2-1 Trends and Present Situation of Road Traffic Accidents

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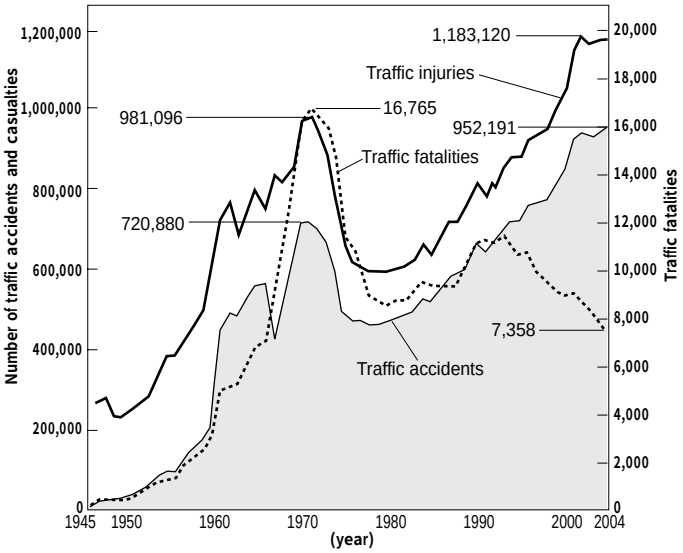
The number of traffic fatalities fell below 8,000 and totaled 7,358 in 2004 in a continuation of the downward trend seen in the past several years. The decrease resulted from all-out efforts by society to reduce traffic accidents, including the June 2002 revision to the Road Traffic Law and the strong resolve shown by the Prime Minister (who heads the Central Transport Safety Council) in a statement issued in January 2003 to halve the number of traffic deaths. Improved vehicle safety systems also led to the decrease in traffic fatalities. However, the number of overall traffic accidents and the number of accidents resulting in injury continue to rise, requiring the promotion of further countermeasures. In addition, the number of traffic fatalities involving senior citizens and pedestrians is relatively higher than for similar accidents in other countries, which indicates the need for further efforts to prevent accidents.

Fig.1 Changes in traffic fatalities, injuries, and number of accidents
The number of traffic fatalities decreased but the number of accidents and the number of accidents resulting in injury are still high.



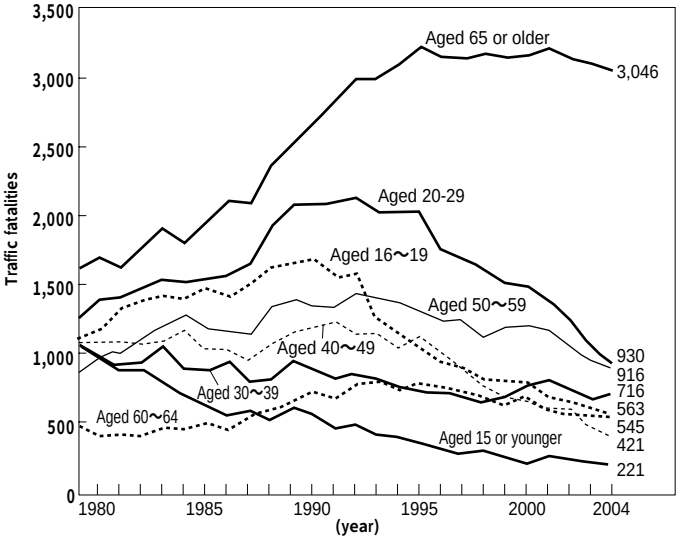
Source: Institute for Traffic Accident Research and Data Analysis, "Traffic Statistics" (2004 edition)

Table 1 Traffic injuries per 100,000 people and per 10,000 vehicles for the worst 10 prefectures (2004)

Per 100,000 people		Per 10,000 vehicles	
Kagawa Prefecture	1,655.9	Kagawa Prefecture	189.6
Saga Prefecture	1,550.1	Saga Prefecture	185.3
Saitama Prefecture	1,521.1	Ibaraki Prefecture	177.3
Fukui Prefecture	1,417.2	Fukuoka Prefecture	176.6
Okayama Prefecture	1,389.4	Osaka Prefecture	174.8
Fukuoka Prefecture	1,236.0	Fukui Prefecture	170.6
Miyazaki Prefecture	1,153.9	Saitama Prefecture	163.1
Toyama Prefecture	1,120.6	Kanagawa Prefecture	162.5
Aichi Prefecture	1,064.2	Okayama Prefecture	157.9
Tokushima Prefecture	1,049.8	Hyogo Prefecture	153.1
Nationwide	932.4	Nationwide	131.6

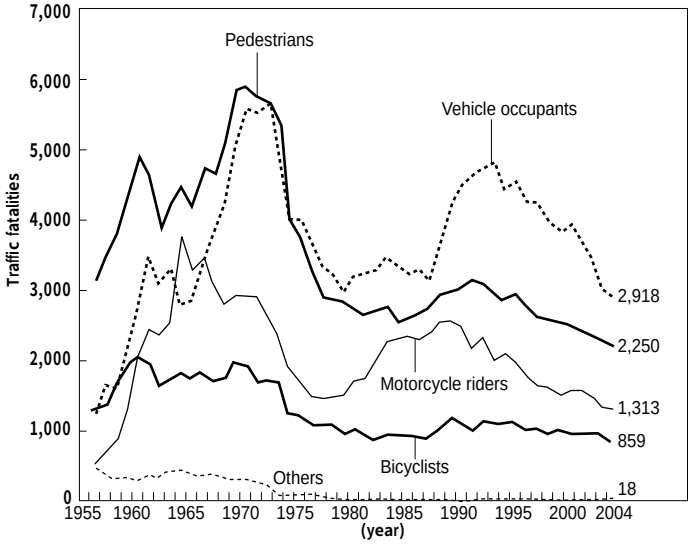
Source: Institute for Traffic Accident Research and Data Analysis,"Traffic Statistics" (2004 edition)

Fig. 2 Changes in traffic fatalities by age bracket
Deaths among senior citizens (aged 65 or older) remain at high levels. But the number declines sharply for the 20-29 age group.



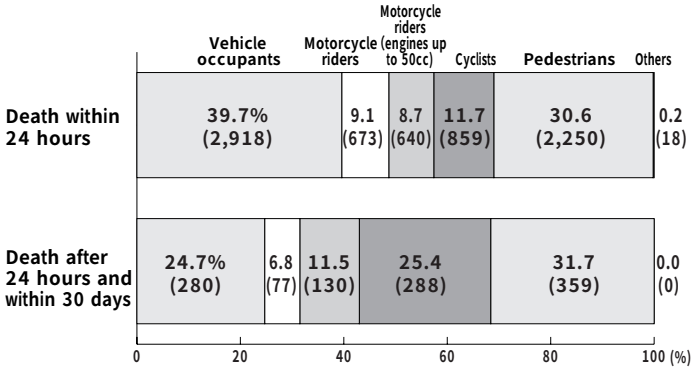
Source: Traffic Statistics (2004 edition)

Fig.3 Changes in traffic fatalities by travel mode
Vehicle occupant fatalities are falling. Measures need to be adopted to curb fatalities for pedestrians and cyclists.



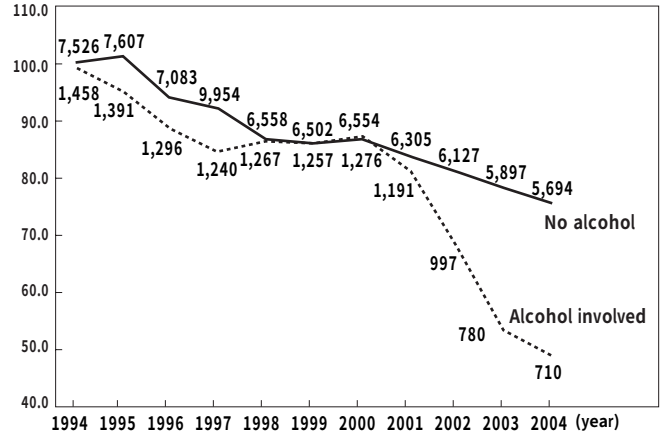
Source: Traffic Statistics (2004 edition)

Fig.4 Breakdown of ratios of accidents for deaths occurring within 24 hours and deaths occurring within 30 days



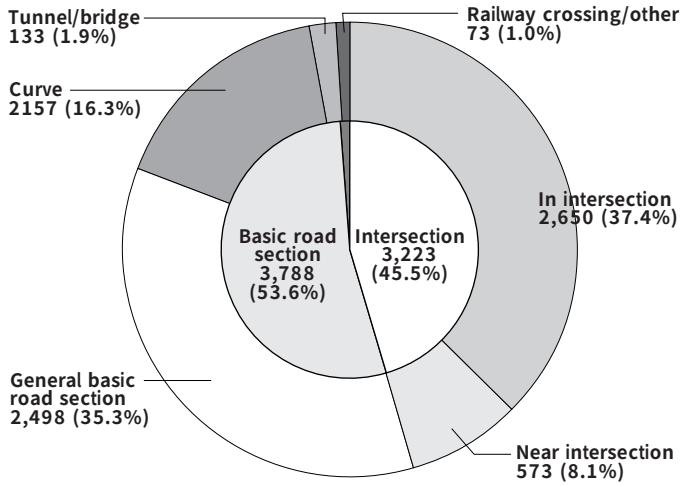
Notes: Death within 24 hours: death resulting from the accident and occurring within 24 hours of the accident
Death within 30 days: death resulting from the accident and occurring within 30 days of the accident, excluding the first 24 hours
Source: Cabinet Office "Traffic Safety White Paper" (2005 edition)

Fig.5 Change in number of fatalities after penalties against driving under the influence of alcohol were strengthened



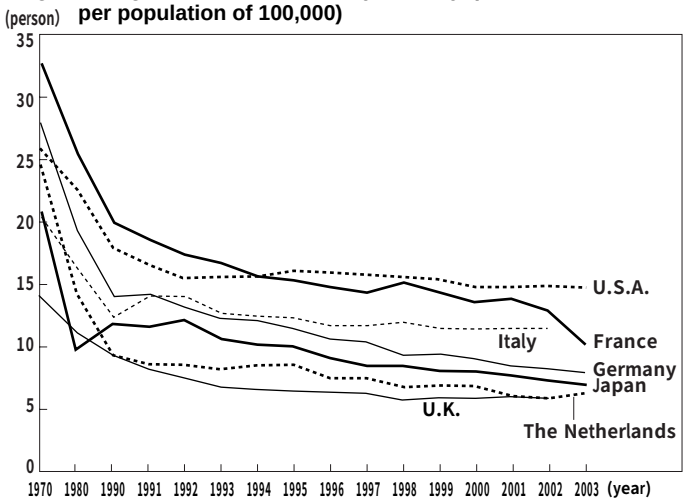
Note: The contribution of driving under the influence of alcohol to fatal accidents in 1994 is set as 100. Penalties for driving under the influence of alcohol were strengthened in the June 2002 revision of the Road Traffic Law.
Source: Cabinet Office Traffic Safety White Paper (2005 edition)

Fig.6 Number of fatal accidents by road configuration



Source: Cabinet Office "Traffic Safety White Paper" (2005 edition)

Fig.7 Changes in traffic deaths by country (Number of fatalities per population of 100,000)



Source: Traffic Safety White Paper (2004 edition)

Table 2 Traffic deaths in each country by situation (2003)

	Fatalities	Vehicle. occupants	Motorcycle riders	Motorcycle riders (engines up to 50cc)	Cyclists	Pedes trians	Others
Germany	6,613 100.0	3,774 57.1	946 14.3	134 2.0	616 9.3	812 12.3	331 5.0
France	6,058 100.0	3,709 61.2	859 14.2	393 6.5	201 3.3	626 10.3	270 4.5
Italy (2000)	6,736 100.0	3,555 52.8	859 12.8	409 6.1	315 4.7	1,188 17.6	410 6.1
The Netherlands	1,028 100.0	483 47.0	95 9.2	94 9.1	188 18.3	97 9.4	71 6.9
U.K.	3,658 100.0	1,861 50.9	690 18.9	25 0.7	116 3.2	802 21.9	164 4.5
U.S.A.	42,643 100.0	19,460 45.6	3,633 8.5	28 0.1	622 1.5	4,749 11.1	14,151 33.2
South Korea	7,212 100.0	1,717 23.8	906 12.6	232 3.2	256 3.5	2,896 40.2	1,205 16.7
Japan	8,877 100.0	2,230 25.1	803 9.0	766 8.6	1,243 14.0	2,739 30.9	1,096 12.3

Figures shown in upper half of cell are the number of fatalities and those in lower half represent percentage shares.
Source: Institute for Traffic Accident Research and Data Analysis, "Traffic Statistics" (2004 edition)

Table 3 Traffic deaths in each country by age bracket (2003)

	Fatalities	5or younger	6-9	10-14	15-17	18-20	21-24	25-64	65 or older	Unknown
Germany	6,613 100.0	47 0.7	61 0.9	100 1.5	316 4.8	720 10.9	672 10.2	3,367 50.9	1,329 20.1	1 0.0
France	6,058 100.0	69 1.1	48 0.8	106 1.7	273 4.5	565 9.3	722 11.9	3,090 51.0	1,099 18.1	87 1.4
Italy (2000)	6,736 100.0	50 0.7	36 0.5	102 1.5	186 2.8	399 5.9	672 10.0	3,554 52.8	1,404 20.8	333 4.9
The Netherlands	1,028 100.0	16 1.6	17 1.7	31 3.0	54 5.3	85 8.3	94 9.1	510 49.6	221 21.5	0 0.0
U.K.	3,658 100.0	39 1.1	29 0.8	77 2.1	201 5.5	411 11.2	361 9.9	1,865 51.0	658 18.0	17 0.5
U.S.A.	42,643 100.0	741 1.7	457 1.1	938 2.2	2,448 5.7	3,988 9.4	4,360 10.2	22,964 53.9	6,630 15.5	117 0.3
South Korea	7,212 100.0	170 2.4	144 2.0	80 1.1	158 2.2	254 3.5	396 5.5	4,267 59.2	1,707 23.7	36 0.5
Japan	8,877 100.0	83 0.9	84 0.9	67 0.8	256 2.9	493 5.6	472 5.3	3,769 42.5	3,653 41.2	0 0.0

Figures shown in upper half of cell are the number of fatalities and those in lower half represent percentage shares.
Source: Institute for Traffic Accident Research and Data Analysis, "Traffic Statistics" (2004 edition)

2-2 Traffic Safety Measures

Associate Professor, Faculty of Urban Environmental Sciences, Tokyo Metropolitan University

Takashi Oguchi

Japan's so-called social losses from traffic accidents are estimated to total \4.2 trillion a year. Of this sum, losses deriving from death or injury of a person are calculated by estimating incomes and other economic benefits that the person would accrue over the rest of his/her life if he/she were not dead or had not become handicapped. But given the worldwide tendency to estimate human losses by using the Willingness-to-Pay method (WTP), total losses in Japan from traffic accidents would swell further and reach huge levels. The central government and local governments have taken measures to ensure traffic safety based on the Traffic Safety Measures Basic Law. Their efforts have produced the desired outcomes, since they are concentrating their financial and human resources for traffic safety on areas where accidents have occurred frequently in the past. The central and local governments are making efforts to improve the safety of vehicle-driving conditions, by introducing advanced safety facilities, advanced traffic-control systems, and improving road conditions and road facilities. But their safety efforts go beyond these conventional approaches to the launching of public relations campaign, for example, so that dangerous road conditions and traffic risks in certain areas are widely disseminated to the general public.

Fig.1 Government efforts for traffic safety

The central government has implemented comprehensive and meticulously-planned safety measures based on the Traffic Safety Measures Basic Law and improved traffic-related facilities and systems based on the Social Infrastructure Improvement Priority Plan.

Traffic Safety Plan based on the Traffic Safety Measures Basic Law

The law is intended to implement safety measures in ground, marine, and aviation traffic in a comprehensive and meticulously-planned manner.

Basic Plan for Traffic Safety

- Devised by the Central Traffic Safety Measures Council (headed by Prime Minister Junichiro Koizumi).
- Stipulates policy guidelines and policy measures for traffic safety

Seventh basic plan for traffic safety (approved by the Central Traffic Safety Measures Council on March 16, 2002) for fiscal 2001-2005

Outline

a. Safety measures addressing the actual conditions of traffic accidents and the changes in social and economic situations are necessary in order to create a safer traffic society in the 21st century.
b. The government will formulate adequate and effective traffic safety measures in a comprehensive manner by addressing issues associated with three elements constituting our traffic society - people, modes of transport, and traffic environments. The government will firmly implement these measures while winning understanding and cooperation from the citizens.
c. The government will promote comprehensive research and analysis on causes of traffic accidents as a basis for introducing measures on the three elements.
d. The government will implement measures to reduce the damage deriving from traffic accidents and measures to relieve the victims of traffic accidents.
e. The government will implement adequate measures in a concentrated and effective manner in accordance with the changes in society, such as the rapid aging of the population and advancements in information technology.
f. The government will promote traffic safety campaigns with general citizens participating in the move.

Traffic Safety Plans by prefectural governments → **Traffic Safety Plans by municipal governments**

Traffic safety facilities improvement projects (after revision)

A five-year comprehensive plan to improve traffic safety facilities was abolished in March 2003, and was integrated into the Social Infrastructure Improvement Priority Plan along with other infrastructure improvement projects.

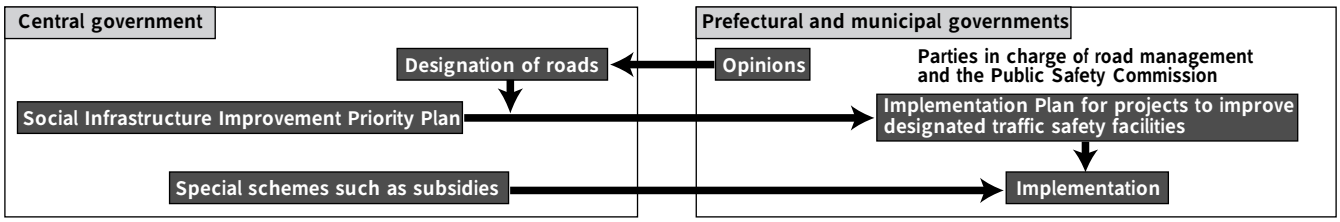


Table 1 Social losses caused by traffic accidents (FY 1999)

In Japan, human losses (calculated by projecting economic costs that victims of accidents would accrue over the rest of their lives if they were not dead or had not become handicapped) and physical losses together account for the bulk of total social losses from traffic accidents.

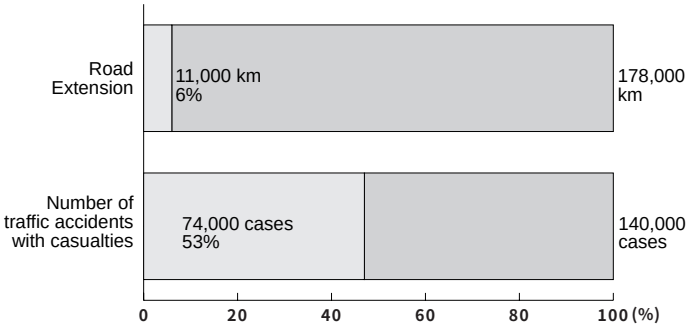
	Losses (\1 million)	% shares	Notes
Human losses	1,726,855	40.5	Medical fees, business compensation, consolation money, econonic loss of victims, etc.
Physical losses	1,804,100	42.3	Repair of vehicles and damaged structures, and payments of damages.
Losses of business operators	77,183	1.8	Decline in business value of persons involved in accidents stemming from their death, physical injury, and suspension from work.
Losses of public organizations	676,883	15.5	Ambulance fees, paperwork fees charged by police, insurance management fees, financial assistance to victims of accidents
Total	4,285,021	100.0	

Source: Economic Losses of Traffic Accidents, compiled by the Director-General in charge of comprehensive planning and research at the Cabinet Office in June 2002

■ Emergency safety measures began in 1996 to focus on accident black spots, where traffic accident had occurred frequently. As the measures produced the intended results, 4,000 other black spots were designated as "dangerous" areas in July 2003.

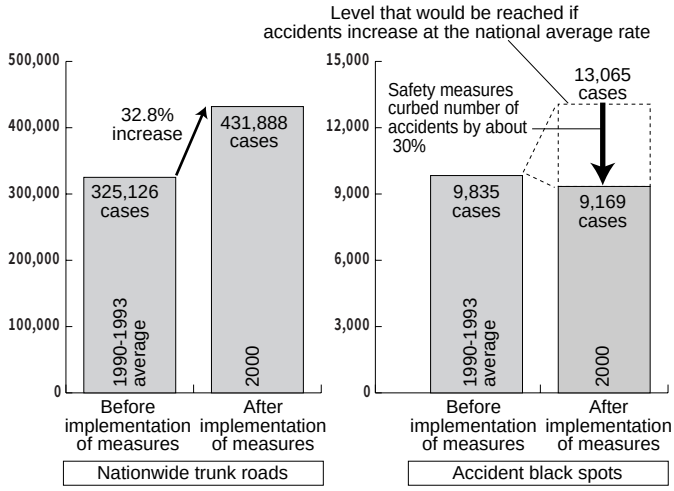
Fig.2 Correlation between road extensions on single-lane areas of trunk roads and the number of traffic accidents with casualties

Traffic accidents on trunk roads concentrate on certain sections.



Note: Traffic accident figures are averages for 1996-1998
Source: Website of the Ministry of Land, Infrastructure and Transport
http://www.mlit.go.jp/road/road/traffic/sesaku/03.html

Fig.3 Effects of emergency safety measures at accident

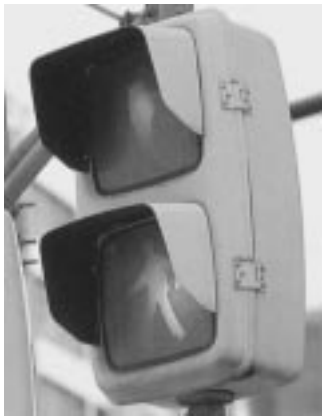


Source: Website of the Ministry of Land, Infrastructure and Transport
http://www.mlit.go.jp/road/road/traffic/taisaku/

Fig.4 Enhanced visibility after introduction of LED-type traffic signal lamps

An LED-type traffic signal lamp gives an instantly recognizable signal. In addition, it consumes less electricity and has a longer life.

<Light bulb-type traffic signal lamp>

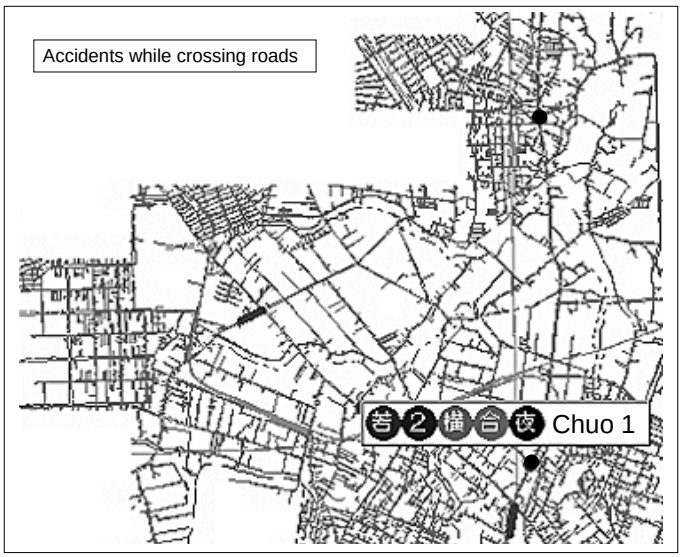


<LED-type traffic signal lamp>

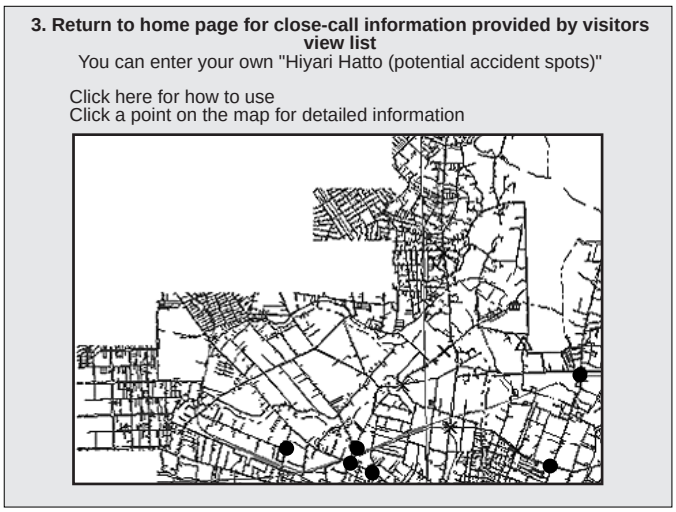
Fig.5 Pavement with better drainage, which is designed to maintain traction and prevent water splashing up from the road's surface

Fig 6 Project to halve traffic accidents in Kamagaya City, Chiba Prefecture

The local government makes available data on locations with frequent accidents.



People's written accounts of close calls can be examined.



Source: Website of the Administration Section, Civil Engineering Department, operated by Kamagaya City(English Translation from the Source)
http://www.utef.co.jpkamagaya/top.html

2-3 The Second Stage of ITS (Intelligent Transport Systems)

Assistant Manager in Charge,
ITS Japan Planning Group
Masahiro Sakakibara

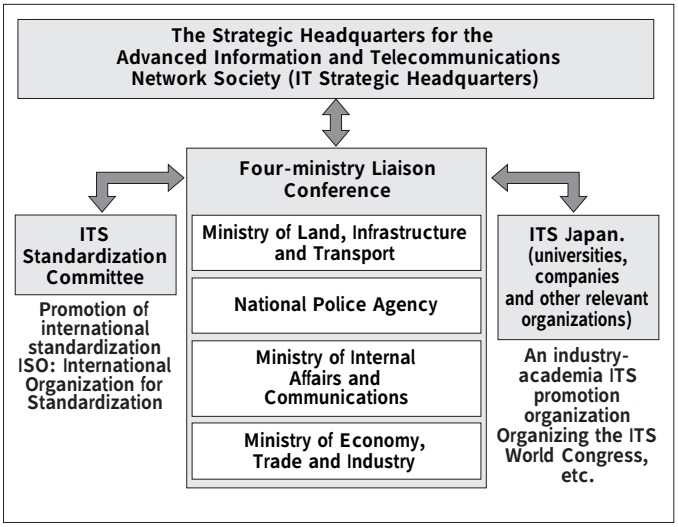
Intelligent Transport Systems (ITS) are designed to increase safety, transportation efficiency, and comfort, as well as promote environmental conservation by organically communication between people, vehicles, and roads using the most advanced information and telecommunications technologies. In Japan, four government agencies (five before reorganization, i.e., the National Police Agency and the former Ministries of International Trade and Industry; Transport, Posts and Telecommunications; and Construction) released an overall scheme for ITS in July 1996. Practical use of ITS has been implemented in the Vehicle Information and Communication System (VICS), Electronic Toll Collection (ETC), and the HELP emergency reporting system, with effective results. This was the first stage of ITS. In September 2004, industry, government, and academic users formed the ITS Info-communications Forum, which announced its second-stage Policy on ITS Promotion. In addition, the e-Japan Strategy II, in its final year, decided on the IT Policy Package 2005 as a priority initiative, with ITS included to "improve the convenience and safety of movement and transportation." In particular, strengthened industry-government-academia collaboration is moving forward on the government's goal of reducing annual traffic fatalities to less than 5,000 by 2012.

Table 1 ITS Info-communications Forum's Policy on ITS Promotion

Field	Overall theme	Individual themes
Safety and Security	(1) Improving the safety of road traffic	*The intelligent automobile *Enhancement of infrastructure *Vehicle-to-vehicle and road-to-vehicle cooperation *Supporting the safety of pedestrians, bicyclists, and motorcyclists *Enhancement of first-aid rescue of traffic-accident victims
Efficiency and Environment	(2) Ensuring smoother traffic and reducing environmental impact	*Optimization of traffic demand *Advanced road traffic management systems *Advanced parking systems The increase in efficiency of freight distribution
Comfort and Convenience	(3) Improving convenience to individualsl	*Raising the quality of road traffic information provided and promoting its active use *Advanced application of ITS content *Improving convenience to the elderly disabled
	(4) Stimulating regional economic activity	*Improving access between regions and expressways *Raising the convenience of intermodal transportation using public transport
Multiple fields	(5) Preparation of a common platform and promotion of international standards and global technical regulations	*Construction of an ITS platform *Promoting the international standards and global technical regulations

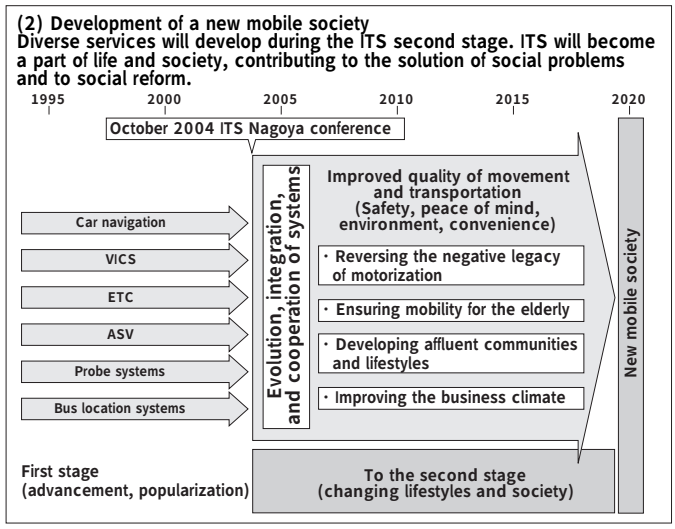
Source: ITS Info-communications Forum (Website of the ITS Japan)
(http://www.its-jp.org/topics/topics017.html)

Fig.2 Government efforts to promote ITS



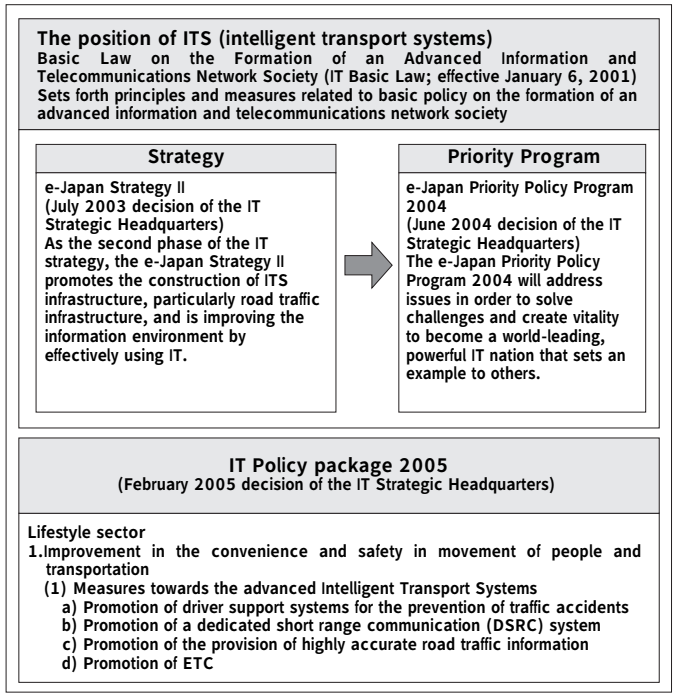
Source: ITS information shown on the website of the Road Bureau of the Ministry of Land, Infrastructure and Transport
(http://www.mlit.go.jp/road/ITS/j-html/index.html)

Fig.1 Direction of the ITS second stage



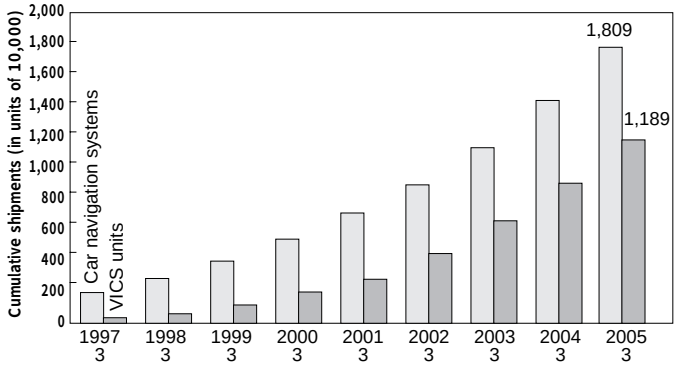
Source: Smartway Project Advisory Council, Road Bureau, Ministry of Land, Infrastructure and Transport
(http://www.its.go.jp/ITS/j-html/Smartway/20040609/)

Fig.3 The position of ITS as a national strategy



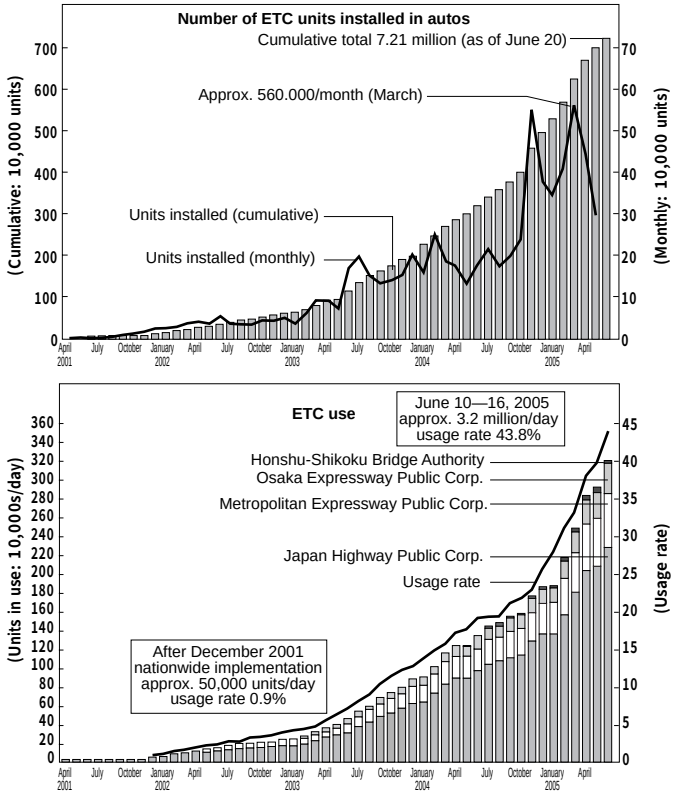
Source: Website of the Strategic Headquarters for Advanced Information and Telecommunications, the Prime Minister of Japan and his Cabinet
(http://www.kantei.go.jp/jp/singi/it2/)

Fig.4 Spread of car navigation systems and VICS



Source: Taken from the Vehicle Information and Communication System Center (http://www.its.go.jp/ITS/j-html/ITSinJapan/navi.html)

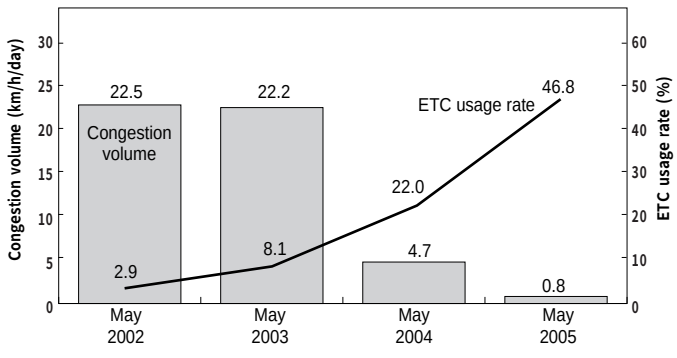
Fig.5 Number of ETC units installed in autos and status of use



Source: Website of the Ministry of Land, Infrastructure and Transport (http://www.mlit.go.jp/road/yuryo/riyou.pdf)

Fig.8 Lessening of congestion at toll gates due to the spread of ETC systems

Traffic congestion almost vanished after pioneering use at toll gates on the main Metropolitan Expressway beginning in May 2005.



Source: Created from website of the Metropolitan Expressway Public Corp (http://www.mex.go.jp/press/2005/050615/index.html)

Table 2 Expanding ITS market : approximately ¥12 trillion already

Current ITS market
Information: About ¥6 trillion
Car navigation systems, etc.
VICS and ETC
Message signs
Infrastructure: About ¥5 trillion
Roadside sensors and cameras
Networks
Services: About ¥1 trillion
Map software
Content
Total: About ¥12 trillion

Source: Created from materials of the Road Bureau of the Ministry of Land, Infrastructure and Transport

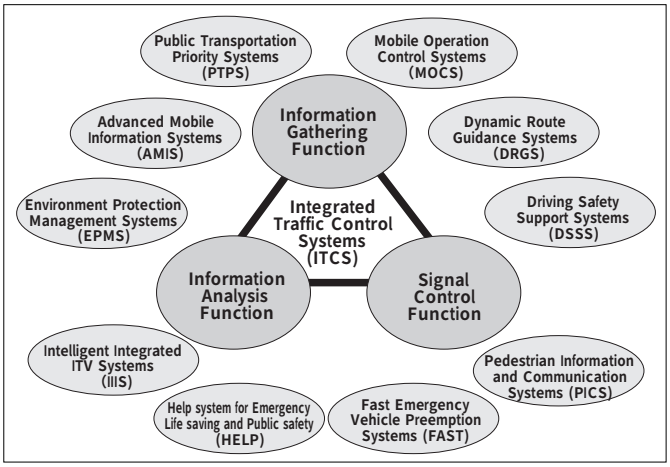
Fig.6 Third-Phase Advanced Safety Vehicle (ASV3)

Research and development is planned between 2001 and 2005 on 32 systems in six fields to develop practical applications and eventual diffusion.

I	Preventive safety technology (information display, warning, and reduction of burden)
II	Accident-avoiding technology (enhancing vehicle functions to maximum levels, automated maneuvering)
III	Automated driving technology (use of existing and new infrastructure)
IV	Collision safety technology (protection of drivers and passengers, reducing damage to pedestrians)
V	Technology to prevent spread of damage from traffic disasters
VI	Basic vehicle technology

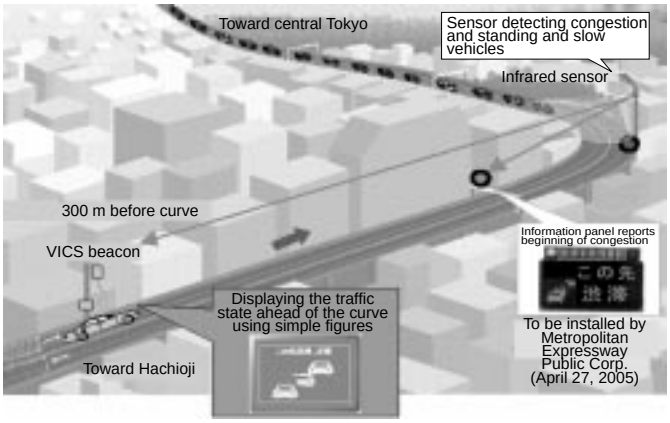
Source: ITS Handbook 2002-2003, compiled by the Highway Industry Development Organization

Fig.7 Subsystems of the Universal Traffic Management Systems (UTMS)



Source: Taken from home page of the Universal Traffic Management Society of Japan (UTMS) (http://www.utms.or.jp/japanese)

Fig.9 Overview of the Sangubashi pilot program for an advanced cruise-assist highway system (AHS)



Source: Created from materials of the Road Bureau of the Ministry of Land, Infrastructure and Transport

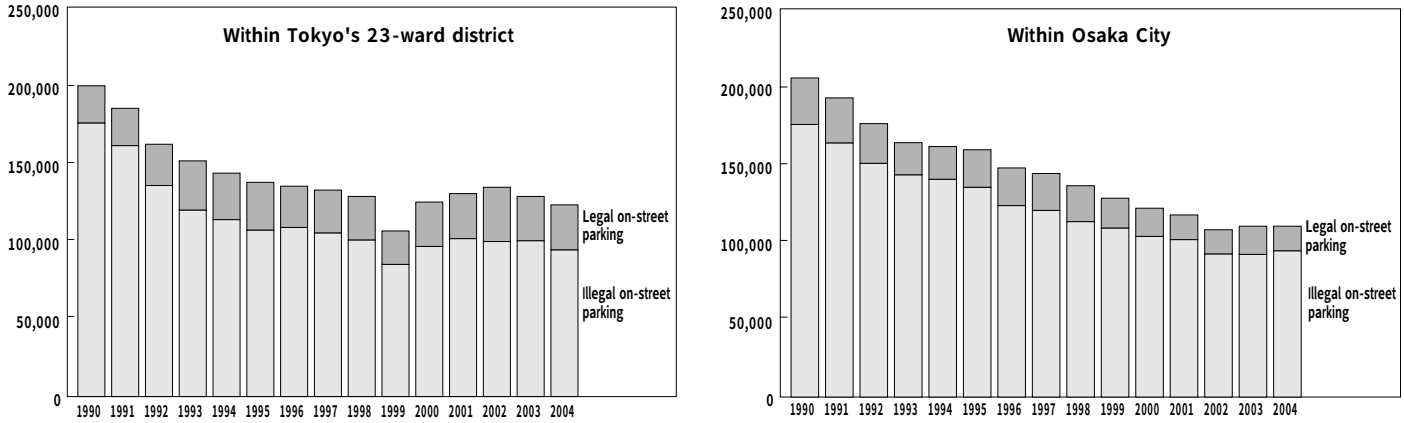
2-4 Efforts to Solve Parking Problems

Associate Professor, Interdisciplinary Graduate School of Science and Engineering, Tokyo Institute of Technology

Yasunori Muromachi

With the revision of Standard Parking Requirements, flexible rules were introduced based on performance rather than uniform numerical standards and the conventional principle of locating them within a building or on the same sites. Parking lot development can consider local conditions, enabling the passage of creative and innovative local rules and integration with town planning.

Fig.1 Changes in the number of vehicles that were temporarily parked on city streets in two metropolitan areas



Source: Toshi Kotsumondai Chosakai, URBAN TRAFFIC 2005

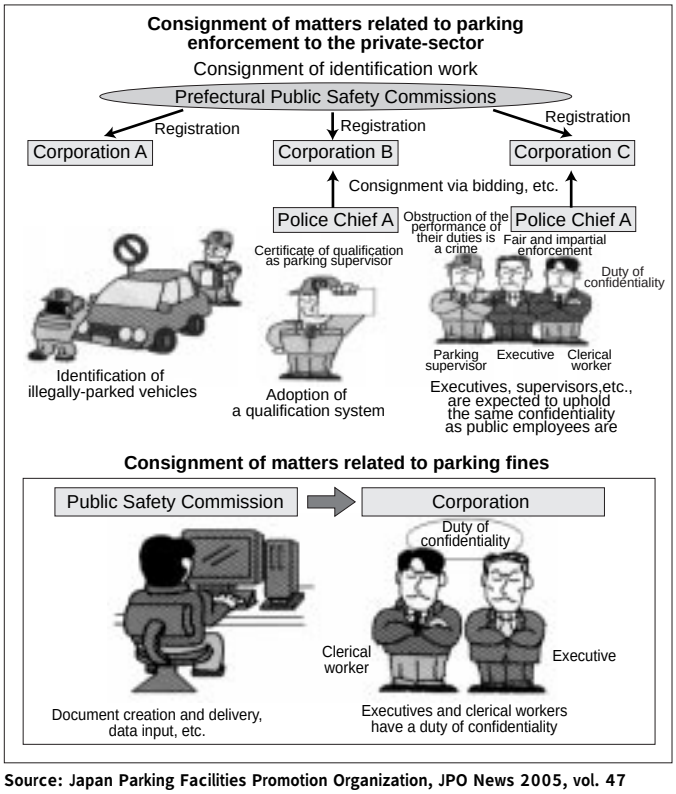
Table 1 A list of who is liable in the event of illegal parking by country

	Driver is liable	Owner of the vehicle is liable
U.S.A. (Washington D.C.)	△	○
(New York City)	△	○
Canada (Ontario)	△	○
U.K. (non-criminal act)	×	○
(criminal act)	△	○
Belgium	△	○
Denmark	△	○
Germany	△	○
Greece	△	○
Spain	△	○
France	△	○
Ireland	△	○
Italy	△	○
Luxembourg	△	○
The Netherlands (The Hague)	△	○
Austria	△	○
Portugal	△	○
Finland	×	○(user of the vehicle)
Sweden	×	○
Australia	△	○
New Zealand (Wellington)	△	○
South Korea	△	○
Singapore	△	○
Japan	○	○

In countries with △ for "driver is liable" and ○ for "owner is liable," authorities initially pursue liability on the part of the driver for illegal parking, but the vehicle's owner is held liable if the driver cannot be identified.

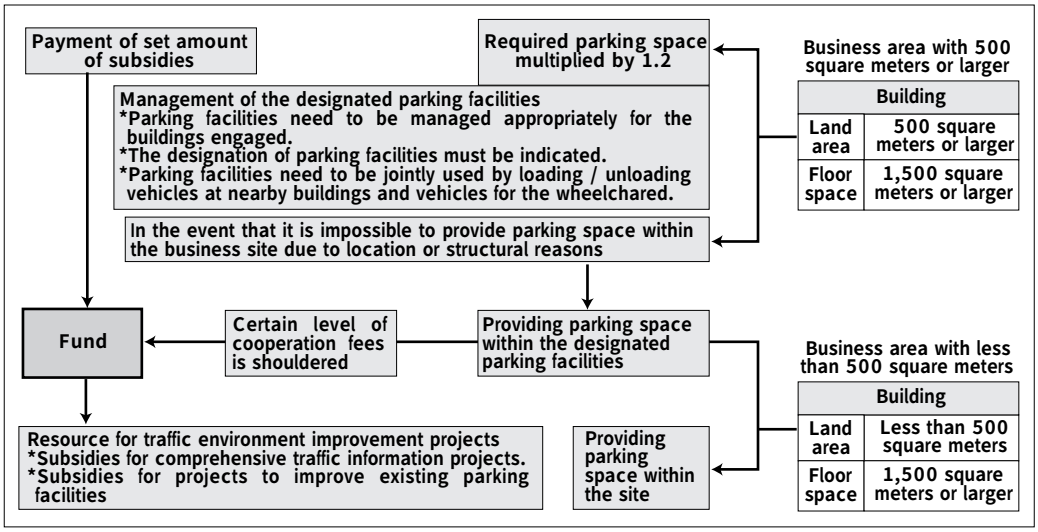
Source: Japan Parking Facilities Promotion Organization Vol. 41, 2004 of JPO NEWS

Fig.2 Consignment of matters related to parking enforcement to the private-sector



Source: Japan Parking Facilities Promotion Organization, JPO News 2005, vol. 47

Fig.3 Outline of guidelines (Ginza Rule) introduced in Chuo-ku (Tokyo) for parking requirement.



Scope of areas subject to the Ginza Rule from Ginza 1 to Ginza 8
Content:
*Buildings which are subject to parking requirement under an ordinance of the Tokyo Metropolitan Government.
*A business area of 500 square meters or larger is required to provide within the business area 1.2 times the number of space under the Tokyo Metropolitan Government. parking requirement.
*A business area of less than 500 square meters is required to provide within the business area or the designated parking facilities the number of space under the Tokyo Metropolitan Government parking requirement.
Effective Date: December 2003 (April 2004 for part of the designated district)

Source:http://www.city.chuo.tokyo.jp/koho/150915/02-01.html

Table 2 Revised enforcement regulations for the Parking Law

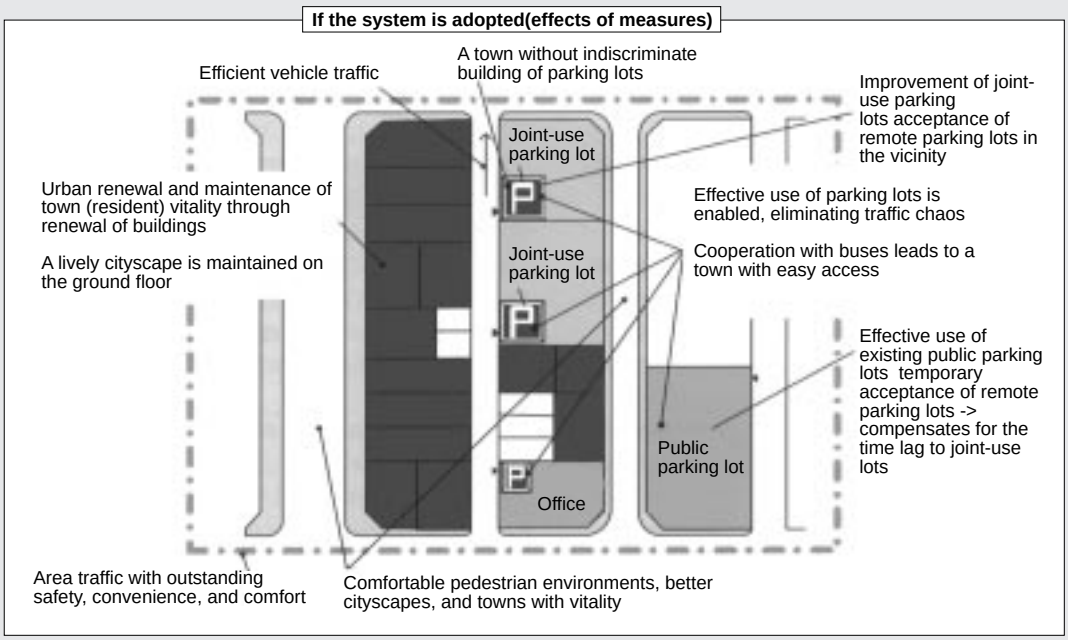
Revision of regulations on entrances and exits to off-street parking in intersections.
Before revision
(Article 7 Section 1) Automobile entrances and exits may not be in roads as listed in Article 44 of the Road Traffic Law.
After revision
Regulations concerning the prohibition on entrances and exits do not apply for off-street parking located alongside an intersection and within five meters of the intersection if the Minister of Land, Infrastructure, and Transport determines through consultation with the relevant road administrator and prefectural Public Safety Commission that said entrances and exits do not impede traffic flow and safety (revision of Article 7 Sections 2 and 3).

Revision of the regulation requiring off-street parking lot entrances and exits to be at least 10 meters apart.
Before revision
(Article 7 Section 5) Off-street parking lots with a motor vehicle parking area of 6,000 m2 or more must have separate entrances and exits for vehicles and they must be at least 10 meters apart as measured along the road.
After revision
When traffic traveling in opposite directions on the facing road is separated by dividers, etc., the rule requiring 10 meters distance does not apply.

Source: Japan Parking Facilities Promotion Organization, JPO News 2004, vol. 44, 2004

Fig.4 Conception of remote parking requirement

*Formation of a consensus among local landowners, government, road administrators, police, and other stakeholders
*Setting forth of a plan to implement joint use of a remote parking facility (improvement of joint-use parking lot, projected structures)
*Reflection of policy in the setting and revision of a parking lot improvement plan



Source: Japan Parking Facilities Promotion Organization, JPO News 2004, vol. 44, 2004

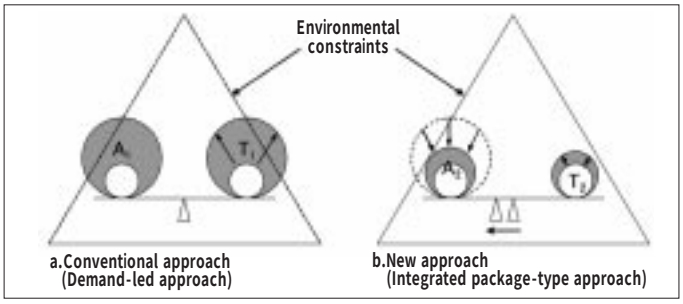
2-5 Developments of Transportation Demand Management (TDM) Measures

Research Associate, Faculty of Engineering, Saitama University
Kunihiro Sakamoto

Transportation Demand Management (TDM) is an idea that came to be rapidly gaining acceptance in recent years as a means of helping smooth traffic flows. Its main concept is to control the "traffic load" in urban cities in accordance with the traffic "capacity." TDM places an emphasis on taking demand-side measures based on conventional supply-side measures such as new road construction and improvement of intersection systems. Given physical and environmental limitations that weigh heavily on the formulation of supply-side measures, TDM, which is essential element of an "integrated package-type" management system, is expected to play an increased role globally in transport policy in the future. Specifically, the concept may prompt governments to review existing frameworks on their transport policies, including regulatory rules, planning, and how to allocate investment burdens among relevant parties, thus affecting the overall demand-supply balance of transport services. In Japan, TDM has become a major pillar of the government's transportation policy from the viewpoint of curbing global warming. Many social experiments on traffic control are now under way in Japan based on the TDM concept.

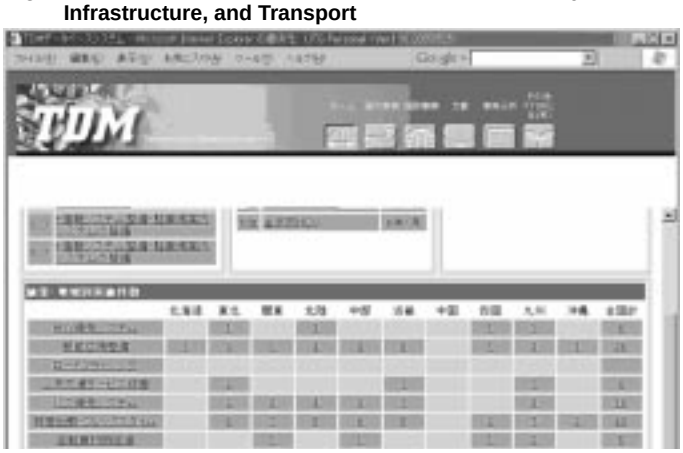
Fig.1 Changing the paradigm of urban transport management policy, and the TDM concept

TDM is a new concept that calls for limiting transport demand to certain levels in line with environmental constraints and limitations on transport policy.



Source: Katsutoshi Ohta Development of Traffic System Plan and Community

Fig.2 TDM database of the Road Bureau of the Ministry of Land, Infrastructure, and Transport



Source:http://218.224.224.229/tdm/servlet/TDM

Fig.3 "Connection Map" to promote use of public transportation

Intergovernmental cooperation on a TDM initiative extending beyond the borders of Osaka and Nara Prefectures

Table 1 Number of pilot programs solicited by the Road Bureau of the Ministry of Land, Infrastructure, and Transport

Direct TDM support such as promotion of public transportation use is declining.

Theme \ Fiscal year	1999	2000	2001	2002	2003	2004
	Number of implemented	Number of implemented	Number of implemented	Number of implemented	Number of implemented	Number of implemented
Pedestrian/bicycle prioritization measures ("Kurashi no Michi" zones, transit malls)	0	0	0	1	11	9
Locally-oriented road use (sidewalk cafes, etc.)	1	1	2	1	4	19
Promotion of use of public transportation	4	3	3	1	1	0
Improved traffic flow in tourist areas	1	1	3	3	0	0
Improved environments for bicycles	0	3	1	3	0	0
Measures on flow of good and parking	0	1	3	0	2	0
Other measures	0	0	2	5	2	1
Total	6	9	14	14	20	29

Source: Website of the Road Bureau of the Ministry of Land, Infrastructure, and Transport

Fig.4 Changing routes from general roads to expressways with smart IC

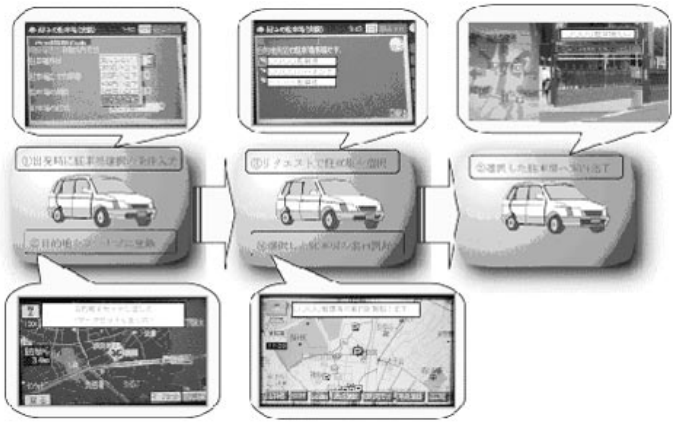
Fourteen percent of survey respondents said they would not use expressways without smart IC, confirming its strong effect on route guidance and decentralization.

Source: Website of the Miyagi Prefecture

Fig.5 Application of a parking guidance system that takes preferences into account

Tokyo Prefecture and the Metropolitan Public Corporation for Road Improvement and Management have begun providing information on parking lots with discounts and so on in accordance with driver preferences to car navigation systems throughout Tokyo.

Chart of application during FY 2004



System concept before practical application (during testing)

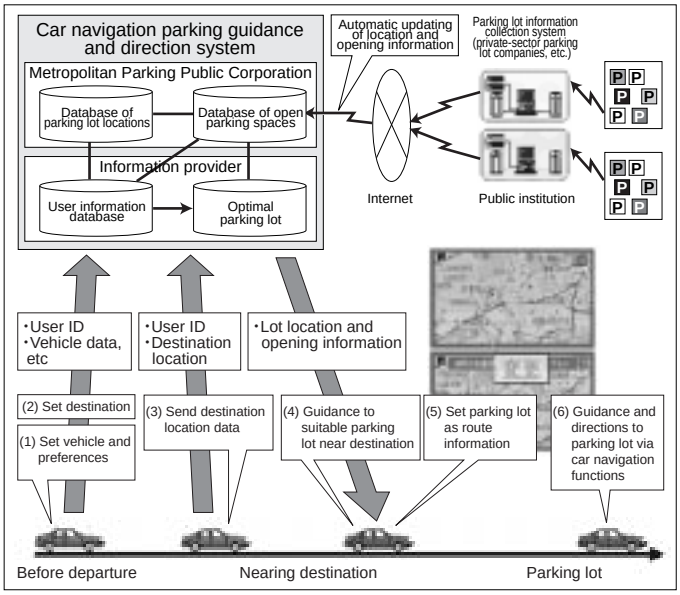
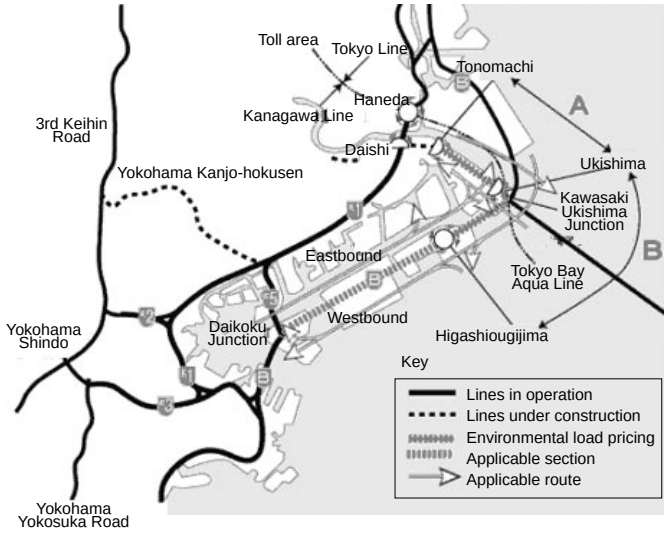
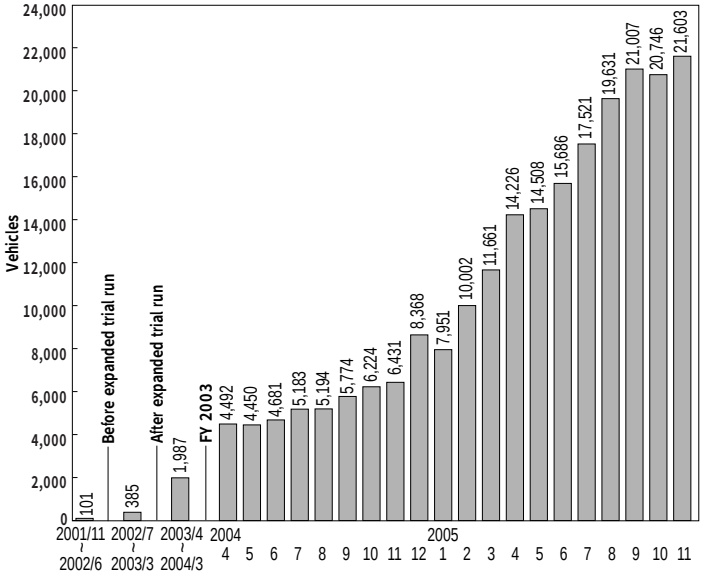


Fig.6 Increasing number of users of environmental load pricing

Use of the environmental load pricing on the Metropolitan Expressway Wangan Line is steadily increasing.



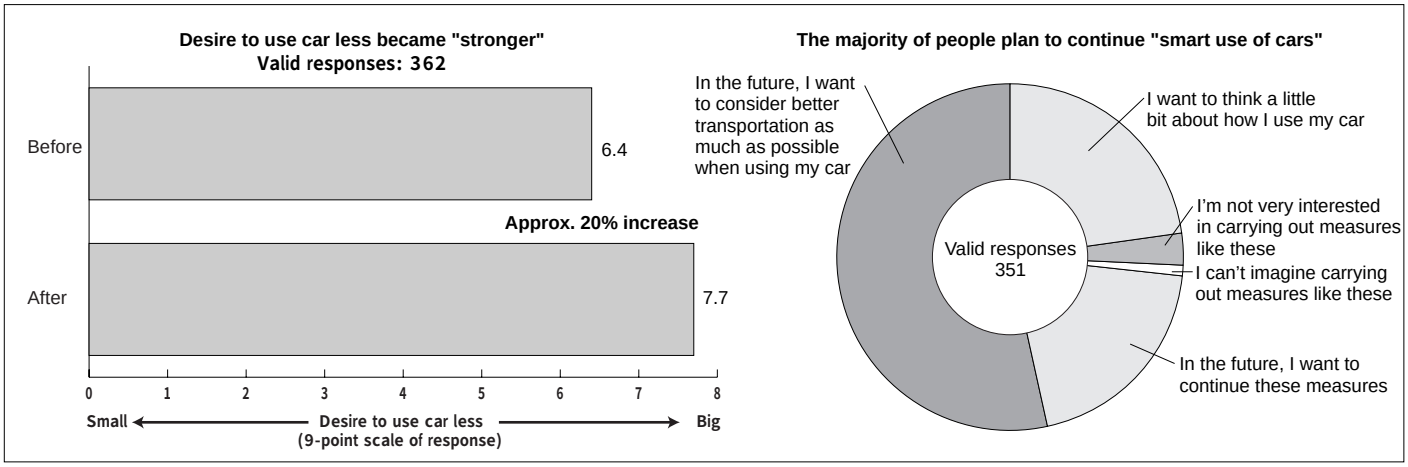
Vehicles to which environmental road pricing applied (weekday average)- Wangan Line



Source: http://www.shutoko.jp/etc/service/road/sisaku.html

Fig.7 Progress of the Travel Feedback Program (TFP)

This communication-type program combines the mobility management techniques of "behavioral planning" and "feedback" to promote voluntary behavioral change by individuals.



Source: Website of the Kinki Transport Bureau of the Ministry of Land, Infrastructure, and Transport

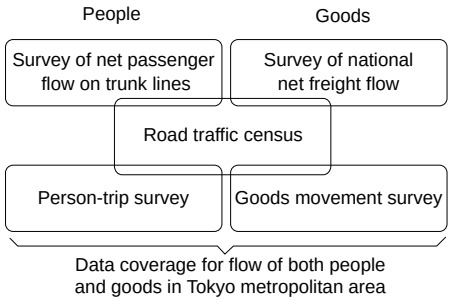
2-6 Urban Logistics from the Metropolitan Tokyo Goods Movement Survey

Professor, Faculty of Marine Technology, Tokyo University of Marine Science and Technology
Hirohito Kuse

Data on the flow of goods is said to be hard to capture. One possible cause is that the subjects of surveys vary by the purposes, but they may track the volume of flow, truck traffic, or volume of flow between industries, facilities, or regions. In addition, the characteristics of the flow of goods vary widely by type of goods. With those points in mind, the Tokyo Metropolitan Area Transportation Planning Council (see Note 1) carried out a goods movement survey of Metropolitan Tokyo in FY 2003 and 2004. It published an overview of the results in July 2005.
Along with the report on the survey's methods and findings, this section describes the direction of future study. (See Note 2.)

Fig.1 The setting of the goods movement survey of Metropolitan Tokyo

Area	Transport mode	Units
All of Japan	Rail, air, sea, etc.	Persons/tonnes
	Automobile	Persons/tonnes
		Vehicles
Tokyo metropolitan area	Automobile	Vehicles
		Persons/tonnes
	Rail, air, sea, etc.	Persons/tonnes



1) Targets and methods of goods movement survey

Transportation-related data tabulated by size of area and means of transport mode are as in Fig.1. The goods movement survey of metropolitan Tokyo focuses on the flow of goods, targeting various transport modes in the metropolitan area.
In the main survey (survey of functions, places, and business) it focuses on facilities that generate and attract goods flow. Approximately 120,000 business units interest in the Tokyo metropolitan areas engaged in logistics-related enterprises such as manufacturing, wholesale, transport, and storage were surveyed by mail. Approximately 30,000 of them responded.

2) Survey systems and characteristics

The survey of business function ascertained the volume of flow of goods (OD) between facilities (factories, distribution centers, stores, etc.) by type of goods for each business unit. The survey was also designed to ascertain the volumes of flow (OD) between types of businesses (e.g. between manufacturers and wholesalers) and between areas (e.g., between North Saitama and South Kanagawa).
In addition, supplemental surveys on corporate attitudes (by interview and questionnaire) and on large trucks (routes and traffic volume counts) were carried out. Finally, an area (terminal) distribution study was carried out in the form of case studies in five areas.

Fig.2 Volume of goods flow generated and trucks dispatched

Tabulation based on departure location of the volume of goods flow between facilities (OD) makes clear the volume carried out from enterprises and the number of trucks used. The result shows that about 30 percent by weight and around 50 percent by number of trucks are goods related to daily necessities such as foods.

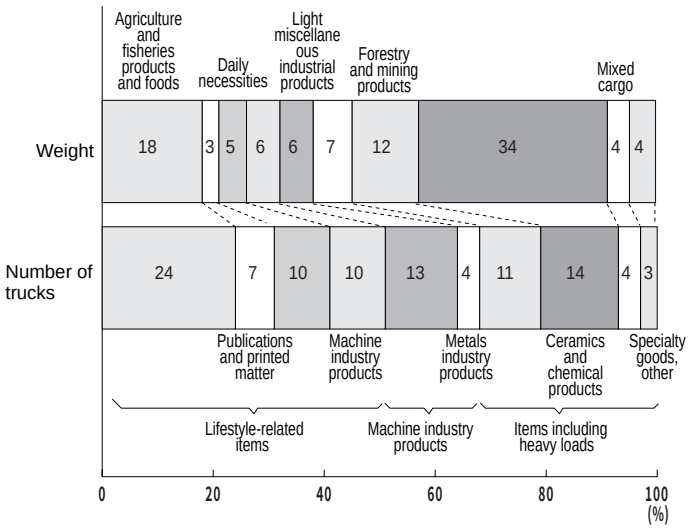


Fig.3 OD flow between areas by type of goods

The volume (OD) of lifestyle related goods flowing between neighboring prefectures, especially Tokyo, is high.

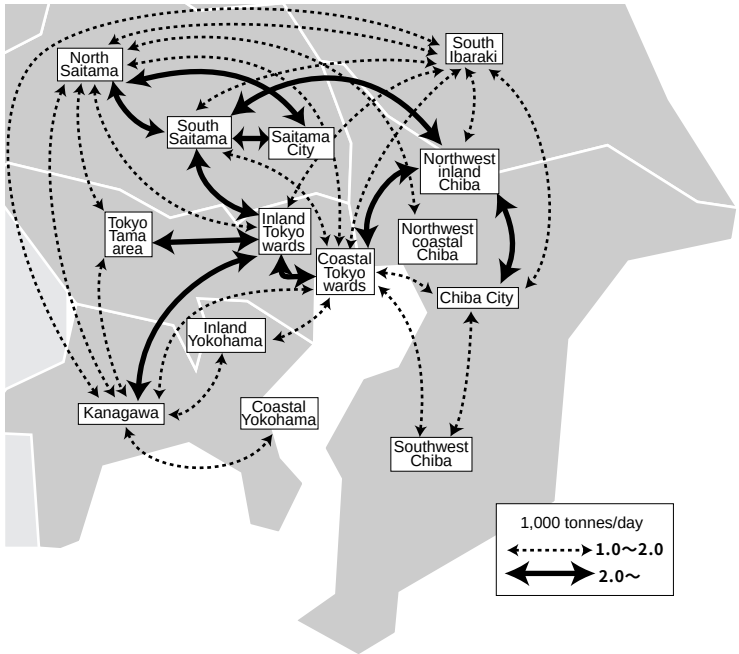


Fig.4 Ownership patterns of logistics facilities by date of opening year

When ownership patterns of logistics facilities (warehouses, distribution centers, etc.) are classified by date of opening, many that opened before the 1970s are owned by the companies that operate them. However, the percentage rented steadily increases until only 24 percent of those opening in the 1990s or later is owned by the companies that use them. This is largely due to the influence of third party logistics (3PL) and other forms of logistics outsourcing. Such rental demand can be expected to increase in the future.

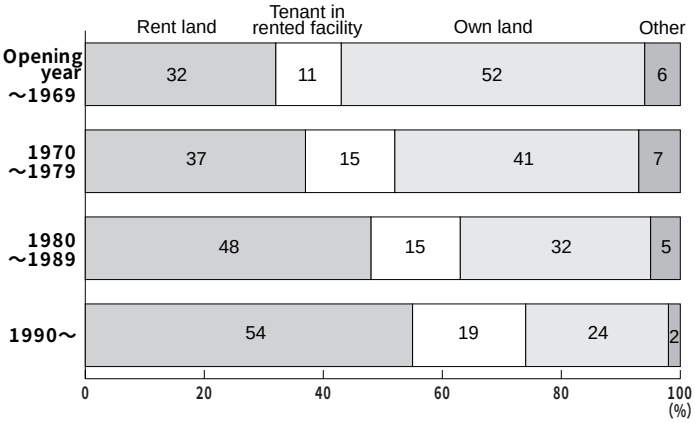


Fig.5 Logistics function by date facility opened

Looking at the functions of logistics facilities, collection/delivery and logistics processing are increasing. This indicates that the goods in the logistics process are changing, and facilities are not just for transport and storage, but are taking on more characteristics of collection/delivery and processing hubs.

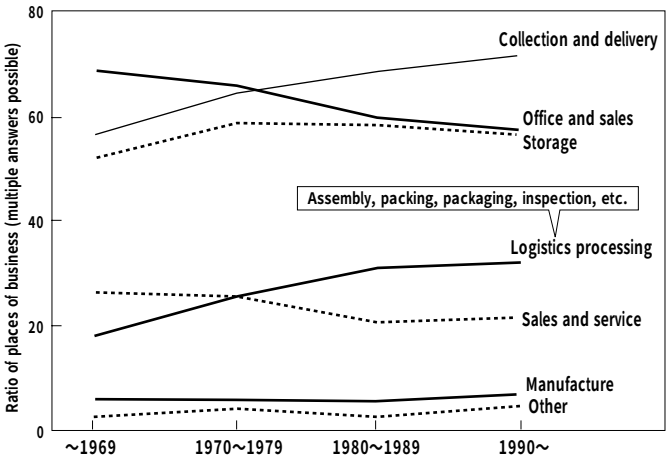
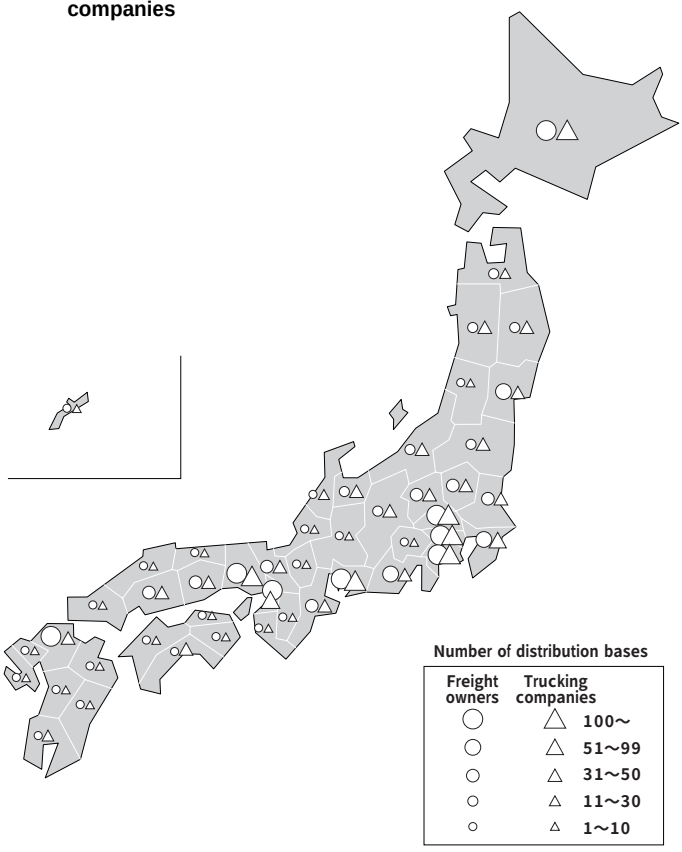


Table 1 Downloadable data

No.	Tabulation category	Unit
1	Volume of flow (OD) by transport method between areas	Tonnes/day
2-A	Flow of goods generated, by area	Tonnes/day
2-B	Flow of goods generated, by area and by type	Tonnes/day
3	Volume of flow (OD table) between areas, by type of goods	Tonnes/day
4	Volume of flow (OD table) between facilities, by type of goods	Tonnes/day
5	Volume of flow (OD table) between industries, by type of goods	Tonnes/day
6	Number of places of business, by industry and type of facility	Number of places of business
7	Number of logistics facilities, by date of opening and industry	Number of places of business
8	Number of logistics facilities, by date of opening and land ownership pattern	Number of places of business
9	Number of logistics facilities, by date of opening and area	Number of places of business
10	Number of trucks used and volume of goods flow generated, by truck size	Number of trucks/day, tonnes/day
11	Loading ratio, by truck size	%
12	Number of trucks, by type of goods and load ratio constraints	Number of trucks/day
13	Volume of goods flow generated, by type of goods and existence of designated time of delivery	Tonnes/day

The goods movement survey of Metropolitan Tokyo provides information on the attraction and generation volumes of logistics facilities as well as the volumes of goods flows (OD) between industries, facilities, and areas by type of goods. This should make it useful for both urban planning and transportation planning.
An overview of these data can be downloaded from the website of the Tokyo Metropolitan Area Transportation Planning Council. The data are now being prepared for release to permitt more detailed analysis without allowing individual businesses to be identified. (http://www.tokyo-pt.jp/)
Utilization of the survey results and data is expected to further develop research and planning in the field of logistics.

Fig.6 Distribution of logistics bases of freight owners and trucking companies



Source: Survey on the Net Freight Flow in Japan (2000)
(Note 1) The Regional Development Bureau of the Ministry of Land, Infrastructure, and Transport. Ibaraki, Saitama, Chiba, Tokyo, and Kanagawa Prefectures, the Cities of Yokohama, Kawasaki, Chiba, and Saitama, the Urban Renaissance Agency, the Japan Highway Public Corp., and the Metropolitan Expressway Public Corp.
(Note 2) The author participates as Chairman of the Logistics Survey Research Committee of the Tokyo Metropolitan Area Transportation Planning Council.

2-7 Renewed Interest in Bicycle Transport

Professor, Graduate School of Environment and Information Sciences, Yokohama National University

Fumihiko Nakamura

The bicycle is once again attracting attention as a non-polluting vehicle which is beneficial to health. Outside of Japan, there have been schemes for securing bicycle lanes, schemes for linking bicycles with public transport or for carrying bicycles on public transport, and cases where bicycles have been given priority in urban improvement plans. In Japan, we have finally started to study ways to provide space for cyclists, and bicycles can now be carried on the railways in some regional cities. Many problems remain to be solved through programs to be carried out in future.

Table 1 State of improvements of bicycle paths

Japan has many problems concerning bicycles, such as how to provide space for cyclists, and the problem of bicycles abandoned at station plazas and along roadsides, etc. However, many people use bicycles, and new technologies for bicycles are spreading.

Category		Total growth by year (km)		Extension by type of road (April 1, 2003)		International comparison of dedicated bicycle space Overseas data are 1997 data from the International Association of Traffic and Safety Sciences. Numbers in parentheses are the percentage of all road extensions.			
		1998	2003	National road, principal local road	Prefectural, municipal road				
Bicycle/pedestrian paths		93,172	99,102	40,505	58,497				
Dedicated bicycle space	Bicycle paths	1,978	1,622	461	1,161				
	Bicycle/pedestrian roads	4,163	5,071	135	4,936	Japan	Germany	Netherlands	USA
	Total	6,141	6,693	596	6,097	6,097 (0.6%)	23,100 (4.7%)	14,500 (8.6%)	24,000 (0.4%)

Note: Bicycle path: the part of a road that is a path for bicycles built alongside a vehicular road or footpath
Bicycle/pedestrian path: The part of a road that is a path for bicycles and pedestrians built alongside that road
Bicycle/pedestrian road: a separate road built solely for the use of bicycles and pedestrians
Source: Created from materials on the website of the Japan Bicycle Promotion Institute

Table 2 Countermeasures for bicycles abandoned at station plazas and along roadsides

Classification	Countermeasures menu
Bicycle parking demand control	Guidance for conversion to other means. Adjustment of parking fees. Introduction of "Rent-A-Cycle" system.
Maintaining supply quantity	Constructing bicycle parking places
Effective use of existing facilities	Transfer of existing facilities to more convenient locations. Lengthening of business hours. Intensification of management including crime prevention. Improvement of facilities including roofs. Improvement of access running tracks.
Strengthening of regulations and supervision regarding bicycles left at station plaza and along roadsides	Reviewing areas where bicycles are parked in the wrong places. Posting parking wardens. Stronger measures to remove bicycles (frequency, methods). Higher fees when collecting removed bicycles
More public relations activities	PR on the nuisance caused by bicycles parked in the wrong places. PR on the expense of removing bicycles parked in the wrong places.

Fig.1 Social experiment for bicycle-town based on private-public partnership in Itabashi & Toshima, Tokyo

Placement of a bike lane along the pedestrian path on the east side of Gekijo Dori.
Placement of guide signs for bicycle parking around the station.
Passing of pamphlets prohibiting illegal bike parking and intensive educational activities (December 4, 2001-January 12, 2002).

Prevention of illegal bicycle parking
Guidance of motorcycles to parking lots.

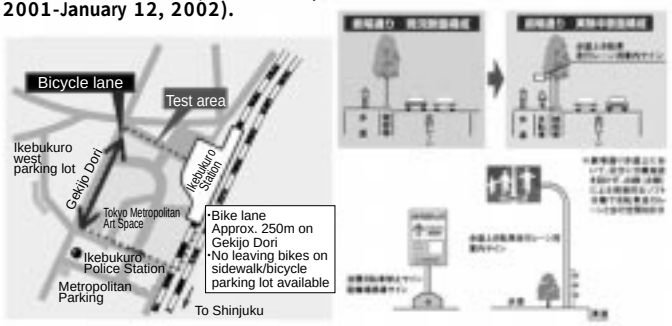


Table 3 Bicycle ownership and utilization rates

	Number of bicycles owned(10thousand bicycles)	Ownership rate (bicycles/100 people)	Utilization rate (%)
Japan	7,297	58	15.3
USA	12,000	44	0.7
England	2,300	40	2.3
Germany	6,400	78	11.0
Denmark	450	84	18.0
The Netherlands	1,650	105	27.0
Sweden	600	67	10.0
Switzerland	380	52	15.0

Source: Katsutoshi Ohta (2001): Environment and bicycles, "National Development and Training" Vol. 92, pp. 12-15

Table 4 Bicycle-related pilot programs of the Ministry of Land, Infrastructure and Transport

	2000	2001	2002	2003
Number of cities	5	7	9	8
Bicycle spaces	1	1	2	3
Bicycle parking lots	1	2	3	3
Rentals	4	4	8	4
Measures against illegal bike parking	0	2	1	1
Cycle and ride	3	0	1	0
Park and cycle	1	1	1	0

There are many cases where multiple measures are carried out in a single program, so the totals in each column will not equal the number of cities.
Source: Website of the Ministry of Land, Infrastructure and Transport

■ The various good practices of bicycle use range from the microscopic level to the macroscopic level.

Fig.2 Cycle path

A cycle path network separated from pedestrian paths has been completed in Narita New Town.

Fig.3 "Rent-A-Cycle" in Futatsuimachi, Akita prefecture ("Cycle stations" are located everywhere in the town.)

Photographed by Katsutoshi Ohta

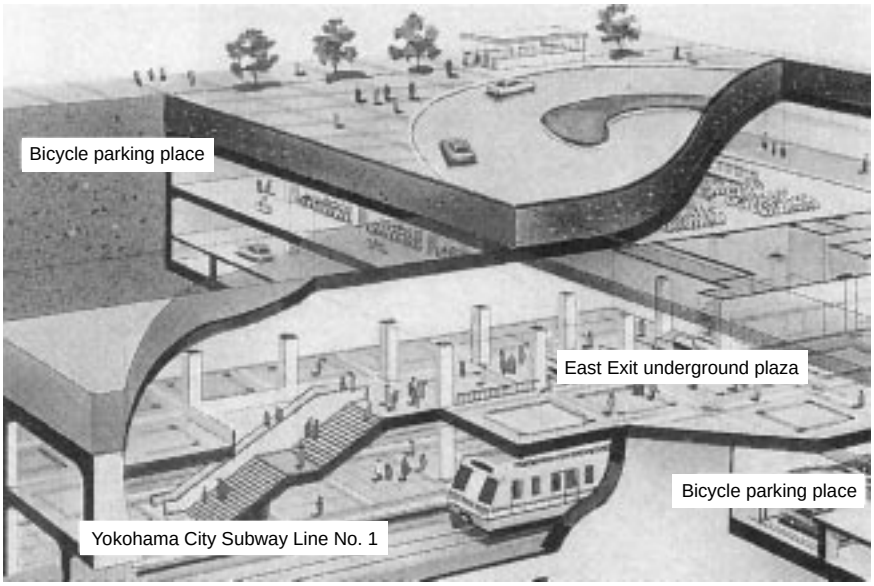
Fig.4 Space for cyclists in Futatsui-machi, Akita Prefecture (Bicycle passing zone is physically separated.)

Photographed by Katsutoshi Ohta

Fig. 5 Bicycle rack on front of bus

A rack that can carry two bicycles is attached to the front of a standard specification local bus in North America.
(Photograph shows a bus in the city of Ottawa.)

Fig.6 Bicycle parking place directly connected to ticket barrier area (Shonandai)



Bicycle parking places were constructed in the public passageway sections on the first underground level near the ticket gates for three lines: Odakyu Line (ground level), Sotetsu Line (underground) and Yokohama City Subway (underground). People can go from the bicycle parking site to the Odakyu Line ticket barrier simply by walking 50 or 60m horizontally.

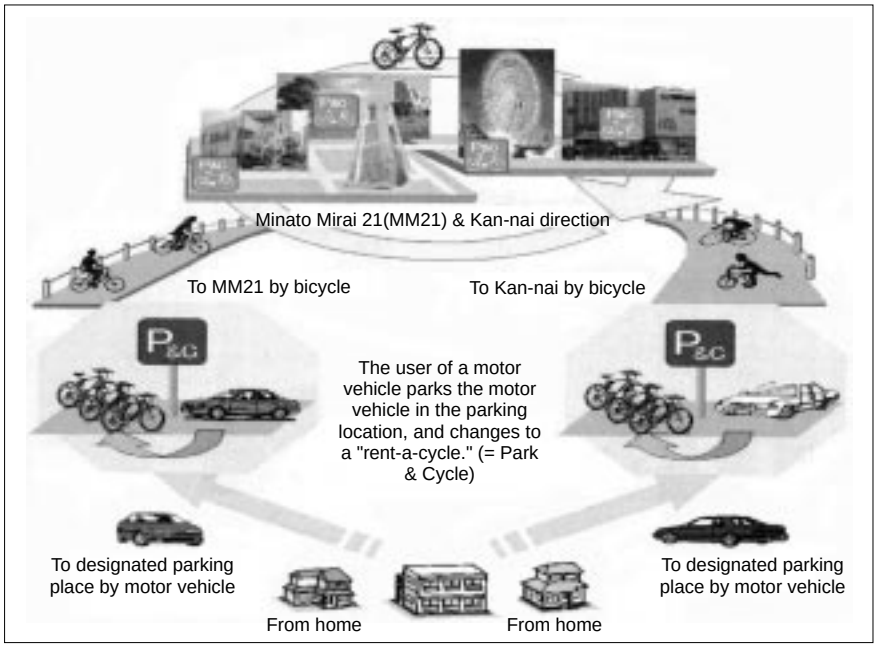
Table5 Cycling Path Plan in Davis (United States)

Category	Goal
Road	Have bicycle lanes on all trunk roads and feeder arterial roads Bicycle-friendly intersection design and traffic signal control Securing passages in districts prohibiting private vehicle traffic
Land use coordination	Access to greenery areas and recreation facilities Connections to college facilities
Others	Developing bicycle parking facilities and ensuring security Providing maps and other information Strengthened safety education from elementary school

Fig.7 City "rent-a-cycle" in Copenhagen

Photographed by Masahiro Sugiyama

Fig.8 Conceptual diagram of Park-and-Cycle Experiment (Yokohama)

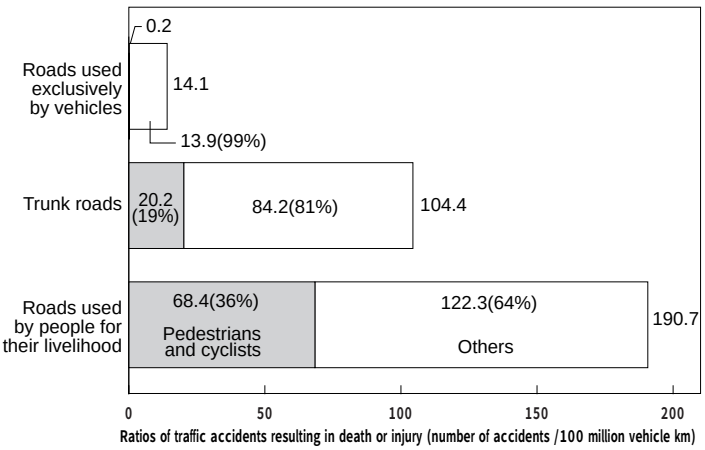


2-8 Efforts for Traffic Calming Measures

Senior Researcher,
Toyota Transportation Research Institute
Seiji Hashimoto

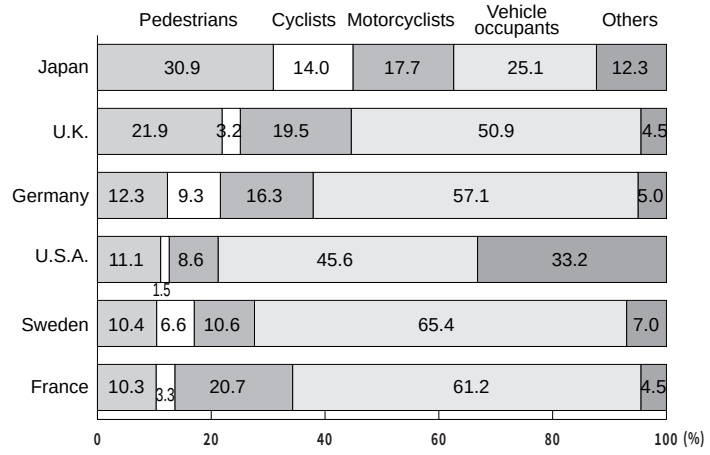
The increasing coexistence of pedestrians, cyclists, and automobile is a new concept in traffic that has become indispensable for addressing issues associated with urban automobile transportation. The idea of a ''Community Zone,'' introduced in various parts of the nation since 1996, has been seen as an effective way of ensuring traffic safety in community space. Measures based on this concept have contributed greatly to increasing traffic safety as the number of traffic accidents declined in areas where such zones were introduced. In addition, ''Road Rejuvenation'' programs have been introduced in Japan since fiscal 2002 as a means of enhancing traffic safety in city areas including commercial districts. The ''Road Rejuvenation'' concept was later extended, and new programs such as ''Livelihood Road Zones'' and ''Safe-to-Walk Areas'' were created in fiscal 2003. As these examples show, efforts to promote coexistence among pedestrians, cyclists, and automobiles are being made in various parts of Japan in a manner that meets local needs and traffic situations.

Fig.1 Road-by-road breakdown of traffic accidents for pedestrians and bicyclists



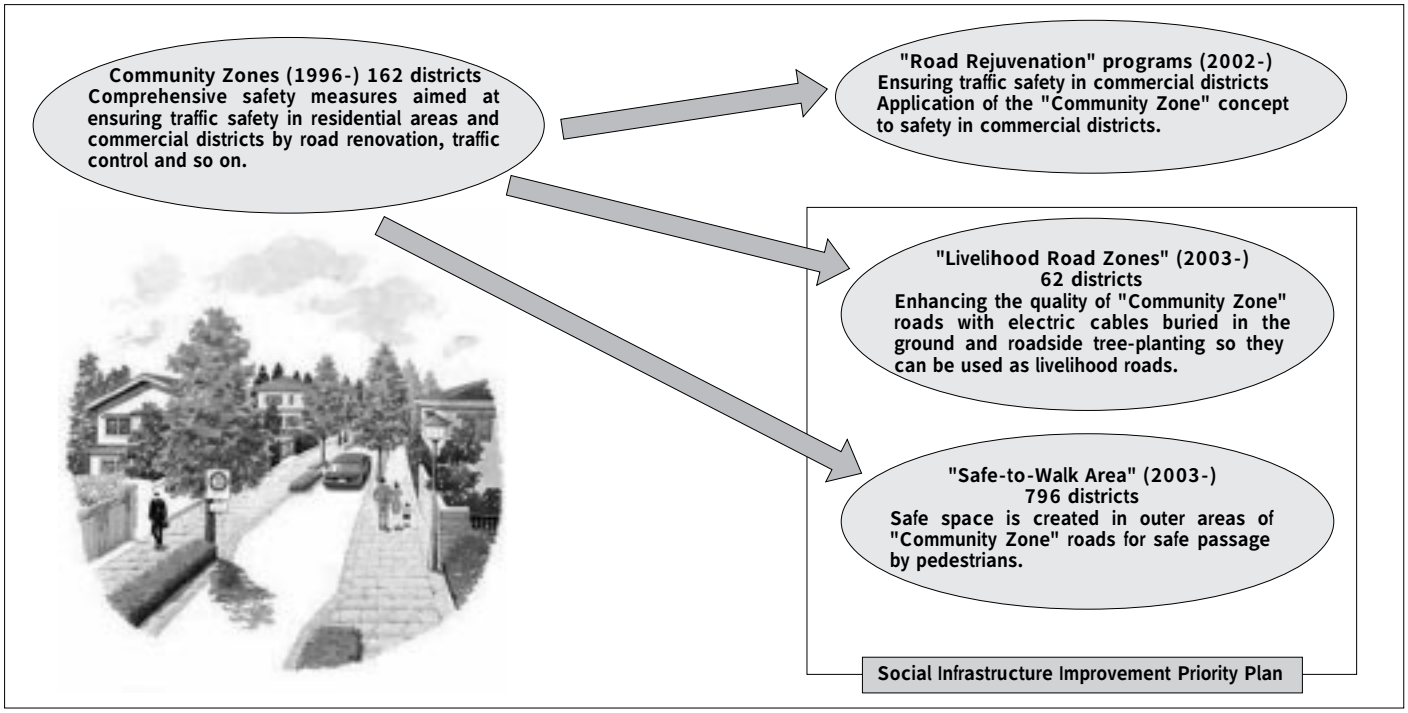
Sources: Administrative Road Policy Fiscal 2003
Note: Ratios of accidents resulting in death or injury is the number of such accidents divided by total vehicle-km traveled.
Trunk roads are prefectural roads, main roads in cities designated by ordinance.
Livelihood roads are all roads, excluding expressways and trunk roads.

Fig.2 Situation-by-situation breakdown of traffic deaths occurring within 30 days in each country (2000)



Sources: Website of Ministry of Land, Infrastructure and Transport (http://www.mlit.go.jp/)

Fig. 3 Safety measures in community space



Sources: Website of Ministry of Land, Infrastructure and Transport (http://www.mlit.go.jp/road/road/traffic/comzone/comtop.him)

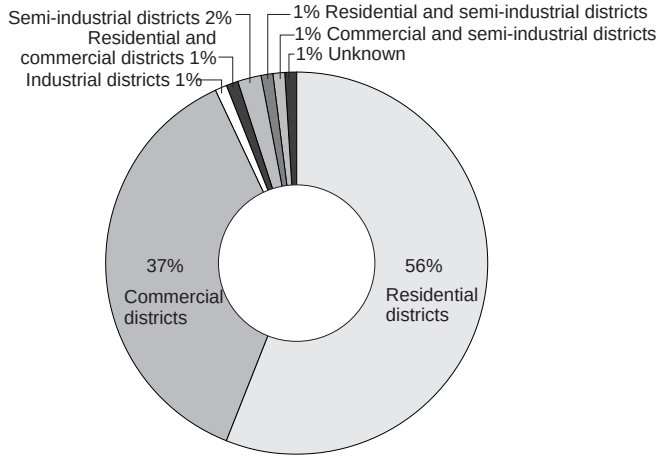
Table 1 Changes in traffic calming measures

In Europe, there has been a shift away from road improvements such as woonerfs and other programs on pedestrian-car road space sharing to Zone 30 and similar inexpensive, widespread surface improvements. The UK, however, carries out route improvements to form higher-quality spaces as part of Home Zone community renewal programs.

	Europe		Japan	
	Route improvements	Area improvements	Route improvements	Area improvements
1970's	Woonerf (Netherlands)			
	Road improvements for sharing of roads by pedestrians and cars are common.			
1980's		Zone 30 (West Germany, Netherlands), Zone 20 (UK)	"Forming Community Roads" program (1981)	"Comprehensive Neighborhood Traffic Safety"program ("Roadpia" concept 1984)"
1990's	Surface improvements become a staple. Road sharing dies down due to costs.			"Forming Community Zones" program(1996)
2000's	Home Zones (UK)			"Road Rejuvenation" (2002) "Forming Livelihood Road Zones" (2003) "Safe-to-Walk Areas" (2003) programs

Fig. 4 Land use in Community Zone improvement areas

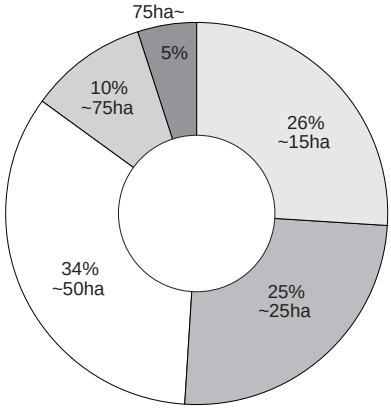
Residential and commercial districts are most common.



Source: Data taken from the Ministry of Land, Infrastructure and Transport, and the National Police Agency

Fig.5 Land area in Community Zone improvements

The majority is in small plots of 25 ha or less.



Source: Data taken from the Ministry of Land, Infrastructure and Transport, and the National Police Agency

Table 2 Typical methods used in "Community Zones"

Physical devices		**Speed humps** **A speed hump is designed to force vehicles to curb their driving speed by creating a bump on the road. Speed humps are categorized into several types according to their shape. The flat top of a speed hump with a trapezoidal shaped section is often used as a pedestrian crossing.**
		**Road narrowing** **A stenosis is designed to force vehicles to curb their driving speed by placing bollards or trees on a road that narrows the width of the road or makes it appea narrower.** **A stenosis is often used along with a speed hump.**
		**Chicane** **Chicane is a sharp double bend in a road to prevent vehicles from going too fast by forcing the driver to concentrate on maneuvering the vehicle. This method has been frequently used on existing community roads.**
Traffic regulations		**Maximum speed of 30 km per hour for traffic in designated areas** **A maximum speed of 30 km per hour is imposed on drivers of vehicles on designated roads that stretch out for a certain distance. Signs indicating the speed limit are usually set up at the entrance and exit of Community Zones.**
	Other traffic regulations	**One-way streets and designation of traffic direction are intended to enhance traffic safety by preventing the passage of vehicles into Community Zone areas.**