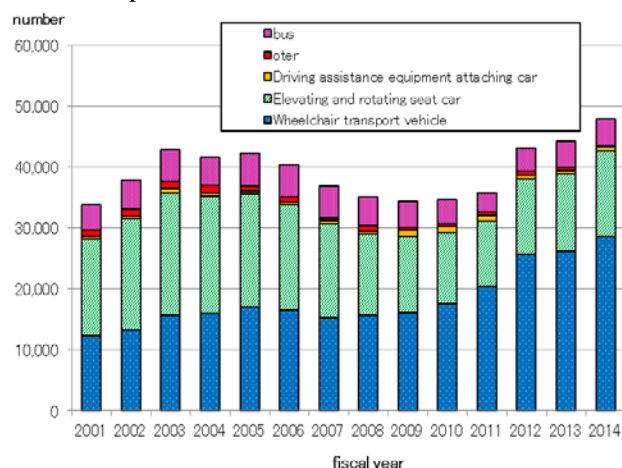
■ Japan's population is aging along with the declining birthrate. Barrier elimination measures have been implemented in the railway stations. The barrier elimination rate is holding steady at 90%..



Source: Compiled from MLIT, MHLW of documents

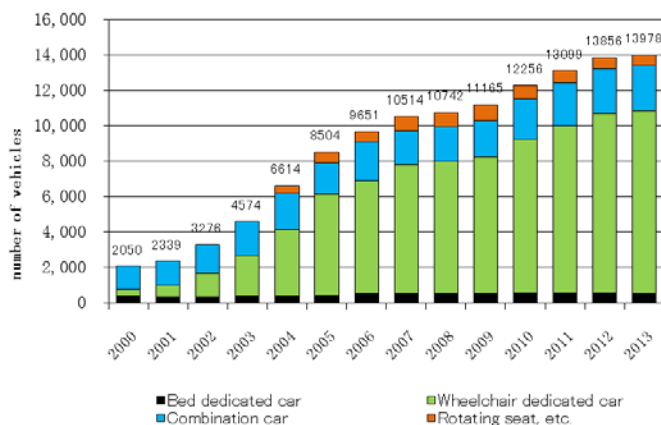
Fig.6 Trends in the sales of welfare vehicles

■ The sales of welfare vehicles have updated the maximum number of the past.



Source: Compiled from JAMA documents

Fig. 7 The number of the welfare taxi



Source : Compiled from MLIT document

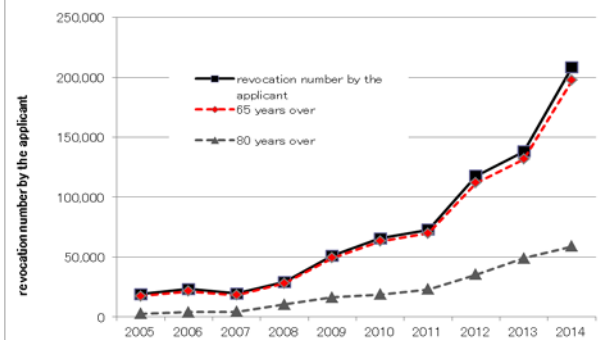
Table 3 The number of driver license holders by gender and age group

■ The number of elderly (older than 85) license holders has increased and young license holder have decreased.

age	2012 year-end		2013 year-end		2014 year-end		25-26 increase or decrease	
	man	woman	man	woman	man	woman	man	woman
16~19	622,717	420,705	619,814	421,073	589,821	398,995	-4.8	-5.2
20~24	2,670,407	2,260,417	2,608,167	2,212,705	2,592,702	2,203,596	-0.6	-0.4
25~29	3,391,731	3,016,663	3,294,638	2,823,116	3,176,756	2,811,533	-3.6	-3.8
30~34	3,842,294	3,498,378	3,746,543	3,408,564	3,671,376	3,340,050	-2.0	-2.0
35~39	4,618,328	4,239,935	4,439,665	4,076,932	4,258,200	3,911,443	-4.1	-4.1
40~44	4,691,331	4,307,671	4,787,012	4,404,728	4,848,704	4,466,368	1.3	1.4
45~49	4,029,832	3,670,104	4,138,815	3,785,029	4,229,297	3,880,065	2.2	2.5
50~54	3,706,830	3,297,218	3,731,217	3,343,220	3,791,510	3,419,943	1.6	2.3
55~59	3,700,484	3,134,417	3,647,968	3,140,491	3,615,288	3,157,328	-0.9	0.5
60~64	4,585,396	3,573,030	4,329,188	3,457,864	4,035,760	3,288,108	-6.8	-4.9
65~69	3,563,431	2,412,677	3,813,644	2,704,937	4,076,811	2,992,346	6.9	10.6
70~74	2,820,247	1,383,096	2,985,683	1,590,165	3,098,451	1,747,309	3.8	9.9
75~79	1,875,068	610,264	1,901,037	661,449	1,845,498	724,050	2.3	9.5
80~84	979,343	194,567	1,031,418	224,585	1,071,203	254,744	3.9	13.4
85~	339,821	31,444	388,982	40,363	428,868	50,100	10.3	24.1
total	45,437,260	36,050,586	45,463,791	36,396,221	45,430,245	36,645,978	-0.1	0.7

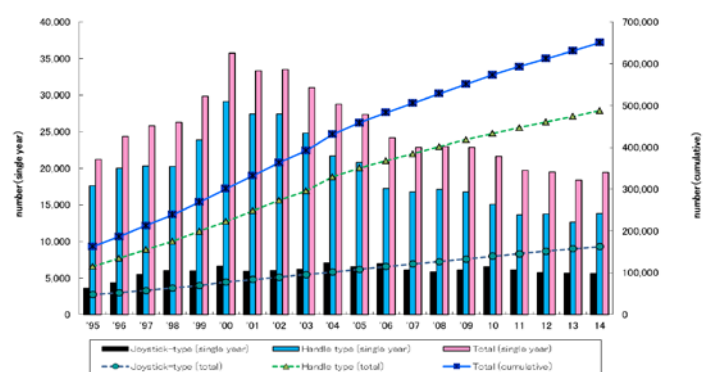
Source : National Police Agency "driver's license statistics 2014 version"

Fig. 8 The number of persons who voluntarily return their driver's licenses



Source : National Police Agency "Driver's License Statistics 2014 version"

Fig. 9 Electric wheelchair shipments



Source : Electric Wheelchair Safety Promotion Association material

Fig. 10 Example of using a golf cart to for mobility in town

■ Wajima city in Ishikawa and Otsuchi chou in Iwate have started to use golf carts with number plates for the mobility of the elderly.(Photo by Professor Minoru Kamata, the University of Tokyo)



The Basic Act on Transport Policy (Law No.92 of 2013), which establishes responsibilities of the state, local governments and stipulates the basic principles for transport policy and basic matters to realize them, was enacted on November 27, 2013. In addition, based on the Basic Act on Transport Policy, Transport Policy Basic Plan (plan period: 2014~2020) was approved in the Cabinet meeting on February 13, 2015.

The Road Committee of the Panel on Infrastructure Development submitted recommendations for the full-scale maintenance of aging roads on April 14, 2014. In addition, the Committee developed an interim report, which emphasizes efforts for “smart use of roads” regarding expressways on July 28, 2015.

The present conditions of the traffic

Figure 1: Summary of The Basic Act on Transport Policy

■ At first, in the Basic Act on Transport Policy, the importance of appropriately satisfying the basic demand of national public for transport is recognized; basic ideas about the transport measure the government need promoting are established such as "realization of the rich life of the people", "enhancement of the international competitiveness", "improvement of the local vitality", and "the correspondence to a large-scale disaster".

In addition, the necessary content of basic measures about the transport for enforcement is established to realize the basic ideas.

Source: Ministry of Land, Infrastructure, Transport, and Tourism, Road Bureau HP
http://www.mlit.go.jp/sogoseisaku/transport_policy/sosei_transport_policy_tk1_000010.html

Cabinet Decision and Execution of "Transport Policy Basic Plan"	
National Measures	
【Realize Rich Life of Citizens】	Secure transport modes for daily lives (Article 16)...Taking account of local conditions of remote islands, etc. Smooth travel of the elderly, disabled (Article 17)...Taking account of pregnant and parturient women, stroller, etc. Increase convenience, smooth, and streamline (Article 18)...Secure punctuality, smooth connecting to different travel mode, etc.
【Strengthen Global Competitiveness】	Establish and strengthen access International maritime and air transport network and hubs (Article 19)
【Improve local revitalization】	Establish domestic transport network and hubs (Article 20) Strengthen Foundation of transport projects, personnel training, etc. (Article 21)
【Handling large-scale Disasters】	In case of large scale disasters, curb functional decline of transport and swift recovery, etc. (Article 22) ...improve seismic capacity, secure alternative transport mode, smooth escape of many people
【Reducing Environmental Burdens】	Low emission vehicle, modal shift, promoting public transport, etc. (Article 23)
【Appropriate Role Sharing and Cooperation】	Development of comprehensive transport system (Article 24)...focused development taking into account of traffic demands, aging Coordination with city planning, tourism, etc., promoting cooperation/collaboration among stakeholders (Articles 25 - 27)
Research (Article 28) Development and diffusion of technologies (Article 29) ... Utilization of ICT Securing International cooperation and promoting international collaboration (Article 30) ... standardization, development of transport infrastructure overseas Reflect public opinion, etc. (Article 31)	

Figure 2: Summary of The Transport Policy Basic Plan

■ Based on the Basic Act on Transport Policy, The Transport Policy Basic Plan stipulates transport measures that the government should implement comprehensively and systematically. The Basic Plan is comprised of the following contents:

○ Basic directions of the policies on transport. The following three "Basic Policies" are stated based on the Basic Act on Transport Policy.

- A. Realization of user-friendly transport that contributes to the rich life of the people
- B. Building up the international and domestic passenger transport and logistics networks that create the foundation for growth and prosperity
- C. Creation of a foundation of sustainable, secure and safe transport.

○ Targets of the policies on transport. Description of the targets with intended achievements within the plan period pursuant to the Basic Act on Transport Policy. In addition, quantitative indicators are set up to assess the level of achievement of the targets.

○ The measures on transport that the government should implement comprehensively and systematically.

Description of existing measures that need further efforts as well as future measures to be discussed for each target.

Source: The Road Committee of the Panel on Infrastructure Development., Transport and Tourism
(http://www.mlit.go.jp/sogoseisaku/transport/sosei_transport_tk_000057.html).

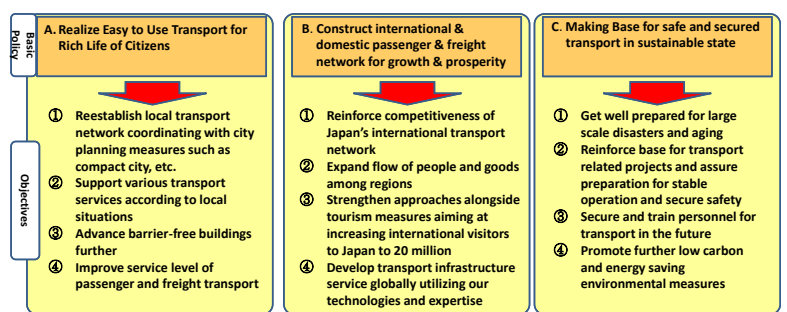


Figure 3: Recommendations for full-scale maintenance of aging roads

■ For starting the full-scale maintenance cycle for aging roads, it needs to facilitate maintenance of municipal roads by focusing on the following 2 components.

- 1) Establishment of a maintenance cycle (clarification of the responsibilities of road administrators)
- 2) Establishment of a mechanism to facilitate the maintenance cycle

Source: The Road Committee of the Panel on Infrastructure Development,

Ministry of Land, Infrastructure, Transport and Tourism (http://www.mlit.go.jp/road/road_fr4_000029.html).

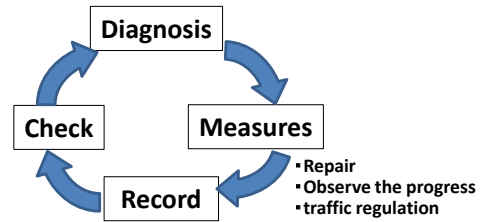


Figure 4: Smart use of roads

■ In the efforts for " smart use of roads " , it is demonstrated that the function of the whole road network should be utilized to the maximum extent in terms of time and space by the operative improvement or small improvement of existing roads, mainly expressways. As a main concrete action, smooth, safe, usability and regional alliances as well as application of ETC2.0 are listed. In the measure to push forward

Smooth	① Cancellation of the bottleneck by concentrated measures based on scientific analysis ② Shift to the full-scale transportation demand management applied ETC2.0
Safe	③ Function differentiation with residential road by the further inflection promotion of expressway ④ Traffic regulation time is shortest by important points of the preparation depends on becoming it and reinforcement of the cooperation
Usability	⑤ Improvement of the services such as guidance and the rest corresponding to the latest society needs ⑥ Activation of passenger and freight flow by <u>the seamlessness of multi modes of transport</u>
Regional alliances	⑦ Reinforcement of the access function with the area by the direct connections with an expressway and facilities

to support the efforts for the smart use of roads, the following three elements are presented, 1) Reinforcement of the network, 2) Securing the effective and efficient function of roads, 3) Detailed understanding of road traffic conditions. Particularly, existing two traffic lane sections should be improved to 4 traffic lanes, but also some different ways such as effective overtaking lane setting or 3 traffic lanes use as countermeasures for low-speed vehicles should also be considered.

Source: [Council for Social Infrastructure Road Subcommittee Infrastructure](#) in Ministry of Land, Infrastructure, Transport and Tourism document http://www.mlit.go.jp/report/press/road01_hh_000266.html

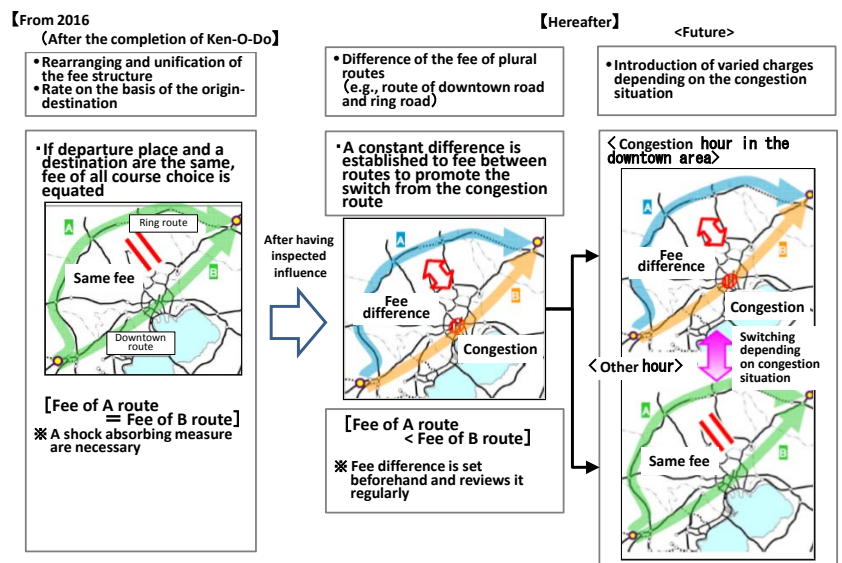
Figure 5: Fee structure to use the expressway of the metropolitan area smartly

■ In the interim report (draft) for the "smart use of roads", the fee structure for future expressways in metropolitan area to fulfill the function of expressways to the maximum extent are shown. For the establishment of "a new fee structure for the current 3 ring roads, the following rational fee structures for smart use of roads are arranged.

- 1) Fair fee structure depending on the degree of use of roads (distance-based toll rate system)
- 2) Simple and seamless fee structure beyond main management entities (rate to ensure a "seamless" system between main management entities)

- 3) Strategic fee structure for the optimization of traffic flow (rate to realize effective and flexible use of roads)

Source: [Council for Social Infrastructure Road Subcommittee Infrastructure](#) in Ministry of Land, Infrastructure, Transport and Tourism document http://www.mlit.go.jp/report/press/road01_hh_000266.html



Funding Japan's Highways Following the Tax-Earmarking System

Professor, Faculty of Business and
Commerce, Keio University

Kazusei Kato

It has been over 5 years since Japan's system of funding its highways through tax-earmarking ended in 2009; however, automobile users are still burdened with various taxes. In FY 2014, the total revenue generated from automobile-related taxes was 6.3 trillion yen. Highway expenditure has remained constant, yet the total number of toll road projects is increasing steadily.

Table 1 Automobile-Related Taxes

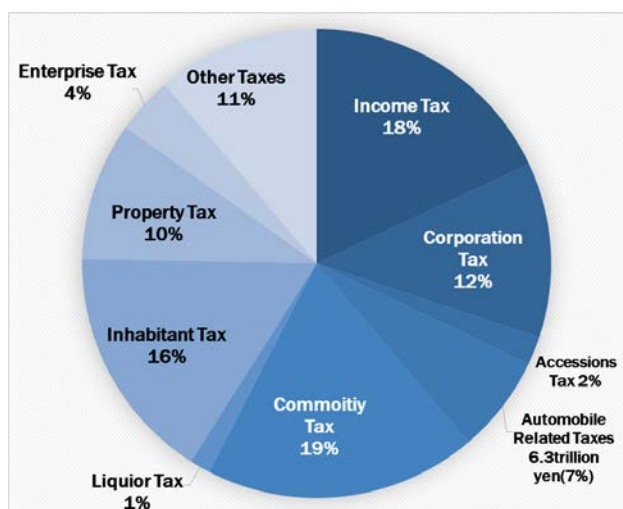
Japan's system, whereby certain tax revenues were earmarked for highway expenditure ended in March 2009. All of the relevant taxes remain in place; however, their respective revenues are decreasing.

Tax Items (Government)	Founding Year	Earmarked for Highway in 2008	Main Rules	Temporary Tax Rate (FY 2008)	Temporary Tax Rate (FY 2015)	Revenue (FY 2008)	Revenue (FY 2015)
Automobile Acquisition Tax (Local)	1968	All	3% of Acquisition Cost (private)	5% of Acquisition Cost (private)	3% of Acquisition Cost (private)	402.4	109.6
Motor Vehicle Tonnage Tax (National)	1971	77.5% of National Tax Revenue (=2/3 of Total Revenue)	2,500 yen per 0.5t	6,300 yen per 0.5t	4,100yen per 0.5t (less than 13years)	554.1	374
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	256.7
Gasoline Tax (National)	1954	All	24.3 yen/L	48.6yen/L	48.6yen/L	2729.9	2466
Liquefied Petroleum Gas Tax (National)	1966	1/2 of Revenue	17.5 yen/kg	--	--	14	10
Local Gasoline Tax (Local)	1955	All	4.4 yen/L	5.2yen/L	5.2yen/L	299.8	263.8
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	10
Light Oil Delivery Tax (Local)	1956	All	15.1yen/L	32.1yen/L	32.1yen/L	991.4	938.3
Total (billion yen)						5365.7	4428.4

Note: Some general taxes are excluded from Table 1, such as: consumption tax when a vehicle is purchased, vehicle prefecture taxes and light-vehicle municipal taxes.

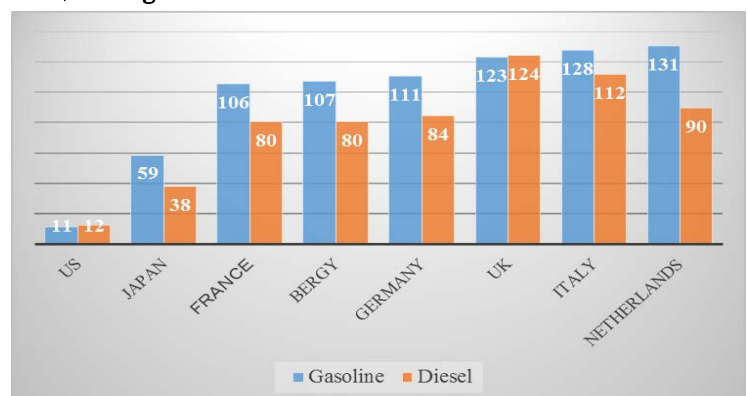
Sources: Ministry of Finance (MOF), Ministry of Internal Affairs and Communication (MIC) and Japan Automobile Manufacturers Association, Inc.

Fig.1 Tax Revenue and Automobile-Related Taxes (FY 2014)



Budget); and MIC, *Revenue Estimates of Local Taxes and Local Transfer Taxes*

Fig.2 Motor Fuel Tax Rates for Selected Countries

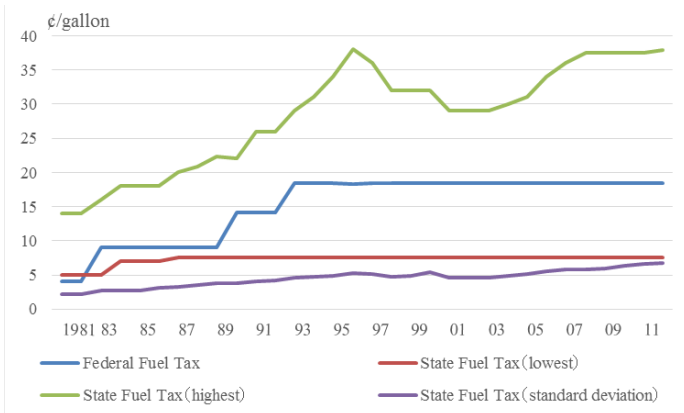


Note: The US figure includes the weighted average of individual state taxes

Source: US Department of Transportation (USDOT), Federal Highway Administration, Policy and Governmental Affairs, Office of Highway Information, *December 2014 Monthly Motor Fuel Reported by States*

□ As shown in Fig. 3, the US federal gas tax, which is mostly earmarked for highway funding after achieving a balanced budget in 1998, remains fixed at 18.4¢/gallon. The state gas taxes (weighted average) show a decreasing trend after 1995, before increasing again in the last 5 years. The standard deviation is widening. However, the highway funding resource is insufficient and some states are reviewing distance-based charges.

Fig.3 Gasoline Tax Trends in the US



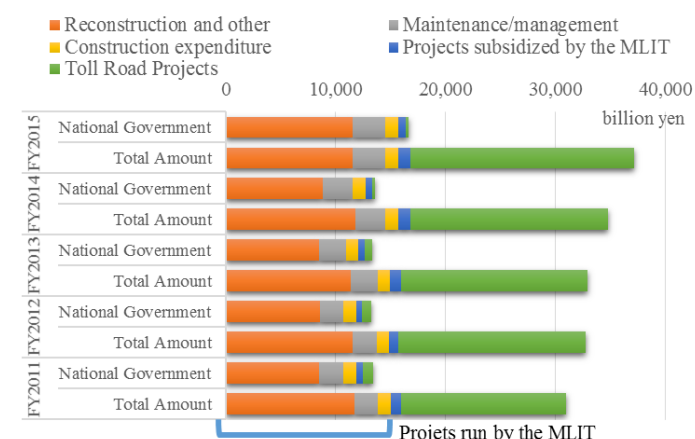
Source: USDOT, *Highway Statistics* (Table MF-205).

Table 2 US Vehicle Miles Traveled Fee Scenarios

Needs Scenario	Charge on All Miles	Charge Federal-Aid- Highway Only	Equivalent Fuel Taxes(¢/gallon)		Required Annual HTF
	(¢/Mile)	(¢/Mile)	Gasoline	Diesel	(billions)
Maintain Current Levels Scenarios					
2008 Highway Trust Fund Revenues	1.2	1.4	18.3	24.3	36.4
2008 Federal Program Level	1.8	2.1	27	39.2	53.6
Base Case Needs Scenarios					
Need to Maintain	2.6	3	39	59.9	77.6
Need to Improve	3.2	3.7	48.4	75.9	96.2

Source: The National Surface Transportation Infrastructure Financing Commission (2009), *Paying Our Way*, p.135.

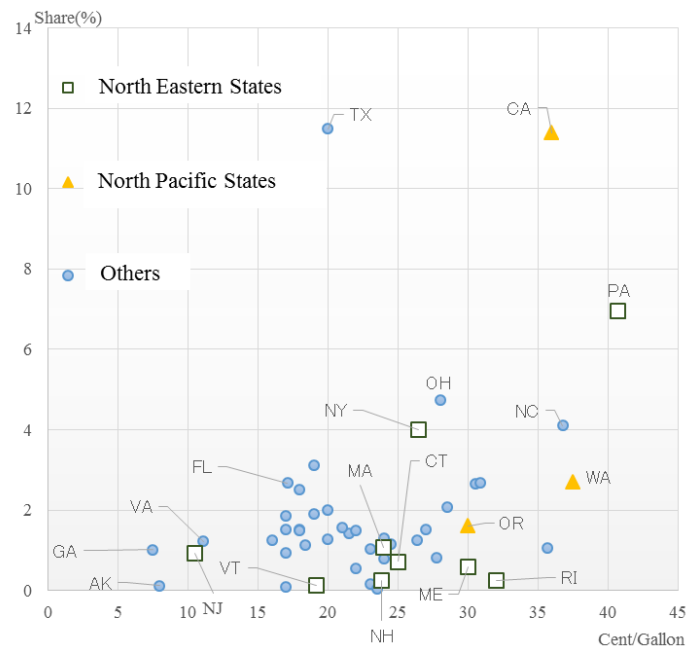
Fig.5 Japan's Recent Highway Budgets



Note: Additional investments include the “Comprehensive and Safety Subsidy” (1084 billion yen) and the 135 billion yen national recovery and reconstruction program following the Great East Japan Earthquake.

Source: MLIT, *Budget Highlights for Road*.




Fig.4 US State Gasoline Tax Rates and Share of Total Revenue



Note: US data include federal and state taxes.

Source: USDOT, *Highway Statistics 2014*, (Table MF-33SF)

Table 3 Correcting the Expressway Charging System

Normal Section (yen/km)			National Expressway	24.6
Honshu-Shikoku Bridge Expwy (on shore)	28.08			
Hiroshima-Iwakuni Road	34.0			
Hanwa Expwy (Kainan-Arita)	39.36			
Chuo Expwy Enasan Tunnel				
Tokai-Hokuriku Expwy Hida Tunnel				
Kan-Etsu Expwy Kan-Etsu Tunnel	64.0			
Kanmon Expwy				
Metropolitan Area (yen/km)			29.52	
National Expwy (metropolitan area)	29.52			
Special Section (yen/km)			Isewangan Expressway	108.1
Tokyo-Wan Aqua-Line	179.28			
Honshu-Shikoku Bridge Expwy (Strait)	252.72			
Honshu-Shikoku Bridge Expwy (Akashi-Kaikyo Bridge)	404.35			

Source: Japan's Ministry of Land, Infrastructure, Transport and Tourism (MLIT) (2014), *New Toll System* (in Japanese)

Table 4. Japan's Stricter Preferential Taxation Rules for Ecologically-Friendly Cars

Japan's FY 2015 tax system revision includes a tightening of the tax breaks for eco-friendly cars.

Criteria		Automobile Acquisition Tax	Motor Vehicle Tonnage Tax
FY 2020 Standard	more than 20%	No Tax	Exempt
	more than 10%	100%→80%	100%→75%
	attainment	100%→60%	100%→50%
FY 2015 Standard	more than 10%	80%→40%	75%→25%
	more than 5%	60%→20%	50%→25%