**3rd. Asia Automobile Institute Summit** 2-4 December 2014, Bangkok

# Motorcycle Safety Measures in Japan

## Yuji Arai Senior Researcher Safety Research Division Japan Automobile Research Institute



#### Contents



- 1. Road Safety
- 2. Accident Database System
- 3. Motorcycle Accidents
- 4. Motorcycle Safety Measures
- 5. Conclusion



## 1. Road Safety

#### **Three Factors for Road Safety**





Safety measures in Japan are promoted based on analysis of road accidents from the standpoint of human factors, vehicle factors and road environments.



# 2. Accident Database System in Japan

3rd AAI Summit, 2-4 Dec. 2014, Bangkok

#### **Accident Database in Japan**



#### • Accident database

#### - Macro DB

All the accidents resulting in injury or death which occur in Japan (0.7 million accidents per year)

#### - Micro DB

In-depth accident DB (300 accidents per year)

#### Maintenance of databases

- The two kinds of databases are maintained by the Institute for Traffic Accident Research and Data Analysis (ITARDA) established by the National Police Agency (NPA) and the Ministry of Land, Infrastructure, Transport and Tourism (MLIT).
- ITARDA also conducts in-depth accident investigations.

## Macro DB in Japan





Main investigation items:

- date and time of accident, day or night, weather
- location type (urban or not), road type, traffic lights, road width
- detailed type of accident
- age, gender, occupation
- type of vehicle, seatbelt/helmet use
- causes of accident, type of violation, drinking driving, speed of vehicles
- level of injury, primarily injured body part, vehicle part inflicting injury

#### **National Accident Data Collection System**





3rd AAI Summit, 2-4 Dec. 2014, Bangkok



# 3. Motorcycle Accidents in Japan

## Fatalities by Road User Category (1965-2013)



 The number of fatalities of motorcycle accidents has been declining since 1990. In 2013, the number of fatalities involving motorcycles was half of that of pedestrians.



### **Body Regions Receiving Most Injuries** (motorcycle riders)



**Source: National Police Agency** 

- Many fatalities had injuries to the head and chest.
- Fatalities due to head injuries have declined greatly.



#### **Helmet Use and Injuries**



- The helmet wearing rate in Japan is very high, and the rate has been increasing.
- The fatality rate when not wearing a helmet is much higher than that of when wearing a helmet, which indicates the importance of wearing helmets.



## 4. Motorcycle Safety Measures



### **Motorcycle Users**

- Training to obtain a driver's license (driving school)
  - learn traffic rules and driving skills



- Re-educating during driver's license renewal
  - awareness of social responsibility as a driver
  - improvement of awareness of traffic safety and driving manners of drivers



- Practical driving school
  - improvement of driving skills
  - participation is the rider's choice
- National Traffic Safety Campaigns

(held in the spring and fall of each year)

- improvement of awareness of traffic safety of the whole nation, including motorcycle users.





Riders' join freely

### **Road Environments**



Hook turns

#### Conditions of hook turns

- Vehicle type: motorcycles up to 0.05 L
- Intersection with a hook turn sign (not less than three lanes on each side)



hook turn



## **Safety Equipment on Vehicles**



### • Active safety

#### Daytime running lamp



The standard equipment of the DRL was enforced in 1998.

## • Passive safety

Airbag



An effective means to enhance the safety of all motorcycles has not been established yet.

the only motorcycle model equipped with an airbag in Japan Source: Honda Motor Co., Ltd Website

3rd AAI Summit, 2-4 Dec. 2014, Bangkok

## <del>d'ar</del>i

## Helmet (personal protective equipment)

#### Helmets for motorcycles



## Standard for motorcycle helmets in Japan

#### JIS T8133 (2007) (refers to UN Regulation No. 22)

(JIS: Japanese Industrial Standards)

- Shock absorption test
- Shell penetration test
- Dynamic retention test
- Positional stability (roll-off) test

### **Road Traffic Act Related to Helmets**





3rd AAI Summit, 2-4 Dec. 2014, Bangkok

## **Body Protector (personal protective equipment)**







## 5. Conclusion



## Conclusion

- It is necessary to consider safety measures from the viewpoint of human factors, vehicle factors and road environments.
- Reliable and accurate road accident data are the basis for effective road safety measures.
- Wearing a helmet is the most important measure to reduce the number of fatalities involving motorcycles.



## Thank you for your attention.

Yuji Arai Email: yarai@jari.or.jp Tel: +81-29-856-0885

3rd AAI Summit, 2-4 Dec. 2014, Bangkok