



# Traffic Impacts of Intelligent Vehicle Safety Systems

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# Overview

1. Introduction to eIMPACT
2. Types of Traffic Effects
3. Determination of Effects
4. Sample Results
5. Conclusion



# eIMPACT

- FP6 Project for DG INFSO
- Carry out a socio-economic impact assessment of IVSS
  - based on a description of relevant IVSS
  - expected impacts on traffic safety and efficiency
- 13 Partners
  - lead by TNO
  - OEM, suppliers, consultants and research institutes
- More Info:
  - Presentation by the coordinator Kerry Malone, paper no. 2555
  - [www.eimpact.eu](http://www.eimpact.eu)

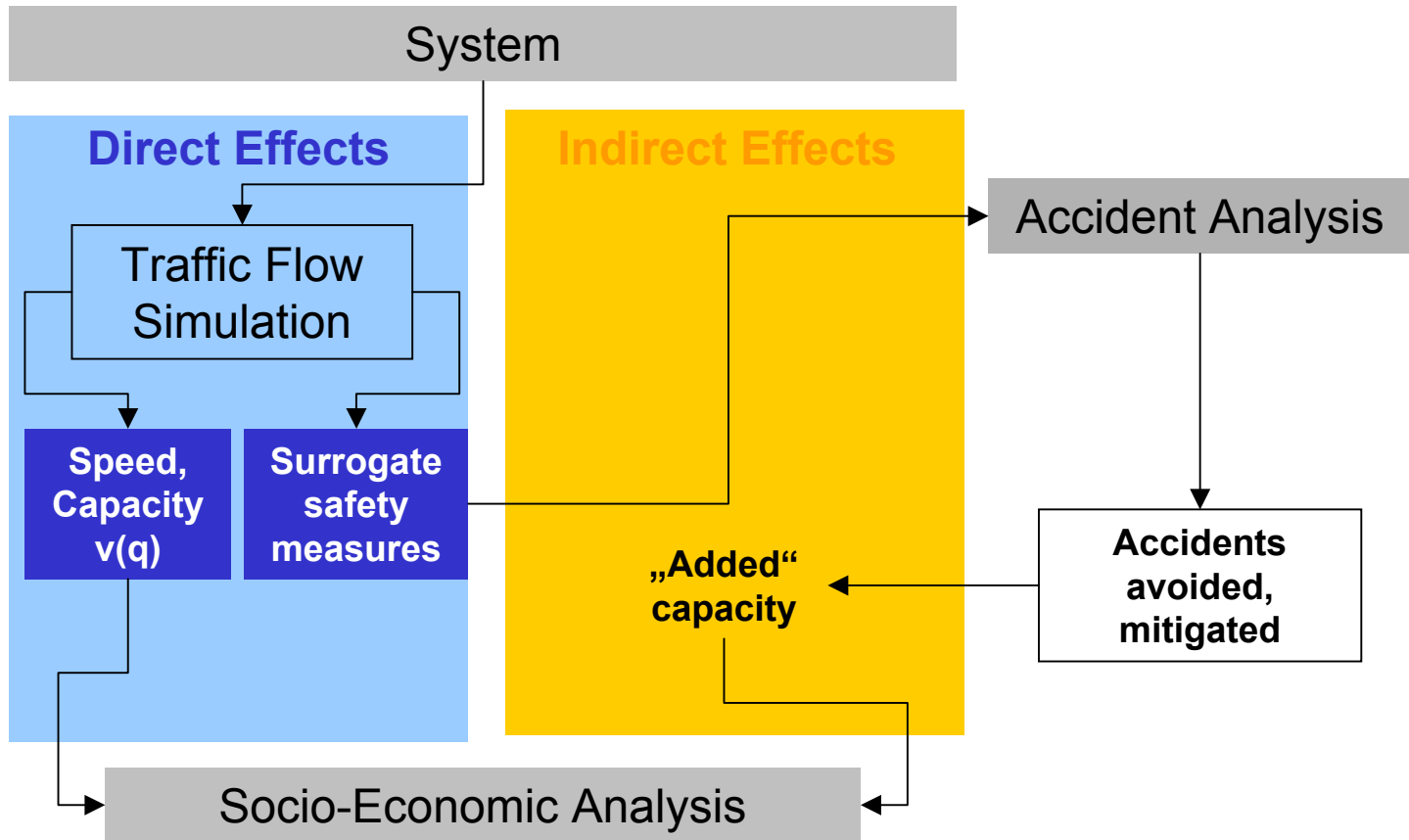


# Traffic Impact Assessment

- Focus
  - Assess what effects do IVSS have on traffic in the future (2010 and 2020)
  - traffic flow effects, surrogate safety measures, possibly fuel consumption and environmental effects
- Methodology used:
  - Three microscopic traffic flow simulation models:
    - ITS Modeller (TNO)
    - VISSIM (PTV)
    - FARSI (DaimlerChrysler)
  - models have been cross-validated
  - supplementary traffic analyses



# Types of Traffic Impacts





## Systems recommended for in-depth assessment

- Wireless Hazard Warning (WILLWARN)
- Speed Alert Systems
- Intersection Safety, e.g. INTERSAFE
- Full Speed Range ACC (Frontal Collision Warning incl.)
- Night Vision
- Vehicle Dynamics Management, e.g. ESP
- eCall
- Lane Keeping Support, e.g. SAFELANE
- Collision Avoidance / Emergency Braking
- Pre-Crash Safety Applications, e.g. COMPOSE
- Lane Departure Warning and Blind Spot Monitoring
- Driver Drowsiness Monitoring and Warning

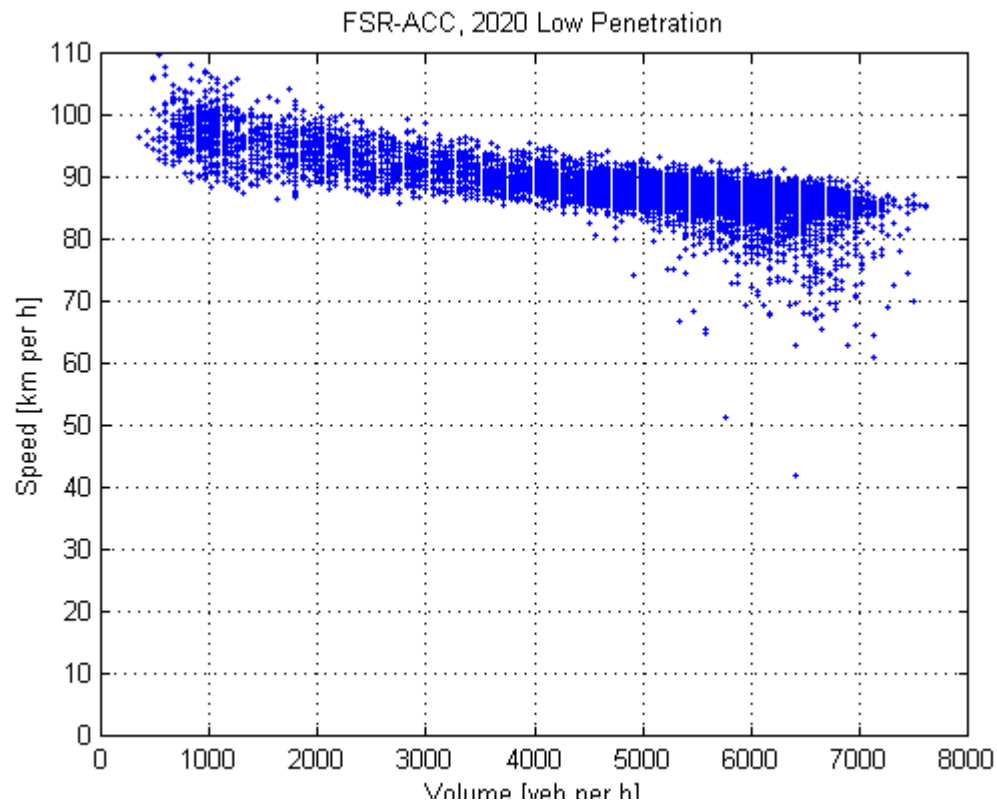


## Systems simulated

- Wireless Hazard Warning → **FARSI + ITS Modeller**
- Speed Alert Systems → **ITS Modeller**
- Intersection Safety, e.g. INTERSAFE → **VISSIM**
- Full Speed Range ACC → **VISSIM**
- Night Vision → **VISSIM**

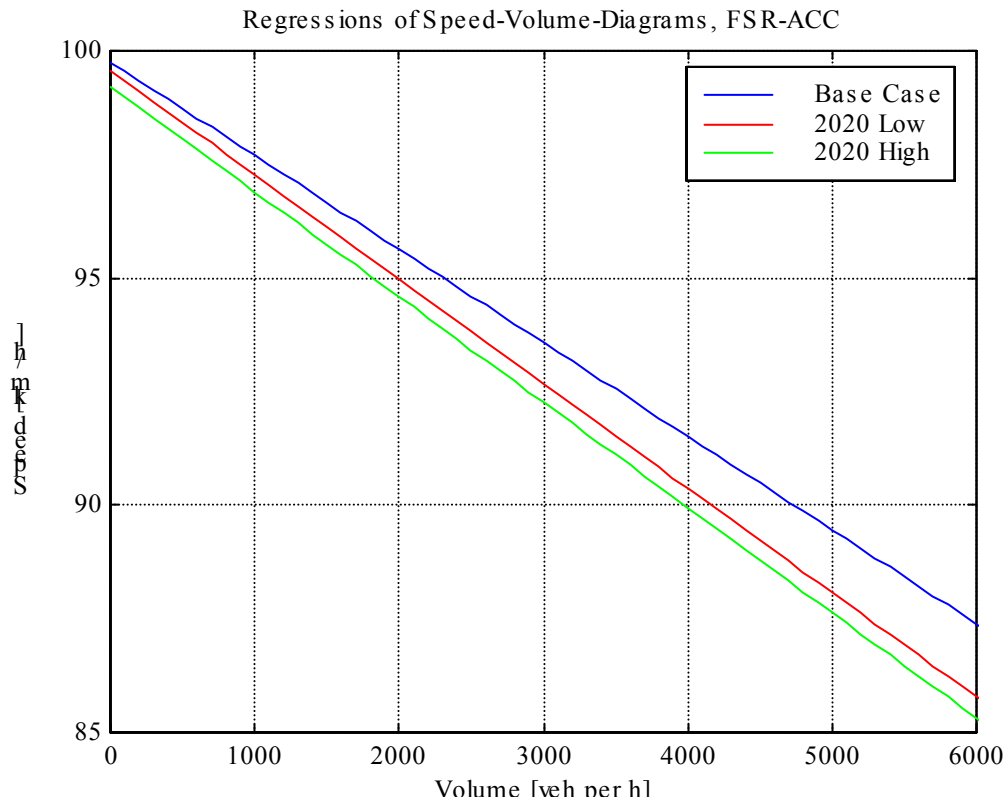


## Example for Results: Speed-Flow-Relationship



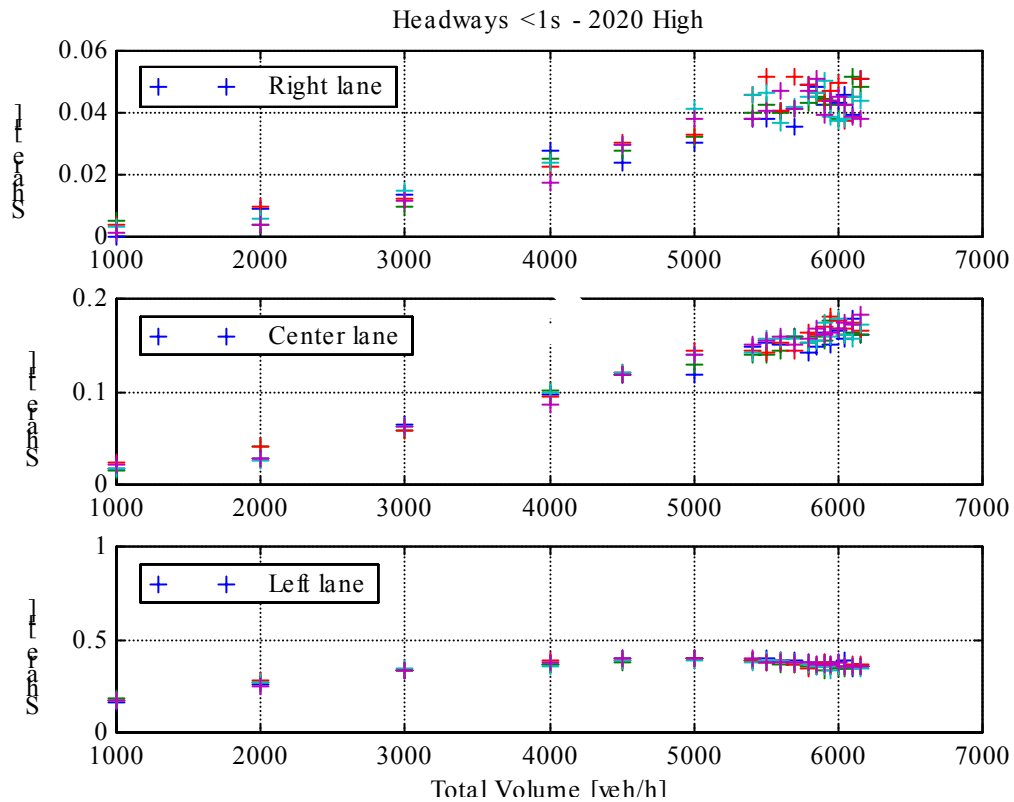


# Statistical Processing of Results





## Example for Results: Small Headways





## Conclusions – Lessons learnt

- Not all systems have (direct) traffic effects
- Indirect effects can play a major role
- Micro-Simulation for IVSS is more effort than expected:
  - Detailed system specs are required
  - A wide variety of conditions is required
  - Some aspects only become clear during the studies
  - Stochastics play an important role!!!



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**[www.eimpact.eu](http://www.eimpact.eu)**