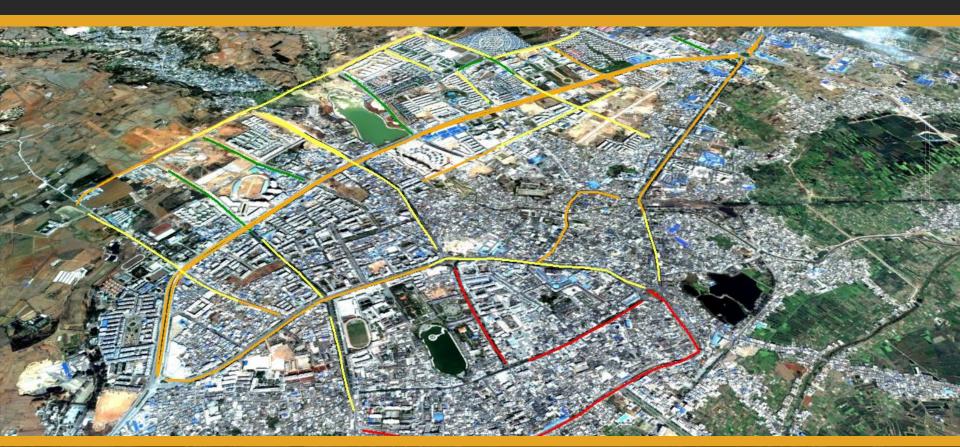
# **Road Safety Improvement in China**



Research Institute of Highway MOT Zhang Tiejun 2016.8

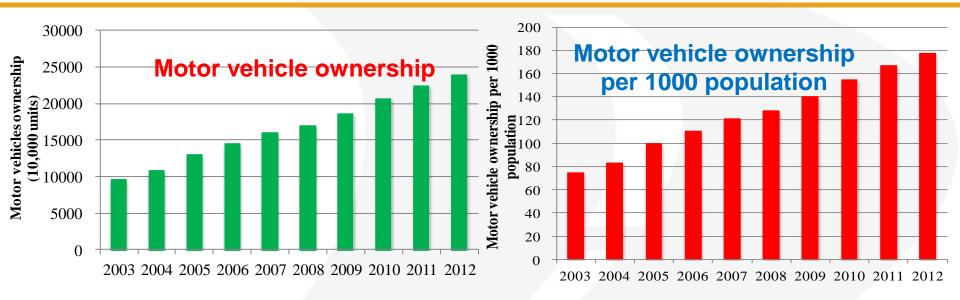


# Contents

- Traffic Safety Situation
- Improving Countermeasures
- ChinaRAP Research and Applications



### **Rapid increase of motor vehicles**



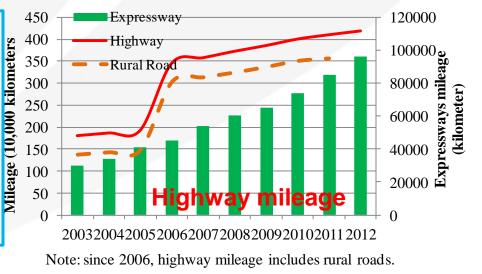
By the end of 2015, the motor vehicle ownership reached 279 million



# Rapid growth of road mileage and vehicle kilometer travelled

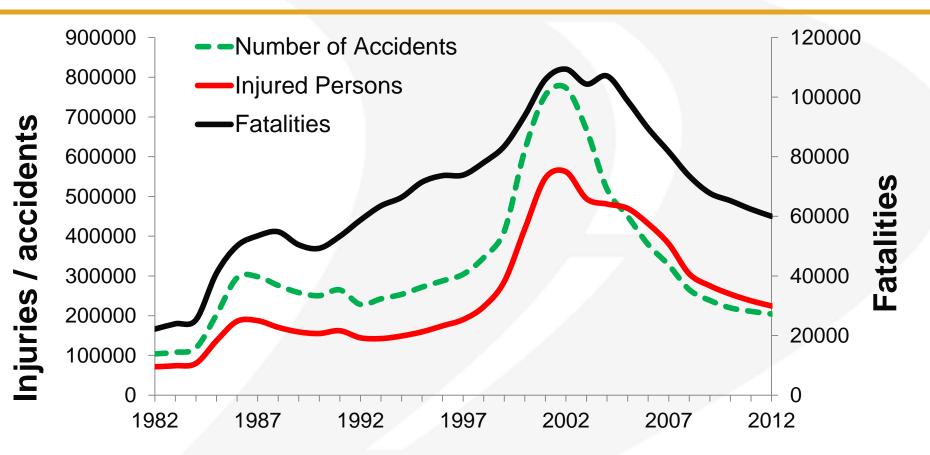
By the end of 2015, the highway mileage reached 4.5773 million kilometers, in which the expressway mileage reached 123.5 thousand kilometers.

The annual average daily vehicle kilometer travelled of the national highway network in 2012 increased 101.88% than that of 2004, and increased 236.64% for the expressway network.



ChinaRAF

### **Traffic accident status**



New drivers cause more accidents(about 30%) Electronic bike accidents increase from 1.1% to 6.0% More accidents happended in low level rural roads

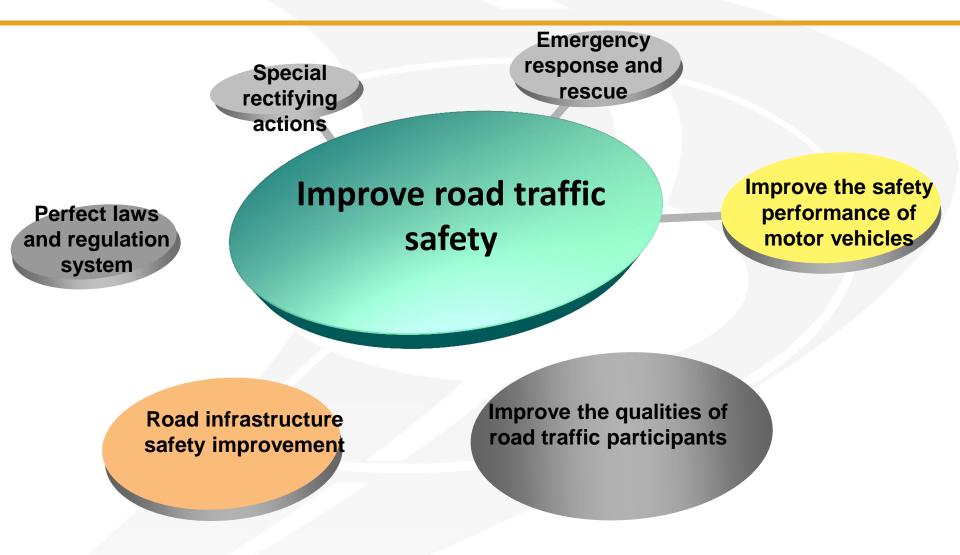


# Contents

- Traffic Safety Situation
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### **Traffic System Improvement**



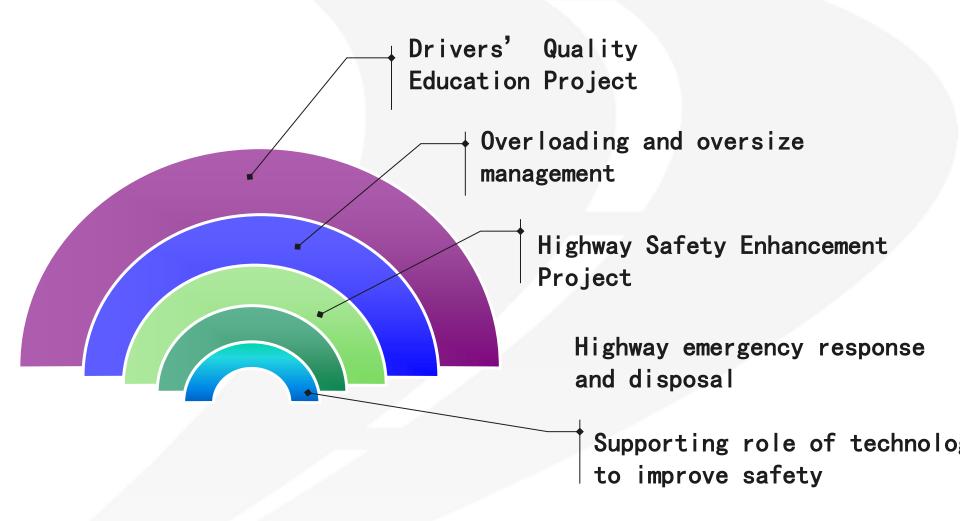
**China**RAP

### Laws and polices

Sep. 2, 2003	The 20 <sup>th</sup> executive conference of the State Council listened to the report by the Ministry of Public Safety on further improving the road traffic safety.
— Sep. 5, 2003	The State Council held the teleconference to make arrangements for road traffic safety, and pointed out the goal of curbing high frequency of road accidents and reducing road accidents year on year in the tenure of the government (2003-2007).
— Oct. 22, 2003	The National Inter-ministerial Joint Conference on Road Traffic Safety was established with the approval of the State Council.
— Oct. 28, 2003	The <i>Road Traffic Safety Law</i> was approved at the 5 <sup>th</sup> meeting of the standing committee of the 10 <sup>th</sup> NPC.
May. 1, 2004	The Road Traffic Safety Law began to be put into practice.
— Apr. 28, 2008	The 4 <sup>th</sup> Plenary Session of the National Inter-ministerial Joint Conference on Road Traffic Safety put forward to the new goal.
	New goal: In the tenure of the government (2008-2012), total number of accidents especially severe crashes and casualties can achieve further decrease. The better road traffic safety status will make the greater contribution to promote the economic and social development, and the social harmony and stability.
— Jul. 22, 2012	The Opinions of the State Council on Strengthening the Road Traffic Safety Work was released.
— Nov. 28, 2014	Improve Highway Safety to Cherish the Life Project.



### Main initiatives of transport departments





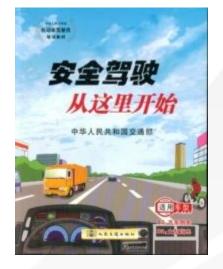
#### **Drivers' Quality Education Project**

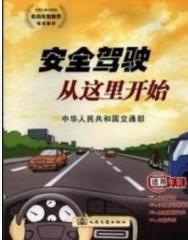
#### 交通部发布驾驶员素质教育大纲3月1日施行 为约社会和实施交通安全部的,发展文明行后,减少交流事论、交 通知2月34日没有了加快的高品和四大切、例下3月1日流行、假始大

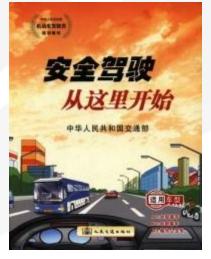
相喻写的驾驶员重原教育性材《安全集资从这集开始》一同发行 20043 田田建田田太平静的交通事故占於政府, ホラ.8% 造成的 花亡人数古总数: 87.4% 受伤人致占派数 90.6% 大明的教材 10,00,00,00 地井车驶员 '安 全荣一, 珍爱朱 和 的形象无限 四个副理念 世以"安全第一、琴 230.10 2.0.0 结石性学品安全世纪 藏草洗器和文明行车 二是以"善及安全知识、提高驾驶员会致"为目标、注意 培训内容的资料、资用股实改 e 三星以"科技创新"为动力、操行"计时制"培训和驾驶驾驶 博信教学、服务学员、市约资源、提高改学 · 若是以"案例和指量教学" 为手册、建立印象思维模式。 经商场训动是

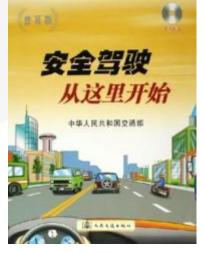


The accident rate due to the drivers with less than 3 years driving experience decreased by 5.5% annually from 2003 to 2009.







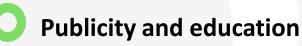




### **Overload and oversize management**

#### The proportion of truck overloading on national trunk highways has dropped dramatically.







- Enforcement
- - Vehicle production and modification



Tonnage calibration and licenses issued



 $\mathbf{O}$ 

0

- Transport market order reorganization
- **Highway charge policy**



# Highway Safety Enhancement Project (From 2004)

Focused on:

High risk roads on the national and provincial high
 Total investment: 30 billion CNY(5 billion USD) to

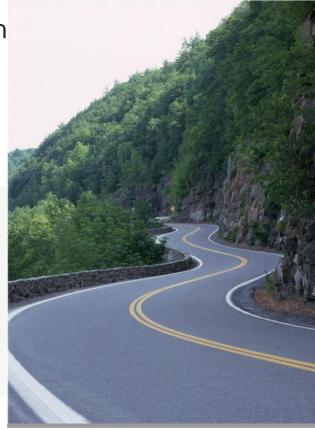
improve the safety facilities(barriers, improve sight

distance)

➤Total enhanced mileage: 350,000km;



accident number reduce 77.13%, Death reduce 81.49%





# Contents

- Traffic Safety Situation
- Countermeasures
- ChinaRAP Research and Applications



# **ChinaRAP** Objectives

Objectives

- Develop road infrastructure risk assessment models that draw on RIOH, iRAP and relative knowledge for application in China.
- 2. Put risk assessment at the heart of strategic decisions on road improvements, crash protection and standards of road design and management.

Final goal: China free of high risk roads











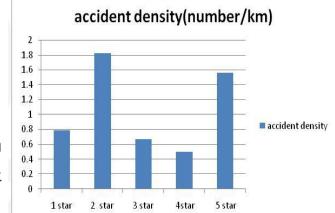
#### **Research and Development – Model**

Model include international framework and Chinese traffic safety characteristics

$$p(Y = y_i) = \frac{\Gamma(\frac{1}{0.68} + y_i)}{\Gamma(\frac{1}{0.68})y_i!} (\frac{1}{1 + 0.68\lambda_i})^{\frac{1}{0.6810461}} (1 - \frac{1}{1 + 0.68\lambda_i})^{y_i}$$

 $\lambda_i = \exp o \times e^{(-4.65+0.06h+0.18zhlc+0.06crk+0.07hc)}$ 

其中 h 为路段平曲线用长度加权的弯曲度,expo 为曝露度,hc 为路段交通量中 货车比例,cnk 为样本单位公里接入口个数,zhlc 对路段两侧路侧危险级别的平 均值。



		Example	e of crash m	nodification	factor review	<b>N</b> *'			
Country	iRAP		ange (Crash R ors Clearingho		RIOH				
Countermeasure name.	CMF 1 <sub>e</sub>	CMF₀	St dev₀	No. studies₽	CMF⊷	Study design₽	No. road segments₽	St dev₀	
Delineation $^{2}$	0.83+	<b>0.67</b> ₽	0.22₊∂	13₊	0.71₊	Prediction model <sub>*</sub>	1067.	0.25₊∂	
Street lighting <sup>3</sup> ,	0.87 <sup>4</sup> ,	0.63	0.25₽	34₽	0.725₽	Prediction model₀	1067.	<mark>0.16</mark> ₽	

<sup>1</sup> See iRAP Model Risk Factors report-

<sup>2</sup> CMF Clearinghouse query: delineation; treatments without rumble strips and/or resurfacing; fatal, serious or minor injury crashes (<u>http://www.cmfclearinghouse.org/</u>)+<sup>1</sup>

<sup>3</sup> CMF Clearinghouse query: highway lighting; not intersection related

<sup>4</sup> Note: iRAP figure used in intersection risk only-



### **Research and Development – Software**

#### Survey software

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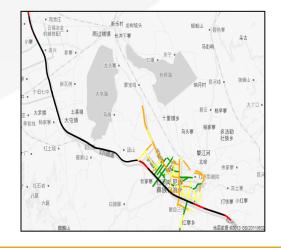
#### Coding software

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#### Analysis software



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清臣			15.2		
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模型马格行人准备		~	本的行人进业		~
右前行人派皇		~			~
		~	*区域关型	Rural / open area	~
•限速	< 30 km/h	~	原托车顶速		~
		~	<ul> <li>建度項利投利</li> </ul>	Not present	V
*中央隔离典型	Safety barrier - metal	~	*中統展防带	Not present	~
●特例危险-主创现高	0 to <1m	~	*路侧炮啦-左侧物件	Safety barrier - metal	~
#持创地始-右侧建高	0 to <1m	~	+格创走险-右则物体	Safety barrier - metal	~
•路用展动者	Not present	~	<<>>主创硬路角支度	Wide (# 2.4m)	~
*它则硬码用文皮	Wide (2.2.4m)	~	•交叉ロ共型	Merge lane	~
•交叉口操化	Not present	~	<ul> <li>文文は液量</li> </ul>	>=16,000 vehicles	~
•父天口情况	Adequate	~	<b>*</b> 證入口	Commercial Access 1+	~
•车送费	one	~	*年達克皮	Wide (>= 3.25m)	~



**China**RAP

### **Research and Development – Equipment**







FIRST (Fast Interactive Road Safety Test)

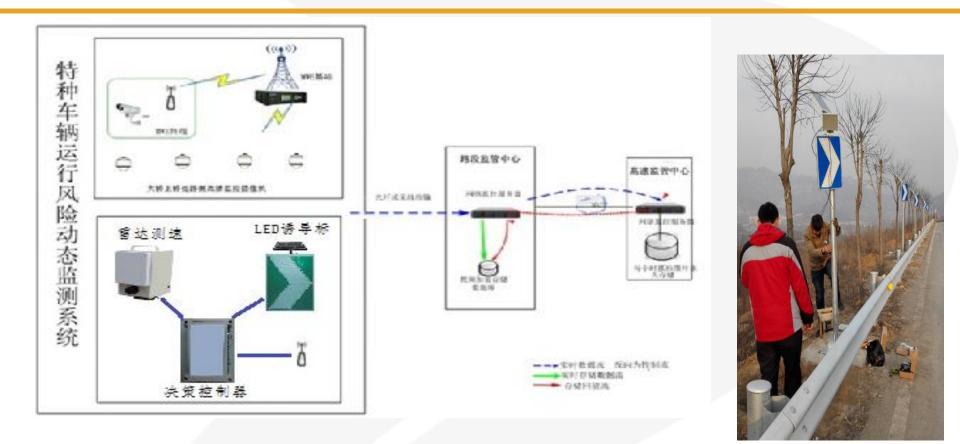


Manuals:

Survey
 Supporting data collection
 Coding
 Quality checking
 Analysis
 Data management



#### **Research and Development – Equipment**



#### Vehicle dynamic risk monitoring and feedback system



### **ChinaRAP Research and Application Project**

W	hen is ChinaRAP used?
Policy	<ul> <li>Setting targets, such as "roads of national importance must be at least 4-stars"</li> </ul>
Network planning	<ul> <li>Large-scale risk assessments of existing road networks</li> <li>Guide investment and track risk over time</li> </ul>
Feasibility/concept	<ul> <li>Assessing safety benefits of road projects (new roads and road upgrades)</li> <li>Developing targeted safety projects</li> </ul>
Detailed design	<ul> <li>Assessing risk for design iterations and standard cross sections, guidance on countermeasure options and economic assessments</li> </ul>
Evaluation	<ul> <li>Post-construction evaluations</li> <li>Before and after studies</li> <li>Performance tracking</li> </ul>



#### **ChinaRAP Research and Application Project**

#### **Application Projects:**

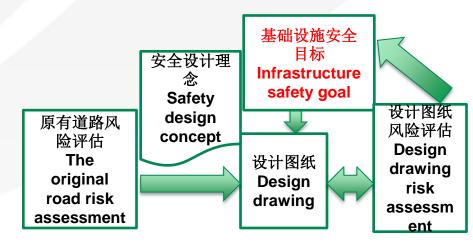
1 Collect data for model, software and equipment development and testing

2 Actual work to improve safety

- ① General whole risk assessment to improve the safety management
- 2 Interactive design to improve design



**ChinaRAP** 



# **ADB and WB Application Projects**

- •ADB:Shaanxi mountain road network assessment
- •ADB:Anhui road network by ADB loan
- •ADB:Yun nan Puer road network assessment
- •WB:Mengzi, Honghe urban road network
- •WB:Jiaozuo road network assessment
- •WB:Shanghai road network assessment
- •WB:Tianjin road network assessment













# **Chinese Government Projects**

- •Road networks of 2 counties at Guizhou Province
- •Expressway network at Yunnan Province
- •Expressway network at Chongqing Clty
- •An Hui ChuZhou S101, S311 road assessment
- 13 provinces of Cherish life project







# **International Projects**

- Yemen national road safety survey and coding project
- Road safety assessment program, Yemen: Data analysis and reporting
- Australia ARRB Coding
- URBAN Kiwirap Star Rating Trial
- CHINA-CAMBODIA FRIENDSHIP ROAD SAFETY PROJECT





# ChinaRAP Project Snapshot 1: Shaanxi Mountain Road Safety Demonstration Project

In Shaanxi, China, the ChinaRAP team achieved:

•double the percentage the roads that would be rated three stars or better

•estimated BCR : 6.1

Summary economic analysis for all roads (20 years)

Scenario	Present value cost (m)	Present value benefit (m)	Benefit cost ratio
All Roads- Final designs	CNY 295.4	CNY 1 966	6.7
			-25%

**Existing roads:** a higher-than-average number of vehicle occupant deaths and serious injuries.

**New designs:** safety barriers, paved shoulders, improved delineations, enhanced skid resistance and traffic calming. Road improvements will result in **fewer deaths and serious injuries**, even though traffic speeds are expected to

Existing road

Upgraded road



# ChinaRAP Project Snapshot 2: Tianjin Urban Transport Project

In Tianjin China, the ChinaRAP team assessed examining risk of death and serious injury on

•roads around existing metro stations which are slated for upgrade,

•a network of roads for NMT upgrades in the Heping and Nankai Districts.

The analysis indicates that •an investment of a little over CNY 610 million in targeted safety improvements could reduce numbers of deaths and serious injuries by about 50%, •generating a benefit cost ratio of 3:1.







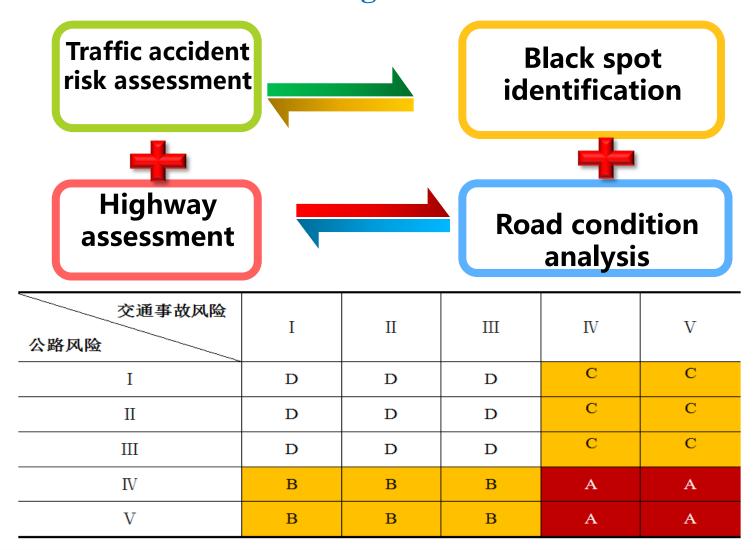
# ChinaRAP Project Snapshot 3: Improve Highway Safety to Cherish the Life Project (HSEP 2)

- HSEP 2 focuses on:
  - scope of project: improving infrastructures on expressway, national and provincial trunk roads, and rural roads
  - total investment(estimated): 120 billion CNY
  - type of roads: existing roads, new built roads, and reconstructed roads.
  - principles and countermeasures
  - principle 1: Existing roads Eliminating the current hazardous road sections
  - principle 2: New-built roads no more new hazardous roads should be added during the designs and constructions stage
  - countermeasures: Decision making process changes: single-index based method to ChinaRAP.





# Risk assessment was defined as a method to define hazardous segments.







- More than 100,000km National and provincial roads in Beijing Shandong Guangdong Jilin Hubei Henan Chongqing Fujian Zhejiang Guizhou Yunan XinJiang were assessed.
- More than 100 staff take part in the survey
- More than 300 take part in the coding and quality checking





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	()+X888			1	0.61%	0	2.945		0.00%	9000	0.268
	永安鎮万佛				0.615	0	0.00%	1	0.505	500	0.00%
	() 未均回石()				0.63%	1	2.948	0	0.00%	10000	0.518
		新春茶在新口		t	0.61%	0	0.00%	2	1.01%	20000	1.03%
	北京市门头沟区103国道			1	0.63%	2	5.005	3	1.518	50000	2.5TX
	()未均回1000通()	10kg142公理1gt.00米		1	0.63%	1	2.948	0	0.00%	2000	0.108
	10968/#735	理+290米炎		1	0.63%	1	2.943	1	0.50%	80000	4.118
	石和路中公			1	0.61%	0	0.00%	1	0.508	5000	0.268
	T			2	1.228	1	2.948	1	0.50%	19000	0.775
	も国際業も「営			1	0.61%	0	0.00%	1	0.50%	500	0.038
	门头沟医石根 司头沟医石根			1	0.618	0	0.00%	2	1.01%	3000	0.15X 2.60X
	四 第一篇			2	0.61%	0	0.00%	2	2.018	40000	2.058
	新T100公 王平赤事				0.615	0	0.00%		0.005	10000	0.518
	[]头泡区的现在((0				0.63%	0	0.00%	1	0.528	10000	0.518
		大街区煤炭路口		i	0.61%	0	0.00%	0	0.00%	9000	0.284
	石田島の公	Rtg:cor#st		1	0.61%	0	0.00%	1	0.50%	500	0.008
	(1)头沟区石(	目落非洲的上		1	0.638	0	0.00%	3	1.518	150000	T. TDK
		22公里+000末处		1	0.61%	0	0.00%	1	0.50%	9000	0.288
	石相路7公			1	0.628	0	0.005	4	2.01%	1000	0.058
	(注理主の図解像)			1	0.638	0	0.00%	1	0.528	500	0.038
	()头沟区室劃	編載特応編目地 - 使hptoe来		1	0.61%	1	2.945	0	0.008	500	0.008
	£.465.000	※10:00年 9世会活動15		-	0.64%	0	0.00%	3	1.515	1000	0.058
	事該對照估计2012-2014 / ?) /				11 14 14		11.10%		11		





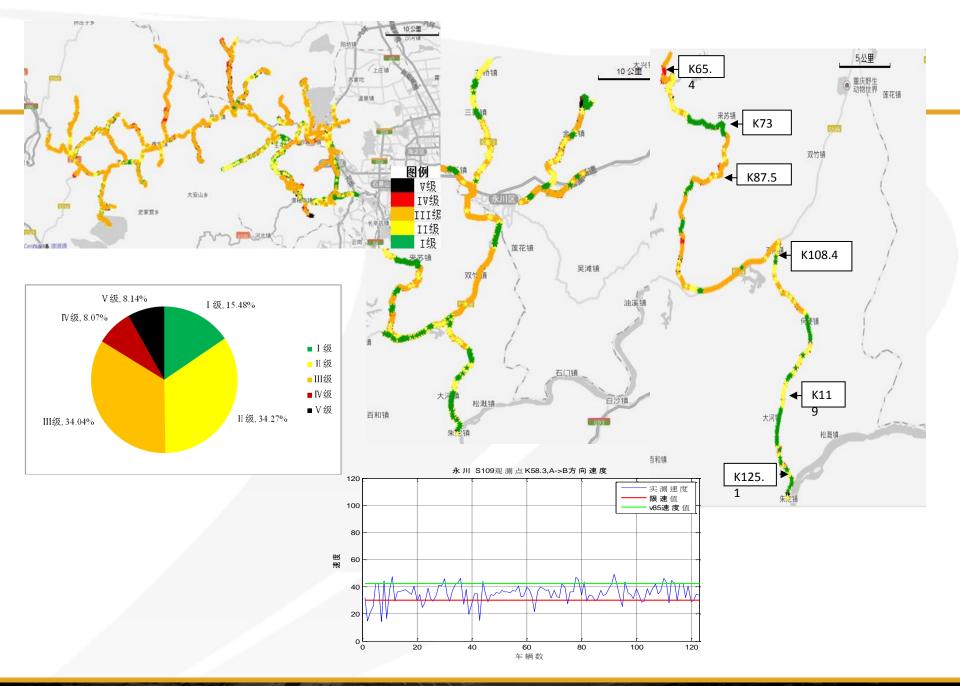
















□ Road Number G**
Mileage: K2262+900
Risk Type: A

□Road Number S\*\* Mileage : K29+700 Risk Type: A





#### **Results table: Typical road attributes and plan**

#### countermeasures and estimated cost.

1       3、路段为按个能过长。不能得整条路作为同一个路段。       不符合事故判别指标,这里填"0"。       2、A1、A3、B1、B2、B3、B4类E         2       技术等级 方向       排查时间 路段分类       不符合事故判别指标,这里算"0"。       2、A1、A3、B1、B2、B3、B4类E         2       技术等级 方向       排查时间 路段分类       不符合事故判别指标,这里算"0"。       2、A1、A3、B1、B2、B3、B4类E         2       技术等级 方向       排查时间 路段分类       不符合事故为别指标,这里空着。       第合指标信息	Z了 CD 排序和 查找和 筛选 · 选择 · 需编 ▼ ▼ 老指项文字。 这五项指标至 为 "1"。 本別 段限速或路计 ま 変度
美期山       Times New Roman       11       A       第       第       第       第       第       第       第       第       第       第       第       第       第       第       第       第       第       第       第       第       1       1       A       1       1       A       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1	▲ 推序和 重线和 構造。送译。 編編 ▼
Times New Roman - 11 - A A B - B - B - B - B - B - B - B - B	Z了 CD 排序和 查找和 筛选 · 选择 · 需编 ▼ ▼ 老指项文字。 这五项指标至 为 "1"。 本別 段限速或路计 ま 変度
新田田         安田田         田田         田         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I         I <th>編編 ▼ ★別 送行存速或路 段限速或设计 ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★</th>	編編 ▼ ★別 送行存速或路 段限速或设计 ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★
Idd         Idd <th>V           諸墳文字。 这五项指标至 为"1"。           本 別 段限速或设计 速度</th>	V           諸墳文字。 这五项指标至 为"1"。           本 別 段限速或设计 速度
A         B         C         D         E         F         C         H         I         J         K         L         M         N         O         P         Q         R         S         T         U           1         P         P         Q         R         S         T         U         T         U         T         U         T         U         T         U         T         U         T         U         T         U         T         U         T         U         T         U         T         U         T         U         T         U         T         U         T         U         T         U         T         T         U         T         T         U         T         T         U         T         T         U         T         T         T         U         T         T         T         T         T         U         T         T         T         T         T         T         T         T         T         T         T         T         T         T         T         T         T         T         T         T         T         T         T	14日東スチ。 这五项指标至 为"1"。 本 送行 年速或路 段限速或设计 北 度
水服子四位。     1、同一个县、同一条路的排查数据应按桩号次序排列在一起。       1     2       2     序     指     月     人路编号       3     5       4       5       6     1     贵/指       1     2       6     1     贵/指       1     2       6     1     贵/指       1     2       6     1       2     大術指       2     大術指       3     1. 1       4     1. 1       5     1. 2       6     1. 2       1     2       2     大術指       2     大術指       2     大術第       3     1. 1       4     1. 1       5     1. 2       6     1. 2       7     2       7     2       7     2       7     2       7     2       7     2       7     2       7     2       7     2       7     2       7     2       7     2       7     2       7     2    2        8 </td <td>14日東スチ。 这五项指标至 为"1"。 本 送行 年速或路 段限速或设计 北 度</td>	14日東スチ。 这五项指标至 为"1"。 本 送行 年速或路 段限速或设计 北 度
8         4         方         月         公路编号         1. 桩号大到         4         2. 桩号小到大         4         2. 忙号小到大         4         2. 忙号·小         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4	別         段限速或设计         1           速度         0
4     5     6     1     贵州省     野东南<榕江县	0
7     2     贵州省     野东南     榕江县     Y020     4     2     K0+400     K0+500     2015/4     A.1     1     1     0     0     1     0     0     1       2     豊州省     野东南     榕江县     Y020     4     2     K0+400     2015/4     A.1     1     1     0     0     1     0     0     0     1	(km/h) 1
	20
8         3         贵州省         黔东南         榕江县         Y020         4         2         K1+615         K2+135         2015/4         A.1         0         0         1         0         0         1         0         0         1         0         0         1         0         0         1         0         0         1         0         0         1         0         0         1         0         0         1         0         0         1         0         0         1         0         0         1         0         0         1         1         0         0         1         0         0         1         0         0         1         0         0         1         0         0         1         0         0         1         1         0         0         1         0         0         1         1         0         0         1         1         0         0         1         1         0         0         1         1         0         0         1         1         0         1         1         0         1         1         0         1         1         1         1         1	20
	20
9     4     贵州省     黔东南     榕江县     Y020     4     2     K2+250     K2+600     2015/4     A.1     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     1     0     1     1     0     1     1     0     1     1     0     1     1     0     1     1     0     1     1     0     1     1     0     1     1     0     1     1     0     1     1     0     1	20
10     5     贵州省     黔东南     榕江县     Y020     4     2     K3+500     K4+300     2015/4     A.1     0     1     0     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0     1     0	20
11     6     贵州省     黔东南     榕江县     Y020     4     2     K4+800     K5+500     2015/4     A.1     1     1     0     0     1     0     1     0     1	20
12     7     贵州省     黔东南     榕江县     Y020     4     2     K5+850     K6+300     2015/4     A.1     0     0     0     1     0     0     1     1     1	20
13     8     贵州省     黔东南     榕江县     Y020     4     2     k7+200     k7+500     2015/4     A.1     1     0     0     1     0     0     1     0	20
14     9     贵州省     黔东南     榕江县     Y020     4     2     k7+500     k7+900     2015/4     A.1     0     1     0     0     1     1     0     0     1	20
10     贵州省     黔东南     榕江县     Y020     4     2     k8+050     k8+400     2015/4     A.1     1     1     0     0     1     1     0     0     1	20
11     贵州省     黔东南     榕江县     Y020     4     2     k8+700     k9+200     2015/4     A.1     0     1     0     1     1     0     1	20
17     12     贵州省     黔东南     榕江县     Y020     4     2     k9+200     k9+400     2015/4     A.1     1     0     0     1     0     0     1     0     1     0     1     0     1     0     1     1	20
18     13     贵州省     黔东南     榕江县     Y020     4     2     k9+400     k9+800     2015/4     A.1     0     1     0     1     1     1     0     1	
14       贵州省       野东南       榕江县       Y020       4       2       k9+800       k11+300       2015/4       A.1       1       0       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       1       1       0       <	20







Barry Low Apara A allasting

