The Ideal Road Traffic to Support Our New Society

MLIT
Ministry of Land, Infrastructure, Transport and Tourism

1. Ideal National Landscape and Road Traffic

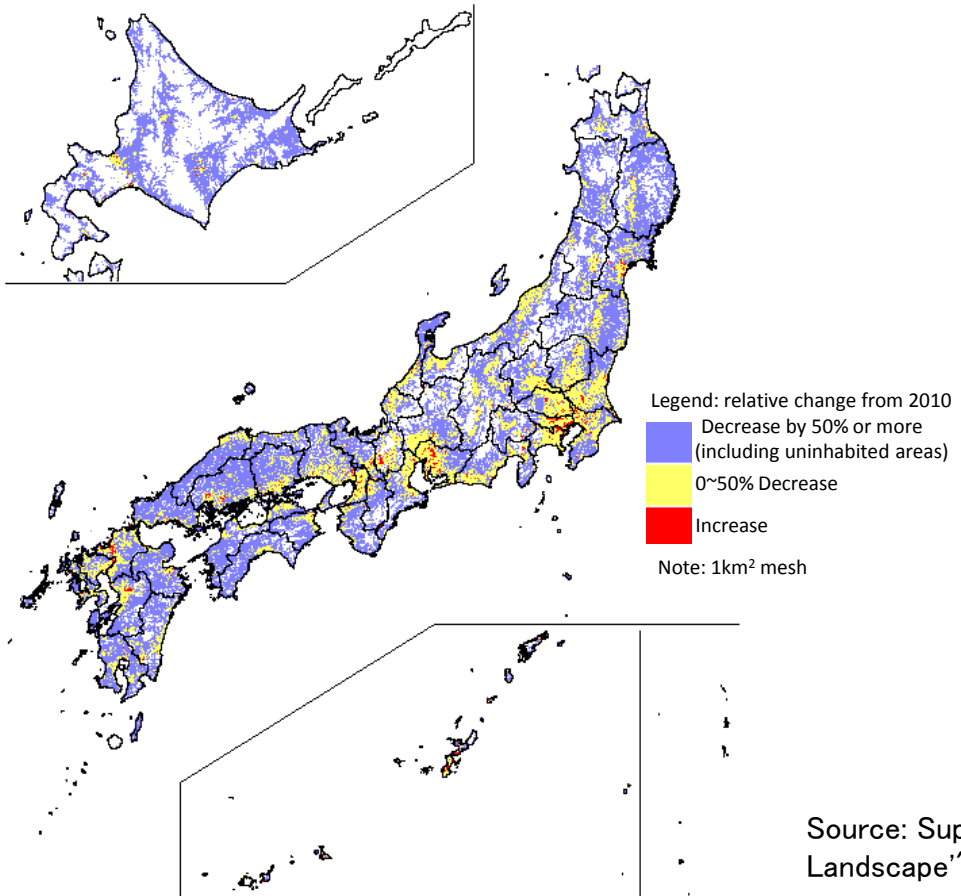
Excerpt from “New ‘Grand Design of National Landscape’”

Population Density Has Been Decreasing across Japan

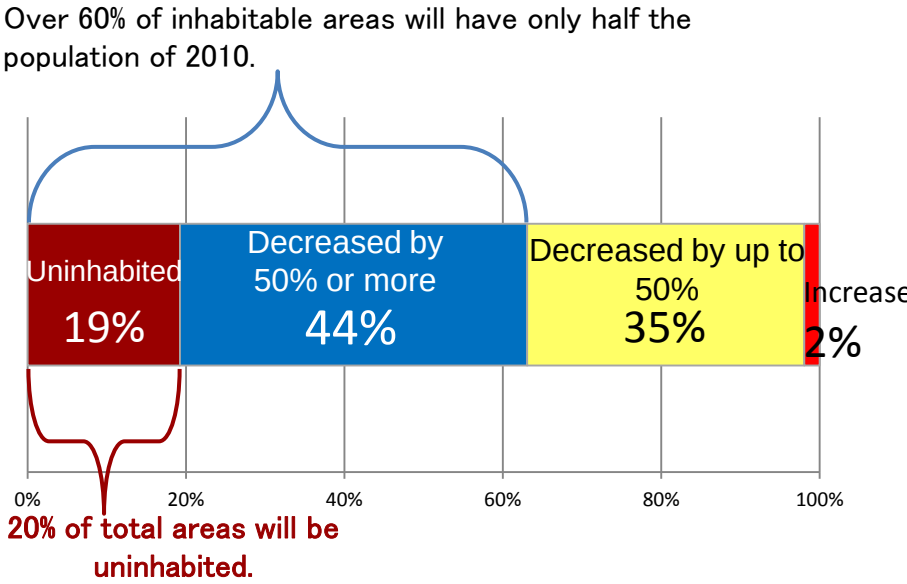
–By 2050, over 60% of inhabitable areas will have only half the population of 2010.

–Preparation is required for the coming depopulating era and also to slow the declining population.

[The change of population from 2010 to 2050]



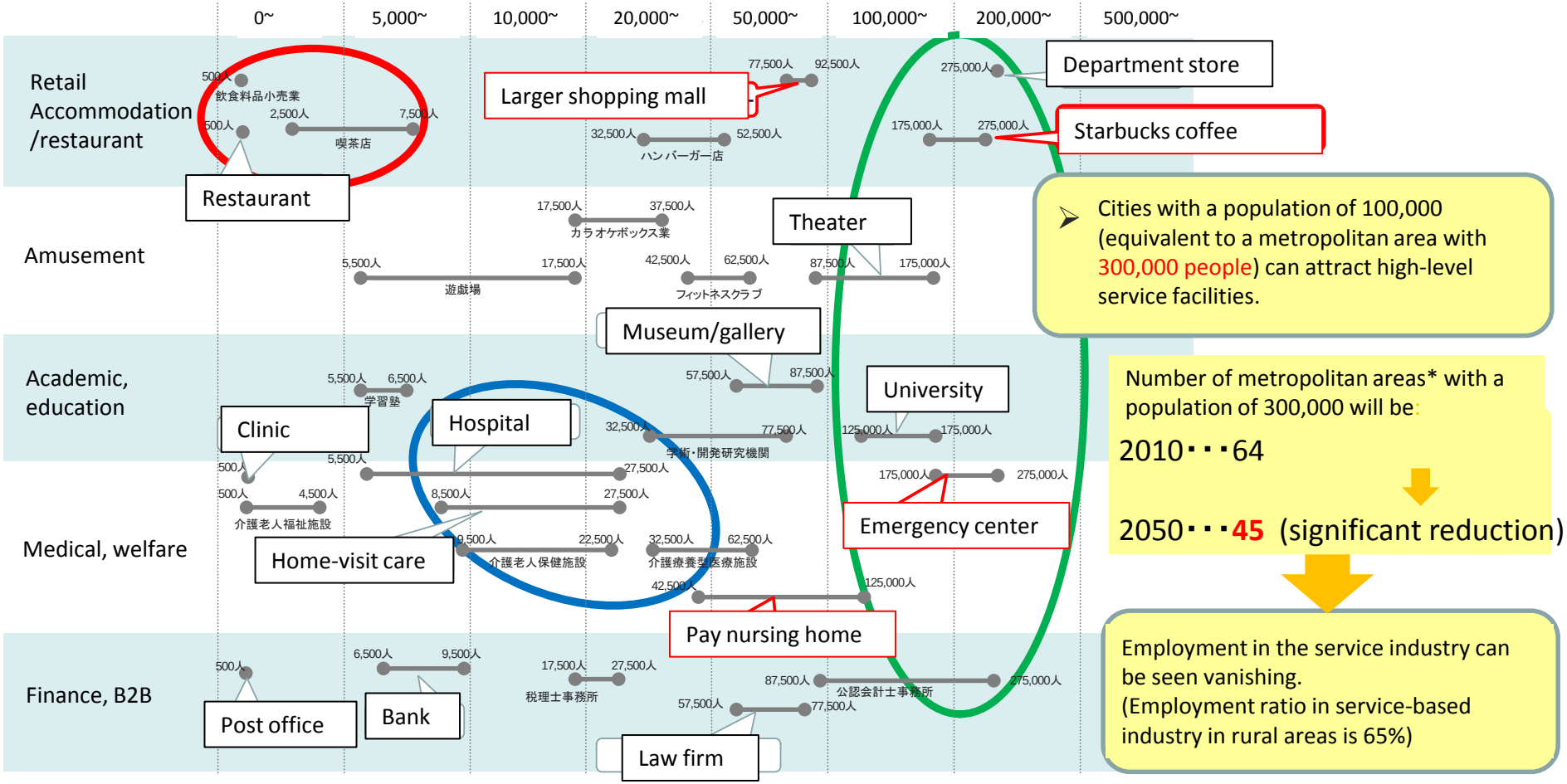
[Number of areas by population change]



Source: Supporting document for summary of "New 'Grand Design of National Landscape'", March 2014

Declining Services and Employment due to Reduced Population

Population sizes of municipalities where 50%-80% of service facilities will remain. (3 major metropolitan areas excluded.)



➢ Cities with a population of 100,000 (equivalent to a metropolitan area with 300,000 people) can attract high-level service facilities.

Number of metropolitan areas* with a population of 300,000 will be:

2010・・・64

2050・・・**45** (significant reduction)

Employment in the service industry can be seen vanishing.
(Employment ratio in service-based industry in rural areas is 65%)

Note *: 3 major metropolitan areas are excluded.

Source: Document prepared by National and Regional Policy Bureau, MLIT with a slight change.

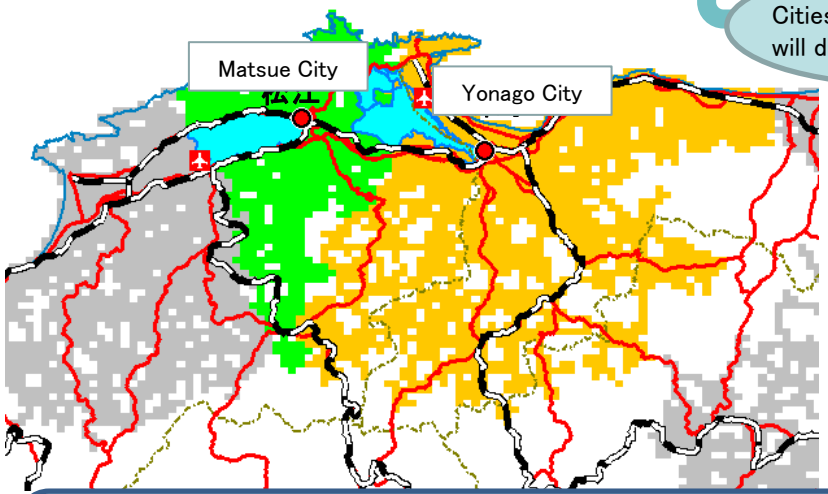
Maintain metropolitan areas' functions through compact transportation hubs and networks

[Change of Matsue-Yonago Metropolitan Area*1 by utilizing expressways]

If expressways are NOT utilized

Central city in the Metropolitan Area	Population of the Metropolitan Area	
	2010*2	2050*3
Matsue City	22.0	15.6
Yonago City	32.6	**20.9**

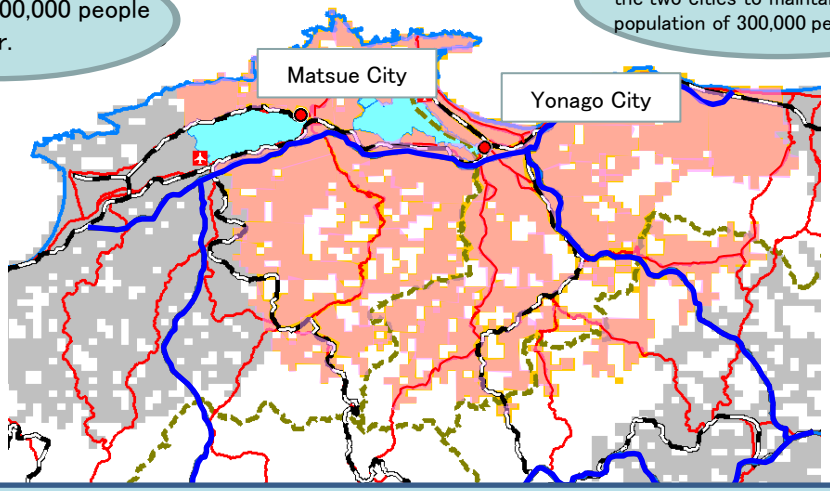
Cities with 300,000 people will disappear.



If expressways ARE utilized

Central city in the Metropolitan Area	Population of the Metropolitan Area	
	2010*2	2050*3
Matsue City and Yonago City	56.0	**37.3**

The expressway network will connect the two cities to maintain a population of 300,000 people.

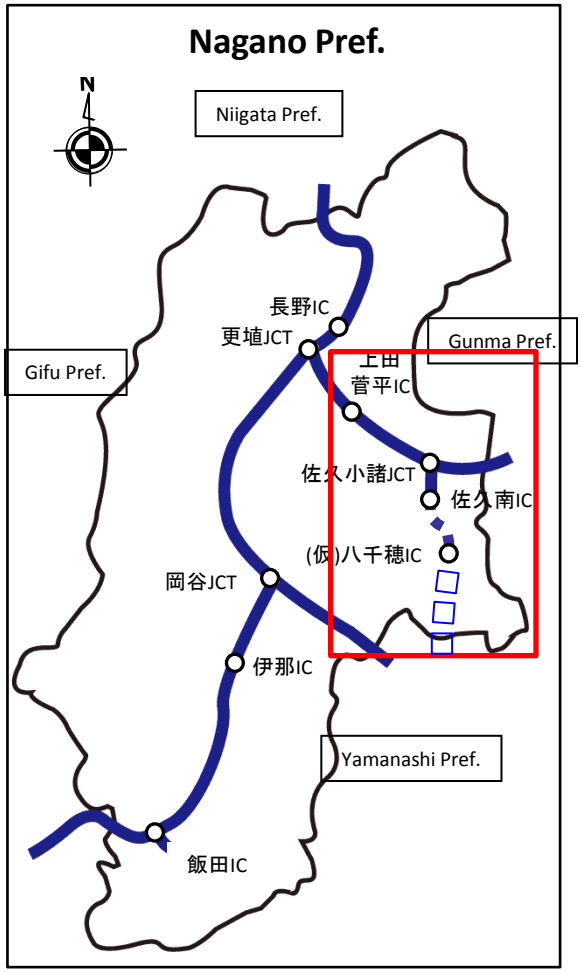


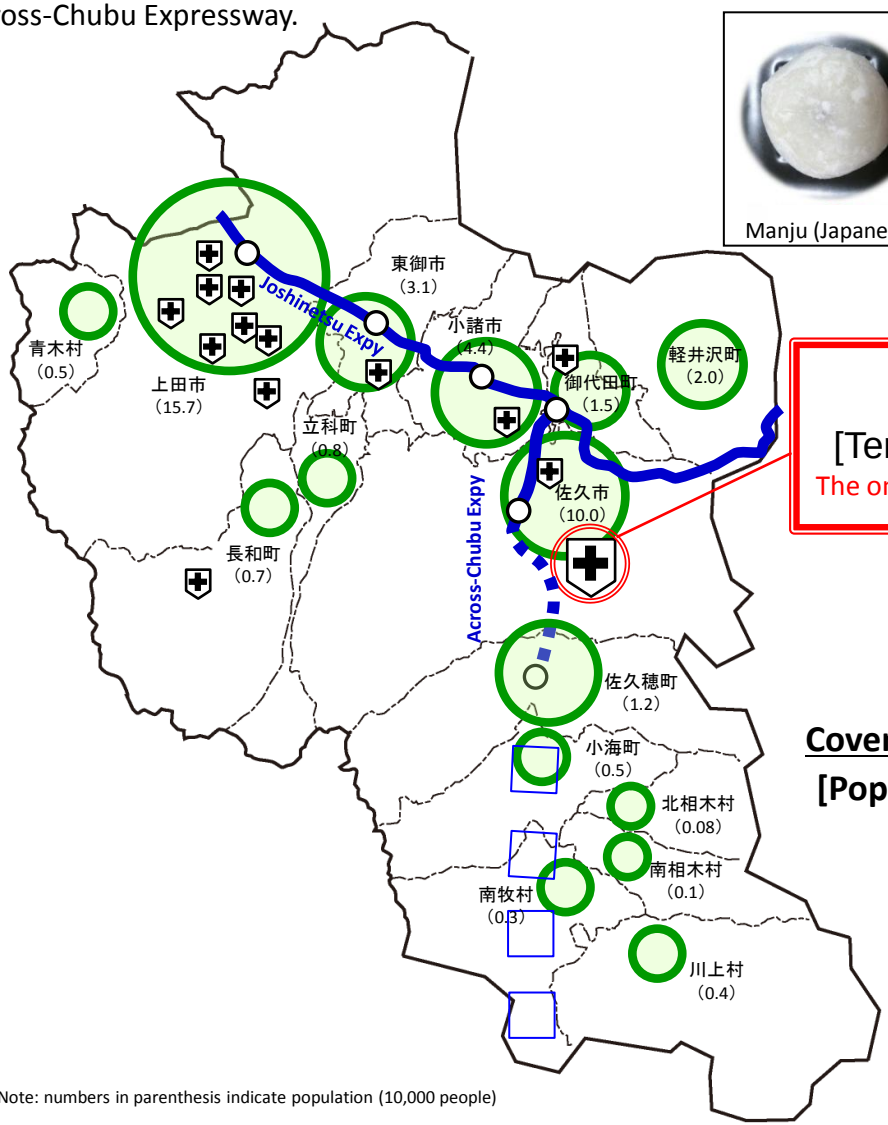
"Compact hubs" are not sufficient to maintain the functions of the Metropolitan Area. With "compact hubs" and "expressway networks", cities within the Metropolitan Area will be connected.

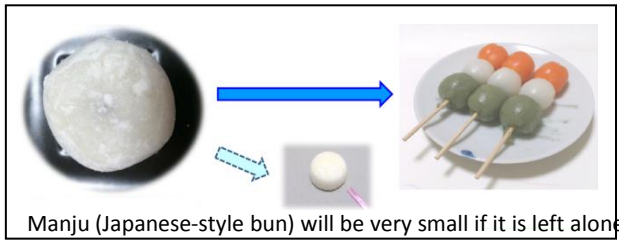
Note 1: In this analysis, "a central city" was defined as a city with a population of 100 thousand. "A Metropolitan Area" was defined as an area (in 1km mesh) which can be reached within 60-minute drive from a central city.
2: Source of population in 2010 is "National Census" (Ministry of Internal Affairs and Communications).
3: Population in 2050 was estimated based on "Estimated Mesh Population" by National and Regional Policy Bureau, MLIT.
Source: Document prepared by National and Regional Policy Bureau, MLIT with a slight change.

Establishing Network-based Emergency Medical System

- Saku General Hospital is the only hospital in Saku, Nagano Pref, that can provide critical care (called a tertiary emergency facility).
- A region-wide emergency medical system was established with Saku General Hospital as the hub, utilizing the Expressways network including Joshinetsu Expressway and across-Chubu Expressway.







Saku General Hospital
[Tertiary emergency facility]
The only critical care center in the region

Covers both Saku and Josyo areas
[Population in the area: 410,000]
(As of 2014)

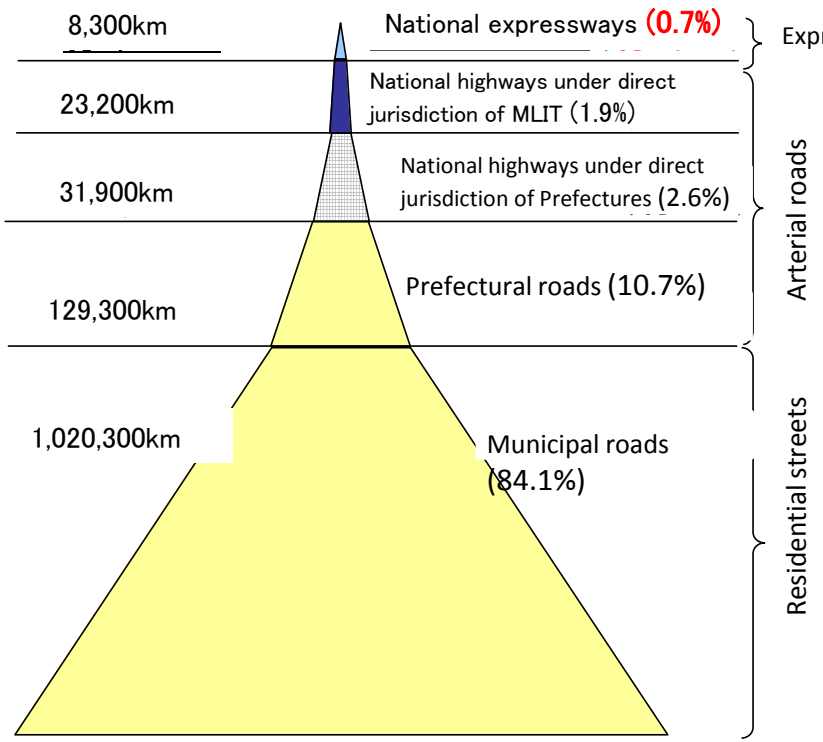
In service
Under construction
Under survey
Secondary emergency facility

Note: numbers in parenthesis indicate population (10,000 people)

The Road Network in Japan is Poor (1)

Expressways in Japan have fewer traffic lanes than in other countries.

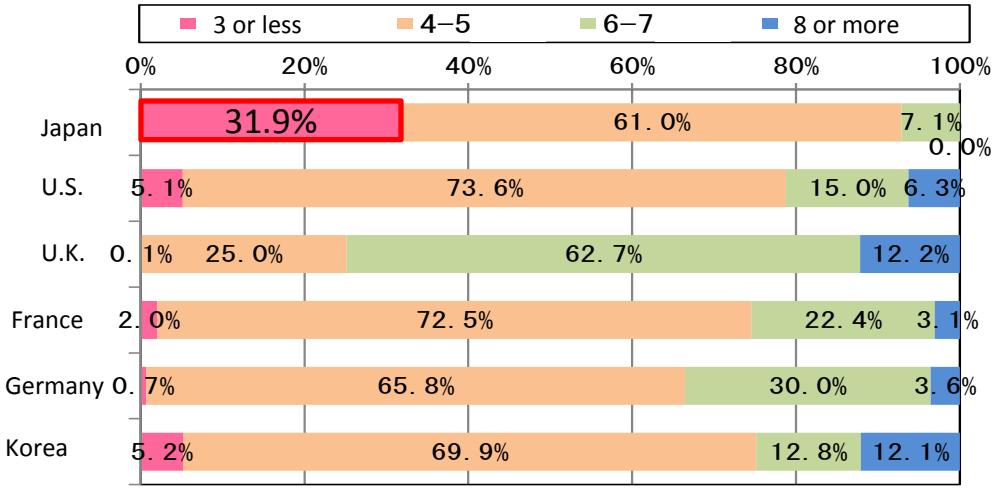
[Road types by length]



Total : 1,213,000km (100%)

National expressway: as of April 2013
Other roads: as of April 2011

[Proportion of expressway length (%) by traffic lane]



Source:
Japan Road Traffic Census (2010)
U.S.: National Transportation Atlas Database
UK, France and Germany: TomTom MultiNet
Korea: Statistics data of Expressways by Ministry of Land Infrastructure and Transport (as of the end of 2012)

Definition of "Expressway"
Japan: High-standard Arterial Highway System, Urban Expressways and Rural high-standard roads.
U.S.: Interstate
U.K.: Motorway
France: AutoRoute
Germany: Autobahn
Korea: Expressway

Travel speed between cities in Japan remains low.

[International comparison of travel speed between cities]

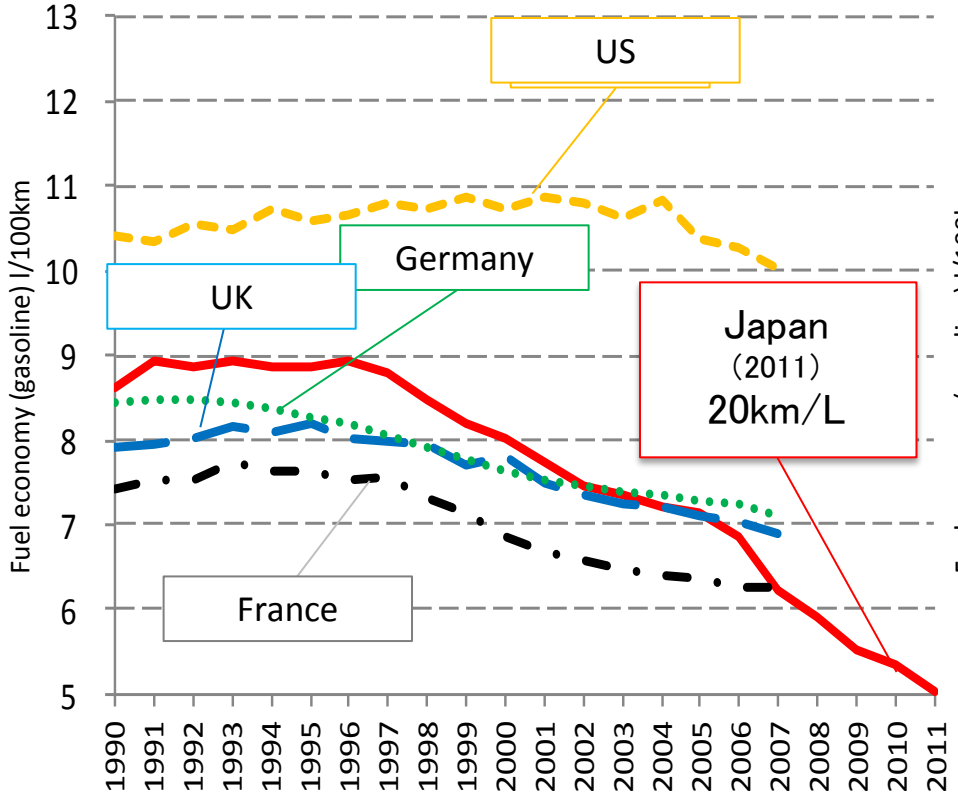
	Japan	Germany	France	U.K.
Travel speed between cities	**51** km/h	**90** km/h	**88** km/h	**72** km/h

Travel speed between cities : the shortest distance divided by the shortest journey time
Subject cities : major cities (prefectural capitals) and larger cities with a population of 50,000 or more with a certain distance and major ports.
Travel time: Optimum route searching system with travel time (on Google Maps)

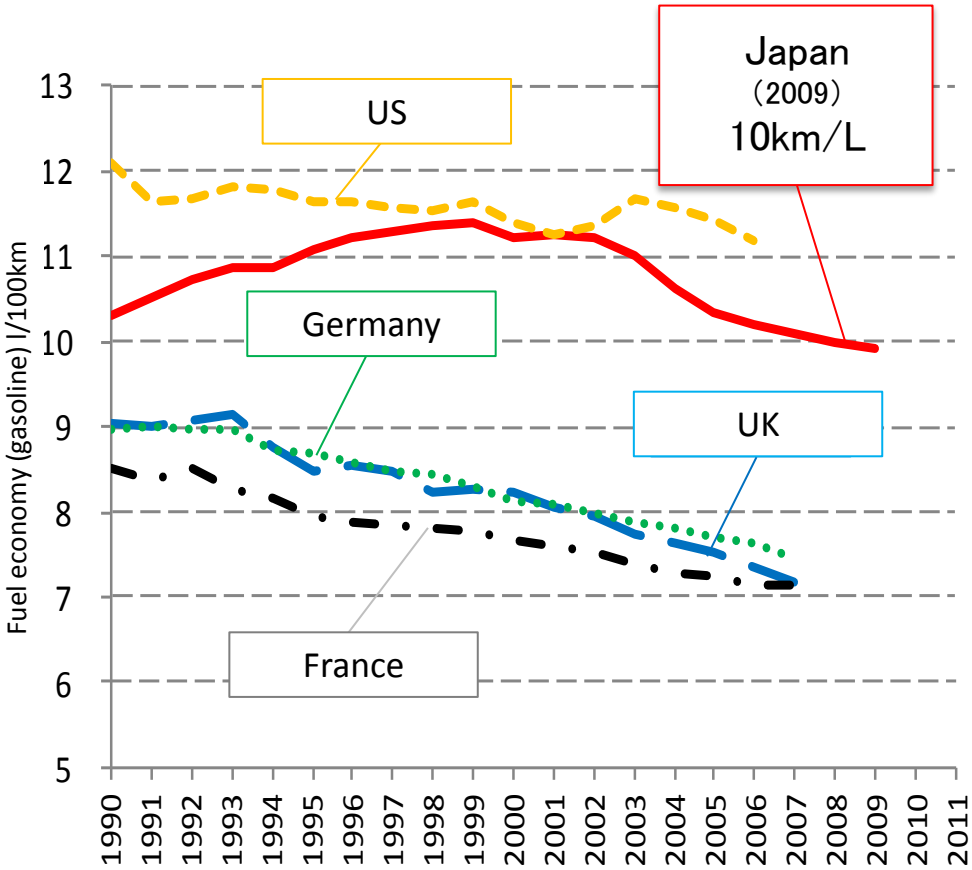
The Road Network in Japan is Poor (2)

Japan's actual fuel economy remains only half of its world-leading level of official fuel economy.

Official fuel economies for new-car models in developed countries

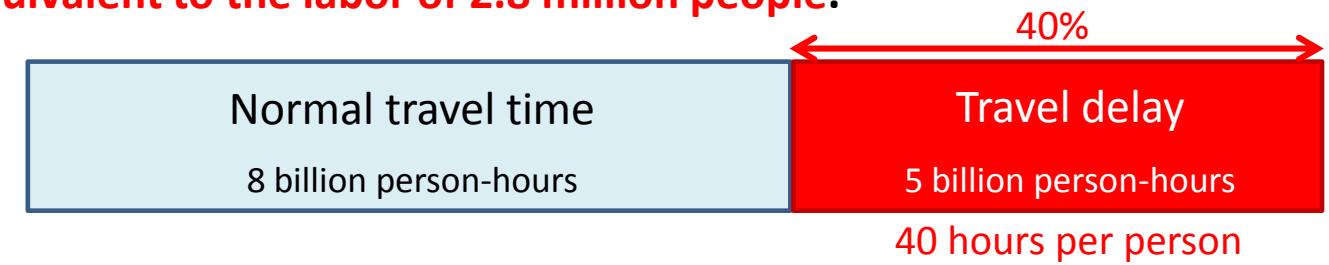


Actual fuel economies for new-car models in developed countries



Frequent Traffic Congestion Causes Significant Economic Loss in a Society

Annual travel delay reaches 5 billion person-hours (accounting for 40% of travel time), which is equivalent to the labor of 2.8 million people.

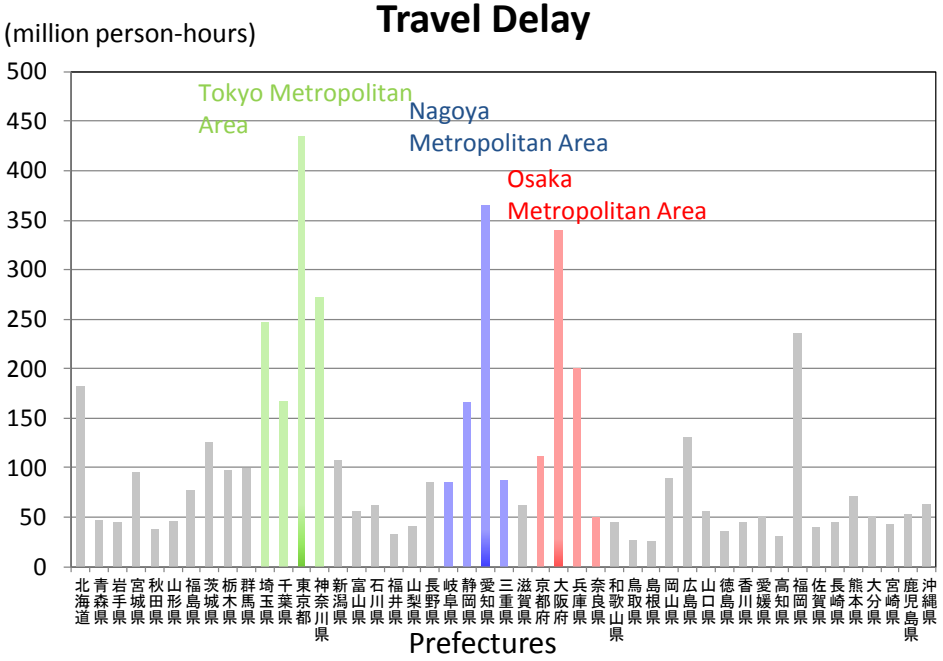


Travel delay is only 20% of normal travel time in major cities in Europe and US.

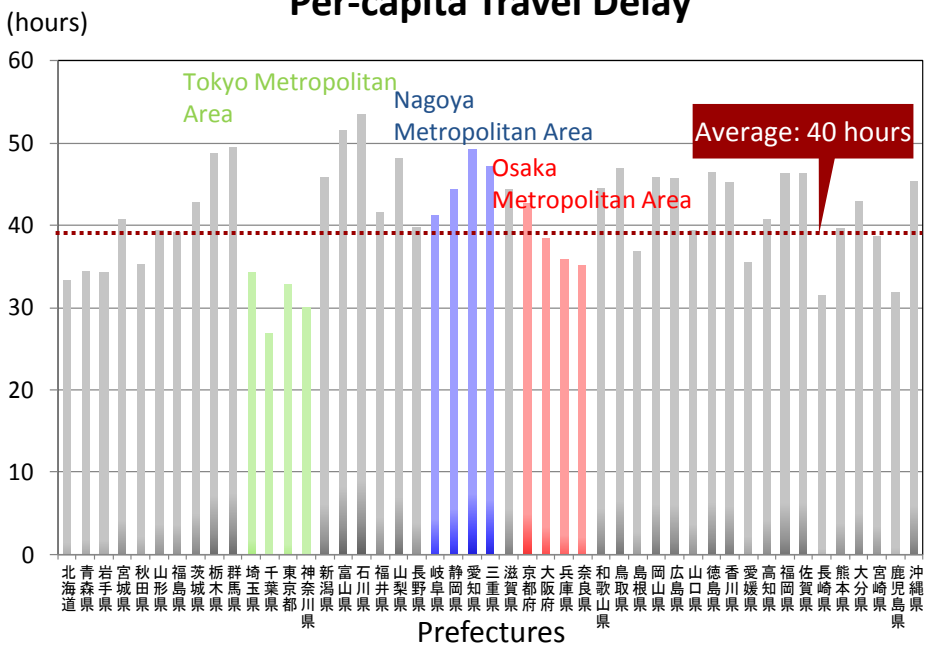
Source: TomTom Americas Traffic Index
TomTom European Traffic Index

Although total travel delays are prominent in 3 major metropolitan areas, per-capita travel delays are the same level across the country.

Travel Delay



Per-capita Travel Delay



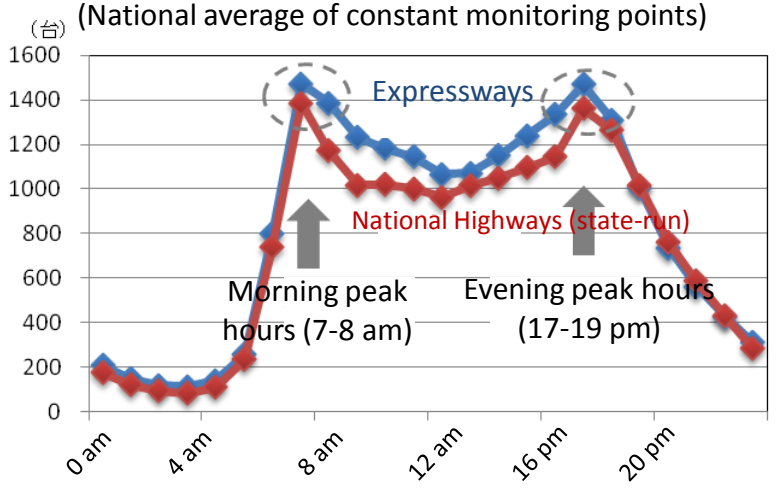
Source: 2012 Probe data for Travel delays, MIC statistics for population (Oct 2012)

2. Direction of Individual Countermeasures
-“Smart Use of Roads” Concept-

Possibility of “Smart Use of Roads” (1)

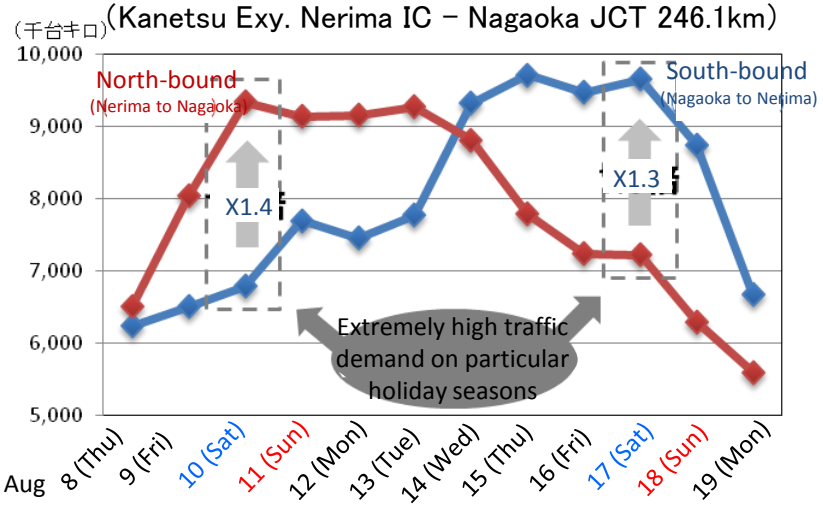
Extremely high traffic demand only during certain hours, seasons and directions.

[Hourly traffic volume on a weekday]
(National average of constant monitoring points)



Source: Traffic monitoring data for passenger vehicles (Apr. 2014)
National total excluding major metropolitan areas.

[Vehicle kilometers travelled during Obon holiday season]
(Kanetsu Exy. Nerima IC – Nagaoka JCT 246.1km)



Source: Traffic monitoring data (Aug. 2013)

Truck loading ratio is declining.

Change in truck loading ratio

	FY1990	FY2000	FY2009
Commercial	59%	51%	48%
Private	35%	28%	25%

Declining

Source: Vehicle Transport Statistics

Possibility to tackle traffic demand by “Smart Use of Existing Roads”

Possibility of “Smart Use of Roads” (2)

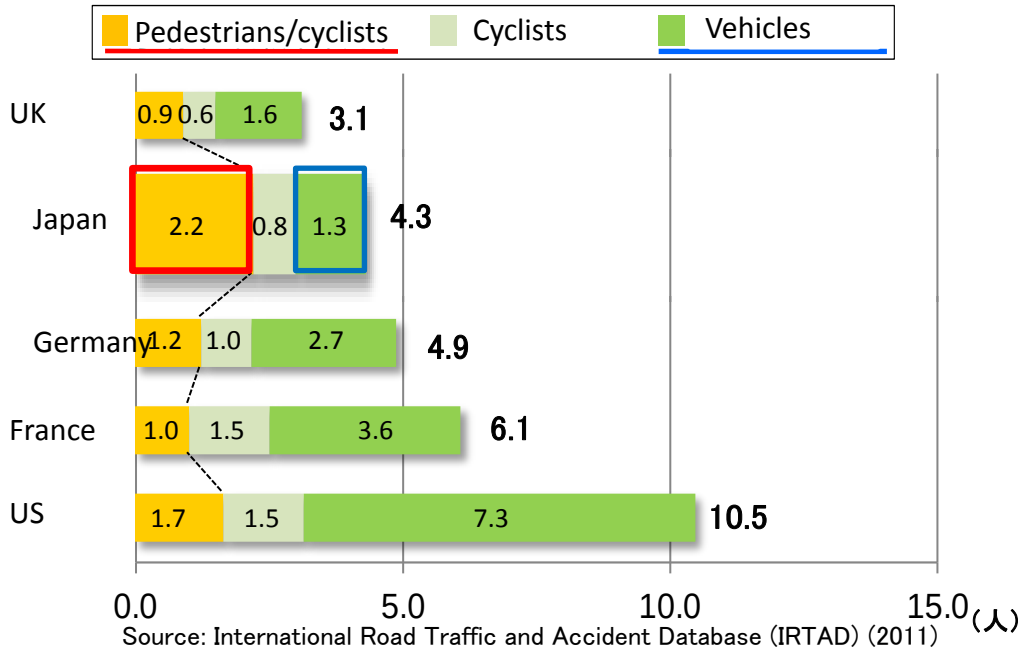
Pedestrian and cyclist fatalities account for 50% of the total number of crash fatalities.

Annual fatalities (2013) – 4, 373
(of which pedestrians and cyclists: 2,184)

Source: NPA

Fatalities (per 100,000 people) in other countries

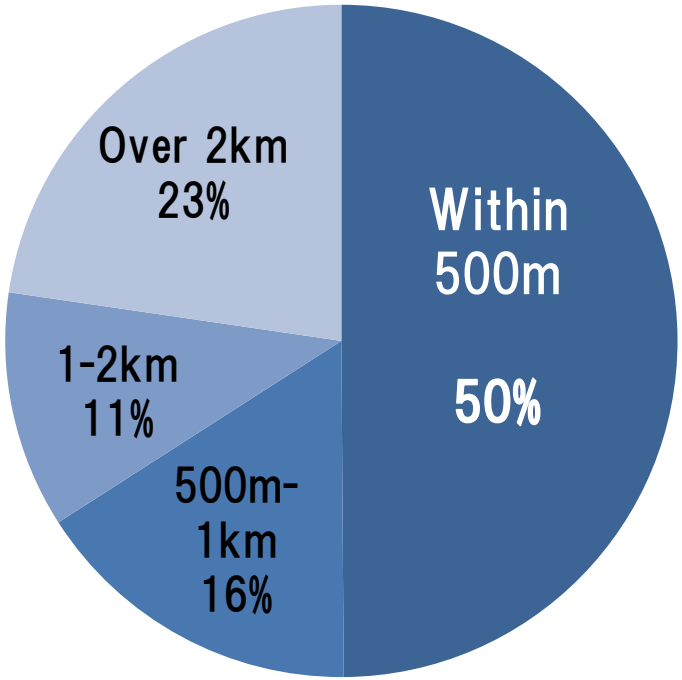
Japan has the lowest number of crash fatalities involving only vehicles and the highest number of crash fatalities involving pedestrians and cyclists among the major developed countries. (Japan’s pedestrian and cyclist fatalities of 2.2 per 100,000 people is 2.4 times higher than UK)



Source: International Road Traffic and Accident Database (IRTAD) (2011)
Death toll within 30 days from the crash

Crash fatalities by distance from home

50% of fatal crashes involving pedestrians or cyclists occur within 500m from their home.



Source: Institute for Traffic Accident Research and Data Analysis (ITARDA) (2012)

“Smart Use of Road” Concept

Goal

[Infrastructure]

Functional metropolitan areas are created by providing compact hubs and networks

[Road traffic]

–Less travel delay and fewer crashes –Environmentally friendly –Connected hubs

Current road traffic

Our road network is insufficient, yet it is also not fully utilized.

-Unevenly distributed traffic demand -Declining loading ratio -High crash fatalities for pedestrians and cyclists

ICT and other innovative technologies ⇨ ⇦ Limited financial resources and space

In addition to new, necessary road development, existing roads must be used in a smart way to tackle various traffic issues.

Japan can mitigate traffic congestion to the level of European countries and US (up to half of the current level).

(Additional Info) Achievement of “Smart use of roads” Efforts

Travel delay

Lead the world in eliminating toll-gate congestion.

Congestion at toll gates

2000 (Before ETC was introduced)

3,974 times (accounting for 30% of entire delays on expressways)

Note: ETC was introduced in 2001.

Introduction of ETC

- Internationally standardized Japanese ETC is used across the nation.
- 90% of drivers use ETC.

2008 (After ETC was introduced)

60 times

Toll-gate congestion is eliminated.

Note: Frequency of congestions is defined as the frequency congestions occurred over 30 times a year or with an average length of 2km or longer and five time a year on major identified congestion segments.

Safety

Annual crash fatalities are reduced to a quarter.

[Annual crash fatalities]

1970 (called “Traffic war”)

16,765 deaths

- Improved pavement and added sidewalks
- Safety improvement in black spots.
- Improvement in vehicle safety features and stringent enforcement.

2013 (current)

4,373 deaths

3. Direction of Individual Countermeasures

Direction Ahead, Issues to be Overcome, and “Smart Use of Roads” Efforts

Direction ahead	Issues	Efforts
Smooth traffic and Energy efficiency	(1) Travel delay	<Supply side> Smart way to secure traffic capacity: Emerging traffic engineering using big data; Correct inconsistency in real traffic capacity throughout a road (Scientifically tackle areas with bottlenecks); Removal of toll gates on expressways; Preference to ETC 2.0 users and innovative toll gates <Demand side> Traffic Demand Management to best utilize existing network
Environment and Comfort	(2) Travel time reliability	Minimize road closures and lane restrictions; Provide services on non-expressways; Provide travel that arrives in time
Safety and Security	(3) Safety	Smart crash reduction: Differentiation of roles of roads: encourage drivers to use safe expressways; Identification and improvement of potentially dangerous spots by using big data; Discourage through-traffic and slower traffic on residential streets
Local revitalization and International Competitiveness	(4) Vibrant communities	Directly connect strategic facilities and expressway exits; Establish network connecting hubs

Smart use

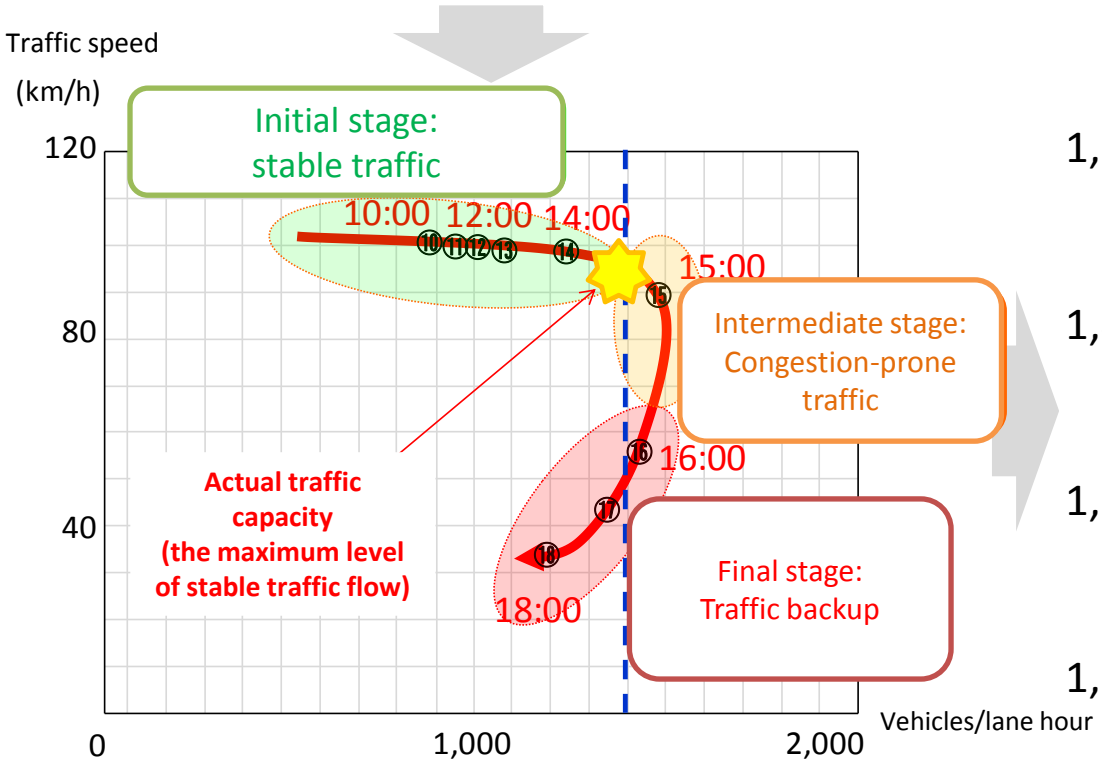
(1) Travel Delay

Emerging Traffic Engineering Using Big Data

New traffic engineering makes good use of big data to identify the actual traffic capacity of roads, as opposed to the number of lanes.

Identification of actual traffic capacity

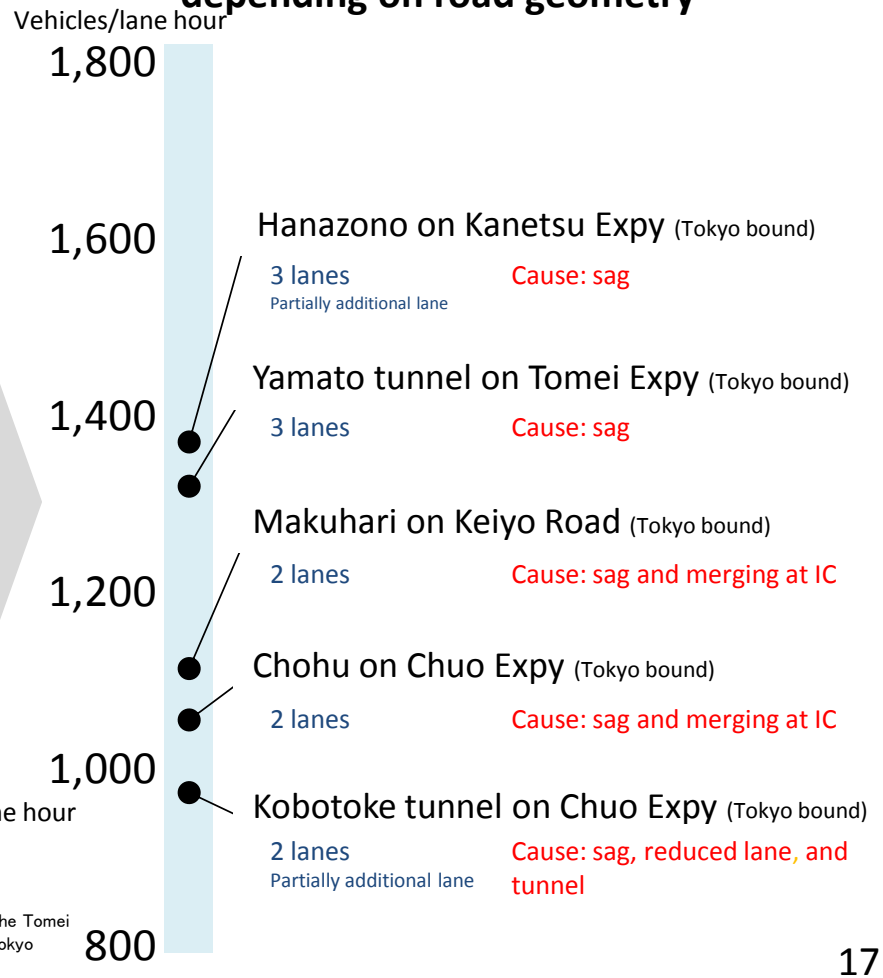
Big data analysis



Definition of traffic volume: number of vehicles travelling on a lane per hour

Source:
Probe data for speed during congestion and traffic monitoring data on the Tomei Expressway segment between Hatano Nakai and Yokohama Machida (Tokyo bound) on April 29 (holiday) in 2012

Actual traffic capacity is different depending on road geometry



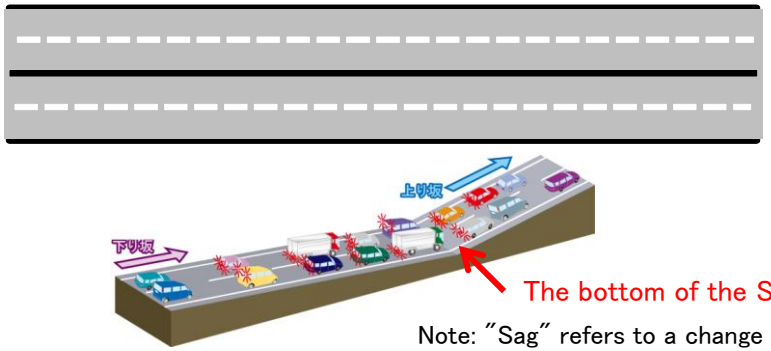
3. Direction of Individual Countermeasures (1): Travel delay

Correct inconsistency in real traffic capacity throughout a road (scientific countermeasure for bottlenecks)

Scientifically optimize traffic flow by correcting inconsistency in real traffic capacities.

[Illustration of inconsistency in real traffic capacity]

There is a sag, although the road has 2 lanes all the way.



Note: "Sag" refers to a change in gradient on the road.

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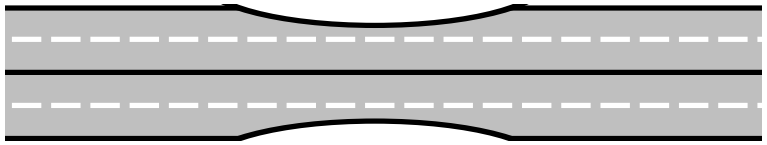
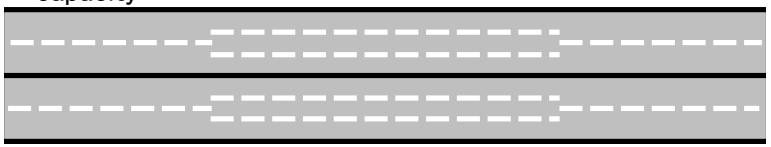
Illustration of real traffic capacity

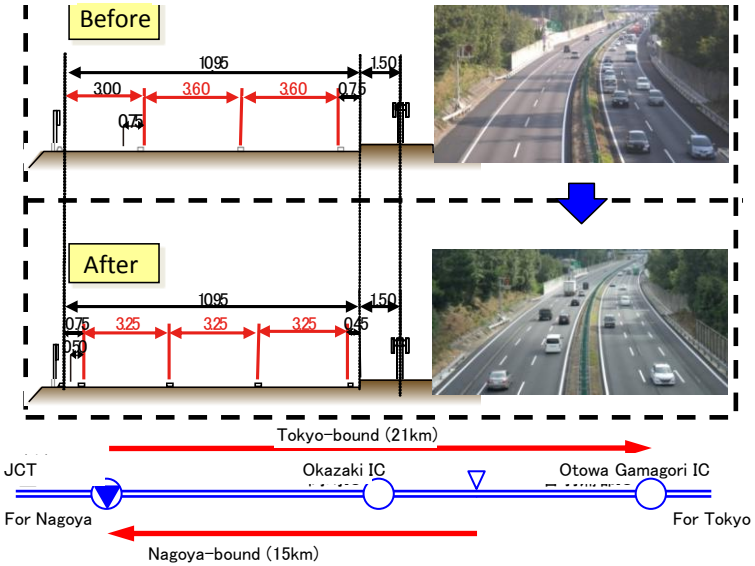


Improved road after correcting inconsistency in real traffic capacity

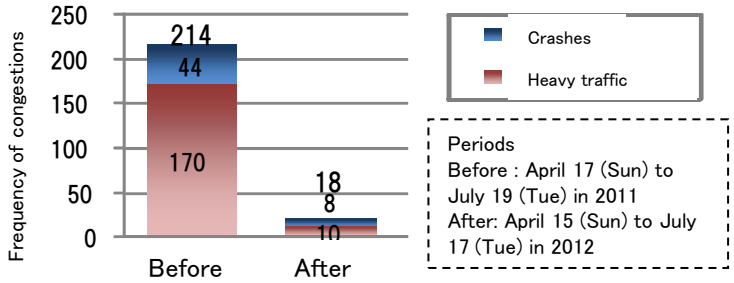


[Optimization of traffic flow]

Temporarily create 3 lanes for a section of Tomei Expressway (a section of road between Otowa Gamagori IC and Toyota JCT)



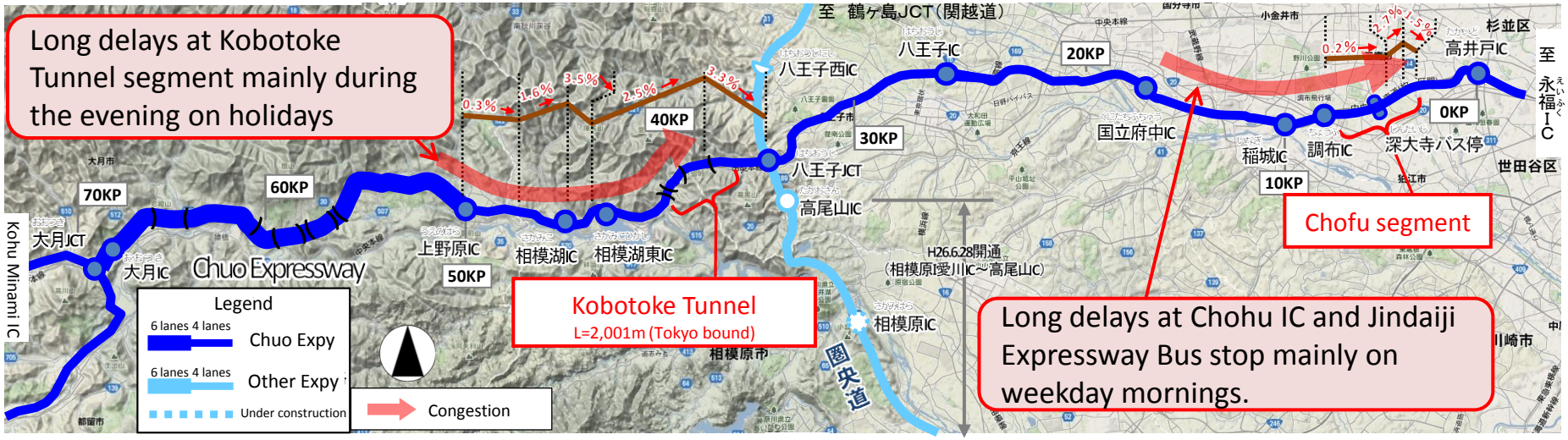
3 temporary lanes resulted in fewer congestions.



3. Direction of Individual Countermeasures (1): Travel delay

Correct inconsistency in real traffic capacity throughout a road (Scientifically tackle areas with bottlenecks)

A Working Group Provided Countermeasures for Congestion at Kobotoke Tunnel and Chohu on Chuo Expressway after Discussion on June 30.

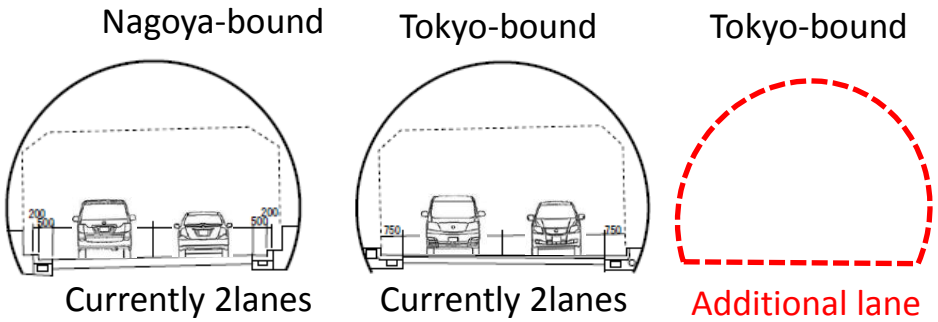


Source : google map

[Countermeasure]

Kobotoke Tunnel

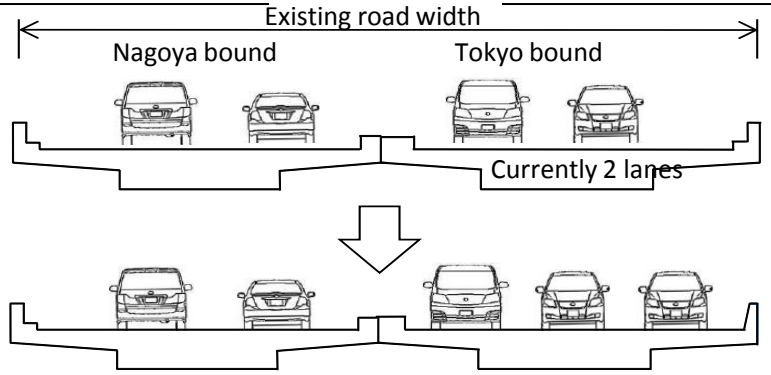
Add another traffic lane on Tokyo-bound route



Kobotoke tunnel may need to structurally change.

Chofu segment

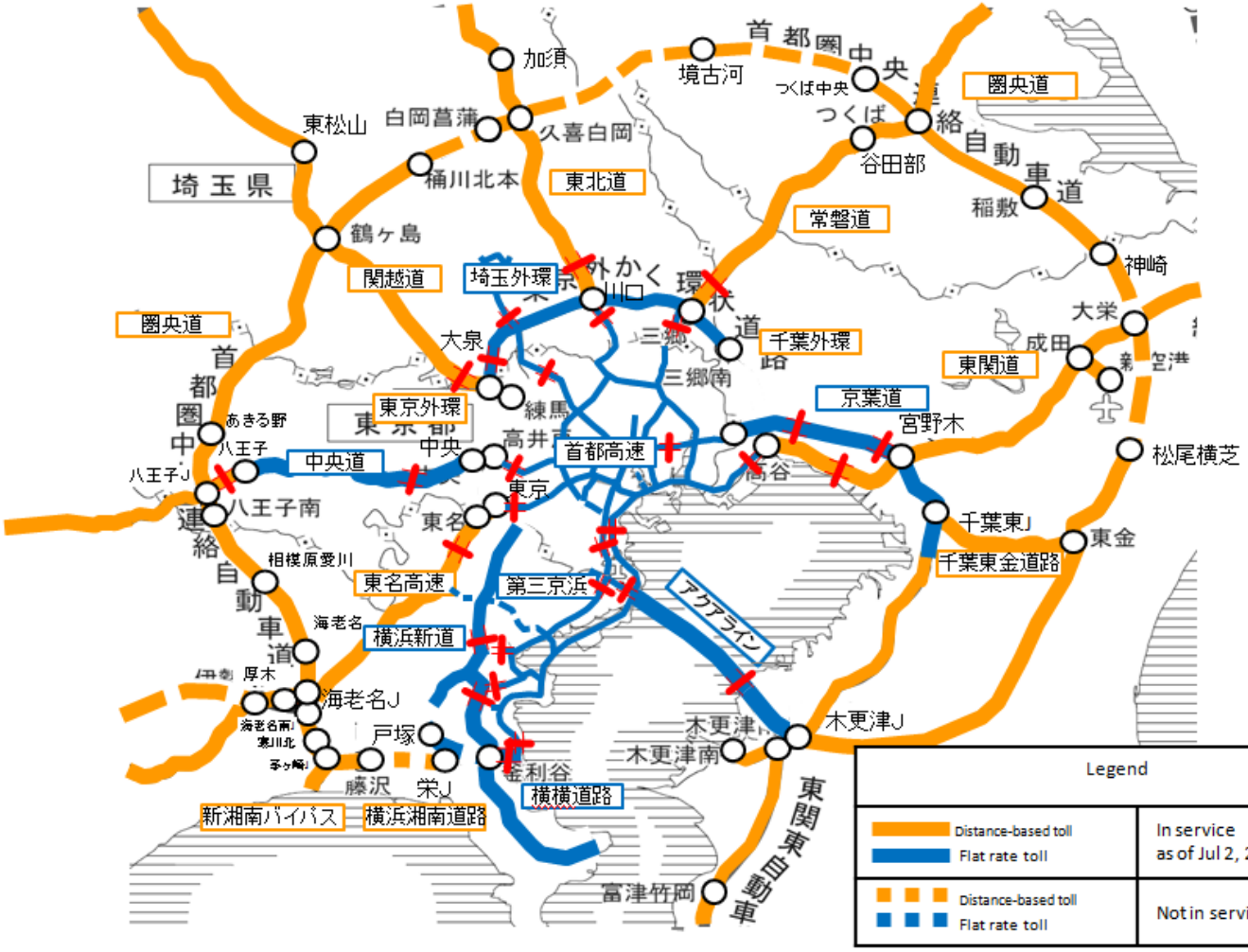
Re-arrange lane alignment, within the existing road width, on Tokyo-bound route.



3. Direction of Individual Countermeasures (1): Travel delay

Removal Of Toll Gates On Expressways By Correcting Inconsistency in Toll Rates

- Current inconsistent toll rates among different expressways resulted in a number of toll gates.
- Remove unnecessary toll gates by introducing seamless toll rate classification.



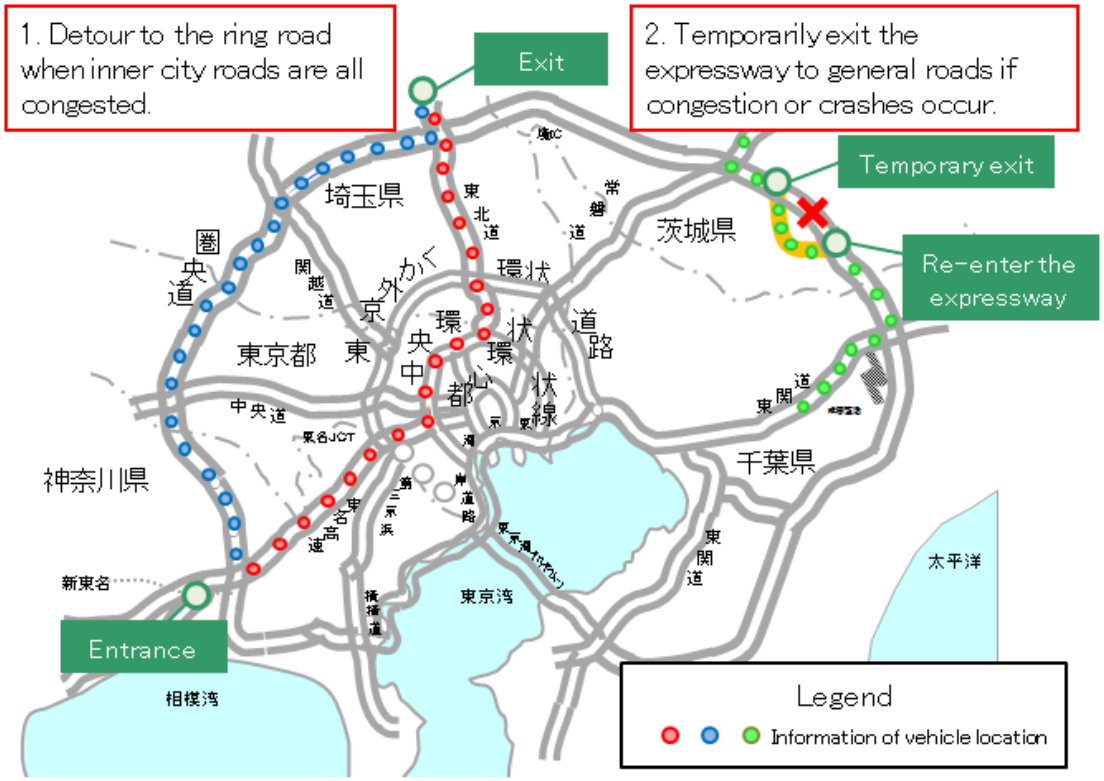
Niiza Toll Gate
(Kanetsu Expressway)

Legend	
Distance-based toll / Flat rate toll	In service as of Jul 2, 2014
Distance-based toll / Flat rate toll	Not in service

"ETC 2.0" encourages drivers to wisely use expressways.

- It is important to let road users wisely select the optimum route from multiple choices depending on traffic conditions, including congestion and crashes.
- If tollbooths are removed, routing information will not be available.
- A new system "ETC 2.0" was introduced to collect routing information using existing ITS spots.

[Illustration of smart routing by "ETC 2.0"]



[Outline of "ETC 2.0"]

ITS spots have been placed at 1,600 locations on expressways.

- Existing ITS-spot ready units will work for ETC 2.0 after re-installation of the system.
- Collect routing information from existing ITS spots

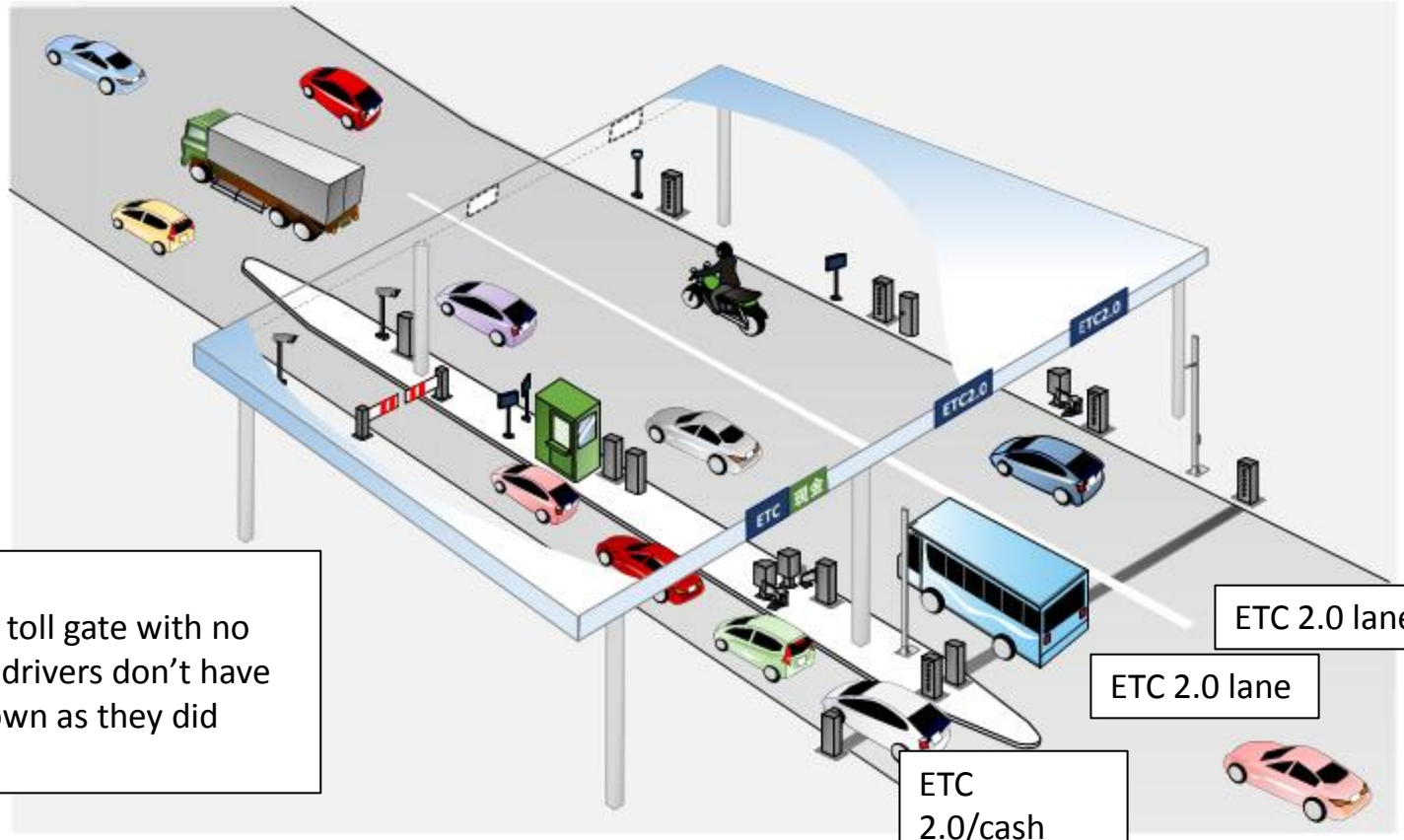
ETC 2.0-ready onboard unit

ETC 2.0-ready car navigation system

ETC 2.0 Brings New Toll Gates That Allow Higher Speed Passing

- Currently, drivers have to slow down to 20km/h to pass the gate bars of the ETC toll gates.
- ETC 2.0 toll gates will be installed when a new seamless toll rate classification is introduced.

ETC 2.0 toll gates and dedicated lanes



<Feature>
At ETC 2.0 toll gate with no gate bars, drivers don't have to slow down as they did before.

ETC 2.0 lane

ETC 2.0 lane

ETC 2.0/cash lane

Traffic Demand Management (TDM) To Best Utilize Existing Network

- Spatially and temporally uneven traffic demands cause congestion.
- TDM can mitigate congestion.
- TDM, in combination with road development, helps to mitigate congestion.

[TDM measures]

1. Levelling temporally uneven traffic demand

Heavy traffic demand during particular hours (i.e. commuting hours) are leveled off.

Examples
- Staggered commuting hours, flextime
- Adjustment of working days

2. Shift to mass transit

Shift from passenger cars to mass transit (i.e. use of public transit and Park & Ride practices) is promoted.

Examples
- Promotion of public transit and bicycle use
- Introduction of Park & Ride system

2. Levelling spatially uneven traffic demand

Efforts to level off chronic congestion on particular roads.

Examples
- Provision of road traffic information
- Road pricing

4. Reduction of traffic demand

Efforts to improve transport efficiency for logistics to reduce traffic demand.

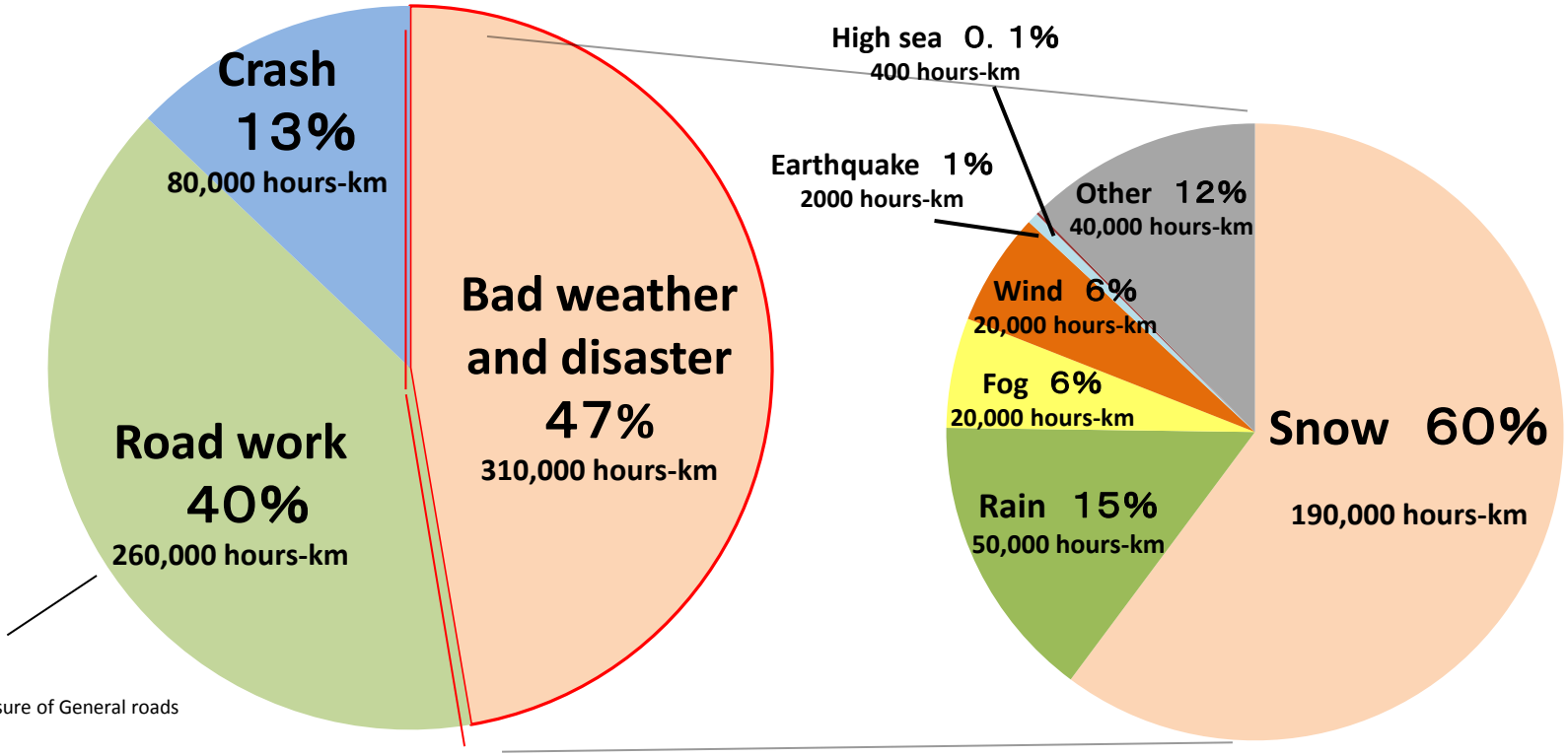
Examples
- Joint transport/delivery
- Promotion of high-occupancy vehicles

(2) Travel Time Reliability

Minimize road closures and lane restrictions

- 90% of Expressway closures are caused by bad weather, disasters, and road work.
- Closures on general roads are caused by a variety of factors, including regular road work, power/gas line work, and road occupation accompanied by roadside building work.
- Because expressways have high capacity, they should be open as much as possible even during bad weather and road work.

Causes of expressway closure (2012)



Other than regular road works, a closure of General roads can be caused by:
-power / gas line works
-road occupation accompanied by roadside building work
-loading/unloading operation
-chronic lineup for parking lot of commercial facilities

Total **660,000** hours-km

Total **310,000** hours-km

Source: Expressway companies

Keep Expressways Open Despite Bad Weather

- Expressways are often closed due to poor visibility caused by heavy fog and snow storms.
- Expressways are closed even before a snow storm hits, which causes heavy traffic congestion on the general roads that run parallel to the expressways.
- In addition to improvement of snow removal capacity, it is necessary to open one lane first and/or allow traffic service at a reduced speed.

A long back-up on parallel general roads due to a closed expressway during a snow storm.

Long-hour expressway closures by cause

Rank	Snow 2012	Snow 2013
1	Iwamizawa-Bibai (Douou Expy) 318 hours	Ebetsu higashi- Iwamizawa (Douou Expy) 349 hours
2	Ebetsu higashi- Iwamizawa (Douou Expy) 221 hours	Sappro Minami-Sapporo JCT (Douou Expy) 293 hours
3	Fukagawa JCT- Fukagawa Nishi (Fukagawa Rumoi 164 hours	Usa-Hayami (Usa Beppu Road) 269 hours

Rank	Fog 2012	Fog 2013
1	Hiji JCT-Hiji (Ohita Road Hiji 355 hours	Hiji JCT-Hiji (Ohita Road Hiji 167 hours
2	Yufuin-Beppu (Ohita Road) 343 hours	Ohita Nogyo Bunka Koen-Hayami (Usa Beppu Road) 164 hours
3	Ohita Nogyo Bunka Koen-Hayami (Usa Beppu Road) 303 hours	Yufuin-Beppu (Ohita Road) 123 hours

Rank	Rain 2012	Rain 2013
1	Yatsushiro JCT-Hinagu (Minami Kyusyu Road) 102 hours	Takanabe-Saito (Higashi Kyusyu Road) 160 hours
2	Kadokawa-Hyuga (Higashi Kyusyu 84 hours	Uenohara-Katsunuma (Chuo Expy) 113 hours
3	Takanabe-Miyazaki nishi (Higashi Kyusyu 34 hours	Koka Tsuchiyama JCT- Kusatsu (Shin Meishin Expy) 102 hours

Rank	Wind 2012	Wind 2013
1	Naha-Kyoda (Okinawa Road) 160 hours	Kojima-Sakaide (Seto Chuo Expy) 105 hours
2	Kawasaki Ukishima JCT-Kisarazu Kaneda (Tokyo Bay Aqualine) 78 hours	Awaji minami-Naruto (Kobe Awaji Naruto Road) 20 hours
3	Kojima-Sakaide (Seto Chuo Expy) 24 hours	Namamugi JCT- Ohgure JCT (Ohguro Route TME) 10 hours

出典）高速道路会社データ

Keep Expressways Traffic Lanes Open During Road Work

- Expressways require periodic maintenance which involves road closures and lane restrictions.
- Road work has been planned to reduce influences on traffic by sharing a parallel road with traffic going in the other direction and reducing work period.
- In addition to current efforts, new efforts are necessary to minimize influences on traffic, which include reducing road shoulder width to provide an additional traffic lane.

Required maintenance work for expressways

Work that involve lane restriction

Bridge maintenance	
	Deck repair/replacement
	Joint repair/replacement
Tunnel maintenance	
	Inspection of emergency facilities
	Finishing plate cleaning
	Lining concrete repair
Pavement maintenance	
	Pavement repair/replacement
	Road sign repair
Equipment maintenance	
	Inspection/repair of Information board
	Road sign repair/replacement
	Guard rail repair/replacement

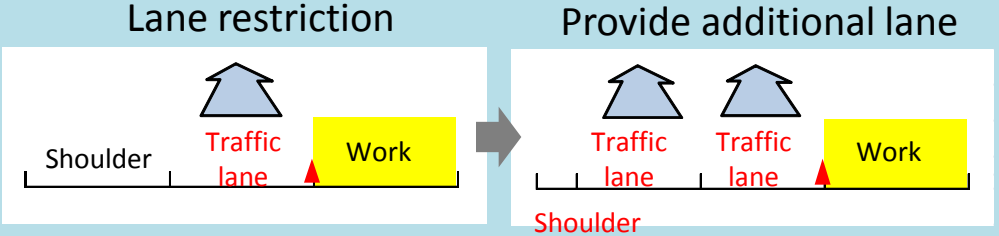
Road work planned to reduce influences on traffic

Avoid road closure by having traffic share a road with traffic going in the other direction.

Reduce the restricted period by shortening the work period.

Further effort

Create provisional lane by reducing road shoulder width to minimize impacts on traffic.



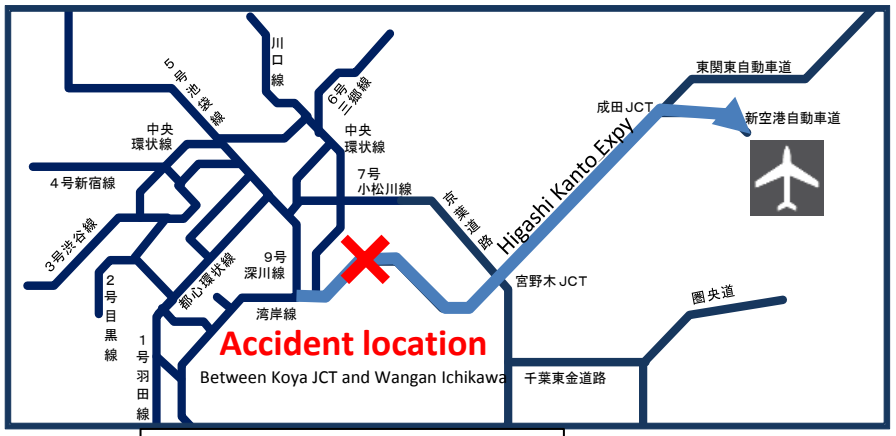
Minimize Expressway Closure/Restriction Period Due to a Crash

- Accidents on expressways involve inspection and removal of damaged vehicles on the scene, which usually causes road closures or restrictions.
- Reduction of the road closure period is critical particularly for access roads to the airport and other roads that people expect for travel time reliability.
- Currently, road administrators move the damaged vehicle to the neighboring IC personally, which can be changed to reduce the road closure period. A coordination effort should be made to change this practice.

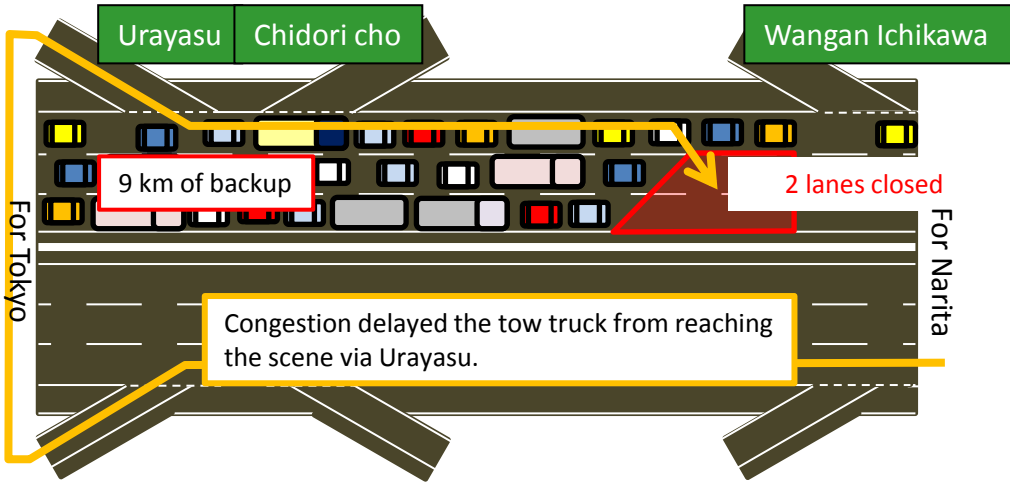
Procedure in the event of accident

Accident occurs

Example of long-hour lane restriction on east-bound Higashi Kanto Expressway on Sep 18 2013



Lane restriction period:
3 hours 32 minutes



Source: NEXCO East and Tokyo Metropolitan Expressways data

Provide Expressway-Level Rest Area Service on Free Expressways

- Free expressways will increasingly be developed in the future.
- Current free expressways have few rest areas.
- A new national program will provide rest areas along free expressways with a total length of over 3,000km.

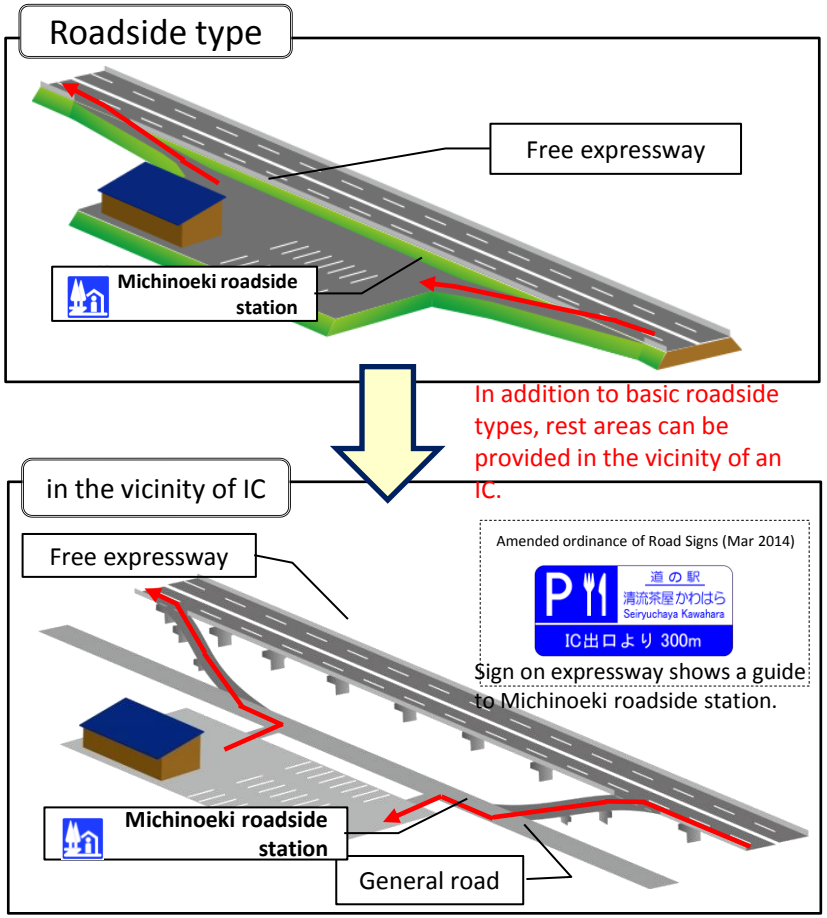
Total length of free expressways

Current : 1,654km ➡ Future : 3,220km

In service (as of Apr 1 2014) / After completing the ongoing constructions

Proposed direction for rest area development on free expressways:

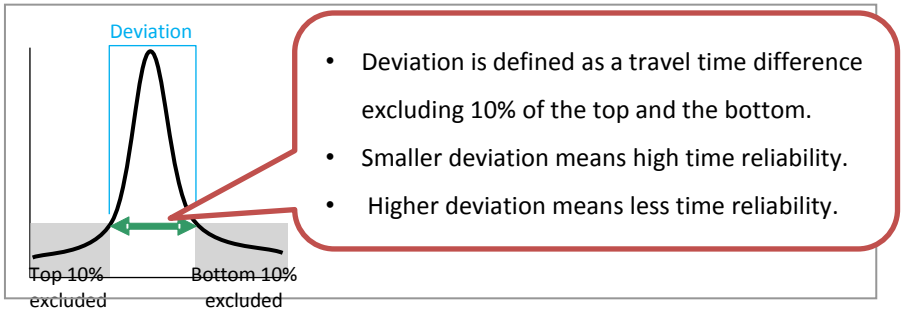
1. Provide rest areas in a systematic manner for free expressways that extends over 3,000km.
2. Michinoeki roadside stations are allowed to be developed by local bodies to provide services with the minimum facilities of a parking lot and rest rooms.
3. In addition to basic roadside types, rest areas can be provided in the vicinity of an IC, taking advantage of free expressways.



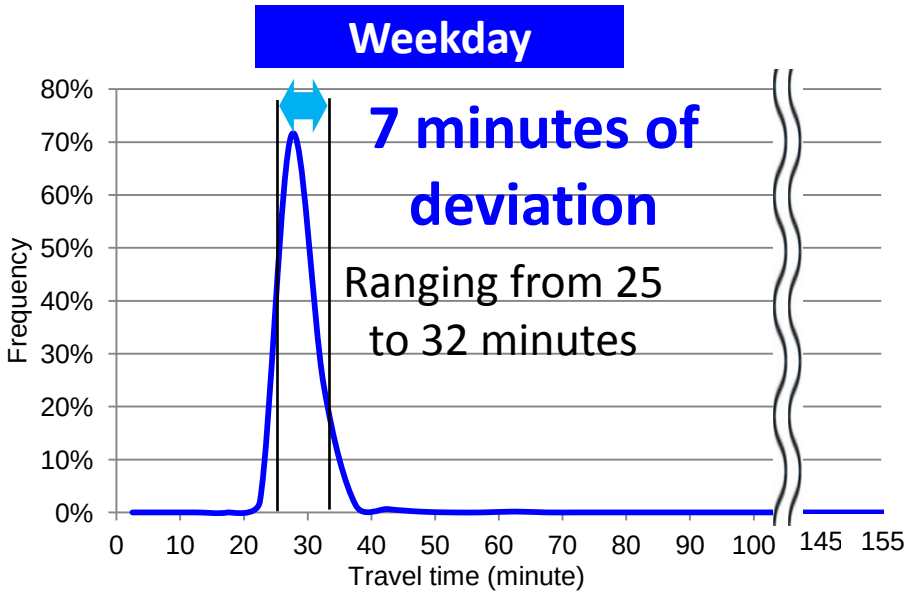
Provide Travel That Arrives In Time

Drivers often depart earlier, because congestion-induced delay can not be precisely predicted.

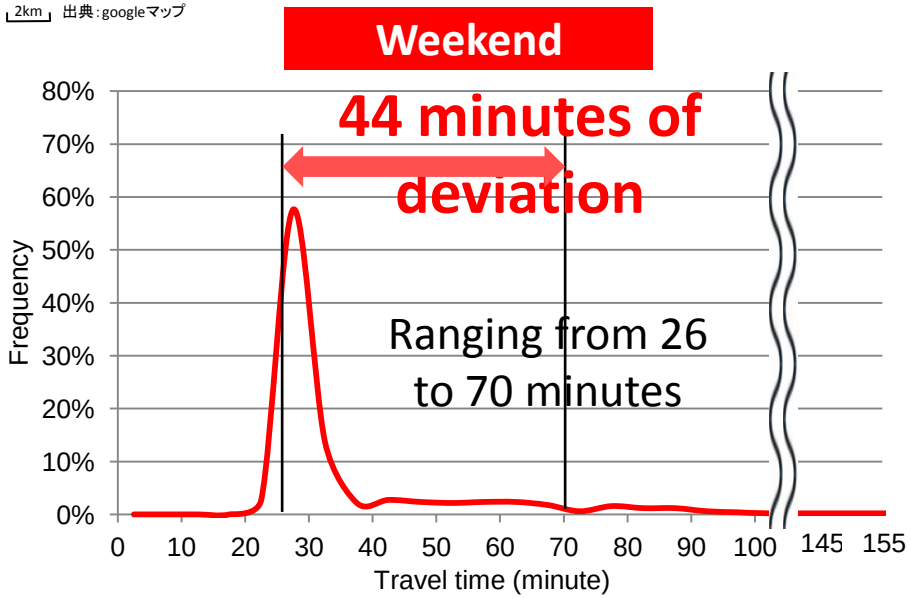
Drivers are forced to depart early because of the low time reliability of road traffic, which increases unnecessary travel time, in addition to travel delays (5 billion person-hours).



Distribution of travel times in the Kobotoke Tunnel section on Tokyo-bound Chuo Expressway



Calculation of travel time: simple average of travel time obtained from probe data between Ohtsuki IC and Hachioji IC (Tokyo-bound) in a unit of 5 minutes.



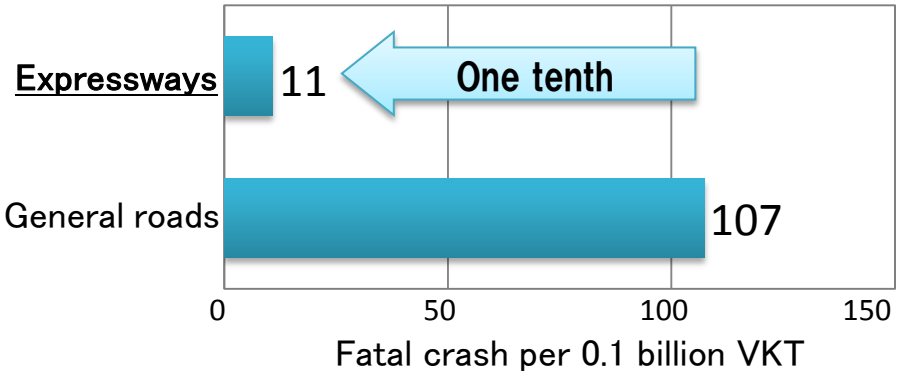
Calculation of travel time: obtained from probe data between Ohtsuki IC and Hachioji IC (Tokyo-bound) in the period between Apr 1 and 30 in 2012.

(3) Safety

Differentiating the Roles of Roads: Encourage Drivers to Use Safe Expressways

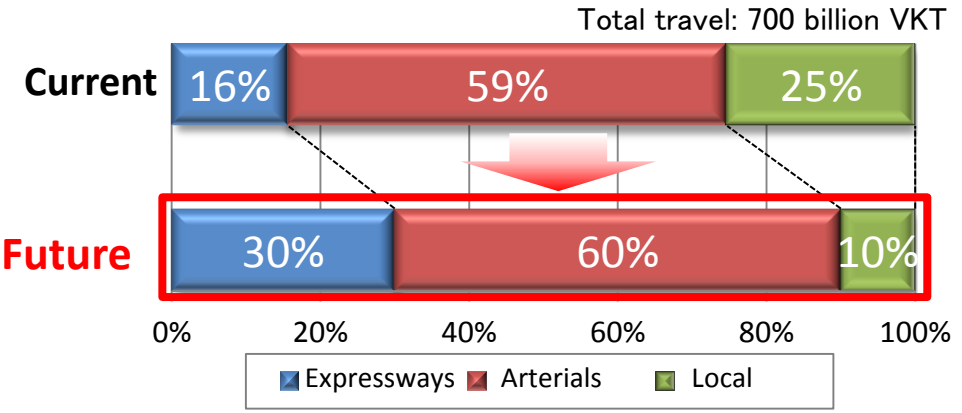
- Number of fatal crashes on expressways is one tenth of those on general roads in Japan, yet expressways are less utilized than in other countries.
- Fatalities and injuries could be dramatically reduced by encouraging use of expressways.

Fatal crashes by road type in Japan



Source: NPA (2011) and Traffic monitoring data (2011)

Use of road by type in Japan



Source: Road traffic census 2010 and Vehicle transport statistics 2010

Expressways' share in developed countries

Japan	US	France	Germany
16%	33%	30%	31%

Source:
Japan: Road traffic census 2010
US: :Highway Statistics 2011 (excl. Puerto Rico)
France: Faits et Chiffres
Germany :Verkehr in Zahlen

"Expressways" include
Japan: High-standard Arterial Highway System, Urban Expressways and Rural high-standard roads.
US : Interstate, Other freeways and expressways
France : Autoroute, Route nationale interurbaine à caractéristiques autoroutières
Germany : Autobahn

Estimated reduction of annual fatalities and injuries on expressways if expressways' share is increased to 30%

Fatalities 600* less /year
4,373 (2013)

Injuries 200,000* less /year
790,000 (2013)

Note *:
Fatalities and injuries per VKT were obtained from actual crash data on expressways and general roads. Then they were re-calculated assuming shares of expressways and general roads were changed.

Identification and Improvement of Potentially Dangerous Spots by Using Big Data

- Methodology of black spot identification is shifting from a crash-rate-based, segment-by-segment analysis to a big-data-based (sudden braking locations) analysis.
- New methodology is effective in identifying black spots and improving the safety of those spots.

Work flow of identification

Big data analysis identifies spots that experience frequent, sudden braking.*1

⇩

Identification of causes by on-site inspection

⇩

Improvement of identified spots for safety

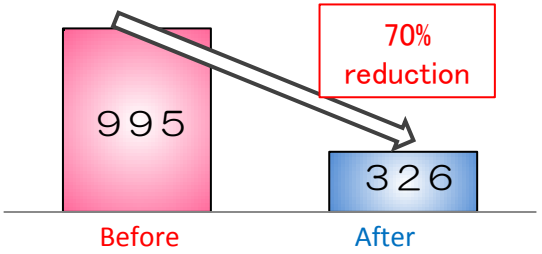
Case examples

Pinpoint identification of the frequent, sudden braking spot

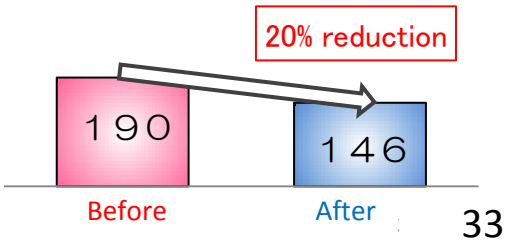
By trimming vegetation that had been blocking the view, sudden braking is reduced.

Effects*2

Reduction of sudden braking in a month



Reduction of annual crashes that cause fatalities or injuries



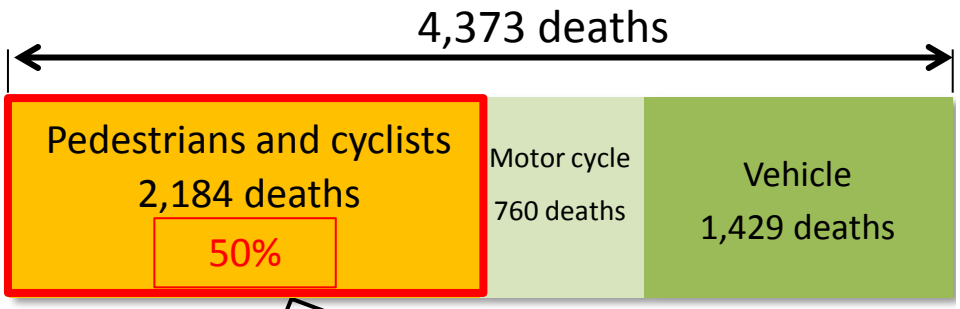
*1: Saitama Prefecture defines sudden braking as braking with over 0.3G of deceleration. In this case, 160 spots which experienced sudden braking 5 times or more were identified as “frequent sudden braking spots”. In general, 0.6G of deceleration are thought to cause a feeling of discomfort to passengers.

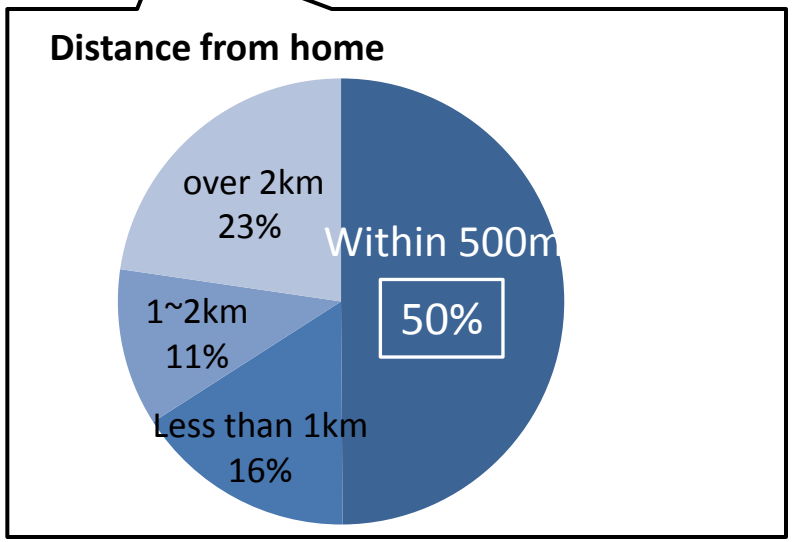
*2: Effects are calculated based on Saitama’s data. A total of 160 spots identified as “frequent sudden braking spots” and 145 crash spots were taken into consideration in the calculation.

Eliminate Through-Traffic and Enforce Speed Control on Residential Streets

- 50% of pedestrian-involved crashes, which accounts for a half of the total crashes, occurs within 500m of home.
- While encouraging drivers to use expressways, the authority rigorously enforces through-traffic and speed control on residential streets.
- This will give pedestrians and cyclists their space back.

Crash fatalities by transport mode (2013)





Zone 30

Woonerf*

Note *: a street where pedestrians and cyclists have legal priority over motorists.

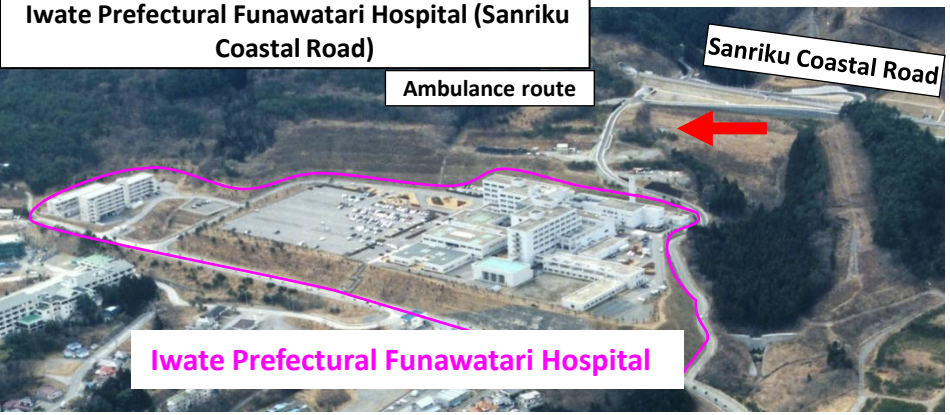
(4) Vibrant Communities

Directly Connect Strategic Facilities And Expressway Exits

- Currently, drivers have to use general roads to reach important facilities after exiting expressways.
- To directly connect strategic facilities and expressway exits, a wide range of development forms will be considered, including publicly-financed development and privately-financed development, depending on the facility's communality.
- Smart IC will be fully utilized.

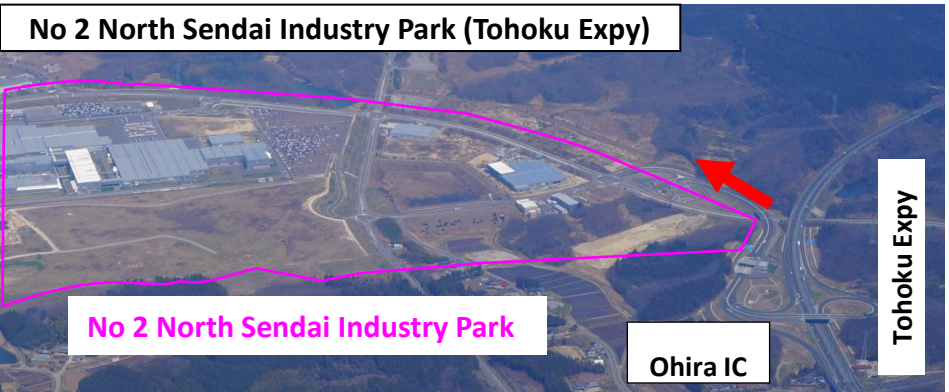
Examples of facilities directly connected to expressway exits:

Iwate Prefectural Funawatari Hospital (Sanriku Coastal Road)



Osaka International Airport (Hanshin Expressway Ikeda Line)

No 2 North Sendai Industry Park (Tohoku Expy)



Eligible facilities

- Critical care medical center
- Large commercial center
- Industry park
- Airport
- Logistics center
- Port

etc.