

Analysis on Traffic Accidents

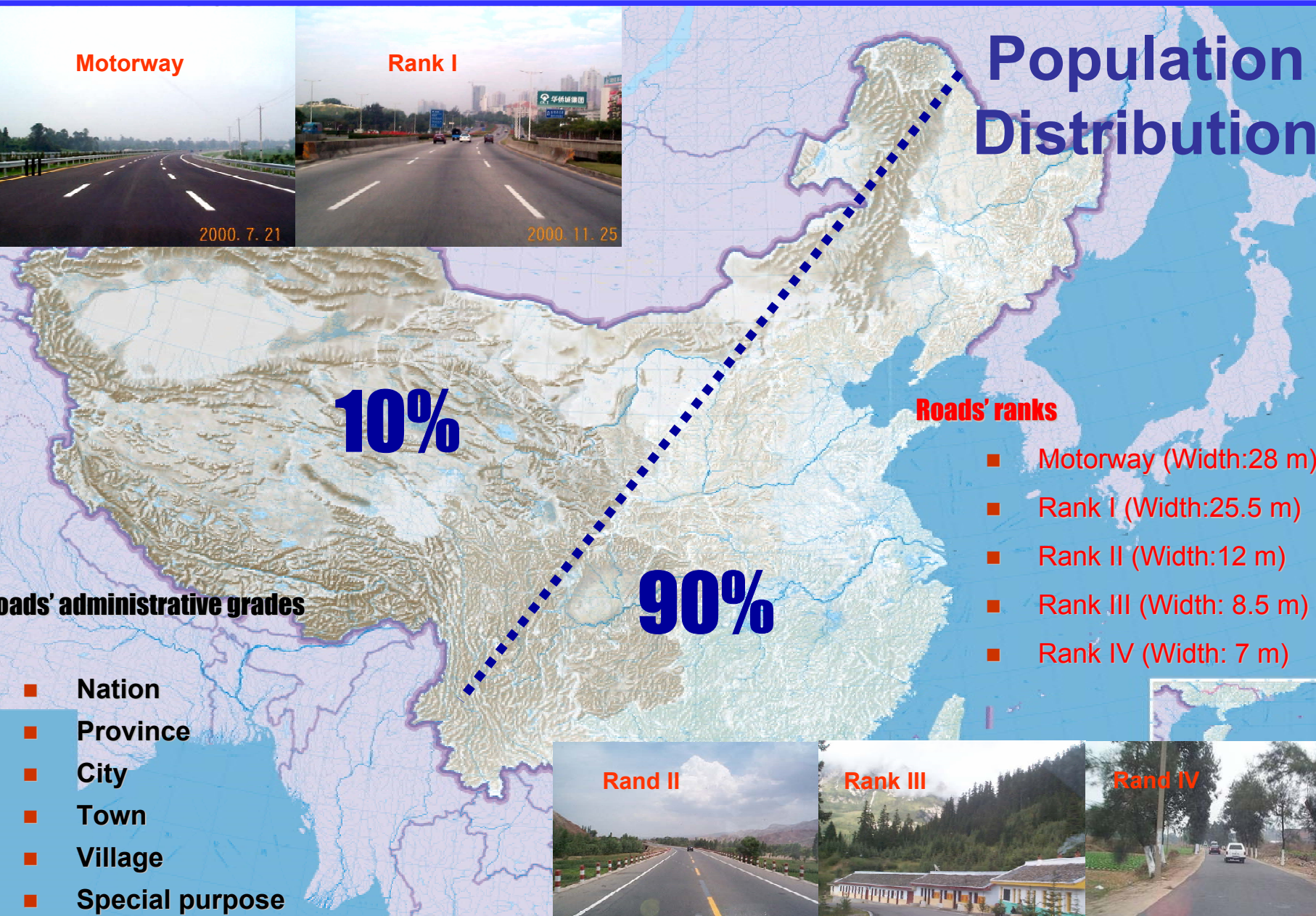
Obstructing the Sustainable Development of Chinese Traffic

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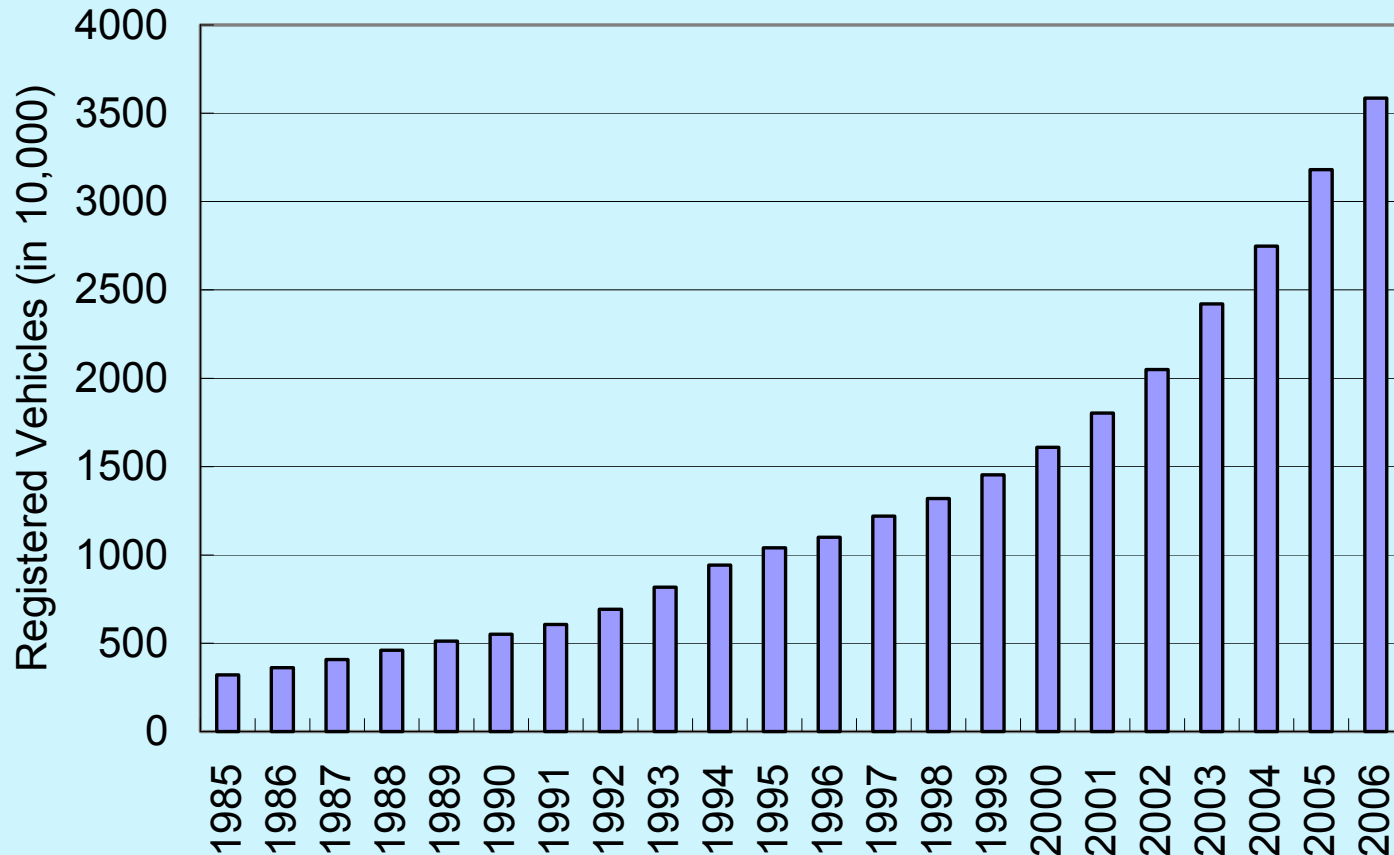
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At the end of 2005, the total mileage of roads in China had reached 1,930,000 kilometers, among which 41,000 kilometers were expressways.

Registered Vehicles in China



At the end of 2005, the total length of roads in China was 1,930,000 kilometers while the number in 1985 was 945,000 kilometers.

During these 20 years, the amount of motor vehicles rose by 10 times but the total mileages of roads just rose by 2 times.



Serious traffic jam

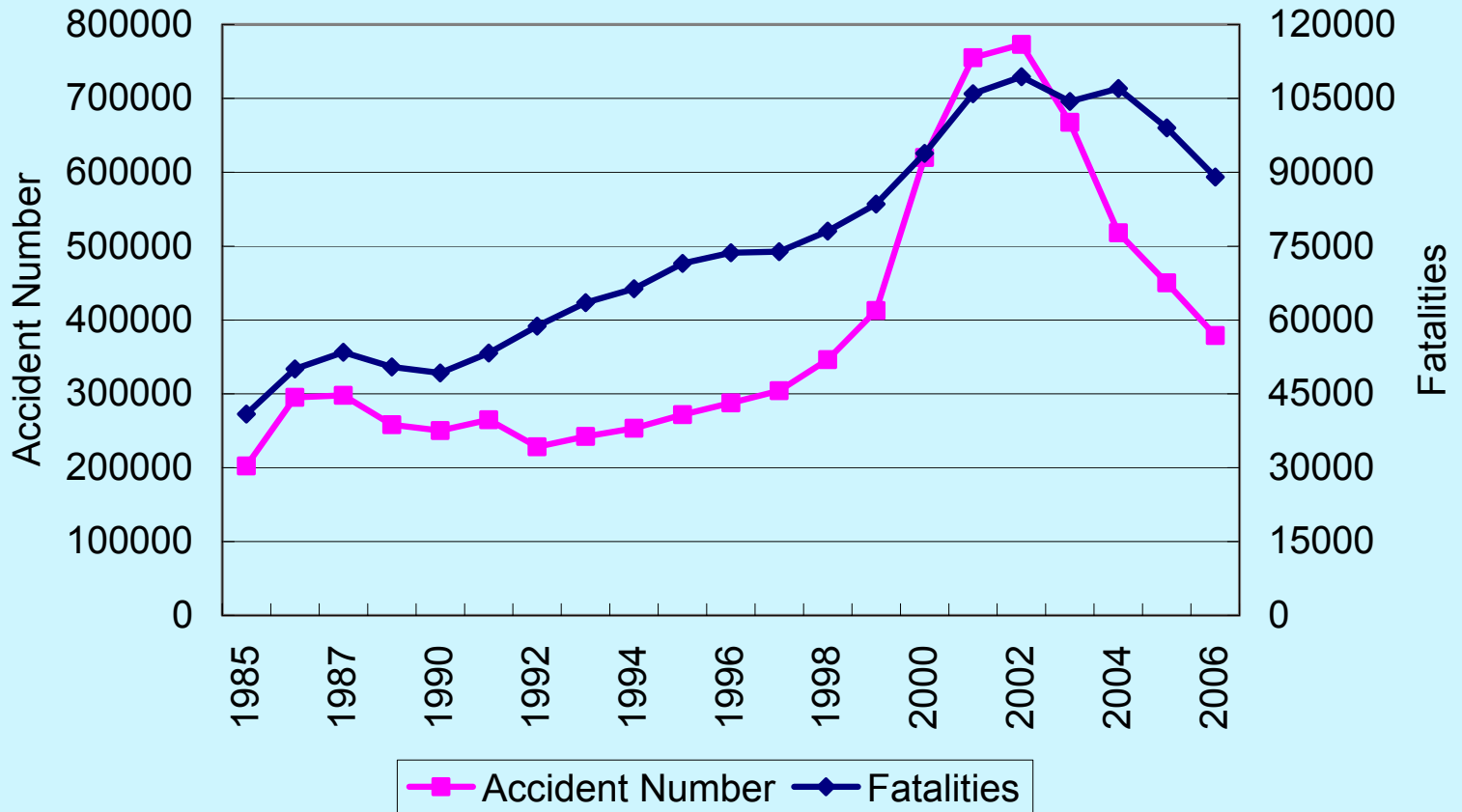
**Traffic
Jam**

**Traffic
Accidents**



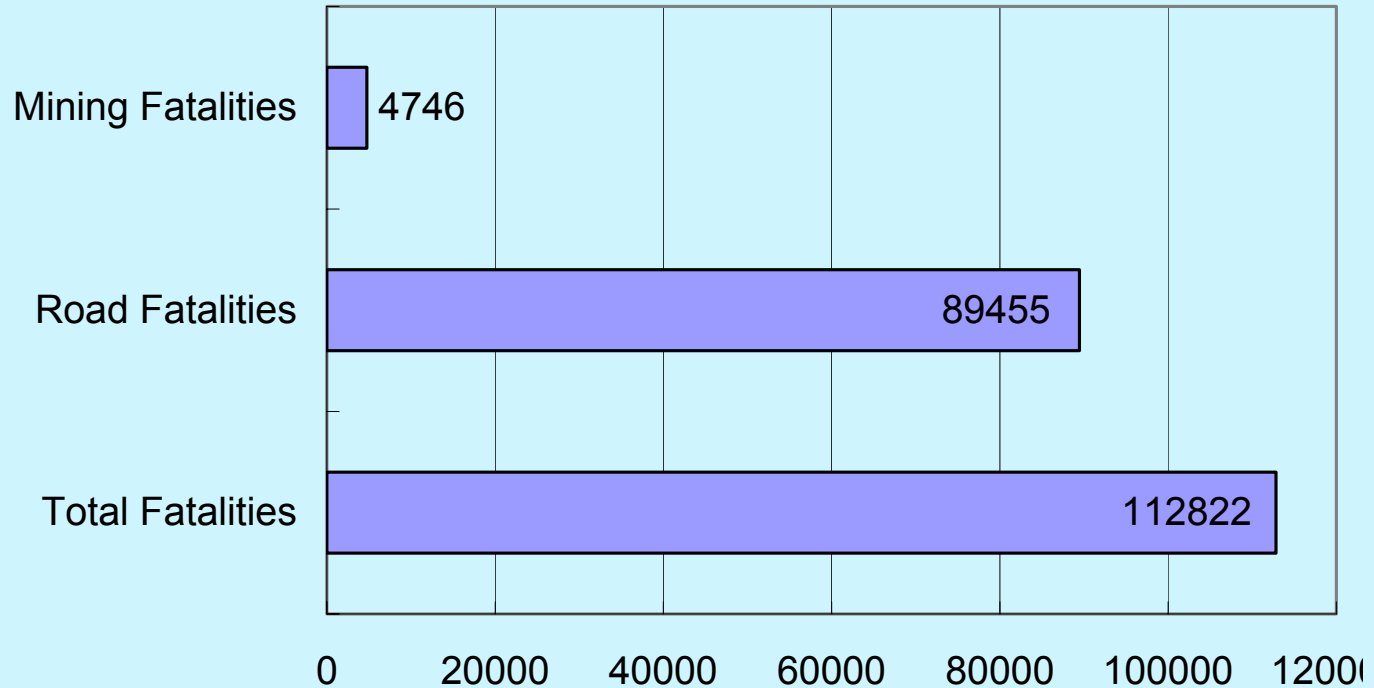
Traffic accidents happen frequently

the Number of Traffic Accidents and Fatalities in China



The amount of Chinese road traffic accidents and fatalities keep rising, and then the numbers began to decrease in these years because many measures were taken to control the rising trend.

Fatalities in Production Safety Area in China (2006)

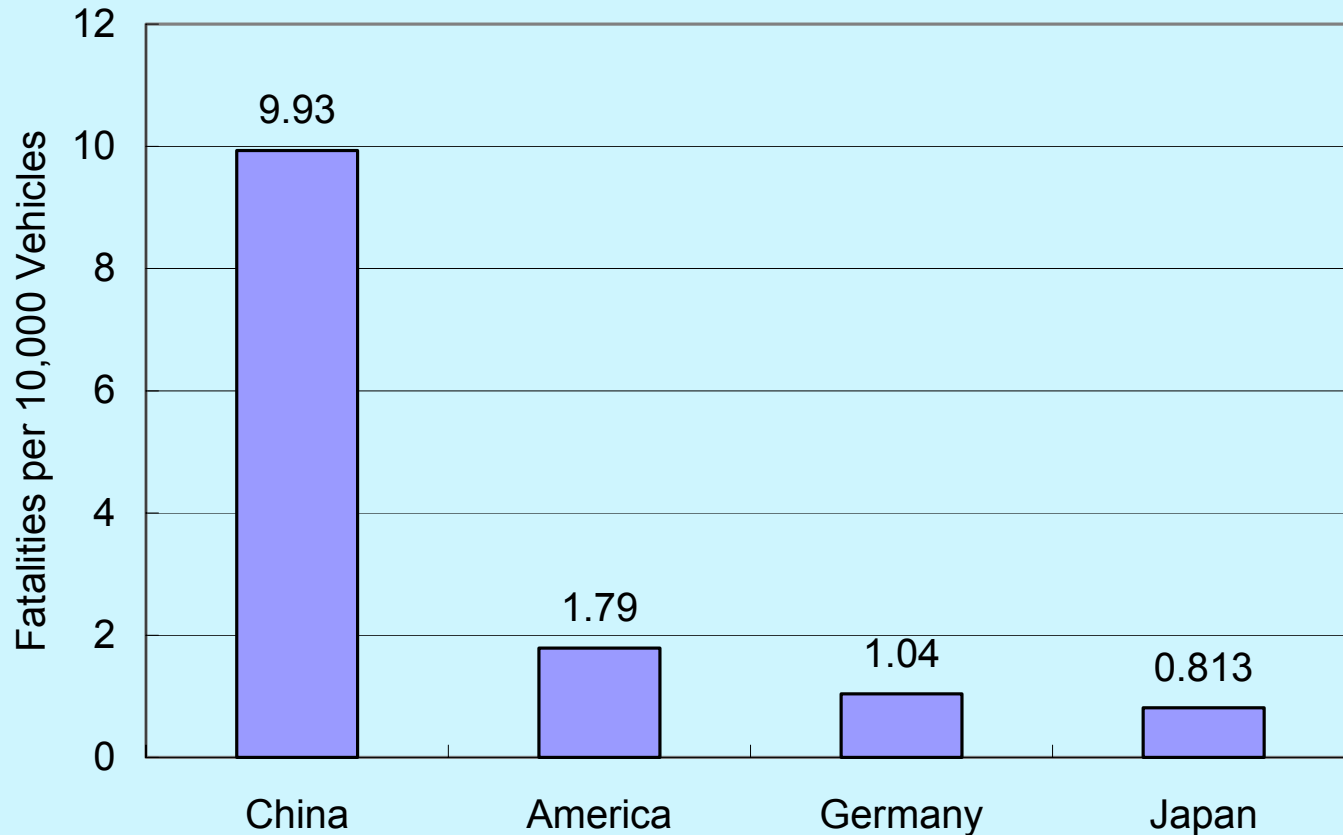


The fatalities of road traffic accidents in China in the year of 2006 account for over 79% of all the fatal cases in the field of national production, which indicates that traffic safety is a serious problem here.

1. Road Traffic Accidents Status in China

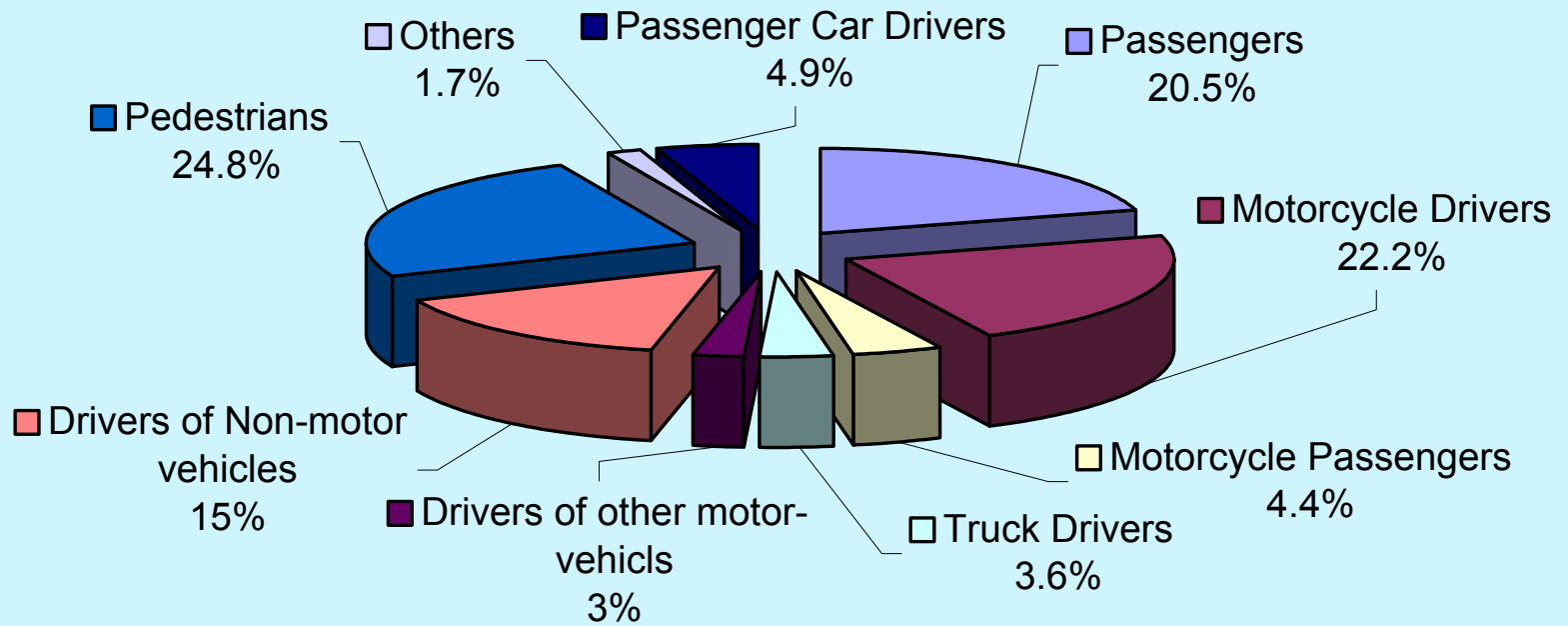
Year	Civil Vehicles Fleet (10,000)	Accidents	Fatalities	Injuries	Direct Economic Losses (100,000,000)
1985	321.12	202394	40906	136829	1.6
1986	361.75	295136	50063	185785	2.4
1987	408.07	298147	53439	187399	2.8
1989	511.32	258030	50441	159002	3.4
1990	551.36	250297	49271	155072	3.6
1991	606.1	264817	53292	162019	4.3
1992	691.79	228278	58729	144264	6.4
1993	817.58	242343	63508	142251	10
1994	941.95	253537	66362	148817	13.3
1995	1040	271843	71494	159308	15.2
1996	1100.08	287685	73655	174447	17.2
1997	1219.09	304217	73861	190128	18.5
1998	1319.3	346129	78067	222721	19.3
1999	1452.94	412860	83529	286080	21.2
2000	1609	619971	93853	418721	26.7
2001	1802.4	754919	105930	546485	30.9
2002	2049	773137	109381	562074	33.2
2003	2421	667507	104372	494174	33.7
2004	2747	518000	107000	481000	27.7
2005	3180	450254	99000	470000	18.8

Fatalities per 10,000 registered vehicle in different countries (2004)



- High fatalities and High fatality Rate
- Road fatalities are close to 100,000 each year, accounts for 10% of the total number all over the world.

Distribution of fatalities by traffic participation



High Fatality Rate of Pedestrians, Motorcycle and Bicycle Drivers.

Most Accidents occur on the roads of 2nd Rank or below

- There were 244,079 traffic accidents occurred on the roads of 2nd rank or below.
- Those resulted in more than 66,489 fatalities, more than 252,484 injuries, which respectively accounted for 62.1% of all fatalities and 52.5% of all injuries.

Serious Problem of Traffic Safety in Countryside

- One-quarter accidents happened on rural roads.
- When 4 people die from traffic accident, one occurs on countryside road.
- Accidents frequently happen on rural roads and cause group casualties.
- Farmers and workers from rural areas are the main people who were involved in the accidents.

High Death Rate in Expressway

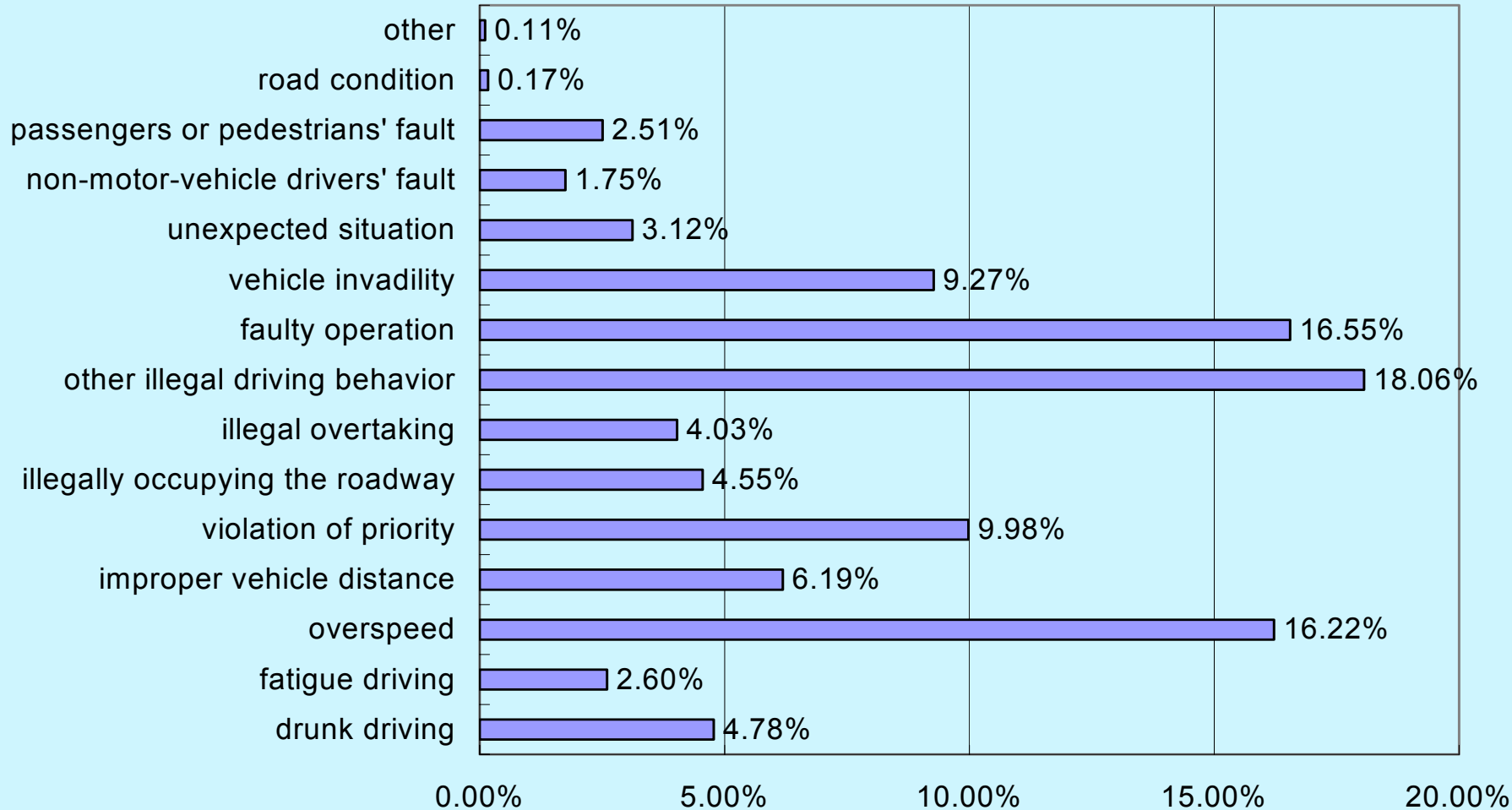
- The fatal case rate of accidents happen on expressway is much higher than that on common roads.
- In 2005, 6407 people died from accidents which happen on expressways.

II . Characteristic of Road Traffic Accidents in China

Area	Road Rank	Fatalities	Proportion
Intercity	Expressway	6407	6.49%
	Rank I	9335	9.45%
	Rank II	27749	28.10%
	Rank III	19699	19.95%
	Rank IV	6967	7.06%
	Substandard	6532	6.62%
	Sum	76689	77.67%
Urban	Fast way	1900	1.92%
	Main road	11895	12.05%
	Hypo road	2930	2.97%
	Spur Track	1510	1.53%
	Road inside factories	217	0.22%
	Other Road	3597	3.64%
	Sum	22049	22.33%
Total		98738	100.00%

IV、Main Cause of Road Traffic Accidents in China

Main causes of road traffic accidents in China (2005)



93% of the accidents were caused by disobeying the traffic law.



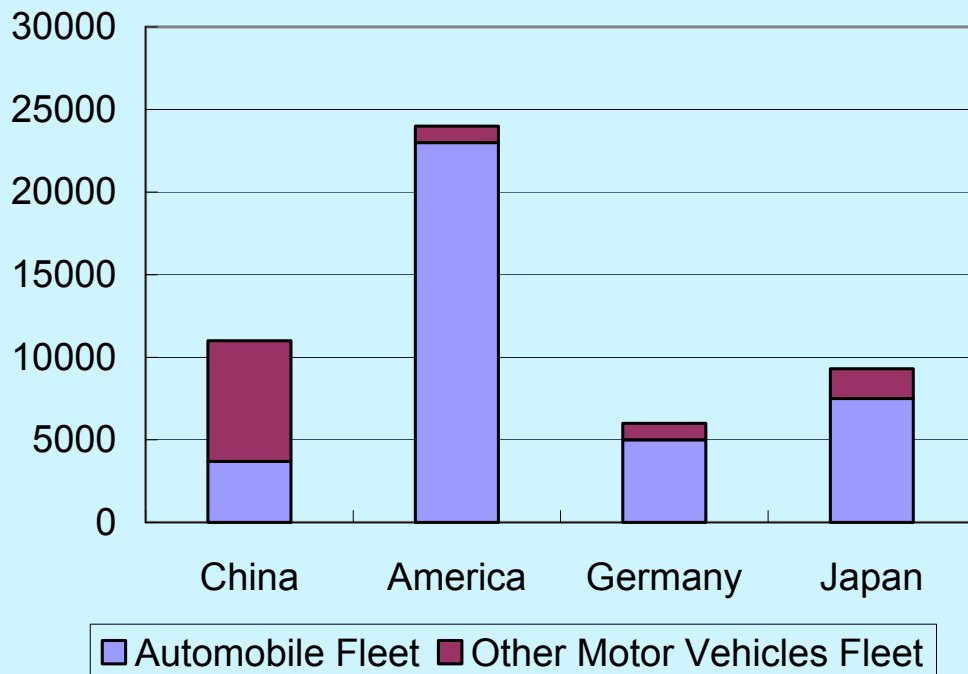
Mixed traffic and disorder of traffic cause a lot of accidents



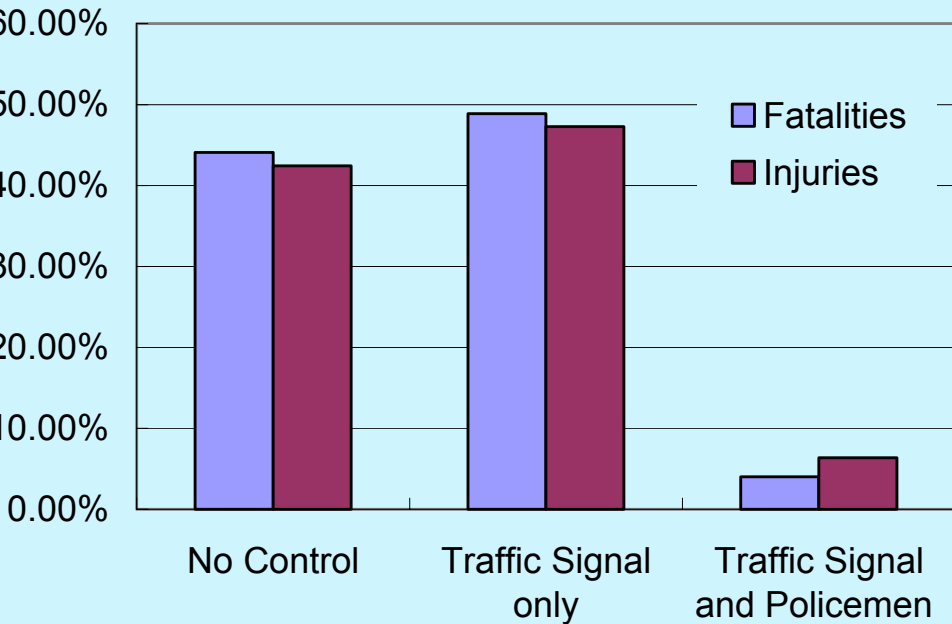
The traffic participants' extremely low awareness about traffic safety causes a great amount of injuries and losses.

- Motor vehicles in bad maintenance; poor safety performance of vehicles
- Among the 47 group casualty accidents in China in 2005, 19.1% are caused by braking failure, flat tire and etc.

Distribution of Motor Vehicles by Types (in 10,000)



Distribution of Casualties by Traffic Control Mode



- In China, the low rank roads account for a large proportion. The roads below the second rank are about 84% of all.
- There is lack of signs and proper infrastructures for traffic safety on many roads. Most of the traffic accidents occurred on the roads, which are lack of traffic management.



V . Main Cause of Road Traffic Accidents in China

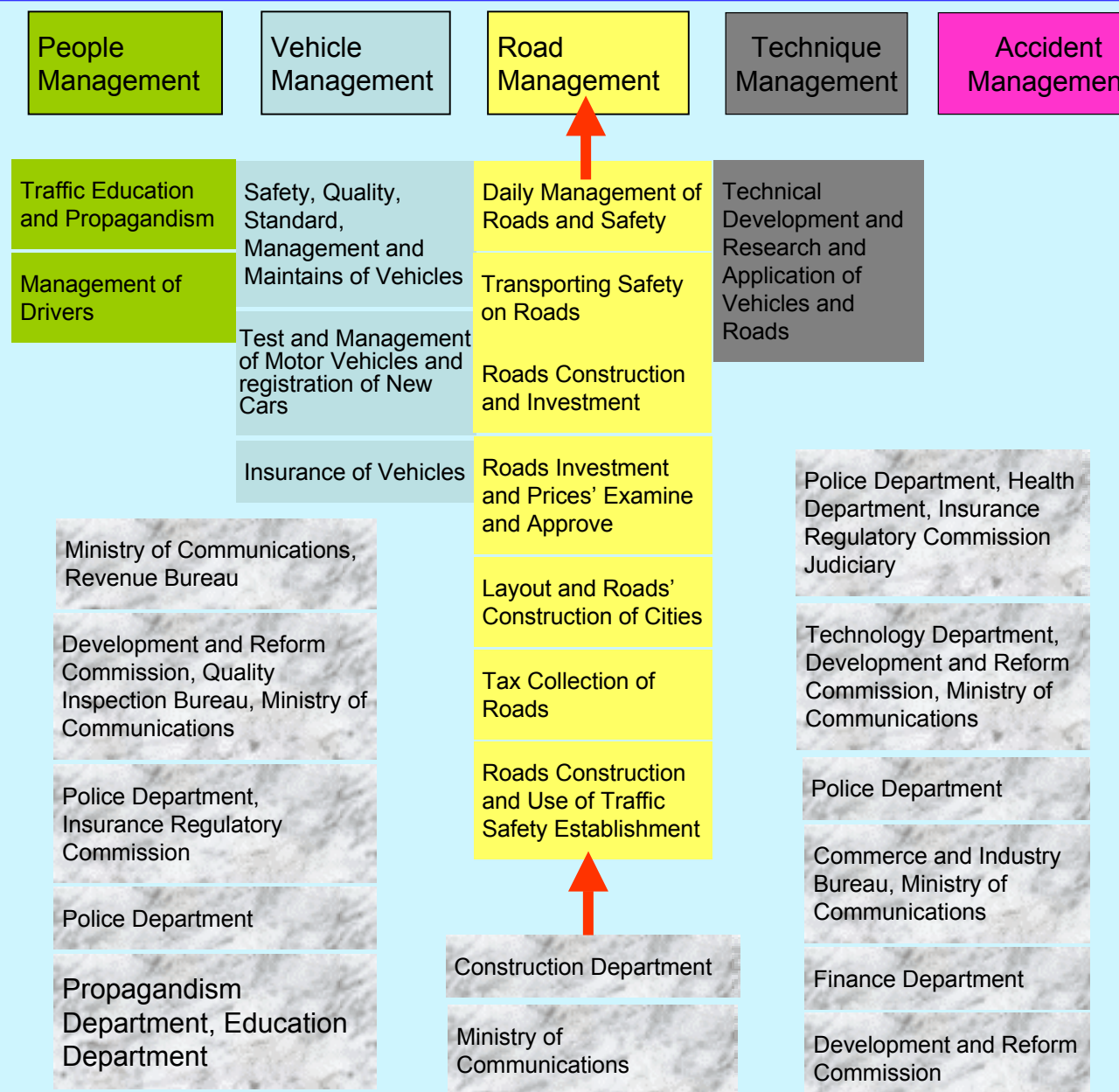
Behindhand traffic management

More managements on surface, less managements on headstream

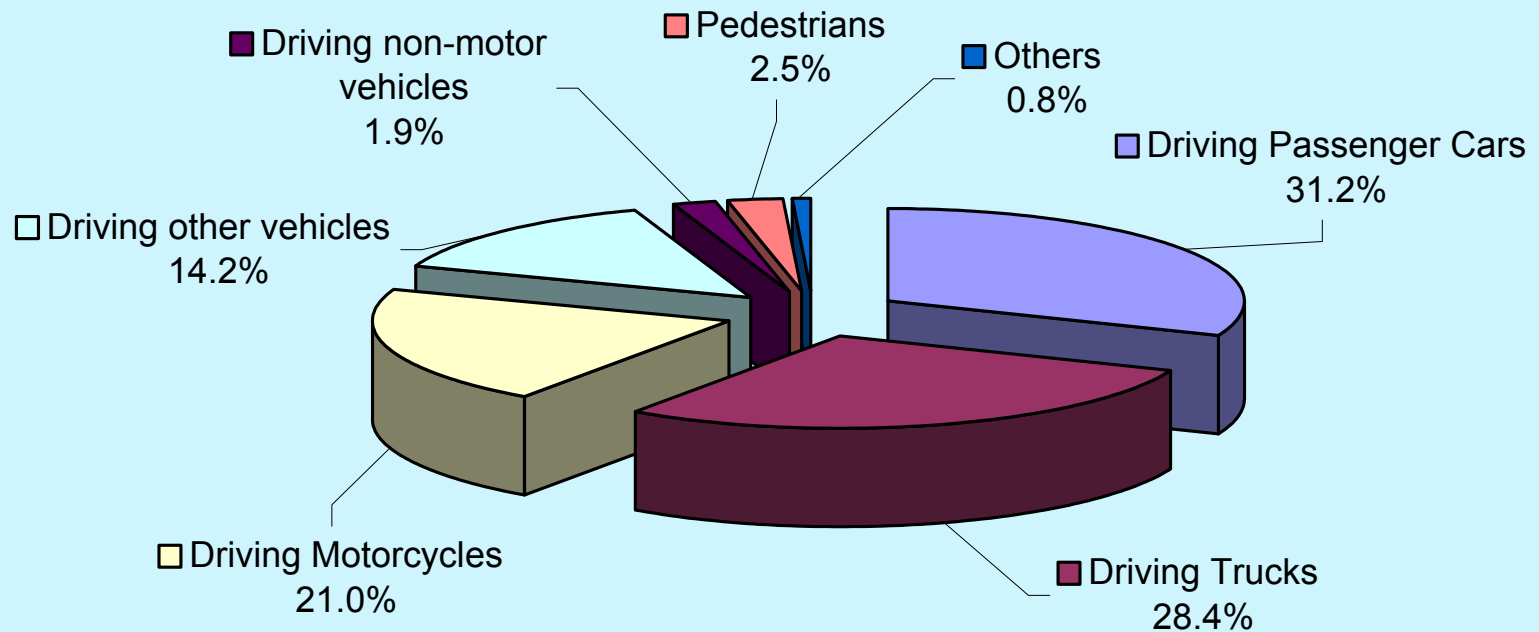
More enforcements on road, less safety propagandize

More economic punishments, less safety education

Traffic safety management absents in countries.

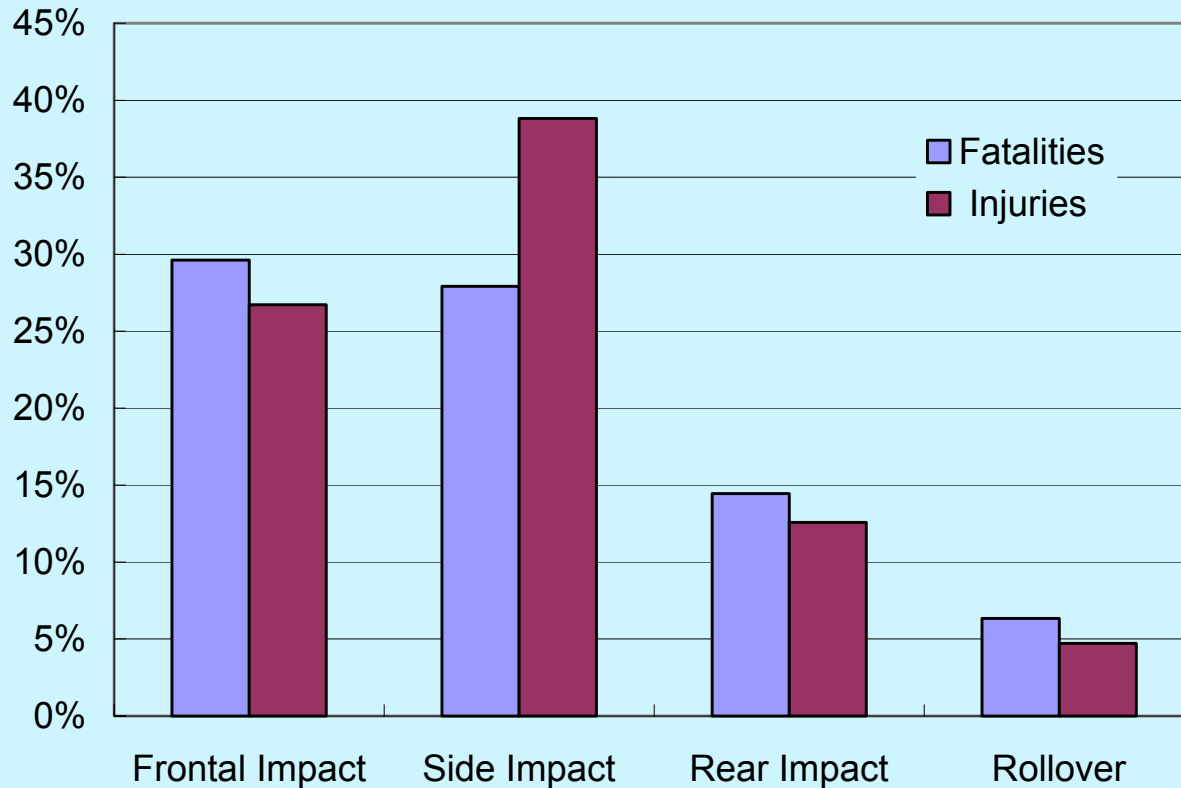


Distribution of Fatalities according to peace breakers' traffic participation (2005)



The main cause of the fatal accidents is motor vehicles

Distribution of Casualties by Impact Type



Main types of accidents are frontal impact and side impact.

Composing Elements of Traffic Safety



In China, some technical qualifications are paid with more attention, while the research on accidents and the behavior of traffic participants are ignored.



**Infrastructure
Road Nets**

**Accidents
Research**

**Law
Constituting**

Behavior

**Vehicles Safety
(NCAP)**

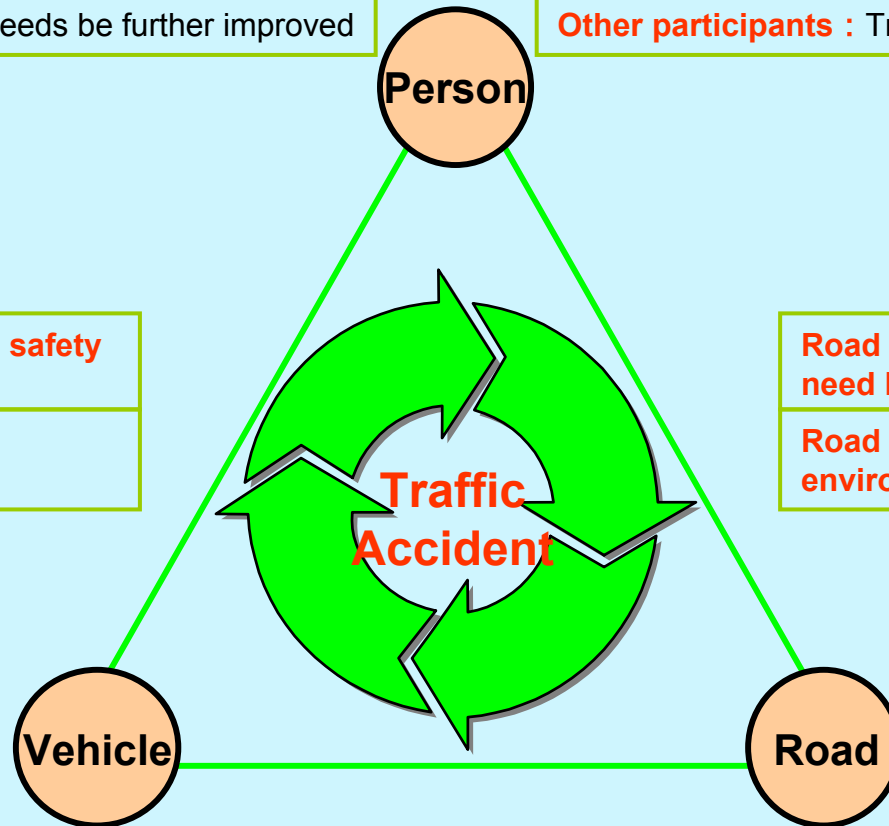
**Safety Education
of Traffic**

**Rescue and
Treatment**

**First Aid
on Scene**

Drivers : Driving behavior needs be further improved

Other participants : Traffic safety idea needs be improved



Development of vehicles' safety technologies

Optimization of vehicles' structures

Road safety establishments still need be improved

Road condition and other traffic environment need be improved

- The accidents in China are not always caused by technical reasons just like active or passive safety performance, but caused by some non-technical, man-made factors just like wrong driving behavior, weak safety awareness and so on.
- Vehicle safety still can't cover the cyclists, pedestrians and other vulnerable participants. About 2/3 fatalities in accidents didn't have effective protection. The traffic actuality in China still haven't been effectively improved.

Safe vehicle ≠ Safe traffic

Traffic safety research needs multianalysis.

- China is one of the fastest developing markets of automobiles in the world, however 90% of all products come from the foreign design.
- Such problems still exist in traffic:
 - Vehicles lack of safeguard, like engineering vehicles
 - Pedestrians and cyclists account for a large proportion of casualties.
- As economy develops, more and more Chinese are going to own private cars. That results in the quantitative increase of new drivers.
- In the whole world, there is no comparable precedent, which keeps on quickening the development of infrastructures.

So Tongji University and Volkswagen decided to develop the research on road traffic accident jointly with the aim of supporting the research on traffic safety in China with our analysis and database of traffic accident.

Besides, the program also helps Volkswagen to improve the vehicle safety level, and devote itself to Chinese traffic development.

In 2005, the project of research on road traffic accident in China was launched in Tongji University under cooperation between China and Germany.



Symposiums on Traffic Accident Research



Collecting accident information on spot

Zusammenarbeit: VW rettet Fahrern in China das Leben

Unfallforschung in Fernost – Polizisten aus Shanghai in Wolfsburg

(bri). Weltpremiere in Shanghai: Volkswagen hat als erster Autohersteller in China ein Projekt zur Unfallforschung ins Leben gerufen. Partner ist die Tongji-Universität. Dieser Tage sind drei chinesische Experten in Wolfsburg und machen sich ein Bild vom deutschen Verkehr. Prof. Dr. Ing. Hongyan Wang hat das Hauptproblem in ihrem Land erkannt: „Bei uns hasten Autos, Fahrräder und Fußgänger durcheinander – und kaum jemand kennt sich im Verkehr aus.“

VW-Unfallforscher Dr. Robert Zobel weiß: „2002 gab es sieben Millionen Unfälle. Die Polizei zählte 562.000 Verletzte und 109.000 Tote. Das sind 152 Verkehrstote auf 10.000 Fahrzeuge – in Deutschland sind es 1,2.“ Da gibt es viel zu tun. VW als Chinas wichtigster Autobauer nimmt seine Verantwortung ernst. „Wir wollen die Sicherheit durch bessere Abstimmung von Fahrzeugbau, Infrastruktur und Fahrverhalten erhöhen“, sagt Dr. Zobel. Zu seinen Gästen in Wolfsburg zählen zwei Spitzenbeamte: Zing Bao leitet die Polizei in Shanghai, Weigu Dai in Jiading.

Für den Aufbau einer eigenen chinesischen Unfallforschung sollen die Besucher in Wolfsburg die Grundlagen legen. Prof. Wang hat inzwischen schon viel gelernt: „In Deutschland sind Autos und Fußgänger getrennt. Das ist sehr gut.“

VW möchte mit dem Projekt erreichen, dass in China eine Diskussion über die Verkehrssicherheit überhaupt erst beginnt. Dr. Zobel nennt das Ziel: „Unser erfolgreichstes Produkt in China ist der Santana. Der hat noch kein ESP. Wir wollen erreichen, dass die Chinesen freiwillig mehr Geld ausgeben für ihre Sicherheit.“



Zusammenarbeit mit China für mehr Sicherheit: Dr. Robert Zobel (li.) und Michael Stanzel (re.) mit ihren Gästen. Foto: Ripper





**Infrastructure
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Behavior

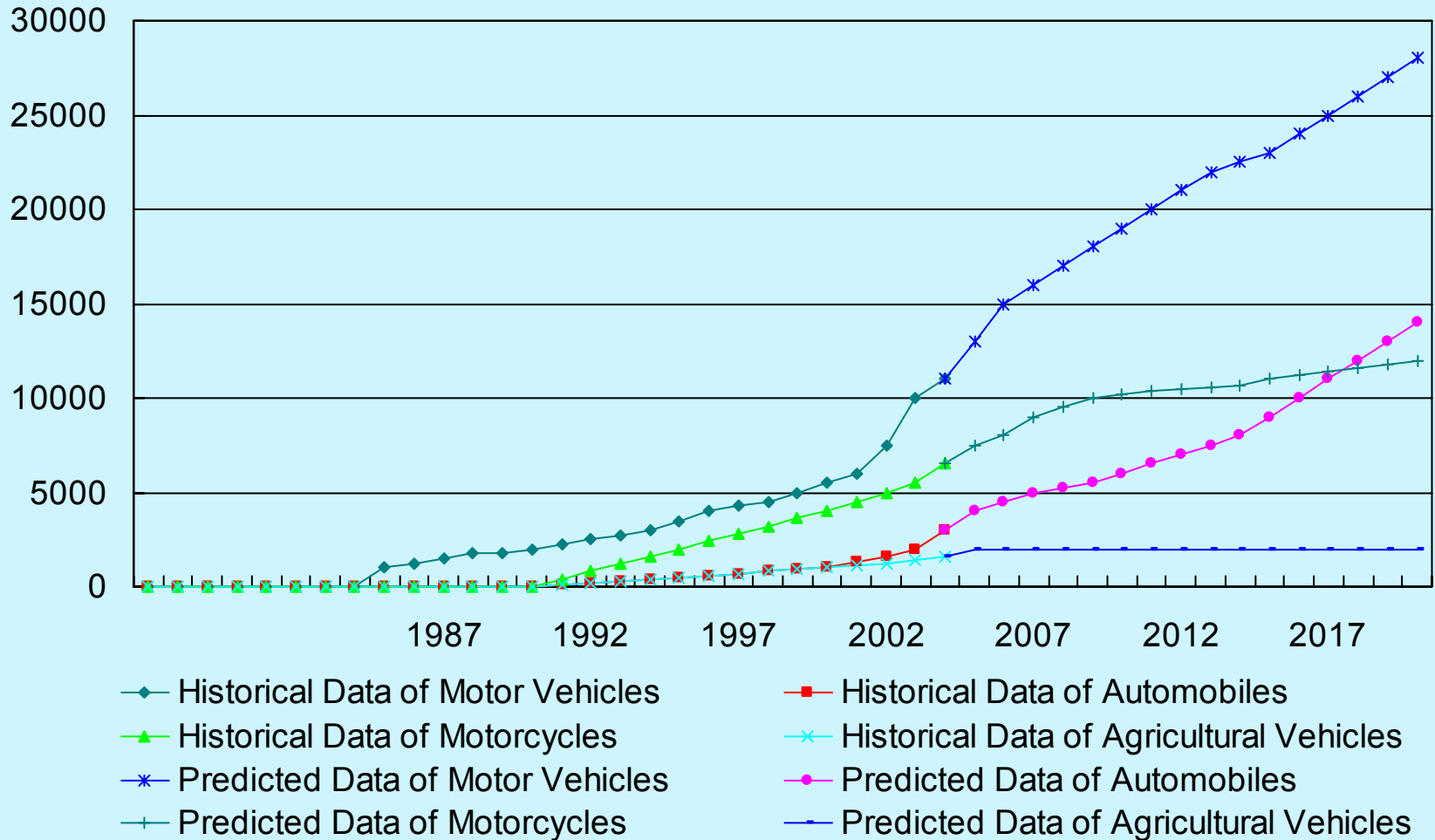
Vehicles Safety

**Safety Education
of Traffic**

**Rescue and
Treatment**

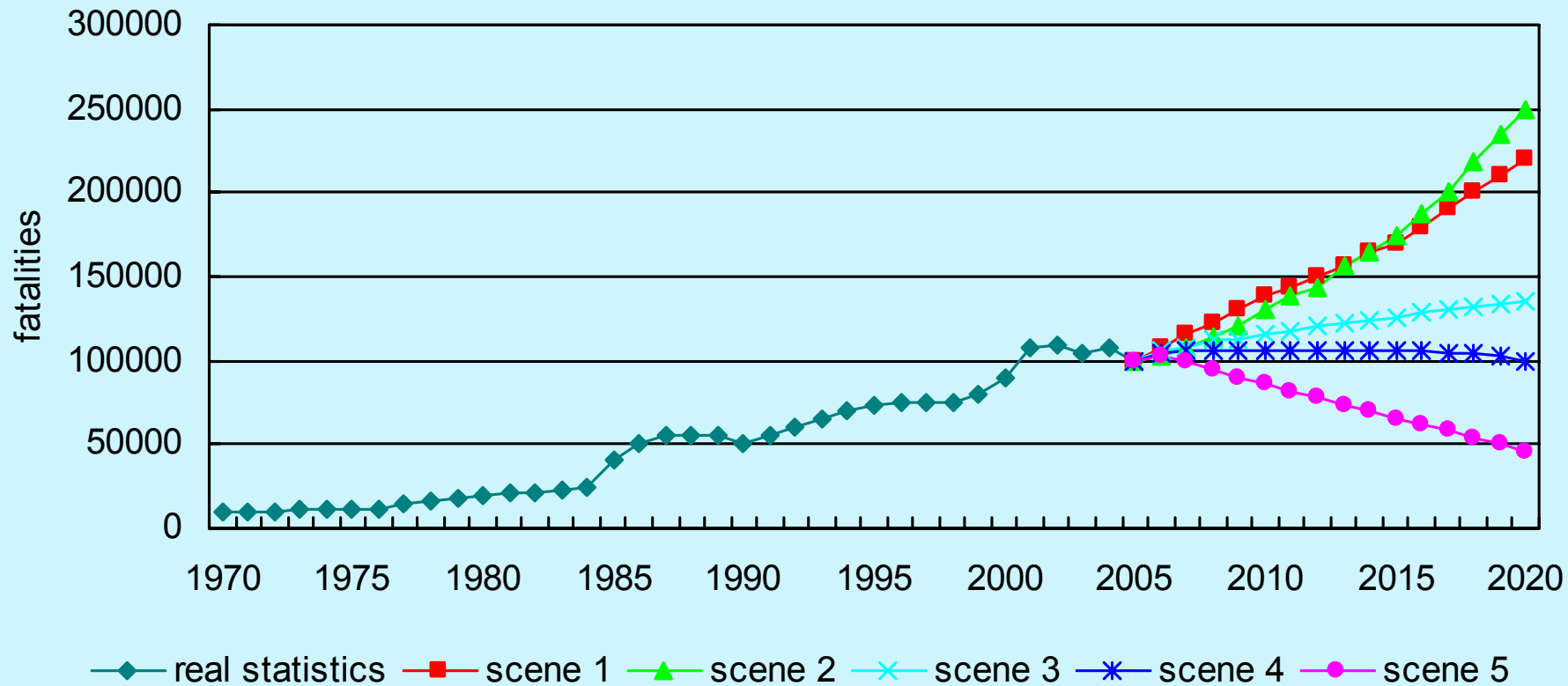
**First Aid
on Scene**

Trend of Motor Vehicle Fleet in China (10,000)



The vehicle fleet keeps rising, while the motorcycle fleet is going to maintain a certain level.

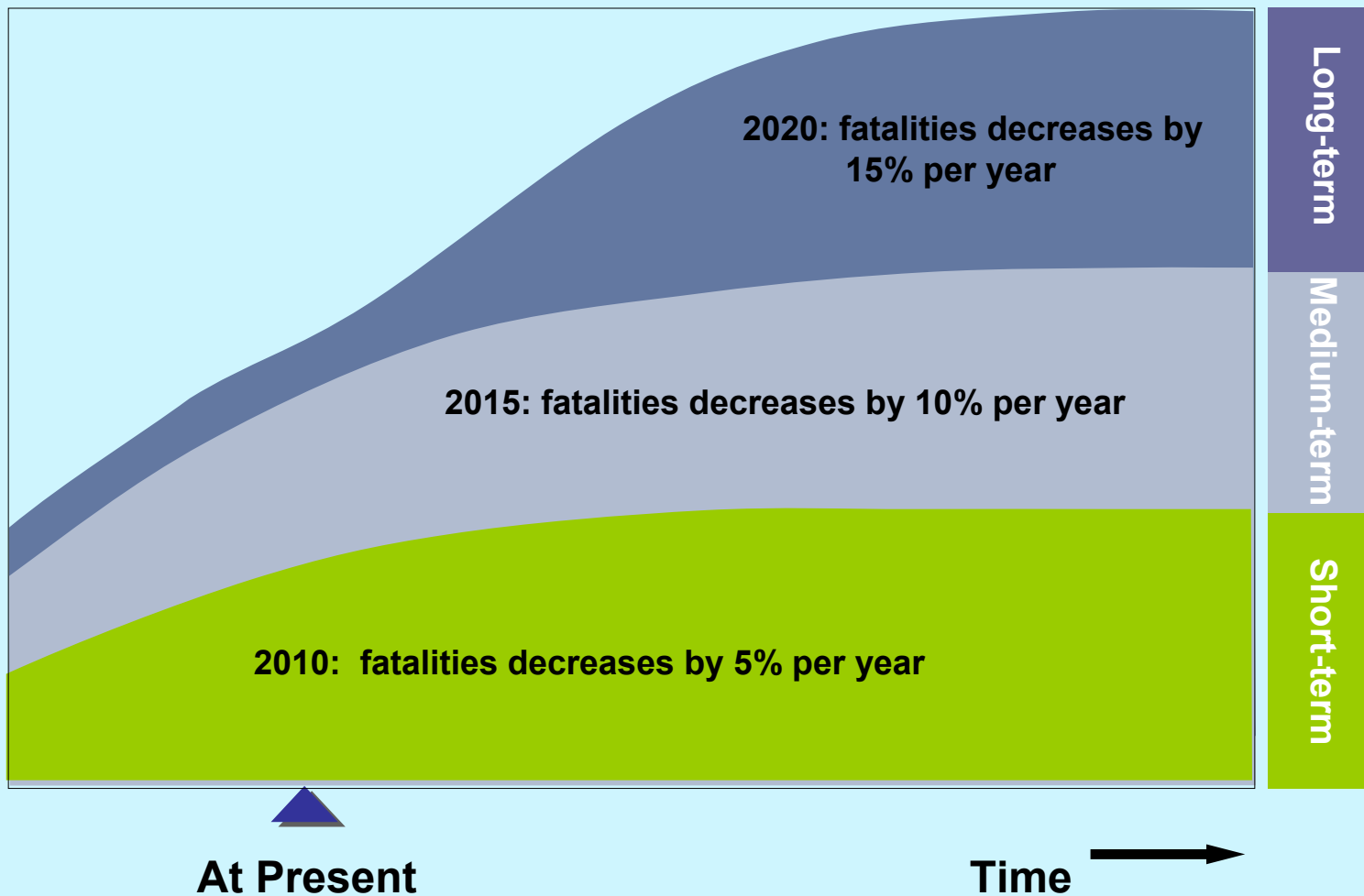
Prediction on Road Fatalities in China



According to the quality of traffic participants, road traffic condition, traffic management and the oncoming countermeasures, the number of traffic accident in China may increase during the next decade.

The peak of road fatalities will appear in around 2010. Based on the practical experiences abroad, it may take about 3-5 years from taking active measures to bring down the fatality steadily.

The short, medium and long-term goals in the control of traffic accidents in China



China has just stepped into the 'Auto Society' with the rapid increase in number of motor vehicle, while the road traffic participants still lack of awareness about road safety.

We will be confronted with a dim future, if the traffic safety management doesn't put enough strength on the enhancement of infrastructure construction.



**It has a long way to realize the goal of non-barrier traffic in China,
that needs collective efforts and all your helps!**



Thank You for Your Attention