

Creating Safe and Secure Road Spaces for Cyclists

Road Traffic Safety Management Office
Environment and Safety Division, Road Bureau
Ministry of Land, Infrastructure, Transport, and Tourism

In the decade from 1965 to 1975, traffic regulations were relaxed to allow cyclists to ride on the sidewalks. Since then, bicycle/pedestrian tracks have gradually been provided so that bicycles are separated from automobiles.

Since cyclists tended to overlook the danger of bicycles as a type of wheeled vehicles, there was an increasing number of dangers when bicyclists rode on the sidewalks. It was necessary to implement countermeasures in order to reduce bicycle-pedestrian accidents.





In FY2007, MLIT and the National Police Agency designated 98 districts across the country as "bicycle road model districts" (hereinafter referred to as "model districts") in which bicycle road / bicycle lane development would occur.

In October 2011, the NPA decided that it would let people know that bicycles are a wheeled vehicle and they would carry out comprehensive safety programs for cyclists and pedestrians.

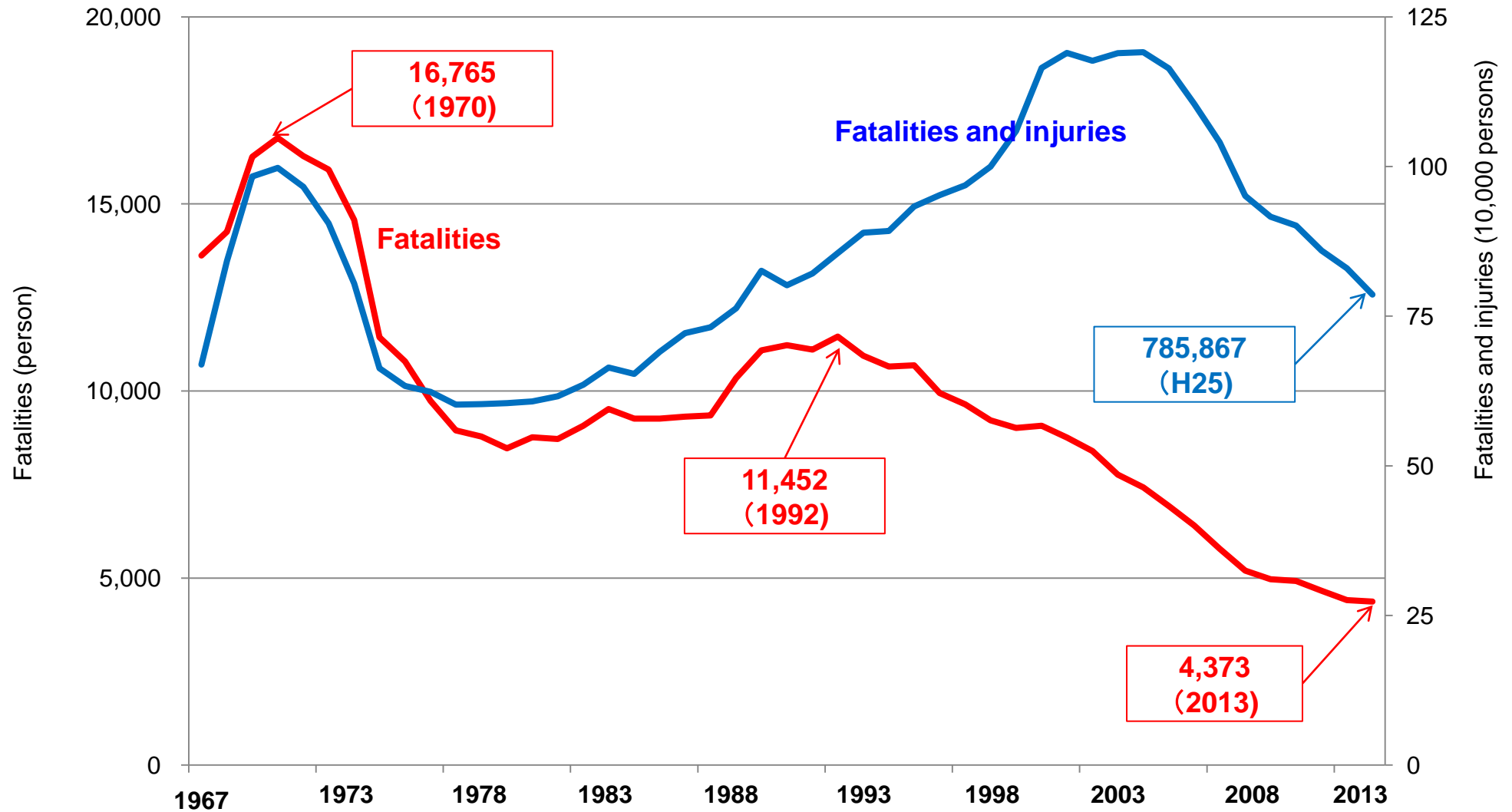
In FY2011, MLIT and the NPA created an investigative committee to provide a safe and pleasant cycling environment. In April 2012, the Committee filed the "Recommendation for safe and pleasant cycling environment for everyone" (hereinafter referred to as the "Recommendation") with both MLIT and the NPA.

In Nov 2012, in response to the Recommendation, MLIT and the NPA jointly developed "A guideline for creating a safe and pleasant cycling environment" to help road administrators and prefectural police to engage in planning and developing road networks for cyclists and to raise awareness of traffic laws.

- The Road Traffic Act of 1960 stated that cyclists must use the left part of the carriageway. However, a rapid increase of accidents, in the decade from 1965 to 1975, prompted a change in regulation that allowed bicycle riding on designated sidewalks.
- Around the same time, new legislation provided for bicycle roads and lanes.

	Bicycle road	Bicycle lane	Sidewalks shared by cyclists and pedestrians	
			Not segregated 	With road markings to visually separate cyclists from pedestrians 
1965	<p>Road Structure Ordinance of 1970 Bicycle roads were newly introduced and shall be provided where "automobile and bicycle traffic is high and it is necessary to segregate cyclists from the automobile traffic for traffic flow".</p>	<p>Before 1971, there were no bicycle lanes in Japan.</p>	<p>Road Structure Ordinance of 1970 Introduced sidewalks that are to be shared by cyclists and pedestrians, which shall be provided where "automobile and bicycle traffic is heavy and it is necessary for safe and smooth traffic".</p>	<p>Before 1978, there was no sidewalks with bicycle track markings.</p>
1975	<p>Road Traffic Act of 1970 Introduced the obligation of cyclists to use bicycle roads (cyclists must use bicycle roads where provided).</p>	<p>Road Traffic Act of 1971 Introduced bicycle lanes (made it possible to regulate traffic on bicycle lanes).</p>	<p>Road Traffic Act of 1970 Deregulation of bicycle riding on sidewalks (cyclists were now allowed to use sidewalks).</p>	<p>Road Traffic Act of 1978 Introduced bicycle tracks as part of sidewalks (cyclists were now allowed to ride on marked bicycle tracks on sidewalks)</p>
2008		<p>Ordinance of Road Signs of 2008 Provided road signs for bicycle lanes.</p>		

Change in Traffic Fatalities and Injuries in Japan



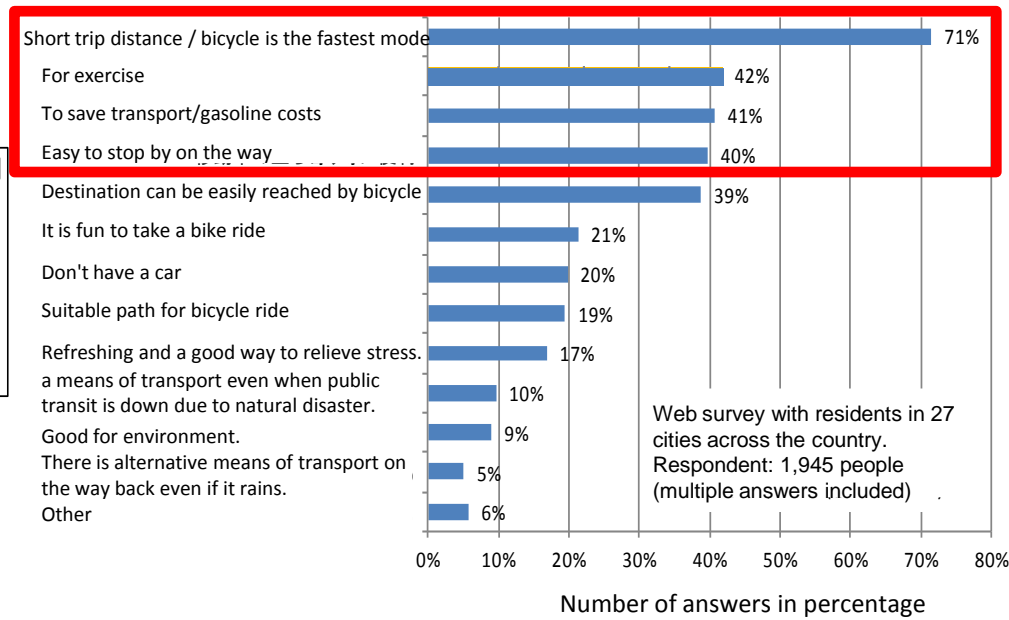
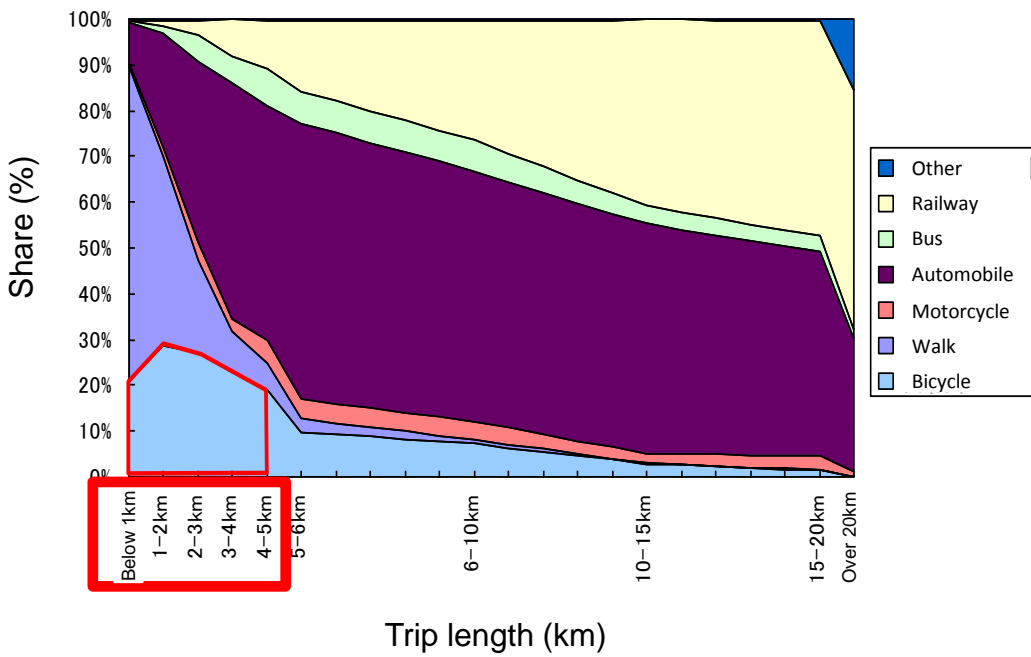
Characteristics of Bicycle Use

Bicycles are an important mode of transportation, accounting for 20% of the traffic that travels distances less than 5km.

Bicycles are used for various reasons, including shorter travel time, exercise for health, low transportation costs, and ease of use (easy to stop by any locations).

Share of transport mode by trip distance

Reason(s) to use bicycle



Source: 2005 Nationwide Person Trip Survey
Note: Shares in the figure are 1km increment up to 6km. Beyond 6km, they are 5km increment.

Source: Web survey carried out by National Institute for Land and Infrastructure Management in Jan 2012.

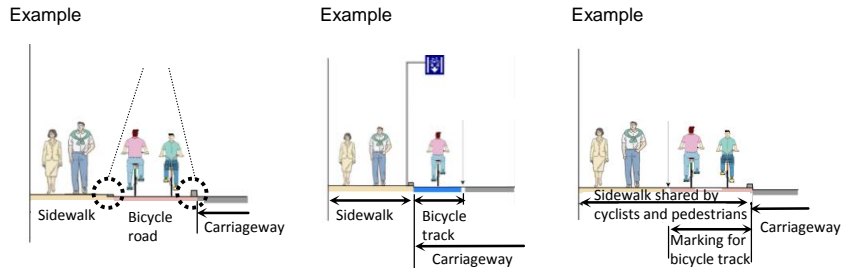
Length of Bicycle Roads

- In the decade from 1965 to 1975, a traffic regulation was relaxed to allow cyclists to ride on the sidewalks. Since then, sidewalks shared by cyclists and pedestrians have been gradually introduced so that bicycles are separated from automobiles (83,600km in length).
- On the other hand, bicycle tracks separate from both automobiles and pedestrians are only 3,000km in total length.

Total road length across Japan: 1.2 million km

Spaces for bicycles that are separated from automobiles: 83,600km

Segregated from pedestrians



Bicycle road



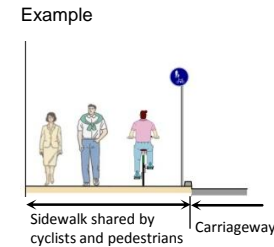
Bicycle lane



Bicycle track within sidewalk visually segregated from pedestrians by road marking

3,000 km

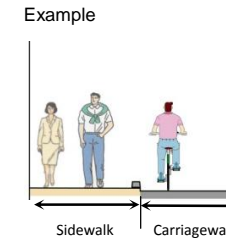
Not segregated from pedestrians



Sidewalk shared by cyclists and pedestrians

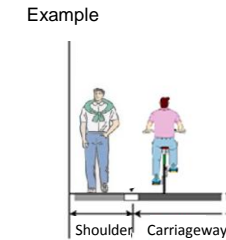
80,600 km

Other spaces for cycling: 1.1 million km



Roadway with sidewalk

91,800km



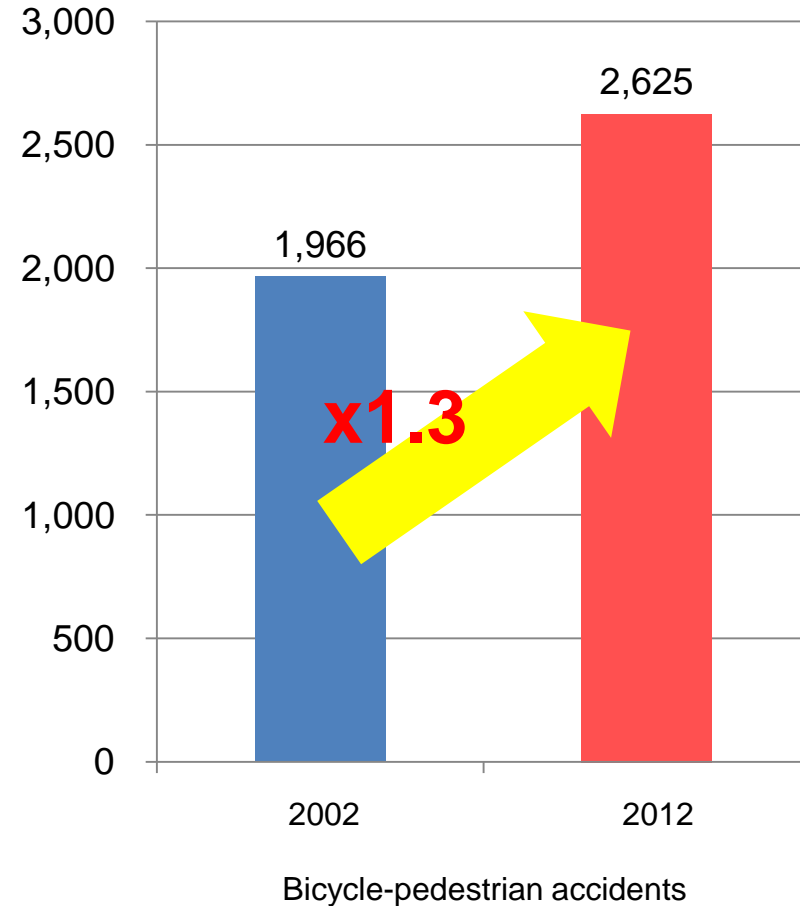
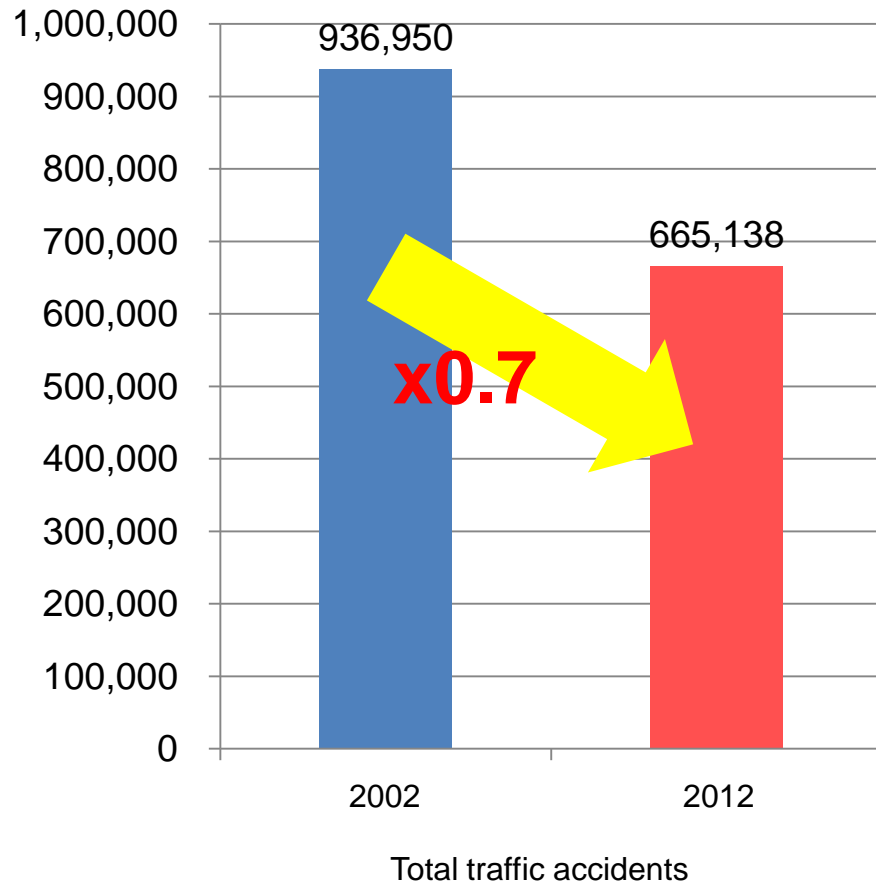
Roadway without sidewalk

1 million km

Note: Cyclists may use side strip ... as long as they do not disrupt pedestrian's traffic flow.

Increase in Bicycle-Pedestrian Accidents

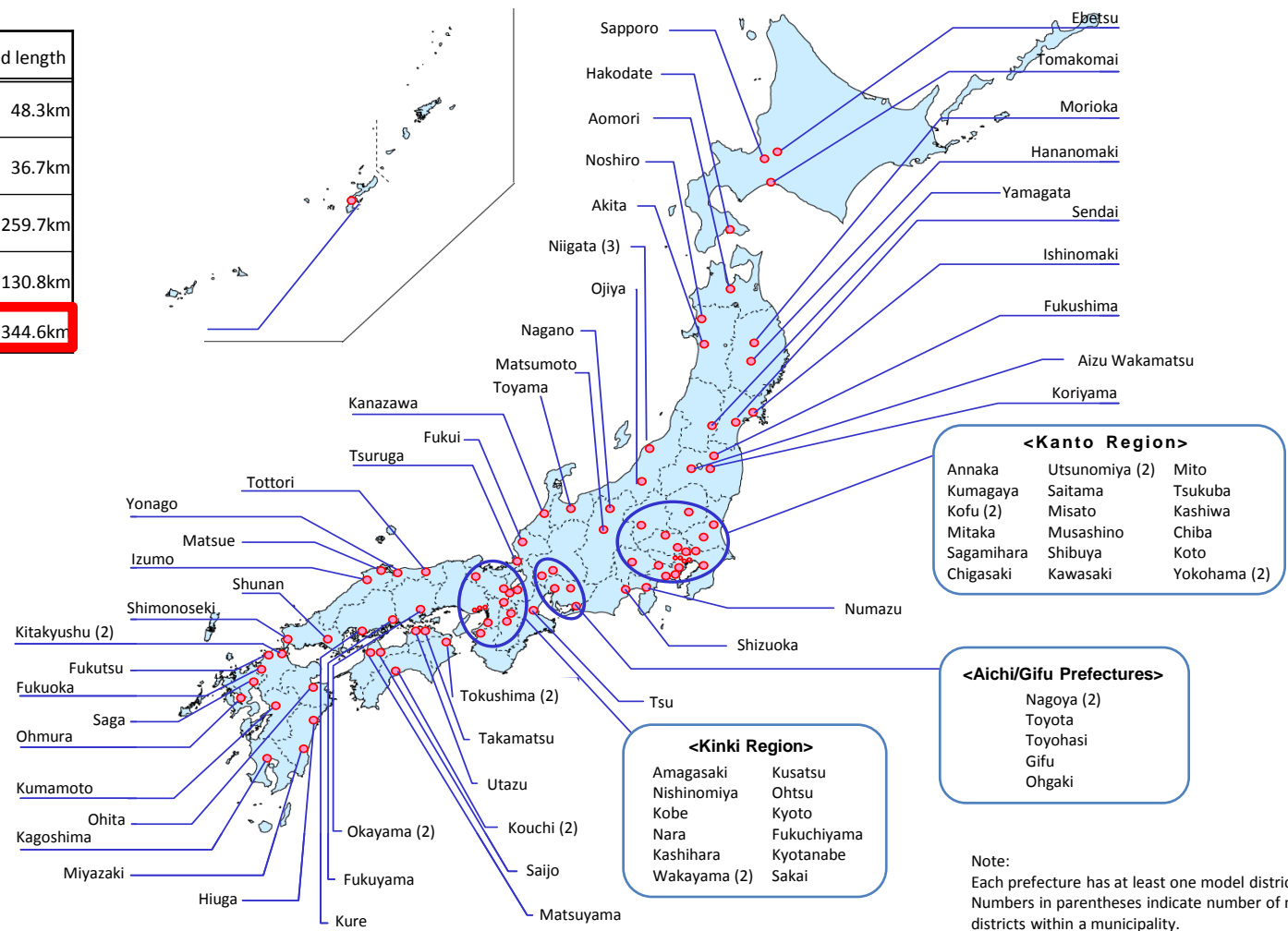
- Total number of traffic accidents decreased by 30% during the last decade, while bicycle-pedestrian accidents increased by 30%.



Outline of Bicycle Road Model Districts

- In FY2007, MLIT and NPA designated 98 districts across the country as a "bicycle road model districts" to promote the development of bicycle roads, bicycle lanes, and sidewalks shared by cyclists and pedestrians.
- Currently 446 roads are under development, with planned bicycle roads and bicycle lanes. These roads will have a total length of 344.6km.

Classification	Number of roads	Planned length
Bicycle road	65	48.3km
Bicycle lane	54	36.7km
Sidewalk shared by cyclists and pedestrians	327	259.7km
Of which the sidewalk with marking for bicycle track	163	130.8km
Total	446	344.6km



Note:
 Each prefecture has at least one model district.
 Numbers in parentheses indicate number of model districts within a municipality.

- Rearrangement of road space to separate cyclists from the pedestrians.

Utilization ratio of bicycle roads/tracks after they were open to public.

Where bicycle roads were developed

	Sidewalk	Bicycle road	Carriageway
Utilization ratio	14%	84%	2%

Where bicycle lanes were developed

	Sidewalk shared by cyclists and pedestrians	Bicycle lane	Carriageway
Utilization ratio	46%	53%	1%
Of which there is no deregulated sidewalks* for cyclists to use.	24% ^{**}	76%	0%





Note:

* Even though there is no such regulation on these particular road sections, the Road Act allows children, elementary school students, the elderly over 70 years old, and the physically challenged to ride a bicycle on the sidewalks. The Act also allows any person to do so if there is no other way due to constraints, such as road work.

** including stretches where no bicycle riding is allowed on sidewalks.

- After a variety of road spaces for cyclists were developed, bicycle accidents reduced over a year.
- This is particularly true for the road sections with new bicycle roads and bicycle lanes. (30% reduction because of bicycle roads, 40% reduction because of bicycle lanes)

Before and after comparison

Classification of space for cycling		Before (accidents/km-year)	After (accidents/km-year)	Increase- decrease rate
Bicycle road		3.8	2.8	-26%
Bicycle lane		3.7	2.4	-36%
Sidewalk shared by cyclists and pedestrians with no marking		2.7	2.4	-11%
Sidewalk shared by cyclists and pedestrians with marking of bicycle track		3.5	3.0	-14%

Comprehensive Program for Well-Ordered Bicycle Traffic (a circular notice by the Director-General for Traffic Bureau, NPA)

- In Oct 2011, NPA issued a circular notice in the name of the Director-General for Traffic Bureau, which stated that the organization would raise public awareness that bicycles were to be considered a type of wheeled vehicle and would promote a comprehensive safety program with the basic idea of committing to the safety of both "cyclists on carriageways" and "pedestrians on sidewalks".

Background

"Although the 2007 Circular Notice concerning the comprehensive program for well-ordered bicycle traffic delivered some positive results...

- Cyclists are generally not aware of traffic rule compliance.
- There is a continuous criticism that cyclists breach traffic rules and manners.
- There is insufficient space for cycling.

Comprehensive program for well-ordered bicycle traffic

Basic idea

Make every effort to raise public awareness that a bicycle is a wheeled vehicle

- Discourage fast moving cyclists from using sidewalks when they would like to enjoy the high speed performance of the bicycle.
- Thoroughly instruct cyclists on who use sidewalks to give priority to pedestrians.

Ensure the safety of both "cyclists on carriageways" and "pedestrians on sidewalks".

Provide sufficient space for cycling

- Provide road signs reading "One Way for Bicycles" and "Bicycle Lane" to ensure space for cycling.
- Review the locations of sidewalks that can be used for bicycle riding.
- Remove bicycle crossing linked sidewalks that can be used for bicycle riding.

Ensure full compliance with traffic rules and provide safety education

- Make every effort to raise public awareness that bicycle is a wheeled vehicle.
- Ensure that the public is aware of penalties, risks of traffic accidents and necessity of purchasing liability insurance.

Tighten instructive enforcement

- Proactively issue instructive warning and investigate bicycle users with broken breaks and other malicious and dangerous violators.
- Discourage speeding cyclists, who would like to enjoy running performance of bicycle, to use sidewalks during the safety awareness campaigns.

Institutional efforts

-Comprehensive safety plans to be developed by prefectural police. -Support municipalities so they enact bylaws using case studies. -Support organizational improvements, staff training, and cooperation with other related organizations. -Support municipalities so they develop bicycle parking lots and remove illegally-parked bicycles.

- In FY2011, MLIT and the NPA held an investigative committee consisting of experts (headed by Prof. Kubota of Saitama University).
- The Committee discussed a safe and pleasant cycling environment, with the basic idea that cyclists should ride their bicycles on carriageways since a bicycle is considered to be a wheeled vehicle. The "Recommendation" was submitted to both MLIT and the NPA, urging them to draw up a guideline for both infrastructural and non-infrastructural measures to be implemented in each region.

Committee members

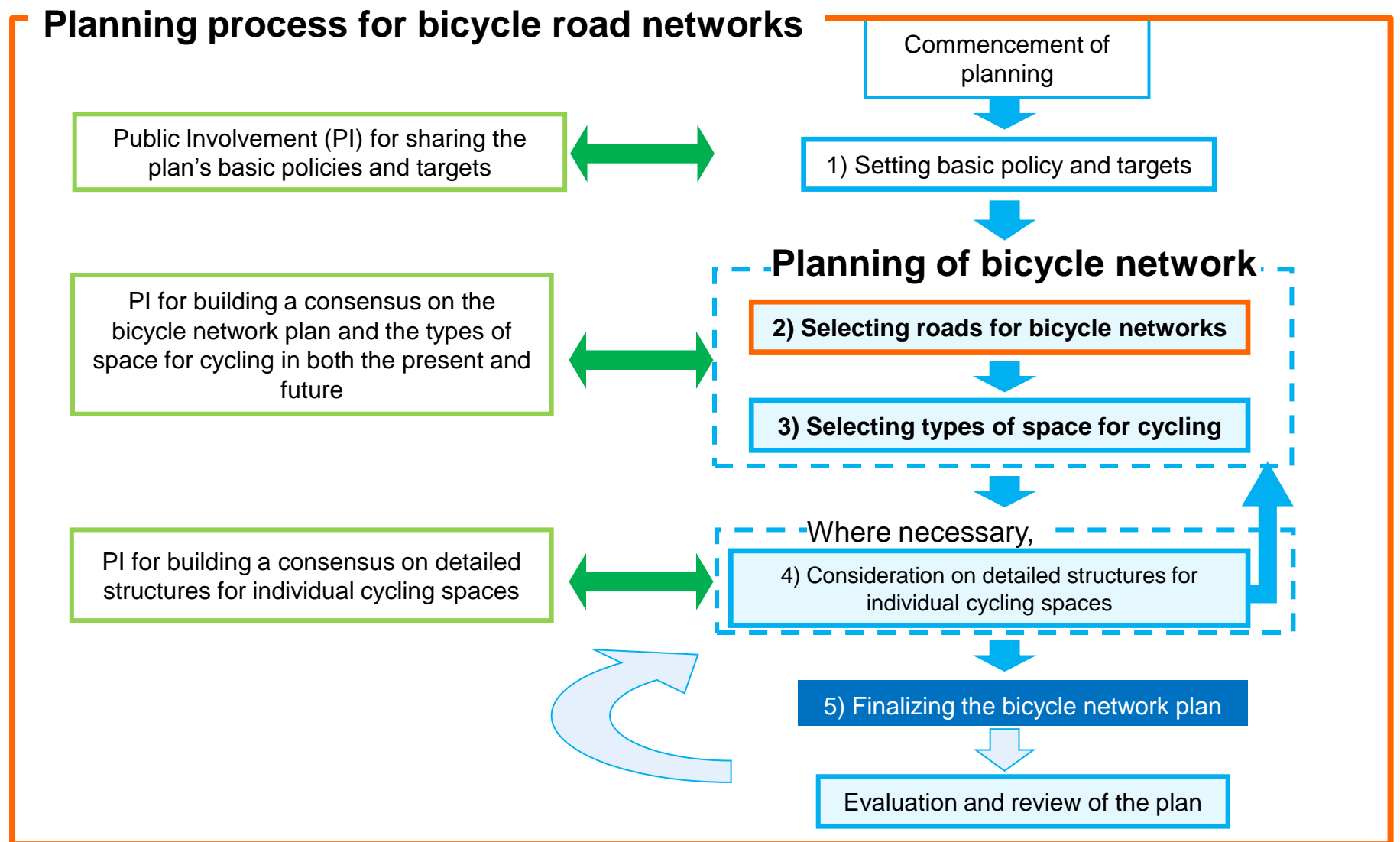
- Chairperson: Prof. Hisashi Kubota (Graduate school of science and engineering, Saitama University)
- Kazuyo Katsuma (Economic Analyst, visiting professor at Chuo University's Business School)
- Kinuyo (Cycle life navigator)
- Muneharu Kokura (Director at Sumishin Research Institute)
- Shigeki Kobayashi (Secretary General at NPO "Bicycle Usage Promotion Study Group")
- Kenzan Takazawa (Executive Director at Japan Traffic Safety Association)
- Tamao Hosokawa (Journalist)
- Shigeko Mikuni (Friends of the earth Kanazawa)
- Prof. Tetsuo Yai (Interdisciplinary Graduate School of Science and Engineering, Tokyo Institute of Technology)
- Prof. Hideo Yamanaka (Institute of Technology and Science, The University of Tokushima)

Excerpt from the contents of the Recommendation

II. Guideline

- II-1. Planning of road space for cyclists
- II-2. Designing of road space for cyclists
- II-3. Ensuring compliance with traffic rules
- II-4. Integrated Improvement for Bicycle Safety Enhancement

- The guideline provides a planning process, including goal-setting, selection of roads for bicycle networks, and a selection of types of road space for cycling.



- In selecting roads for a bicycle network, a combination of the following types of roads should be taken into consideration.

Selecting roads for a bicycle network

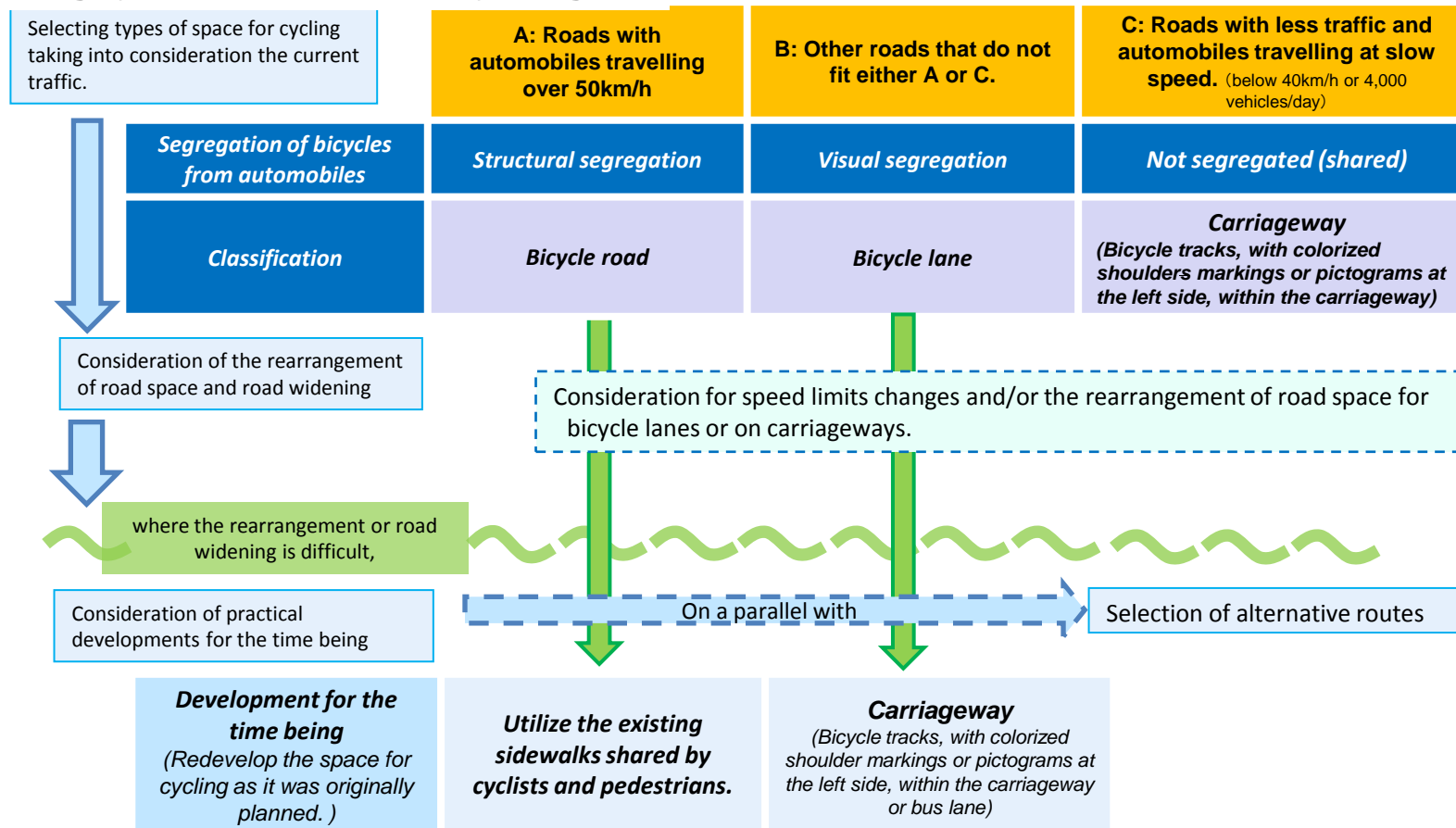
1. Roads, which link public transit facilities, schools, main commercial facilities, and residential areas, should have a main route for cyclists in the area.
2. Roads that are used by a mix of cyclists and pedestrians and experience a number of bicycle accidents.
3. Roads that cyclists are encouraged to use depending on the situation and needs in the area.
4. Roads that an increasing number of cyclists are expected to use due to new development nearby.
5. Roads that already provide space for cycling.
6. Roads that are necessary for continuity of the bicycle network.

Main Points of The Guideline (planning road spaces for cycling)

- Provides ideas and criteria* for spaces for cyclists to choose from, in addition to the basic shared carriageway, taking into consideration automobile speeds and traffic volume.
- Suggests the consideration of the rearrangement of road space, road widening, and change of cycling space based on reviewed speed limits. It also suggests the consideration of practical development for the time being and alternative routes, if road space development is difficult.

Note: * includes bicycle roads, bicycle lanes and carriageways shared with automobiles.

Selecting types of space for cycling



- Provides basic ideas for designing bicycle roads, bicycle lanes, and shared carriageways, including separators, road width, and markings.

Bicycle road

Bicycle-only road space structurally separated from the roadway using, for example, a curb line.



Bicycle lane

Bicycle lanes are provided exclusively for cyclists, based on traffic regulations.



Roadway (cyclists not separated from roadway)

Carriageway is shared by both bicycles and automobiles. Colored road shoulders, belt-shaped markings, or pictograms are used to indicate where cyclists are supposed to be traveling.



Colored road shoulder



Pictogram



Belt-shaped road marking

One-way bicycle road

Kawasaki City, Kanagawa Pref.



Provides a safe and pleasant space for cycling.

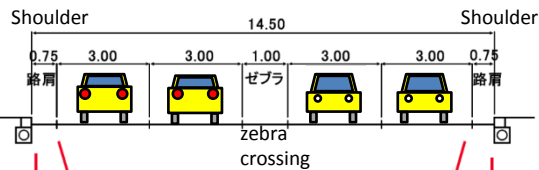
Bicycle lanes were created by rearranging road spaces (through the reduction of automobile lanes)

Fukuoka City, Fukuoka Pref.

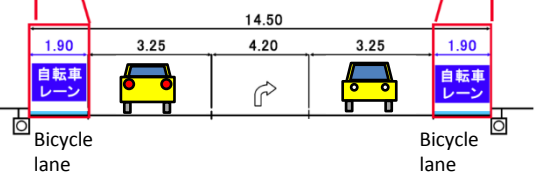
Bicycle lanes were created by reducing traffic lanes from 4 to 2.



Before (4 traffic lanes)



After (2 traffic lanes)



Road markings serve to visually separate the bicycle track from the pedestrian track on roads with no sidewalks.

Kanazawa City, Ishikawa Pref.



Improves safety because road markings visually separate bicycle tracks from pedestrian tracks on roads with no sidewalks.

Road markings for a bicycle track at an intersection

Utsunomiya City, Tochigi Pref.

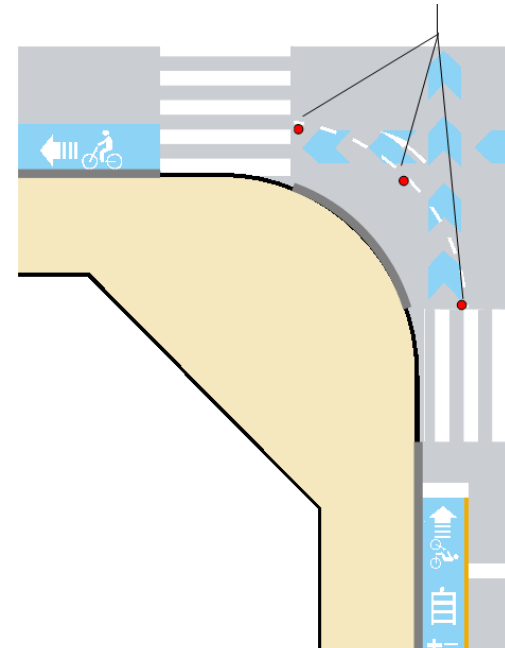


The linear road marking for bicycle track draws a driver's attention to where cyclists are and also provides cyclists safety and comfort.

Rubber traffic cones are installed to prevent a left-turn crash from occurring.

Koto Ward, Tokyo

Cones can be installed at these locations (below).



Cones are installed to prevent automobiles that are turning left from crashing into bicycles.

Flyers are distributed at a station with support from local residents.



A flyer encouraging cyclists to use bicycle lanes



Instructive enforcement for bicycle users.



Example of the Integrated Safety Program for Cyclists

Regulations on the stopping and parking of automobiles during commuting hours.



Bicycle parking lots are developed with the cooperation of railway business.



Example of the Integrated Safety Program for Cyclists

Bicycle parking lots are created nearby bus stops for better connection between modes of transportation.



Some railway business allows “bicycles on board”.



Source: Ohmi Railway Corporation website

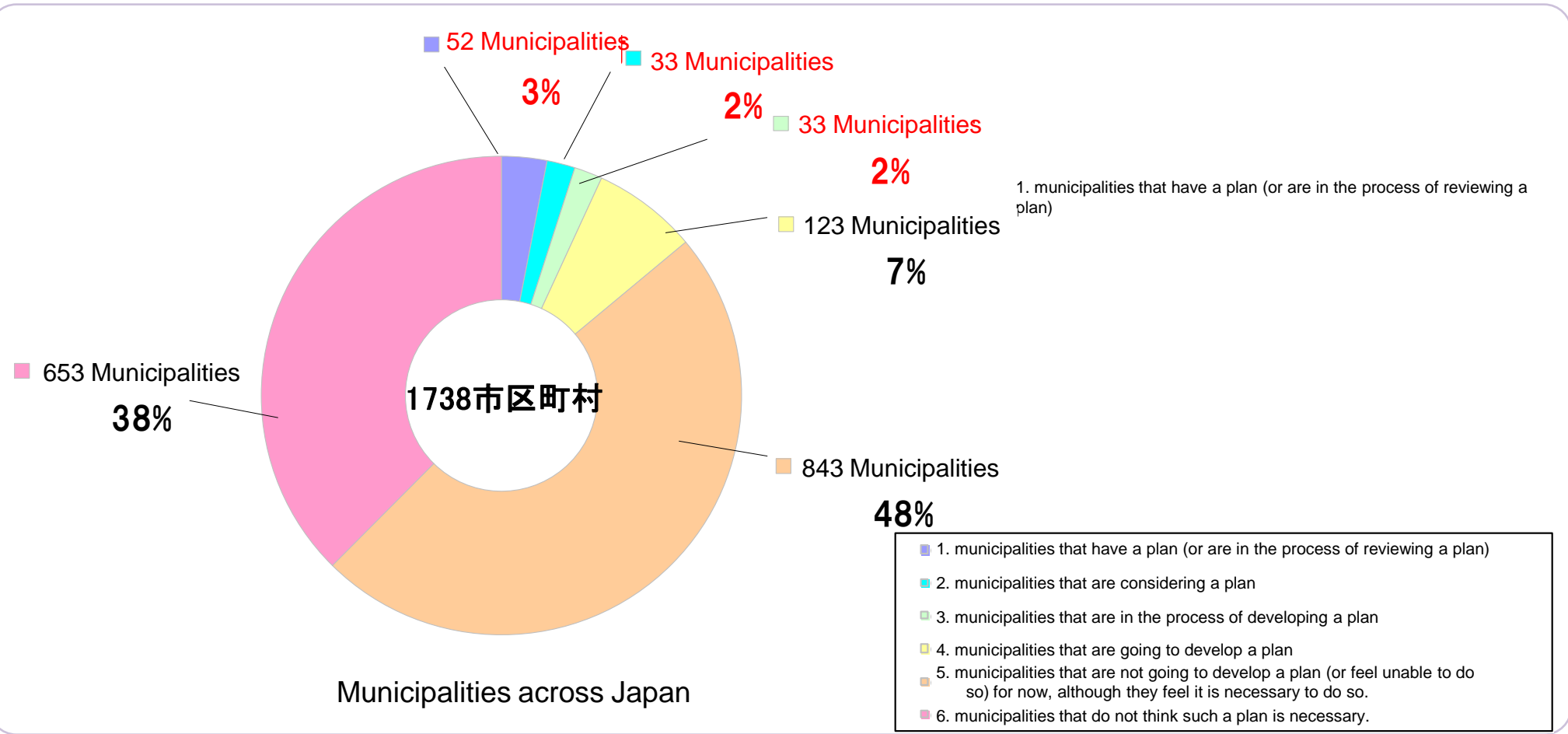
Example of the Integrated Safety Program for Cyclists

A "Cycle Station" is a rest area where cyclists can stop at for a rest and in order to maintain their bicycles.



• 53 municipalities have developed a bicycle network plan as of April 1, 2013. (17 increase from the previous year)

Percentage of municipalities with a bicycle network plan (as of April 1, 2013)



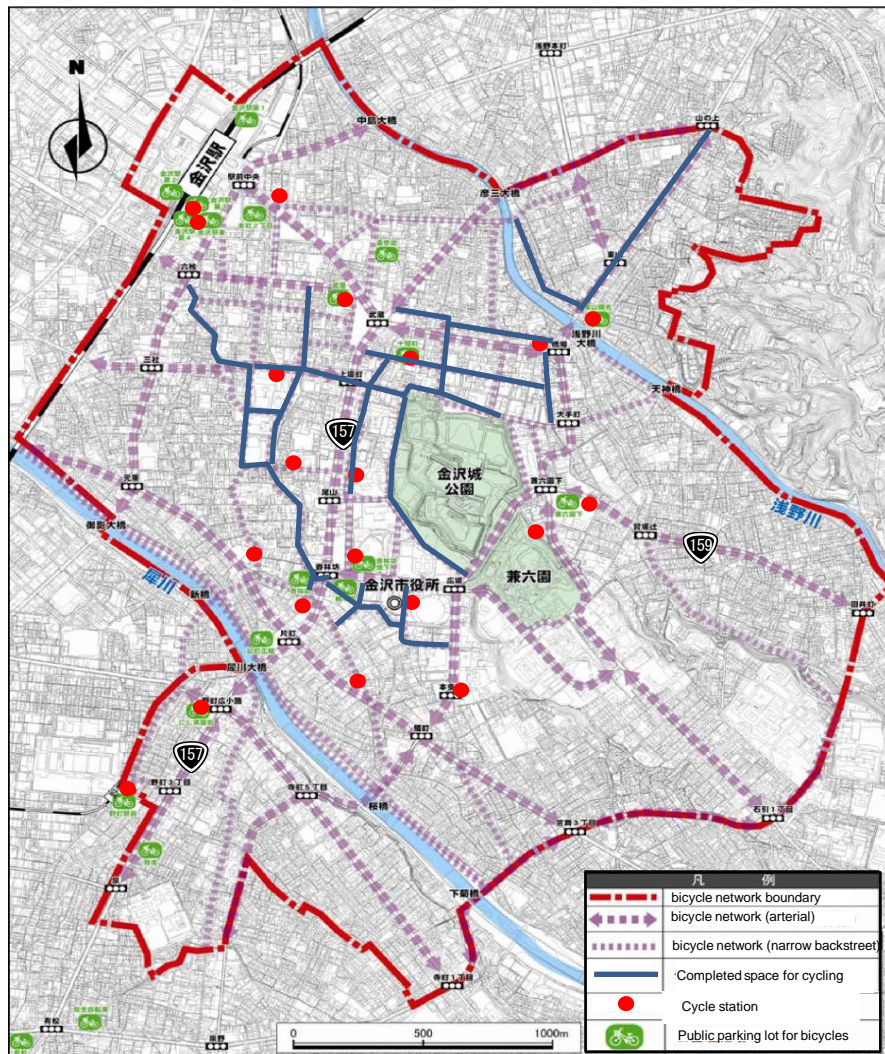
Note: "Municipalities across Japan" do not include municipalities within the evacuation zones of the Fukushima No. 1 Nuclear Plant as of April 2013.

Case Examples In Each Municipality

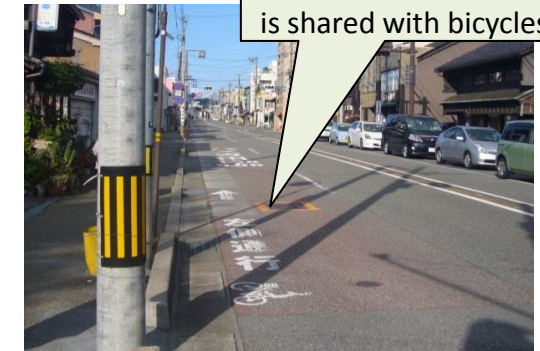
Case Example in an Advanced Municipality (Kanazawa City)

Area-wide bicycle network plan includes arterials and narrow backstreets.

Bus lanes and residential streets are utilized to complete the bicycle network. High-traffic arterial roads generally don't have space for cyclists.



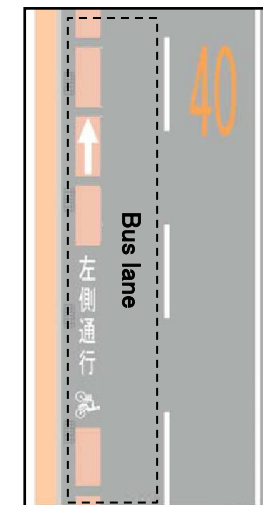
Arterial road



The road marking indicates the bus lane is shared with bicycles



Residential street



Bus lane on arterial road

Source: "A Kanazawa City's Plan for a Better Cycling Environment" (Kanazawa City)

Community cycles and cycle maps make it easy for tourists to go around the city.



Cyclists can hire and return the bicycles at 19 stations in the city.



A total of 165,000 trips have been made.

Community bicycle "Machinori"
(meaning "hanging out in the city on a bike")



Map of bicycle parking lots in Kanazawa City

Community bicycles are used as a education tool of traffic rules.



A panel describing traffic rules are put on the back of bicycle handle bar.

Road markings indicate the bicycle track.



Road marking indicating the traffic rule (left-hand traffic)

Kanazawa City has been introduced as a bicycle-friendly city in the international media.



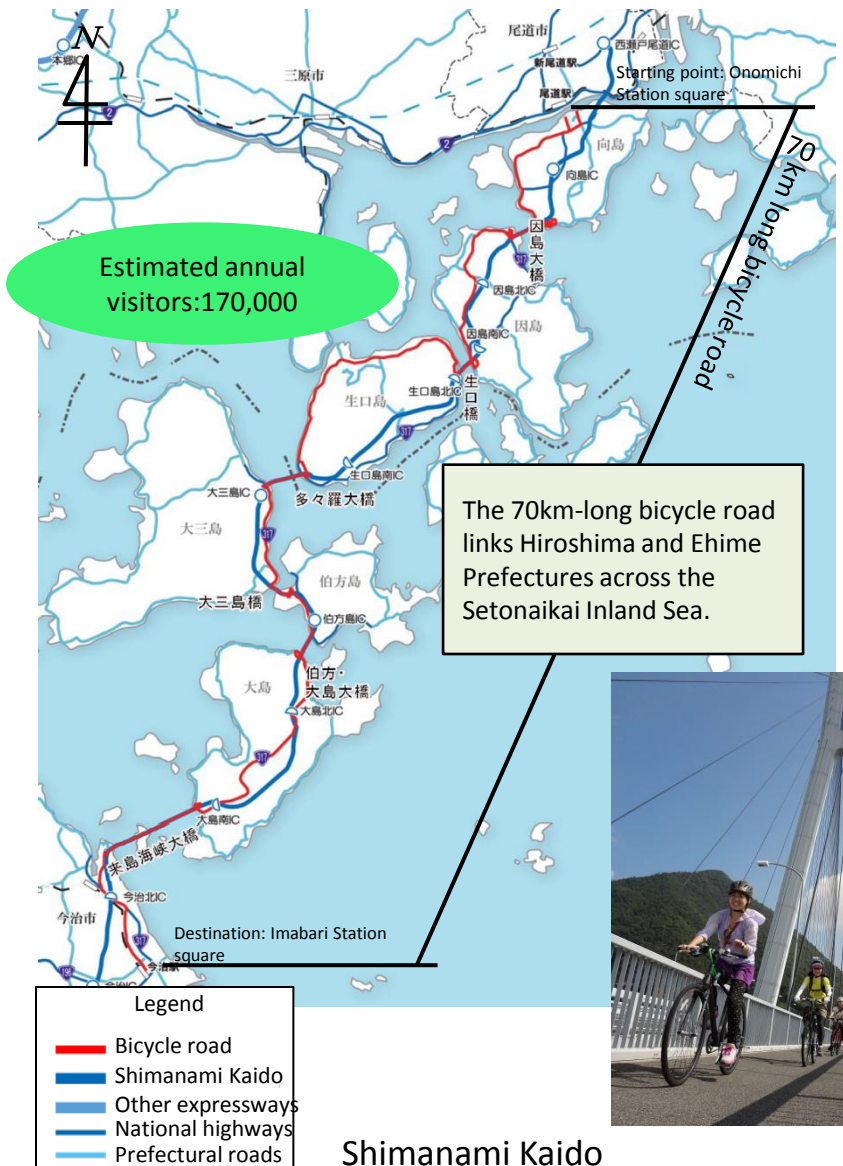
Tabloid newspaper in Switzerland

Community bicycle "Machinori"

Case Study of Bicycle Road for Tourism (Shimanami Kaido)

Annually a total of 170,000 cyclists enjoy the bicycle road with its beautiful archipelago scenery.

Road markings, sign boards, and cycle maps in several languages are provided to give cyclists useful information.



The 70km-long bicycle road links Hiroshima and Ehime Prefectures across the Setonaikai Inland Sea.



Road markings indicate where you are heading for.

Road marking



Sign board



Chinese Korean Japanese
Cycle map

Visitors can hire a various bicycles ranging from full-spec models to power-assisted models.



Visitors can hire and return the bicycle at 15 stations.



Annually, a total of 70,000 visitors use the stations.

Cycle rental station

"Cycle Oasis"



A rest area that provide air pumps, washrooms and drinking water for cyclists. Local stores and Michinoeki roadside stations support its operation.



"Tousou Rescue" (Rescue service for cyclists in trouble)



There are 17 Toso Rescue stations en route.

Provides various services including repairment of disabled bicycles and transport of broken bicycles and tired cyclists with support from bicycle shops and taxi businesses.

Bus stops and bicycle stations en route



Cyclists can drop off the bicycle at any stations en route and switch to a bus ride. There are several routes to choose.