A Road Safety Decision Support System for the Municipality of Perugia

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Summary

- Background
- ISIDE features
- Conclusions

Improving road safety

Improving road safety: *needs*

Data

Knowledge

Actors involved

Issues in Italy

- Issues with accident data:
  - Crash data were not easy available to local government and not geografically localized
- Issues in finding effective road safety solutions:
  - Road safety were not included in a structured way in the local government planning
  - Poor availability of tools and evaluation methods
- Lack of coordination among actors responsible for road safety

Background 1

- In 2006 Perugia Municipality took part to a regional Call for tenders for the implementation of road safety measures
- The municipality of Perugia in partnership with University of Rome and the local Public Transport Agency won with a project called PIU' Sicurezza, meaning "*More Safety*"

Background 2

- PIU' Sicurezza project included:
  - Roundabouts and raised pedestrian crossings
  - Enhancement of bus stops safety and accessibility
  - Costitution of a *Road Safety Monitoring Center* at municipality level
  - Development and implementation of tools to support the road safety management at local level → ISIDE

ISIDE: A Road Safety Decision Support System

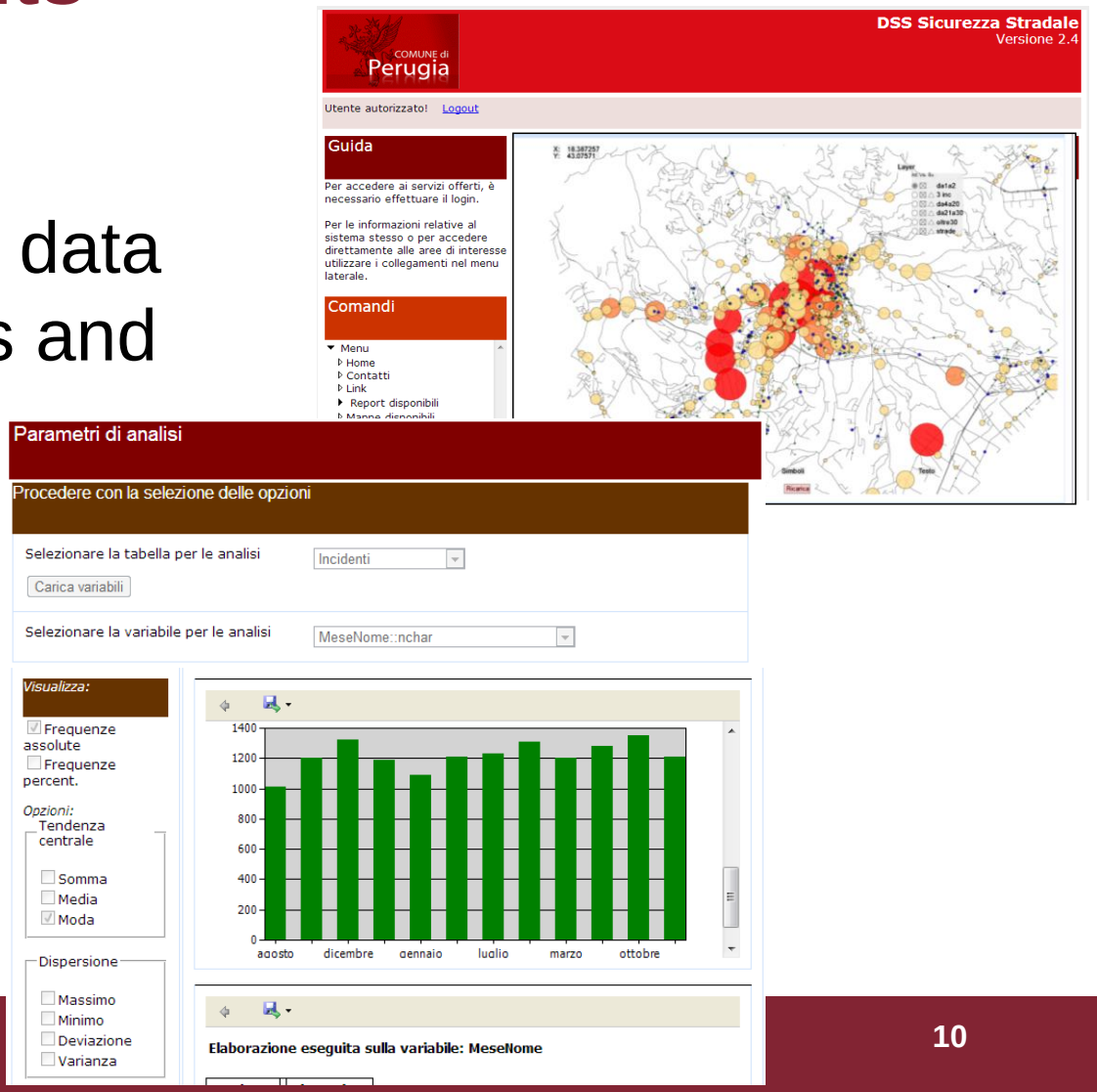
- The system has been developed by the research Center for Transport and Logistics of the University of Rome La Sapienza
- It is fed by data acquired from the local police crash database
- It works with tools and knowledge taken from literature

ISIDE: Main features

- ISIDE is a web-based system to support the local government in:
  - Monitoring trends and distribution of road accidents
  - Identifying high concentration roads and intersections
  - Analizing road safety issues
  - Identifying most effective countermeasures

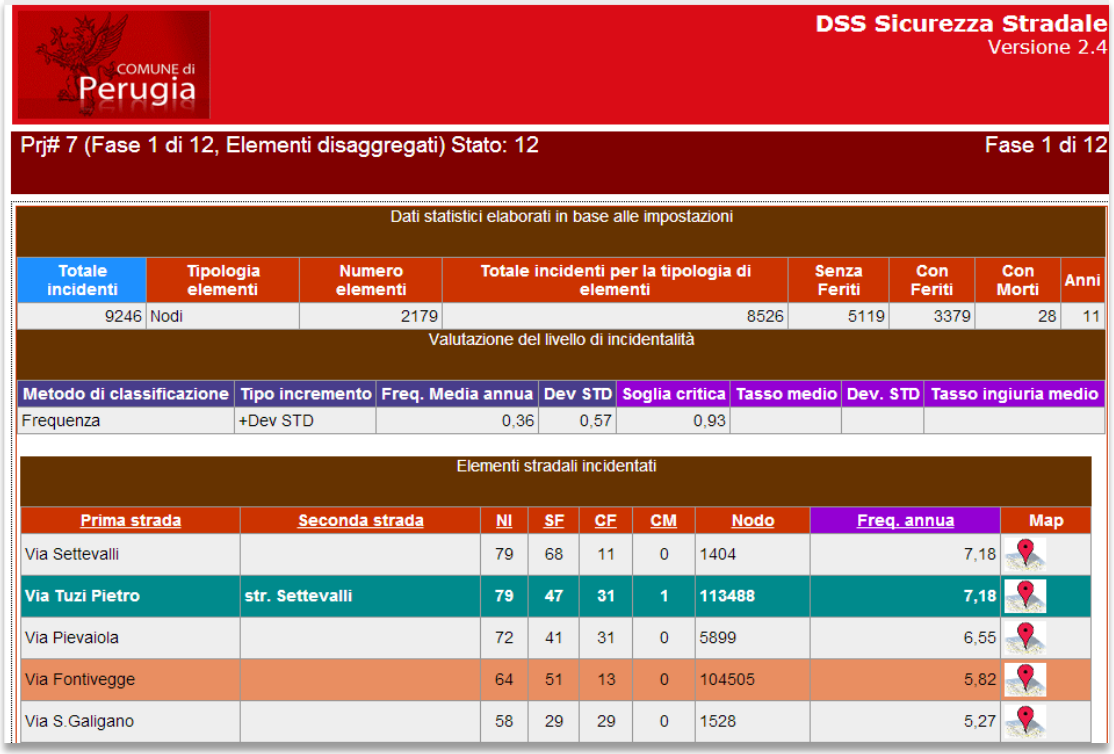
Monitoring trends and distribution of road accidents

- Possibility to analize crash data through maps and diagrams



Identifying high concentration roads and intersections

- Ranks road sections or intersections of the road network based on different road safety indicators



COMUNE di Perugia

DSS Sicurezza Stradale
Versione 2.4

Prj# 7 (Fase 1 di 12, Elementi disaggregati) Stato: 12 — Fase 1 di 12

Dati statistici elaborati in base alle impostazioni

Totale incidenti	Tipologia elementi	Numero elementi	Totale incidenti per la tipologia di elementi	Senza Feriti	Con Feriti	Con Morti	Anni
9246	Nodi	2179	8526	5119	3379	28	11

Valutazione del livello di incidentalità

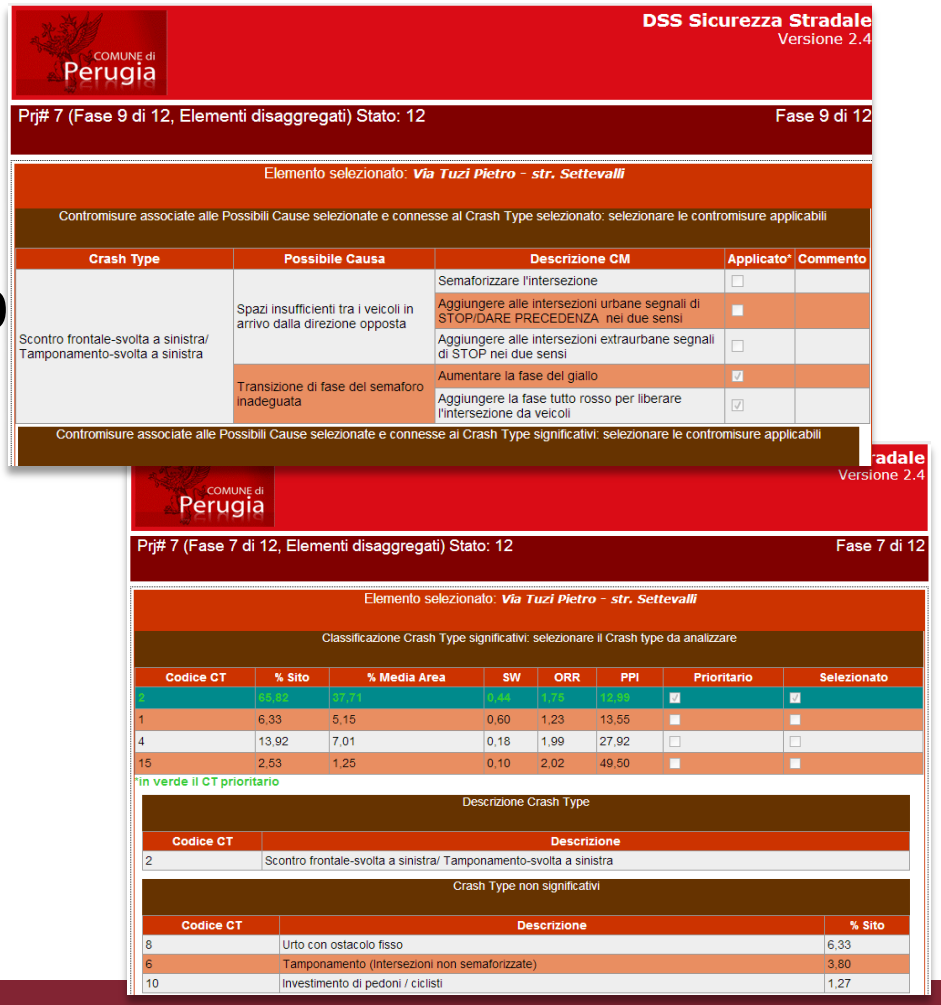
Metodo di classificazione	Tipo incremento	Freq. Media annua	Dev STD	Soglia critica	Tasso medio	Dev. STD	Tasso ingiuria medio
Frequenza	+Dev STD	0,36	0,57	0,93			

Elementi stradali incidentati

Prima strada	Seconda strada	NI	SF	CF	CM	Nodo	Freq. annua	Map
Via Settevalli		79	68	11	0	1404	7,18	
Via Tuzi Pietro	**str. Settevalli**	**79**	**47**	**31**	**1**	**113488**	**7,18**	
Via Pievaiola		72	41	31	0	5899	6,55	
Via Fontivegge		64	51	13	0	104505	5,82	
Via S.Galigano		58	29	29	0	1528	5,27	

Analyzing road safety issues

- Identifies the most critical crash type on a road section o intersection
- Links crash type and road safety issues and proposes feasible countermeasures



COMUNE di Perugia

DSS Sicurezza Stradale
Versione 2.4

Prj# 7 (Fase 9 di 12, Elementi disaggregati) Stato: 12 — Fase 9 di 12

Elemento selezionato: ***Via Tuzi Pietro - str. Settevalli***

Contromisure associate alle Possibili Cause selezionate e connesse al Crash Type selezionato: selezionare le contromisure applicabili

Crash Type	Possibile Causa	Descrizione CM	Applicato*	Commento
Scontro frontale-svolta a sinistra/ Tamponamento-svolta a sinistra	Spazi insufficienti tra i veicoli in arrivo dalla direzione opposta	Semaforizzare l'intersezione	☐	
		Aggiungere alle intersezioni urbane segnali di STOP/DARE PRECEDENZA nei due sensi	☐	
		Aggiungere alle intersezioni extraurbane segnali di STOP nei due sensi	☐	
	Transizione di fase del semaforo inadeguata	Aumentare la fase del giallo	☑	
		Aggiungere la fase tutto rosso per liberare l'intersezione da veicoli	☑	

Contromisure associate alle Possibili Cause selezionate e connesse ai Crash Type significativi: selezionare le contromisure applicabili

COMUNE di Perugia

…radale
Versione 2.4

Prj# 7 (Fase 7 di 12, Elementi disaggregati) Stato: 12 — Fase 7 di 12

Elemento selezionato: ***Via Tuzi Pietro - str. Settevalli***

Classificazione Crash Type significativi: selezionare il Crash type da analizzare

Codice CT	% Sito	% Media Area	SW	ORR	PPI	Prioritario	Selezionato
2	65,82	37,71	0,44	1,76	12,99	☑	☑
1	6,33	5,15	0,60	1,23	13,55	☐	☐
4	13,92	7,01	0,18	1,99	27,92	☐	☐
15	2,53	1,25	0,10	2,02	49,50	☐	☐

*in verde il CT prioritario

Descrizione Crash Type

Codice CT	Descrizione
2	Scontro frontale-svolta a sinistra/ Tamponamento-svolta a sinistra

Crash Type non significativi

Codice CT	Descrizione	% Sito
8	Urto con ostacolo fisso	6,33
6	Tamponamento (Intersezioni non semaforizzate)	3,80
10	Investimento di pedoni / ciclisti	1,27

Identifying most effective countermeasures

- Supports the user in analysing the effectiveness of selected measures through Benefit/Cost Analysis
- Makes use of *Crash Reduction Factors* to estimate the benefits of a countermeasure
- Produces a report of the main steps of the analysis

Lesson learned

- Importance of data:
  - Analysis results strongly depend on data availability and quality → Strong effort on data management and localization
- Not only data!
  - Importance of a structured approach to deal with road safety issues
- Political will is needed

Limitations of use

- Knowledge about effects of road measures has been transferred from literature to Perugia → Calibration to local context
- Presentation of information and ease of use

Conclusions

- Enhancement of knowledge about spatial distribution of the phenomenon
- Road safety decisions supported by data
- The system is still under development
  - Enhancemen of the user interface
  - Further functions and analysis tools, e.g. Safety Performance functions (PIU' Sicurezza 2)

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THANK YOU FOR YOUR ATTENTION!