

New Approaches to Reduce Road Traffic Accidents in Japan

October 25, 2012

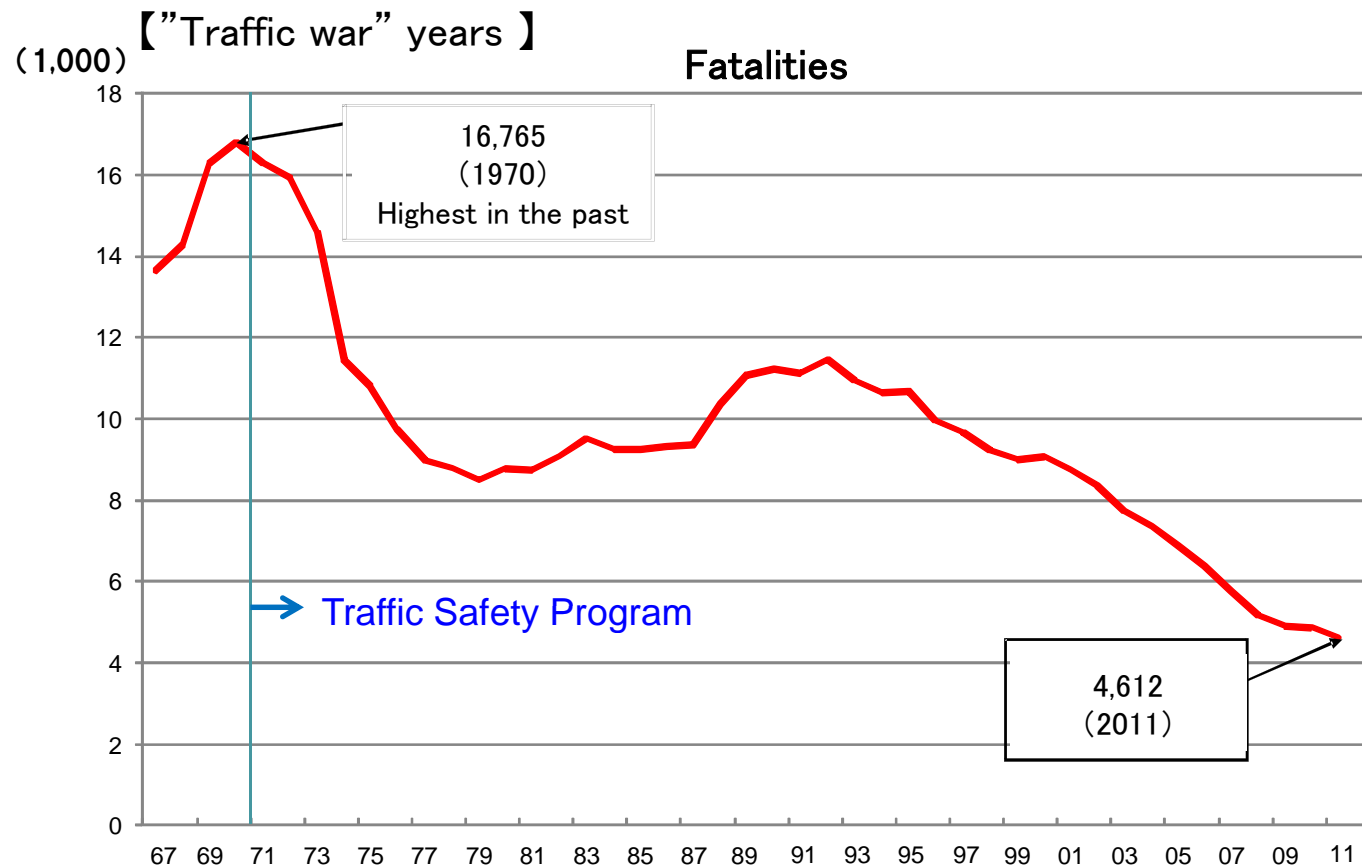
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- (2) The Management Approach for Safer Roads
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(1) Current Situation of Traffic Accidents in Japan

○“Traffic war*” led by post-war motorization became a social problem and fatality reached a record high of 16,765 in 1970. In 2011, however, the number decreased down to less than one third of the 1970-level.

■ Changes in traffic fatalities



*expression indicating a high number of deaths from traffic accidents

Factors of the decline in traffic fatalities during the last 40years

- (1) Improvement of road infrastructure
- (2) Reduction in drunk driving accidents
- (3) Increased use of seatbelts
- (4) Increased pedestrian awareness to keep traffic rules
- (5) Enhanced vehicle safety

Goals

- (1) Reduce the annual number of deaths resulting from traffic accidents to below 3,000 so that Japan becomes the nation with the world's safest road traffic.
- (2) Reduce injuries to 0.7 million or fewer.

Countermeasures

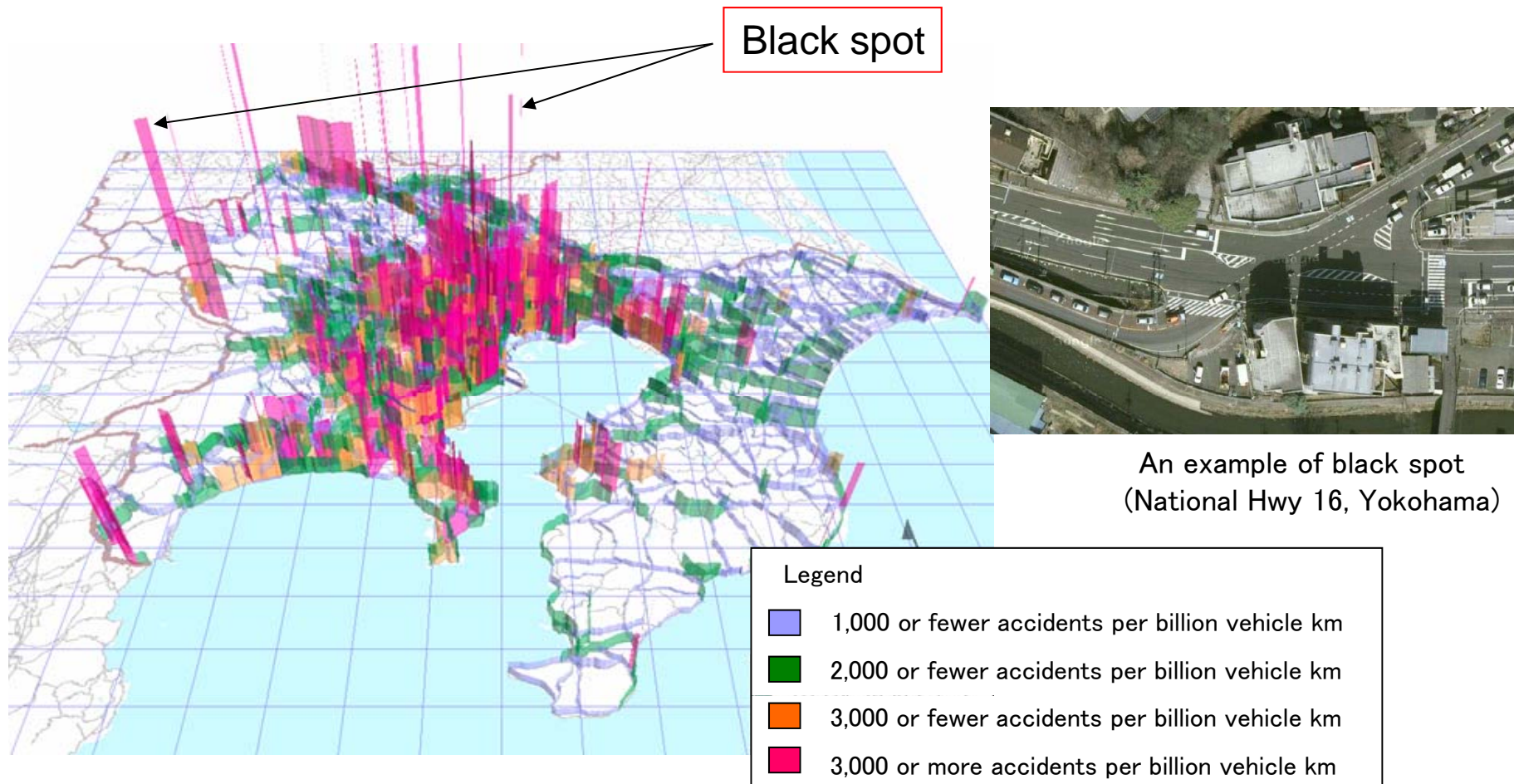
<Point of view>

- ① Ensure safety of the elderly and children.
- ② Ensure safety of pedestrians and cyclists.
- ③ Ensure safety of road users on residential and arterial roads.

(2) The Management Approach for Safer Roads

Accident rates in the Tokyo Metropolitan region

- Accidents tend to occur frequently at certain spots on arterial roads.
- Measures are focused on these black spots.



Designation of Black Spots



- Designate arterial road sections with high frequency of accidents as “black spots” and promote accident prevention measures.
- About 4,000 black spots were designated in 2003 and 3,400 spots in 2008.

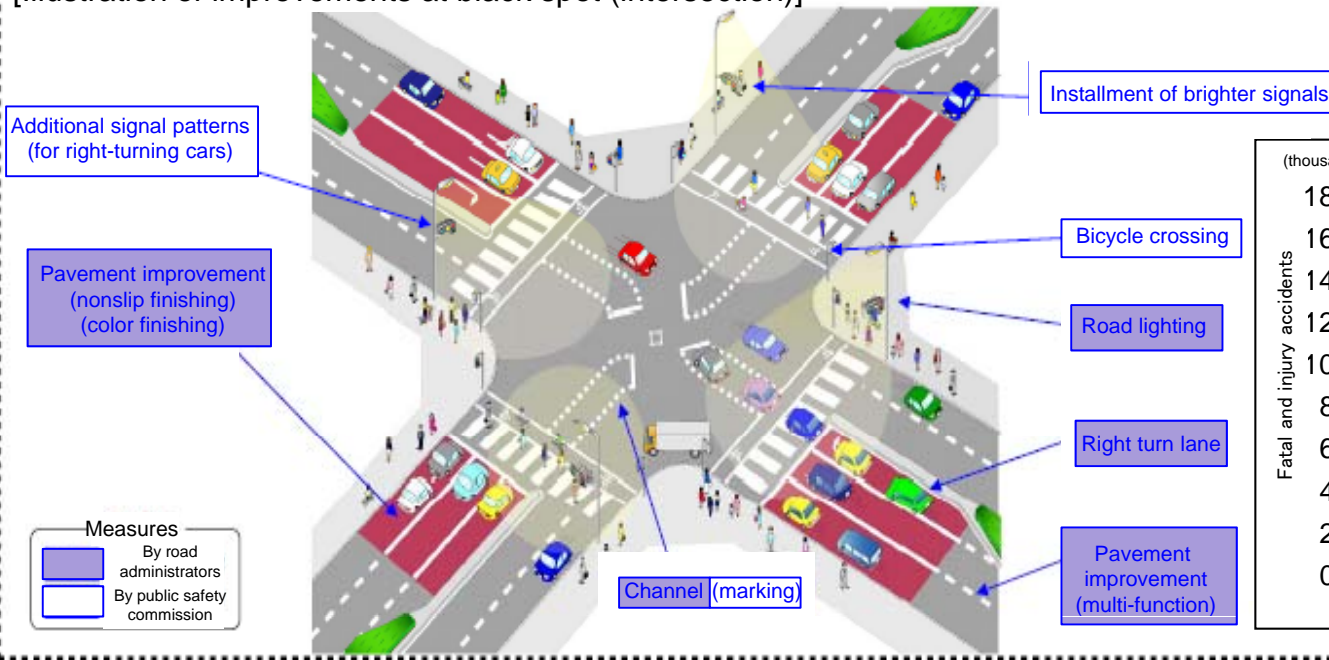
« Criteria for black spot designation in 2008 »

All of the following segments for the average from 2003 to 2006

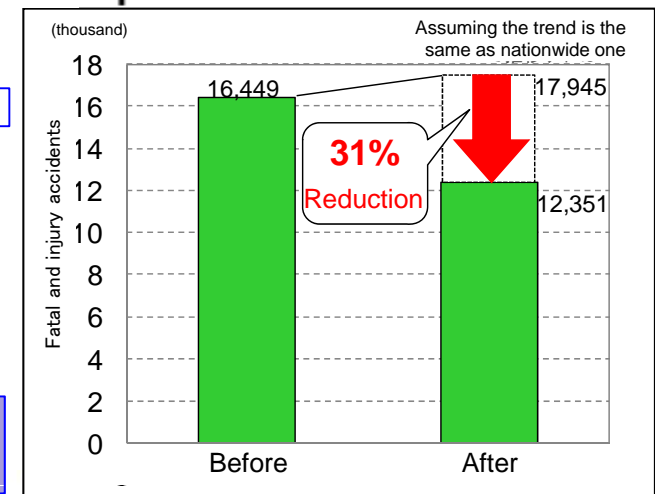
- 1,000 or more injury accidents/billion vehicle km
- 10 or more fatal accidents/billion vehicle km

- Improvements of signal system and intersections were carried out through the cooperation between police and road administrators.
- Fatal and injury accidents were declined by 31% amongst 3,271 “black spots” after the improvements during the target years (2003 to 2007)

[Illustration of improvements at black spot (intersection)]



[Accident prevention effect of measure]

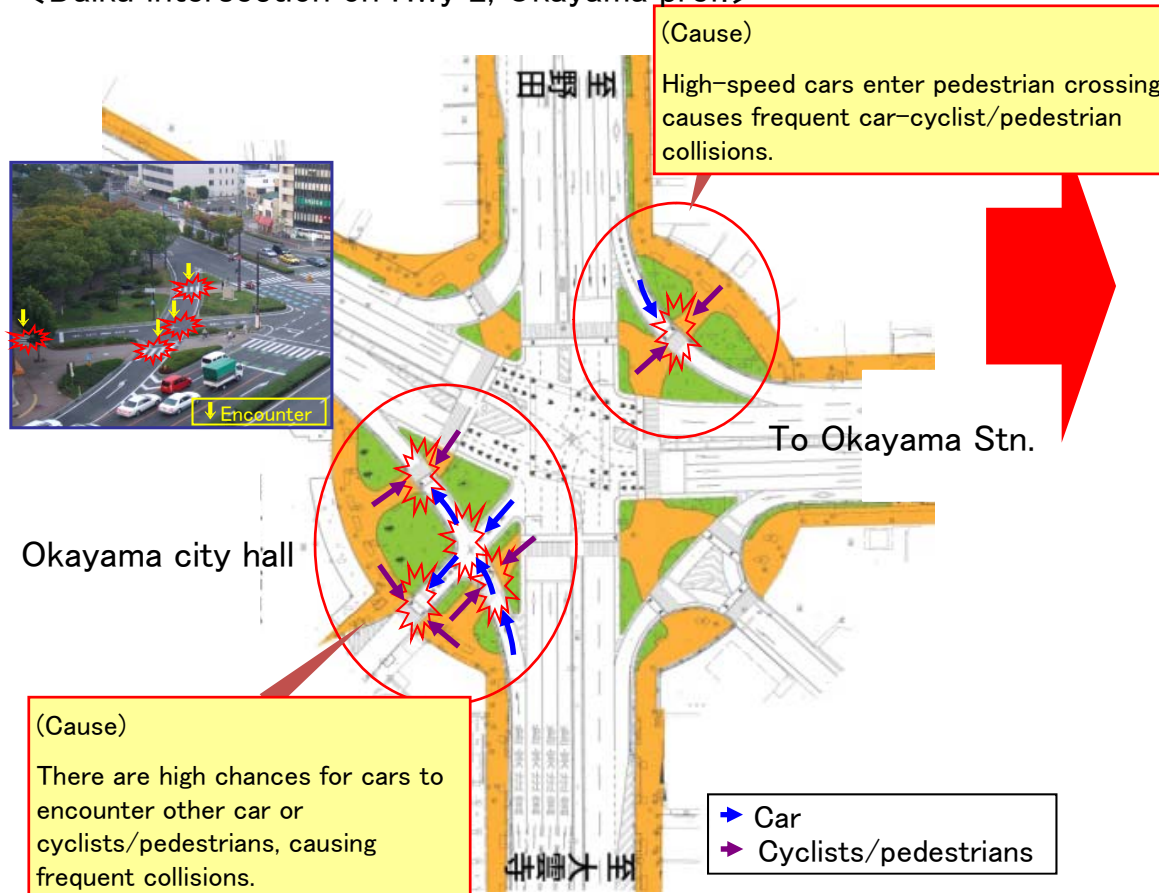


Case Example of Countermeasure at Black Spot (Daiku Intersection On National Hwy 2, Okayama Pref.)

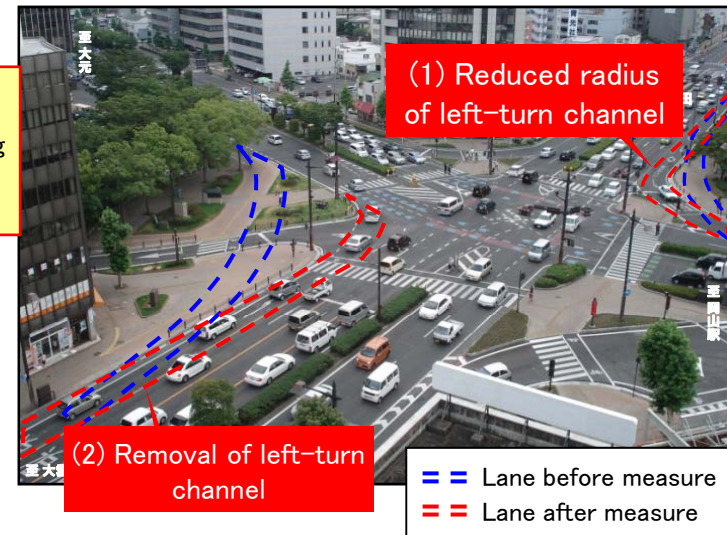
- Daiku intersection on Hwy 2 is one the most accident-prone spots in Okayama pref.
- Reduced radius of left turn channel on one side and removal of left turn channel on the other side brought reduction of sudden collision and left turning accidents.

[Causes of accidents]

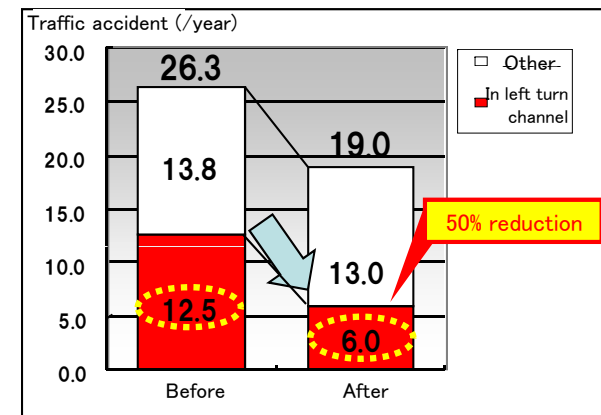
<Daiku intersection on Hwy 2, Okayama pref.>



[Countermeasures (completed in 2008)]

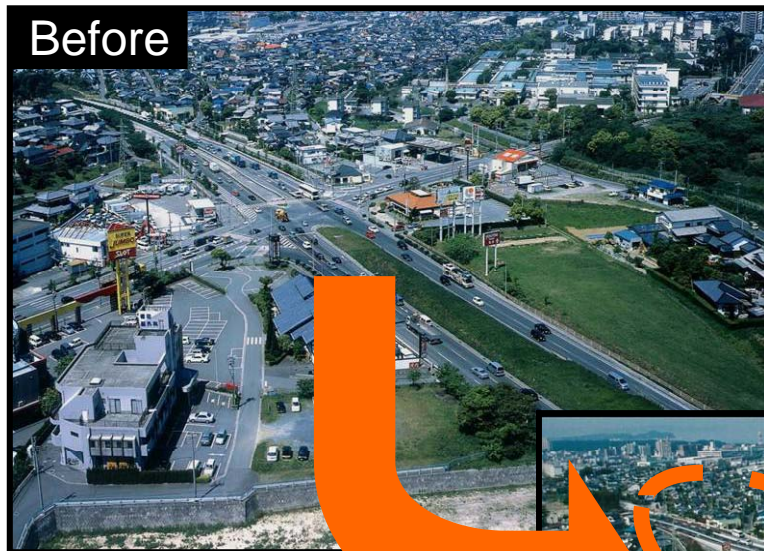


[Change in traffic accidents]



Case Example of Countermeasure at Black Spot (Nagare Intersection on National Hwy 3, Fukuoka Pref.)

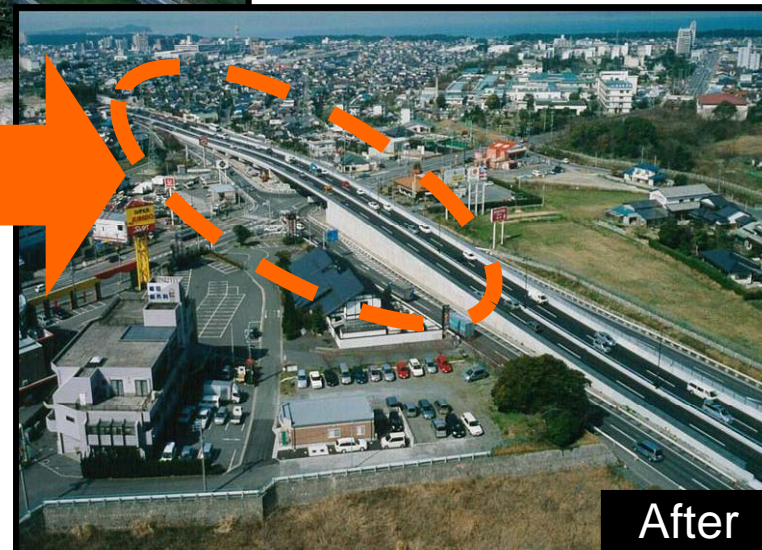
- With increasing traffic volume, more than 20 accidents occur annually.
- Improvement of intersection (grade separation) brought accident reduction by half.



<Traffic accidents>
22 accidents in 2001
↓
(improvements
completed in 2003)
↓
10 accidents in 2004

Reduced
to less
than half

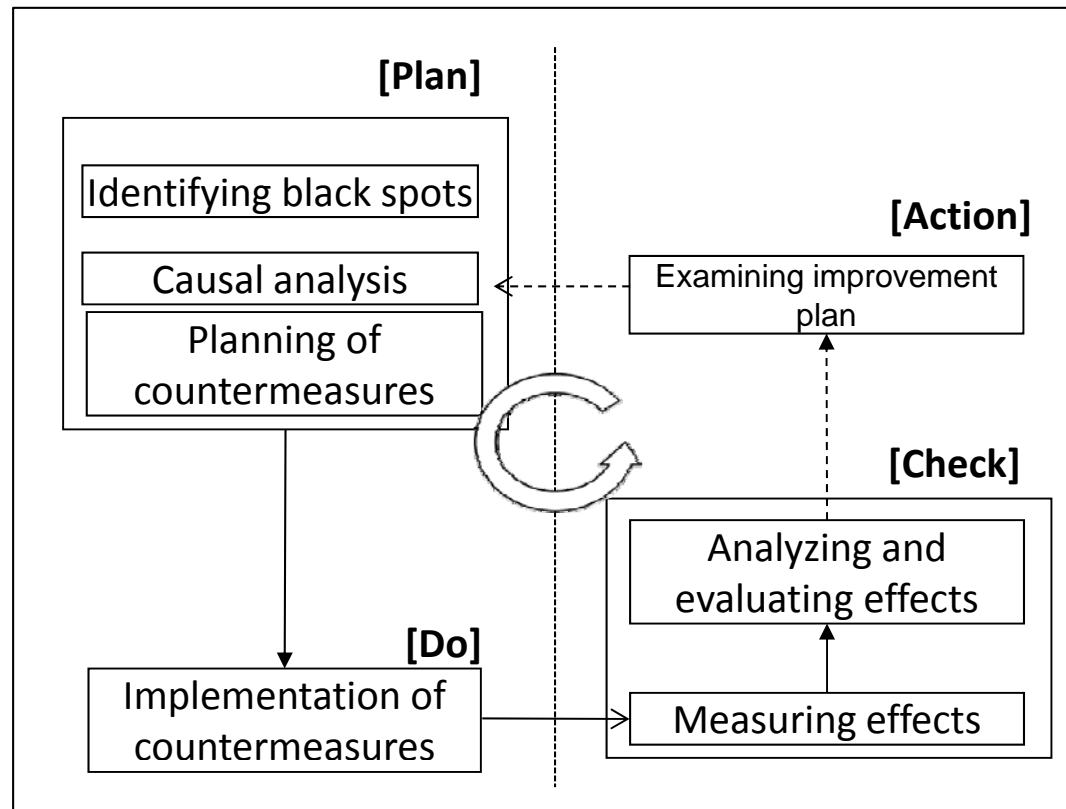
Nagare intersection
Hwy 3 (Fukuoka pref.)



Management Cycle to Improve Black Spots



○ Conduct effective measures under the management cycle to improve black spots including causal analysis, planning of countermeasures, implementation of countermeasures and evaluation of the effects.



- A database was created to support management cycle to improve black spots.
- The database is accessible on the web by every road administrator for planning countermeasures.

« Outline of accident database »

Subject

- Black Spots

- About 4,000 spots designated in 2003

- About 3,400 spots designated in 2008

Data Items

- Traffic Accident Situation

- Process of Planning Countermeasures

- Items of Countermeasures

- Accident data before and after countermeasures

Format A (basic information, examination of measures)

概要版様式

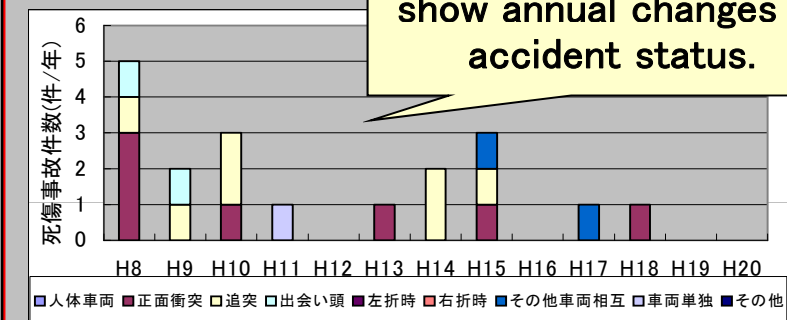
様式A 基本情報・対策検討

箇所の基本情報


箇所概要			
整備局	関東地方整備局	箇所ID	20533003t
事務所	長野国道事務所	事業区分	事故危険箇所 (H15~H19)
路線名	一般国道19号	距離標	258.566~259.016
住所	長野市篠ノ井山手7808番1~篠ノ井山手7804番1	交差点名	
単路・交差点区分	単路	沿線状況	山地
日交通量		23,986	
混雑度		2.56	

Displays information such as names of roads, types of roads, and traffic status.

事故発生傾向



Displays a graph to show annual changes of accident status.



前方の線形を確認出来ないまま速度超過でカーブ区間に突入する。

前方の線形を確認出来ないまま速度超過でカーブ区間に突入する。

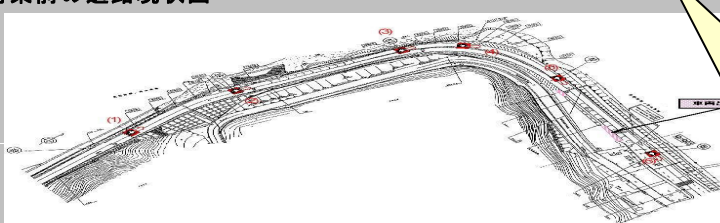
前方の線形を確認出来ないまま速度超過でカーブ区間に突入する。

事故発生要因の分析・事故対策の立案

着目事故	対策方針	対策工程
正面衝突	ドライバーにとって死角となる意喚起・情報提供とともに注	対向車接近表示装置(道路管理者)
追突	車両が制御不能となる	舗装改良(排水性舗装)
追突	ドライバーにとって死角となる意喚起・情報提供とともに注	法定外看板・表示(文字、マーク、矢印等)(道路管理者)

Displays accident factor analysis and the history of examining proposed preventive measures.

対策前の道路現状図



Displays photographs and figures to show road structures and roadside conditions before implementing measures.

Format B (Evaluation of implemented measures and effects)

概要版様式

様式B 実施対策・効果評価

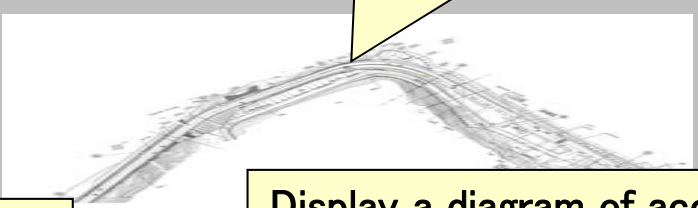
箇所概要			
事務所	長野国道事務所	路線名	一般国道19号
住所	長野市篠ノ井山布施字北之平7808番1~	交差点名	

対策前の道路交通状況写真

対策工程	対策年	対策工程	対策年
対向車接近表示装置(道路管理)	H15		
舗装改良(特)	H18		

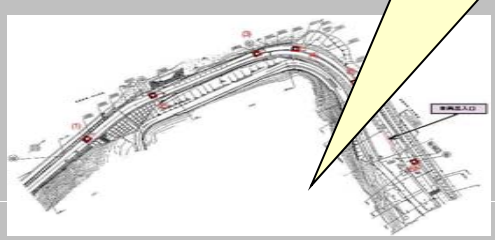
対策効果評価

事故発生状況図



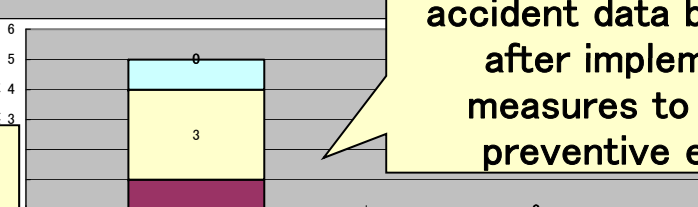
Displays a diagram of accident status before implementing measures.

対策後の道路現況図



Displays road conditions after implementing measures.


事故データ



Displays genre-based accident data before and after implementing measures to identify preventive effects.

対策前		対策後					
人体車両	0	正面衝突	0	追突	0	出会い頭	0
右折時	0	その他車両相互	3	車両単独	0	左折時	0
						その他	0

対策写真



Displays photographs to show how the measures are implemented.

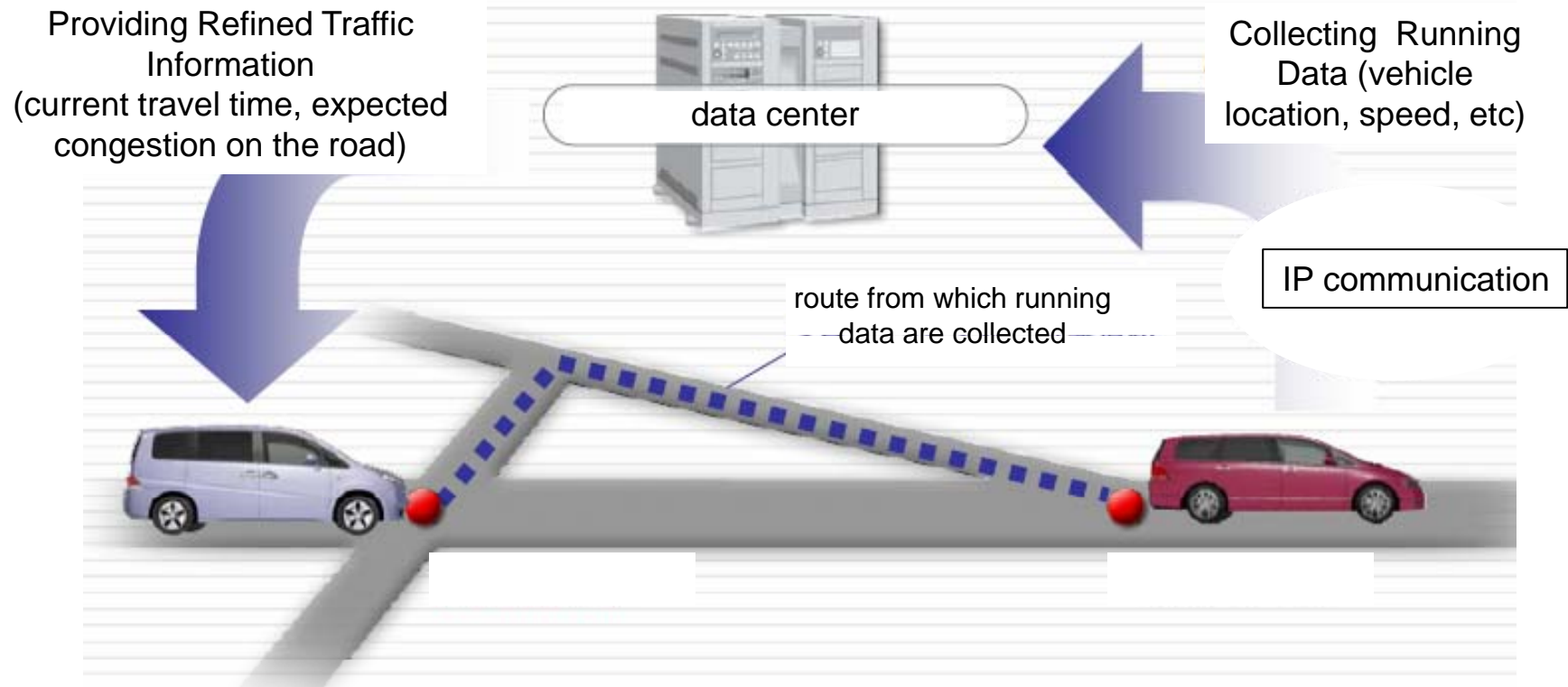
舗装改良、法定外標示
対向車接近表示等

(3) New Efforts to Combat Traffic Accidents

Utilizing Probe Data from Telematics Service to Identify Hazardous Spots

-Typical Telematics Service Managed by Automobile Manufacturers-

A data center collects from subscribers
And provides refined traffic information



- The number of subscribers to HONDA system has reached 1.48 millions.
- TOYOTA and NISSAN provide a similar system.

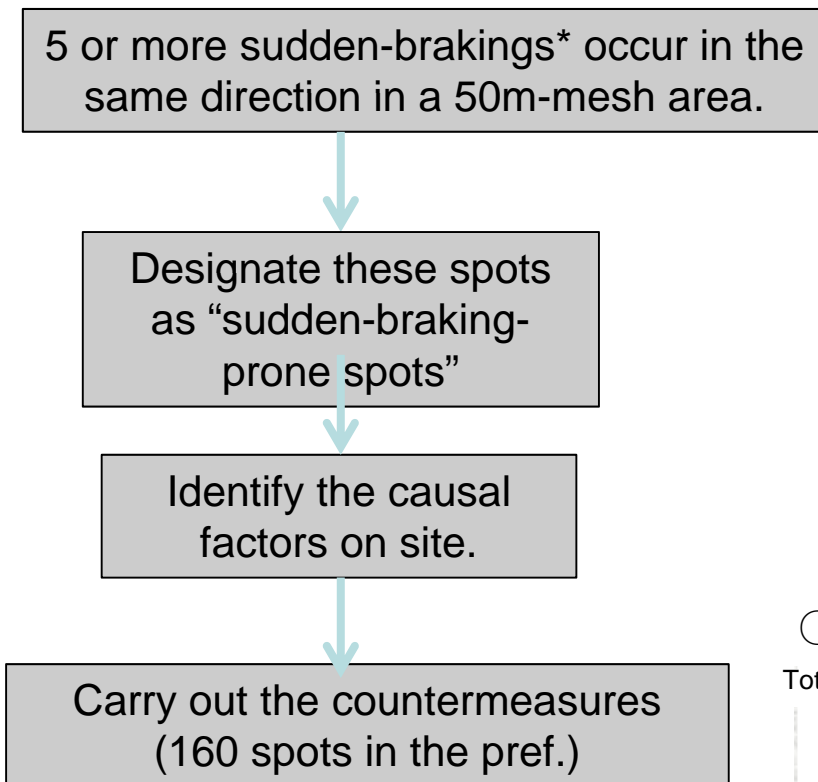
Traffic Accident Countermeasures Using Probe Data



-Trial by Saitama Prefecture office -

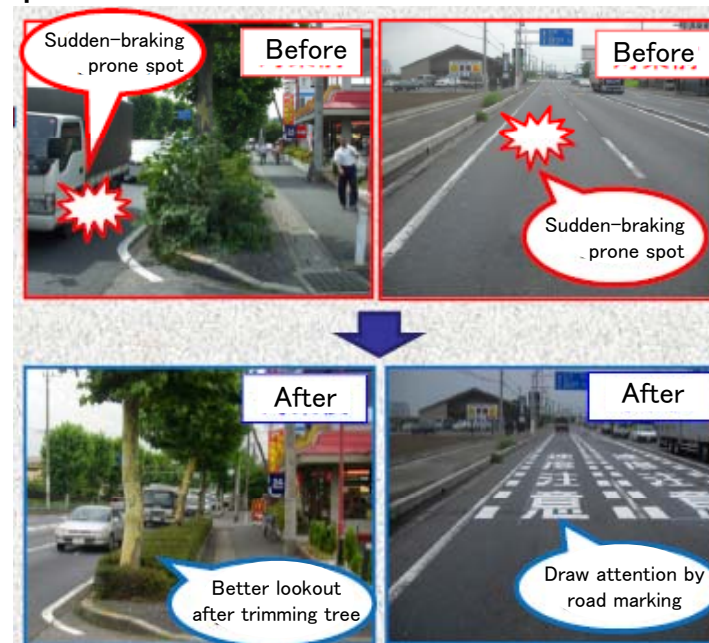
- Saitama pref. signed an agreement with Honda and uses probe data for road development (since Dec 2007).
- Traffic accident countermeasures are carried out after identifying sudden-braking-prone spots using the probe data.
- After improvements, frequency of sudden braking and fatal or injury accidents declined on the spots.

○ Work flow



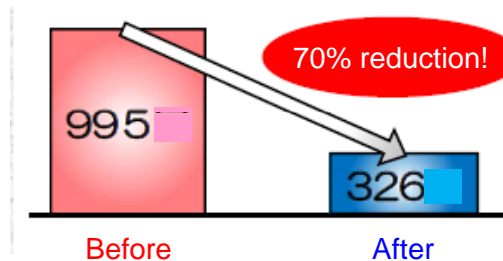
* Defined as a braking with deceleration at 0.3G or higher. Generally, deceleration at 0.3G or higher is thought to cause passengers discomfort.

○ Example of countermeasure

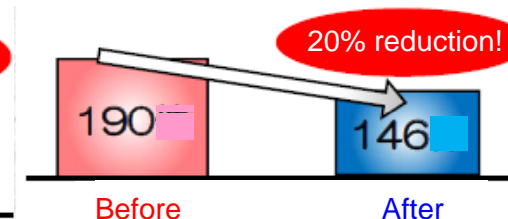


○ Effects

Total number of sudden-brakings in a month



Number of fatal and injury accidents



145 spots where improvements were completed by Sep 2010

- Elementary school students in Japan walk to school on the school-commuting roads designated by their schools (in groups for security reason).

- A series of traffic accidents involving students on the road to and from school occurred this April.
 - April 23rd (Mon) Kameoka city, Kyoto pref.
A car crashed into a group of 9 students and a parent of Ansyo municipal elementary school killing 2 students and a parent with 7 major or minor injuries.

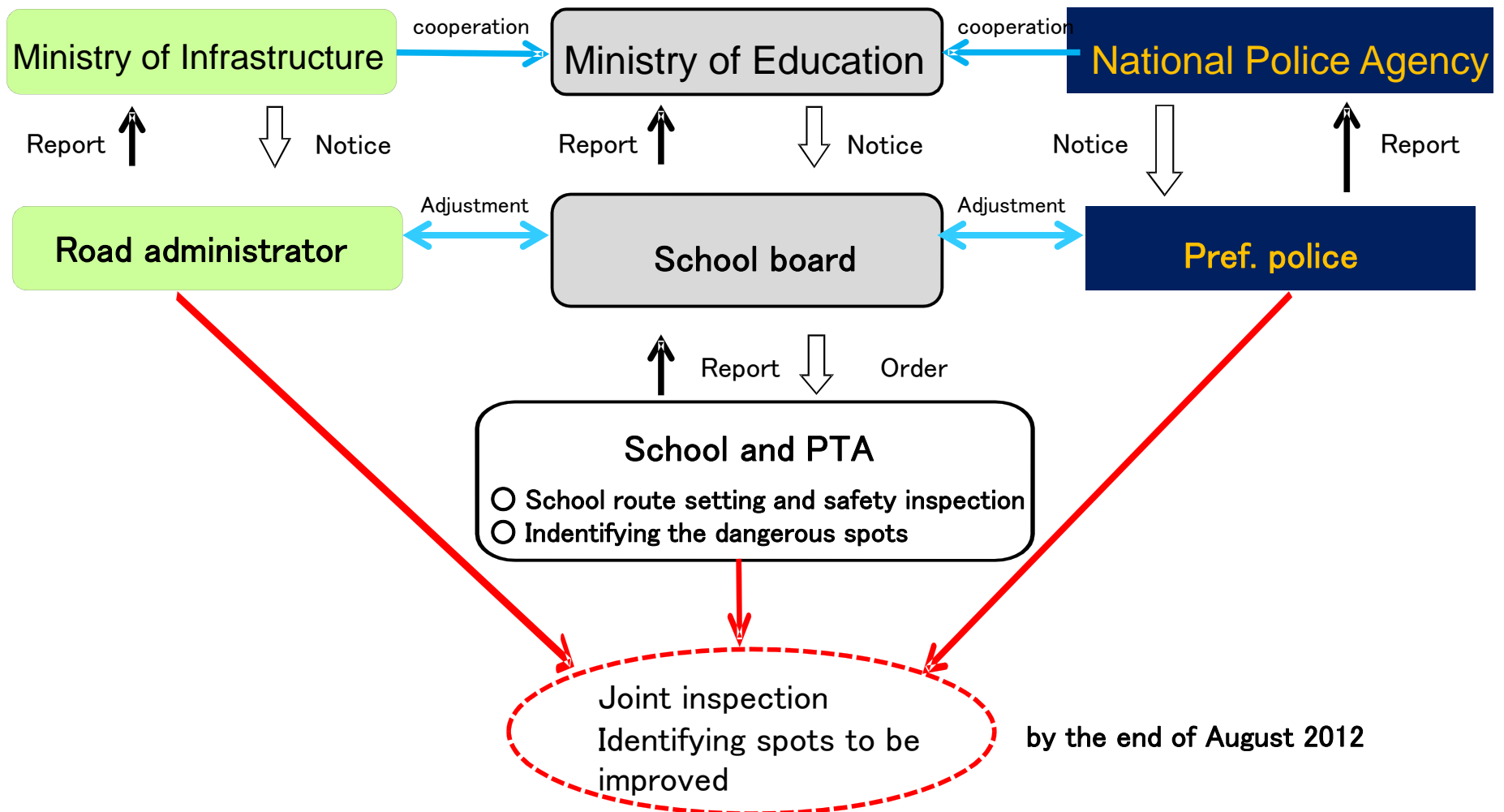
 - April 27th (Fri) Tateyama city, Chiba pref.
A car crashed into an elementary student who had been waiting for a bus to death.

 - April 27th (Fri) Okazaki city, Aichi pref.
A car crashed into 2 elementary students who had been crossing the pedestrian crossing, causing both injuries.



Images of elementary school students going to school in a group

Cooperative Urgent Inspection of School-Commuting Roads



«Findings»

- Number of inspected schools: about 20,000
- Number of inspected spots: about 70,000
- Number of spots to be improved: about 60,000

【Involved party】

- school board, school, PTA
- road administrators
- police
- road users

- Cyclists and students use the same road, which can cause accident.

<Countermeasure>

- Traffic controlling by volunteers



- Too narrow pedestrian space in grade crossing

<Countermeasure>

- Grade crossing widening



- Pedestrians sometimes have to enter the roadway to go around utility poles.

<Countermeasure>

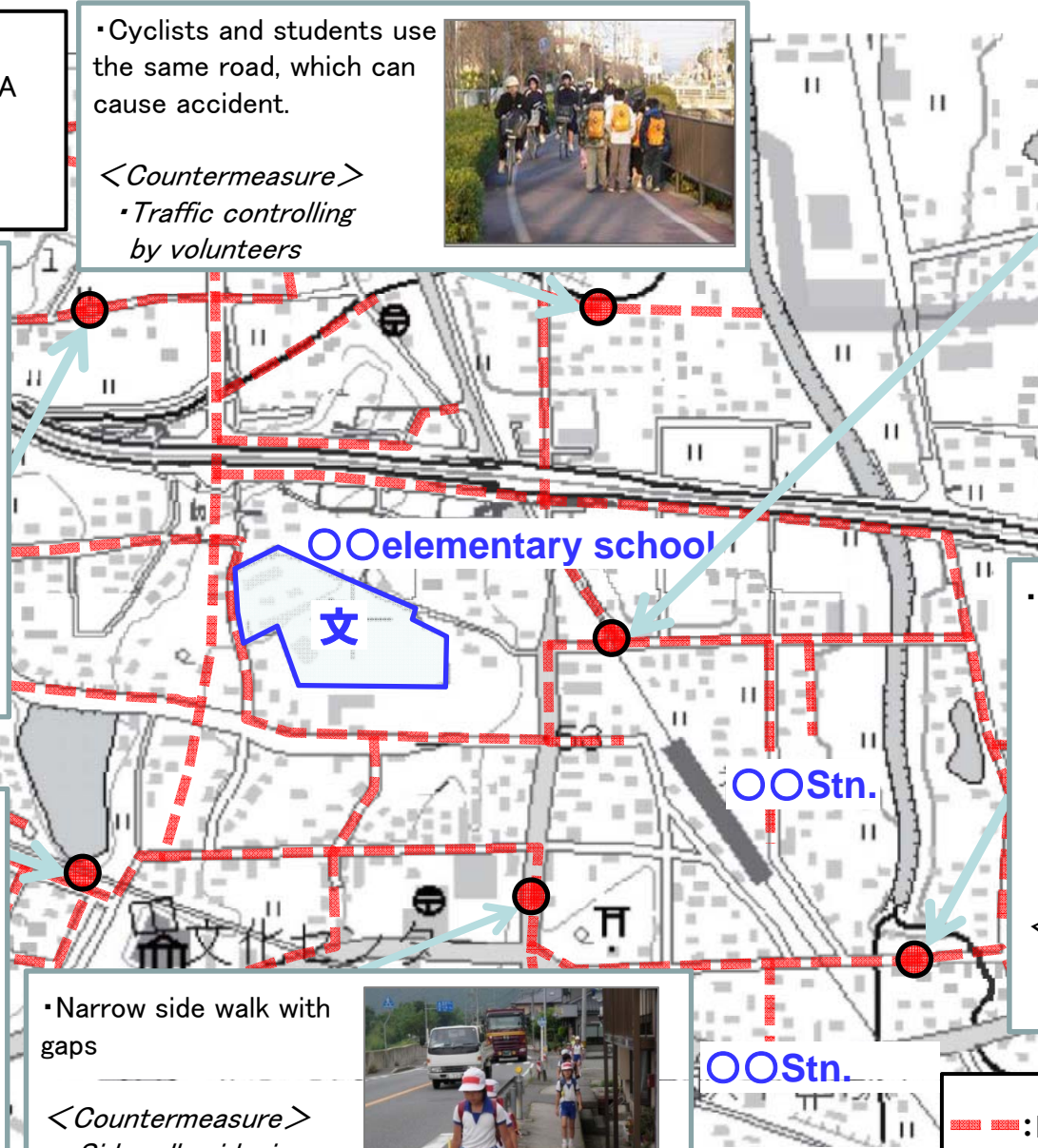
- Undergrounding



- Large vehicle on the narrow residential roads

<Countermeasure>

- Restrict large vehicles
- Narrow the road using fence



- A bus stop in the middle of narrow side walk

<Countermeasure>

- Change of school route



- Narrow side walk with gaps

<Countermeasure>

- Sidewalk widening
- Barrier-free side walk



--- : Designated route

● : Points to be improved

Conclusion

- Systematic efforts in traffic safety are effective.
- New approaches such as introduction of a management cycle and utilization of prove data should be continued.
- Cooperative work with other authorities and cooperation with citizens are effective and should be enhanced.

Thank You for Your Attention