A comprehensive approach for road safety – The example of Germany

**User Related Measures**
- **Training and Education, Traffic Law, Industry, Environment**
  - 1958: Introduction of a 0.05% legal blood alcohol limit
  - 1978: Introduction of the principle of defensive driving
  - 1978: Temporary age of 20 for minor signals in urban areas
  - 1973: Revision of legal blood alcohol limit to 0.5%
  - 1975: Accumulating credit system for traffic offenses
  - 1975: Introduction of recommended speed limit on interminos (interminos) - 130 km/h
  - 1978: Law of salivaed and facial becomes compulsory
  - 1978: Introduction of a 100 mph speed limit outside of built-up areas
  - 1988: Introduction of times for installing motorways without barrier
  - 1988: Introduction of times for driving without traffic lights
  - 1989: Further fine period for new drivers
  - 1990: Minimum age for driving heavy motorbikes raised to 28 years
  - 1990: Introduction of automatic database for trucks and buses
  - 1993: Mandatory use of child safety seats for children in cars
  - 1995: Compulsory speed limit for vehicles that drive past signaling poles (breathing speed)
  - 1998: Minimum age for driving heavy motorbikes raised to 20 years
  - 2001: Introduction of zebra crossings for pedestrians
  - 2001: Introduction of accompanied driving from the age of 17
  - 2008: New design recommendations for urban main roads (inside the city (intra-city))
  - 2010: Introduction of fines for driving without fastened seatbelt
  - 2011: Introduction of fines for driving without electronic stability
  - 2013: Mandatory introduction of Electronic Stability
  - 2015: Introduction of fines for using mobile phones while driving
  - 2015: Introduction of standards for geometric layout, signage, costs, and design speeds to be integrated into design guidelines

**Infrastructure Related Measures**
- **Road, Bridge, Road Construction, Maintenance**
  - 1954: Introduction of extra oversizing for pedestrians
  - 1973: Introduction of standards for geometric layout, gradients, cross sections, and design speeds to be integrated into design guidelines
  - 1975: Introduction of general principle of road network design, classification of roads according to road categories (i.e., motorways, arterial, collector, local, and connection type [urban or rural, expected volume etc.])
  - 1988: Merger of the German Federal Rail and International Road Commission (IFST), which is responsible for defining the dimensions of the roadway components based on physical and ergonomic characteristics
  - 1990: First trials for zones with 30 km/h speed limit in residential areas
  - 1995: Increasing use of roundabouts as alternative form of intersection
  - 1998: New design recommendations for urban main roads (including consideration of urban design and requirements of pedestrians and cyclists)
  - 2001: Revised guidelines on road alignment including updates on existing right-of-way requirements
  - 2005: Introduction of fines for driving for high-level rural roads to prevent overspeeding accidents
  - 2006: Introduction of concepts for self-explaining (i.e., standardized) roads and targeting modules in design guidelines
  - 2007: Detailed recommendations for improving road safety on popular motorway routes through improved road design and enforcement measures
  - 2009: First trials expanded to zones with 30 km/h speed limit in residential areas
  - 2011: Introduction of fines for driving for high-level rural roads to prevent overspeeding accidents

**Vehicle Related Measures**
- **Active Safety, Passive Safety, Telematics**
  - 1959: Introduction of driver point seat belt
  - 1975: Introduction of e-brake and steering column (avoiding serious injuries to the driver in the event of a heavy frontal impact)
  - 1979: Introduction of anti-lock braking system (ABS) for all new cars
  - 1988: First implementation of ABS for all new cars
  - 1990: First implementation of ABS for all new cars and trucks in EU
  - 2006: Introduction of Euro-NCAP testing procedures for vehicle passive safety devices
  - 2008: Increasing use of anti-theft braking systems (front, rear)
  - 2011: Mandate implementation of Electronic Stability Control in all new cars and trucks in EU

**Rescue Services**
- **Health, NGO**
  - 1982: First air ambulance for patients
  - 1986: Second introduction of air ambulance (helicopter) medical services
  - 1987: Introduction of emergency telephone
  - 1991: Introduction of country-wide emergency call numbers (110 for France and 112 in Germany), although regional numbers such as 999 continued to exist
  - 1993: First EMS was introduced in the Federal State of Bavaria, including requirements for staff, equipment and response times. Other federal states follow suit
  - 2002: Uniform introduction of emergency call number 112 for EMS

**Further information and the infographics as pdf**

**Organization**
- **Planning, Financing, Controlling**
  - 1966: Regular Road Safety Inspections for roads become compulsory in traffic laws regulations (VwV-StVO)
  - 1968: The insurance-based traffic safety program (VwV-VO) becomes mandatory
  - 1971: Publication of the Federal Road and Transportation Research Association (FGSV) guidelines on local transport plans (introduction of accident analysis, consideration of non-motorized transport)
  - 1978: Adoption of the Municipal Transport Planning Model, introduction of centralized transport planning
  - 1981: Introduction of urban transport planning instead of supply-related planning for local transport plans
  - 1982: Introduction of safety audits to avoid shortcomings in regard to road safety during the planning process
  - 2001: The National Road Safety Committee of the Federal Government and the German Transportation Organization (VDA) established
  - 2005: Creation of the National Road Safety Commission (KBL), which is responsible for defining the dimensions of the roadway components based on physical and ergonomic characteristics

**Incentives, Enforcement**
- **Training and Education, Traffic Law, Industry, Environment**
  - 1980: Revision of legal blood alcohol limit to 0.8‰
  - 1986: First implementation of an air bag (in driver seat only)
  - 1988: Introduction of death compensation for passengers (front, rear)
  - 1990: Introduction of fines for riding motorcycles without helmet
  - 1993: Introduction of fines for using mobile phones while driving
  - 1997: Introduction of concepts for self-explaining (i.e., standardized) roads and targeting modules in design guidelines
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**Road Safety Programmes of the Federal Government**
- **Planning, Financing, Controlling**
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**University of Wuppertal, and Dr. Markus Lerner, Federal Ministry of Transport, Innovation and Technology, Germany**

**2011: Introduction of fines for driving for high-level rural roads to prevent overspeeding accidents**

**2014: First introduction of three point seat belt**

**2015: Introduction of Brake Assist System (BAS)**

**2016: Introduction of Euro-NCAP testing procedures for vehicle passive safety devices**

**2017: Increasing use of anti-theft braking systems (front, rear)**

**2018: First EMS was introduced in the Federal State of Bavaria, including requirements for staff, equipment and response times. Other federal states follow suit**

**2020: Uniform introduction of emergency call number 112 for EMS**

**The challenge of road safety**

1. Road traffic accidents are the leading cause of death for children aged 1-19 years.
2. In 2019, an estimated 1.35 million people died worldwide in road traffic accidents.
3. About 3,400 people die every day in road traffic accidents around the world.
4. Each year, about 50 million people are injured in road traffic accidents.
5. Road traffic accidents also cause significant economic costs, estimated at over $5 trillion per year worldwide.

**Further information and the infographics as pdf**

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