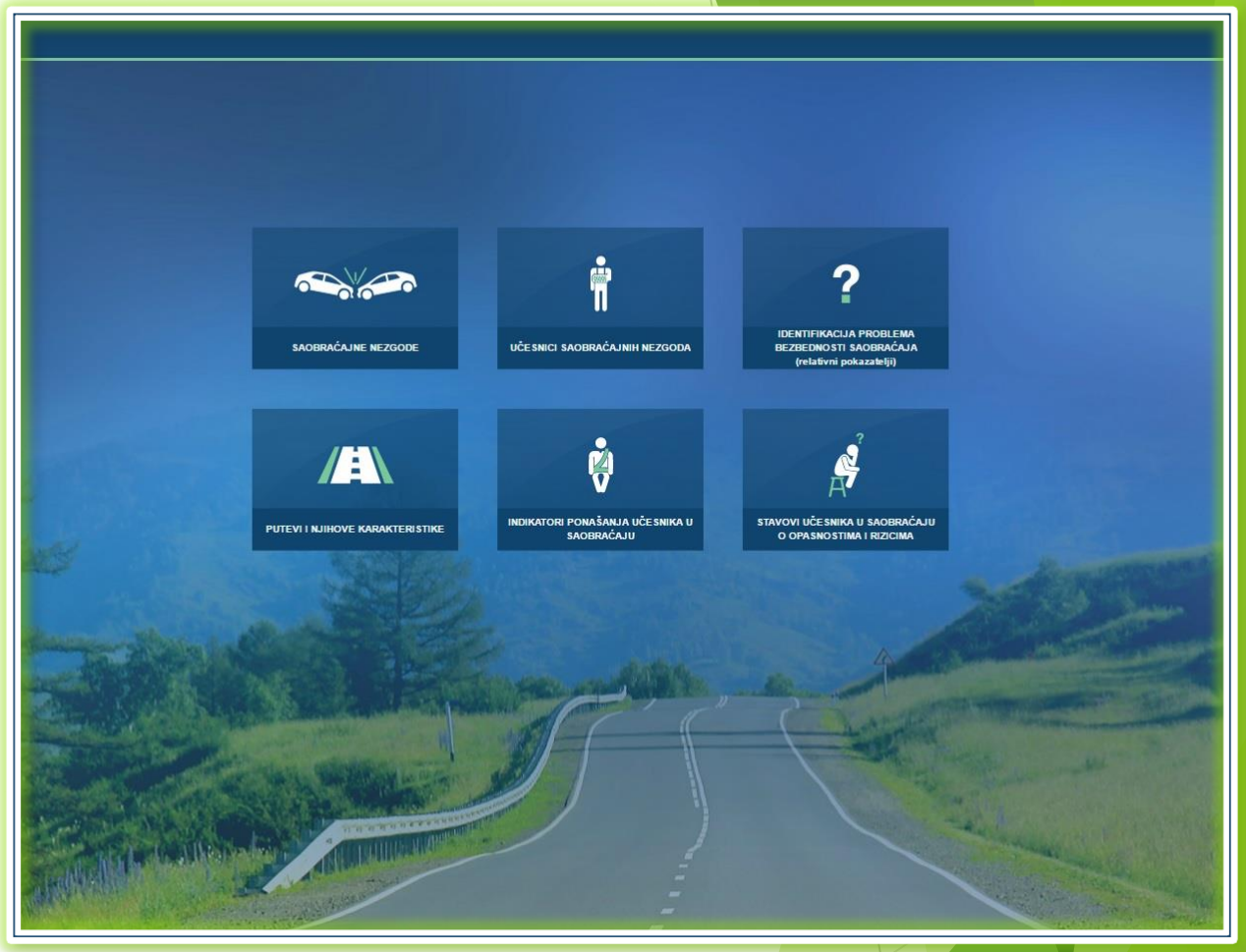
EaP Road Safety Cooperation
Crash Data System and Crash Data Analysis
August 29th, 2018
VC meeting, Armenia



Need for better stakeholder coordination in the process of establishment and development of the road safety database (European examples)

Dr Dragoslav Kukić

International Crash Data Specialist and Road Safety Specialist

EaP | Eastern Partnership

World Bank

SWEDEN

National Road Accident Database

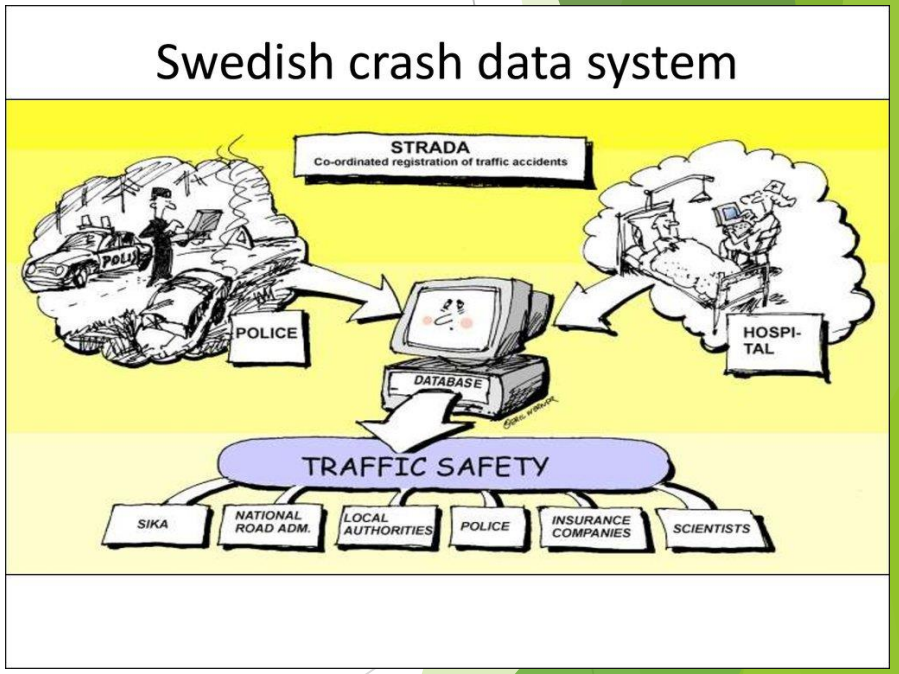
- ***STRADA***

- The most comprehensive and relevant national road accident database

- **Includes:**

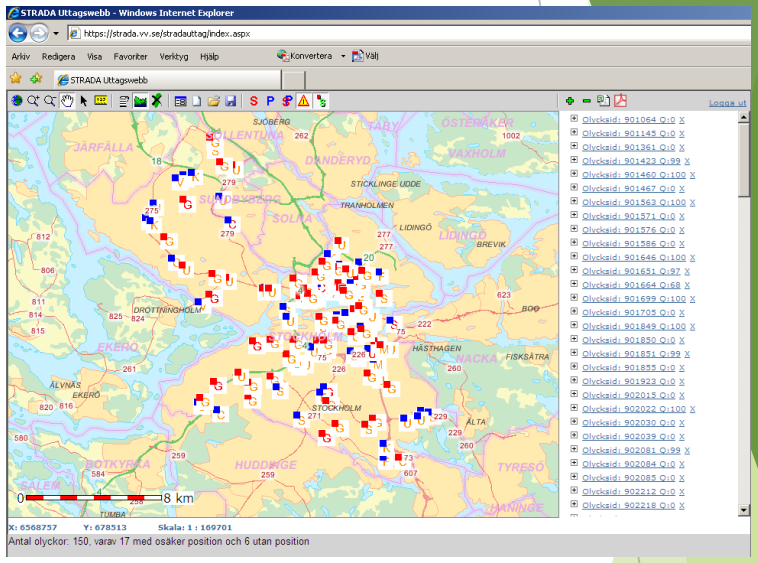
✓ Swedish Transport Agency
✓ Police
✓ Hospitals
✓ Cities

- **Aim** - combination of police and hospitals reports



SWEDEN → **TRAFIKVERKET – Swedish Transport Administration**

STRADA



Driving license register, vehicle register, road data

Hospital

Police

STRADA 1 → STRADA 2

Data de-identification

STRADA
Swedish TRaffic Accident Data Acquisition

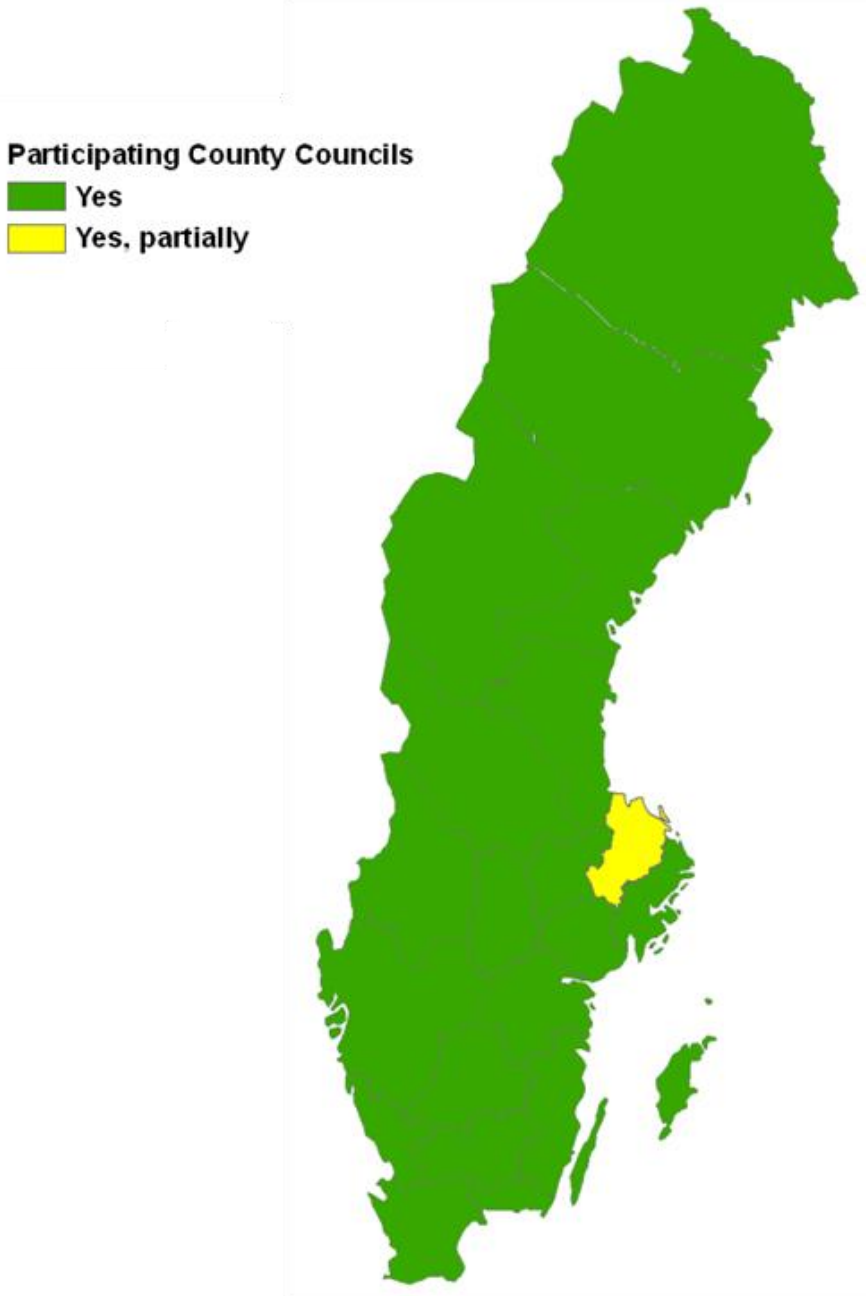
Police

Mandatory registration
In STRADA since 2003
(regulation)

Hospitals

Registration in STRADA is voluntary and economically compensated by the Swedish Transport Agency.

STRADA



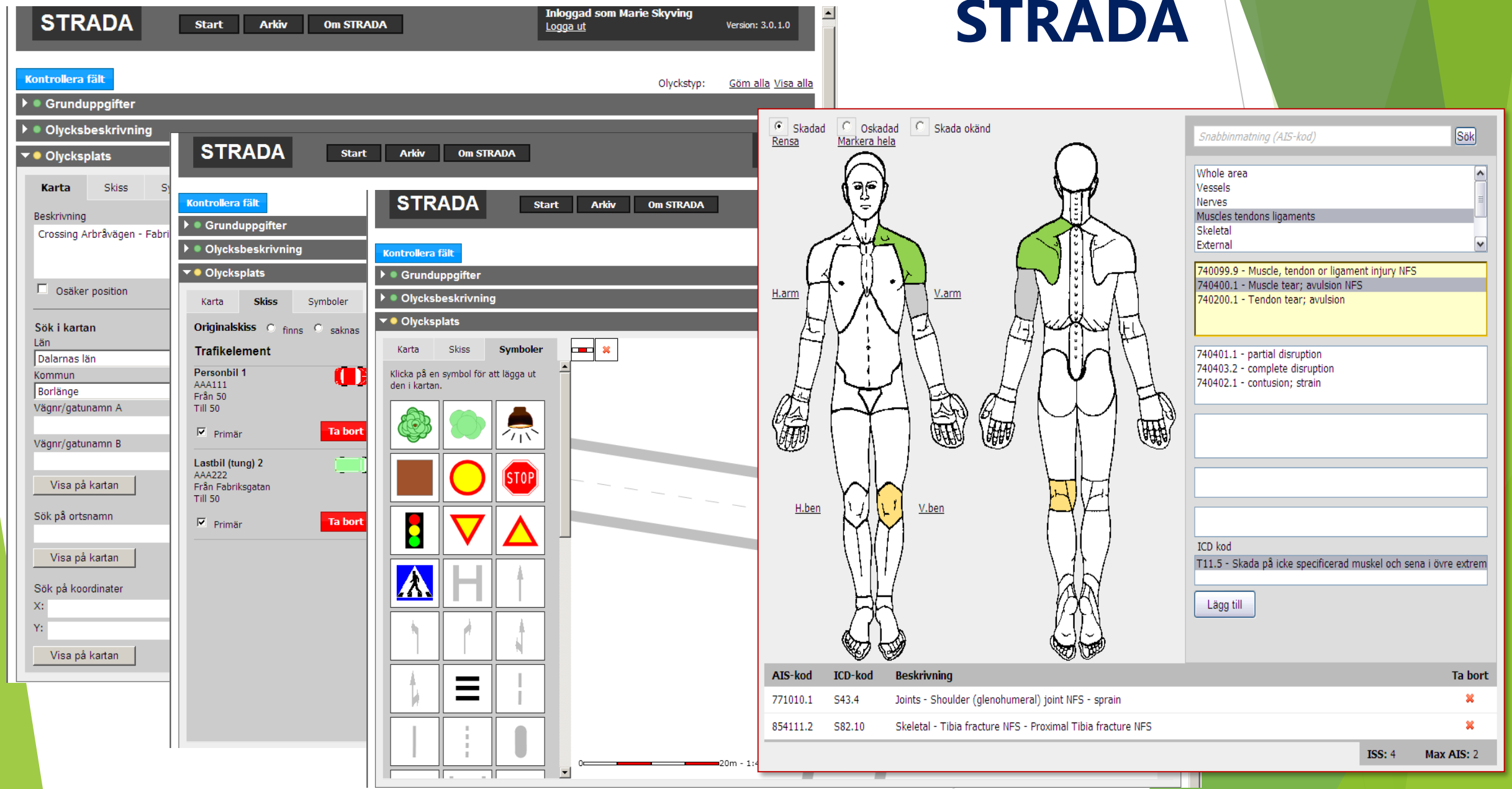
Coverage, hospitals

20 counties with registration in all hospitals (green)

1 county with partial registration (yellow)

68 of 69 emergency-hospitals

STRADA

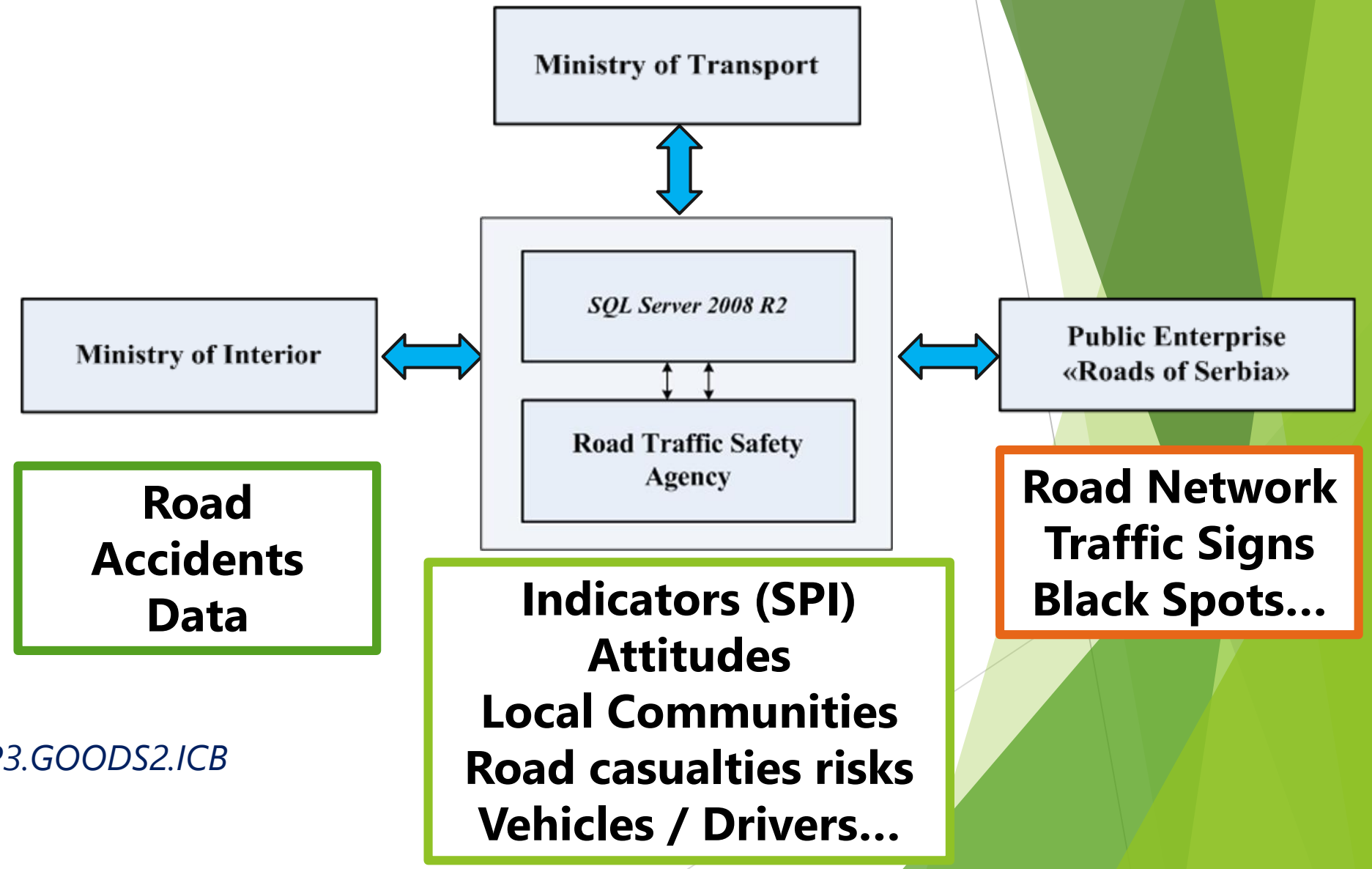

STRADA
Start
Arkiv
Om STRADA
Inloggad som Marie Skyving
Logga ut
Version: 3.0.1.0
Kontrollera fält
Olyckstyp:
Göm alla
Visa alla
Grunduppgifter
Olycksbeskrivning
Olycksplats
Karta
Skiss
Symboler
Beskrivning
Crossing Arbråvägen - Fabri
Osäker position
Sök i kartan
Län
Dalarnas län
Kommun
Borlänge
Vägnr/gatunamn A
Vägnr/gatunamn B
Visa på kartan
Sök på ortsnamn
Visa på kartan
Sök på koordinater
X:
Y:
Visa på kartan
Originalskiss
finns
saknas
Trafikelement
Personbil 1
AAA111
Från 50
Till 50
Primär
Ta bort
Lastbil (tung) 2
AAA222
Från Fabriksgatan
Till 50
Primär
Ta bort
Klicka på en symbol för att lägga ut den i kartan.
STOP
Skadad
Oskadad
Skada okänd
Rensa
Markera hela
H.arm
V.arm
H.ben
V.ben
Snabbinmatning (AIS-kod)
Sök
Whole area
Vessels
Nerves
Muscles tendons ligaments
Skeletal
External
740099.9 - Muscle, tendon or ligament injury NFS
740400.1 - Muscle tear; avulsion NFS
740200.1 - Tendon tear; avulsion
740401.1 - partial disruption
740403.2 - complete disruption
740402.1 - contusion; strain
ICD kod
T11.5 - Skada på icke specificerad muskel och sena i övre extrem
Lägg till
AIS-kod
ICD-kod
Beskrivning
Ta bort
771010.1
S43.4
Joints - Shoulder (glenohumeral) joint NFS - sprain
854111.2
S82.10
Skeletal - Tibia fracture NFS - Proximal Tibia fracture NFS
ISS: 4
Max AIS: 2

Serbia

Unique Road Safety Database

World Bank Project – implemented in 2016

IFB No: *CORRX.WB.COMP3.GOODS2.ICB*

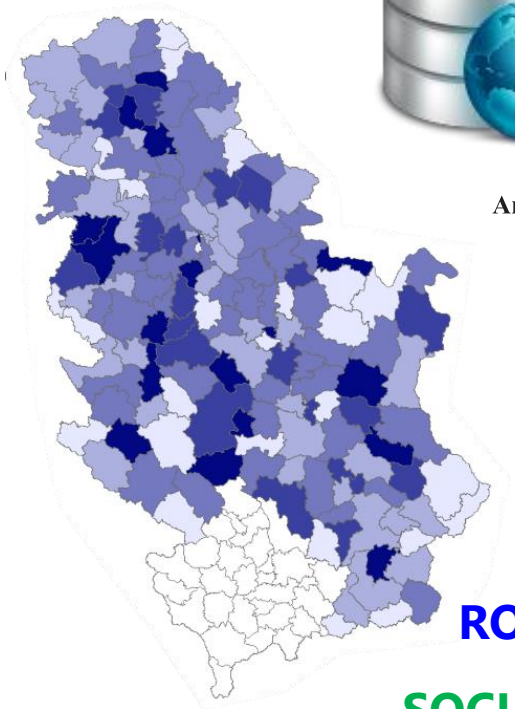


Unique Road Safety Database
World Bank Project – implemented in 2016

DATABASE SERVER

Microsoft SQL Server 2012

Република Србија
Агенција за безбедност саобраћаја



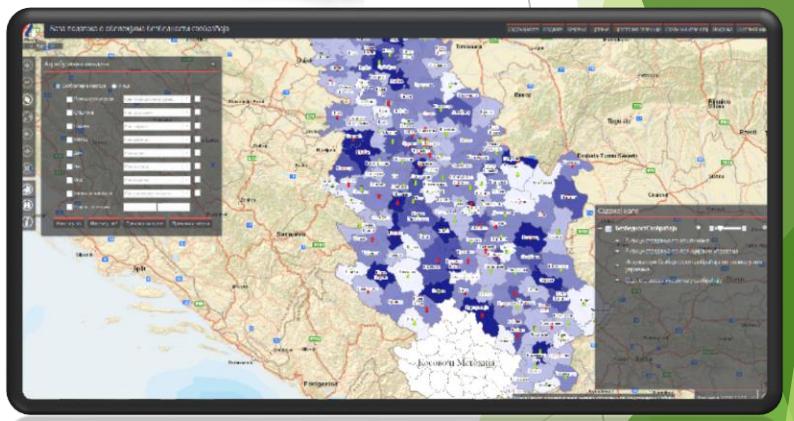
ROAD ACCIDENTS AND CONSEQUENCES

ROAD SAFETY RISKS

SAFETY PERFORMANCE INDICATORS

ROADS – STATE ROADS REFERENCE SYSTEM

SOCIAL ATTITUTEDES ABOUT RISKS IN TRAFFIC



WEB SERVER
ArcGIS SERVER

Cyrillic| Latynic| English

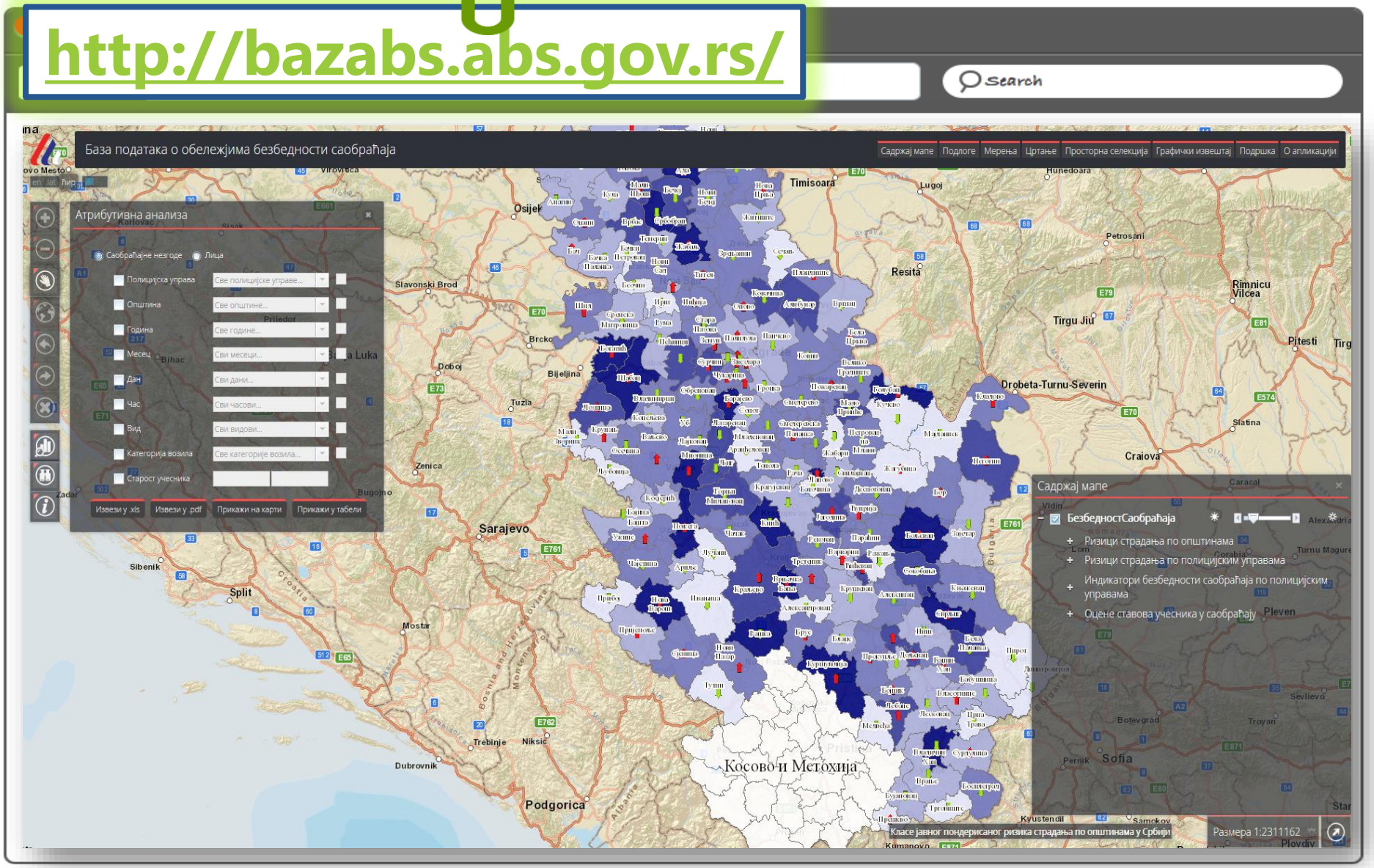
+ other data (population, registered motor vehicles, local bodies on road safety, etc.)

Importance of Road safety database

- **Local communities** recognized problems and direct the activities for road safety improvement (potential for own local road safety database).
- **Traffic police** may to direct activities in accordance with data based on indicators, accidents and attitudes.
- **Other users** could get basic **information and data for research papers, own researches, newspapers etc.**
- **Available to everyone** from every software platform in every moment ca (for now lower aspect for mobile phone platform).
- **Combination of different data from different data source.**

WEB GIS Application
PUBLICLY AVAILABLE

http://bazabs.abs.gov.rs/



Basic parts of Application…

Attributive

- **Data available to everyone** on the same condition
- Available **from every software platform** (without procedures) in every time
- **Combination of tables directly in application**
- **Excel and PDF** for export data, and review of data direct in the Application

Graphic

- Possibilities to analysing (search) **interactive maps**
- Possibilities **to draw on maps** (creating and producing of own maps)
- **Exports of maps in PDF** (A4 or A3)
- Getting a detail data by **using of identification tool**

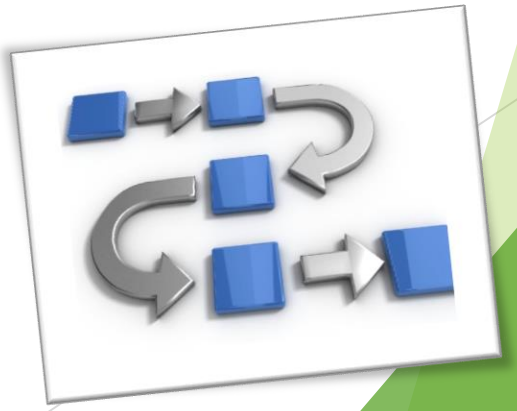
Attributive analysis !!!

ROAD ACCIDENTS ⟷ **PERSONS DATA (INVOLVED IN RA)**

- ✓ Police departments (27)
- ✓ Municipalities (161)
- ✓ Year
- ✓ Month
- ✓ Day
- ✓ Hour
- ✓ Type of RA
- ✓ Category of vehicle
- ✓ Date of birth
- ✓ …

+ ADDITIONAL OPTIONS

- ✓ Type of road users
- ✓ Gender
- ✓ Persons connected with category of vehicles
- ✓ …



CLUSTERING OF DATA & DATA FILTER

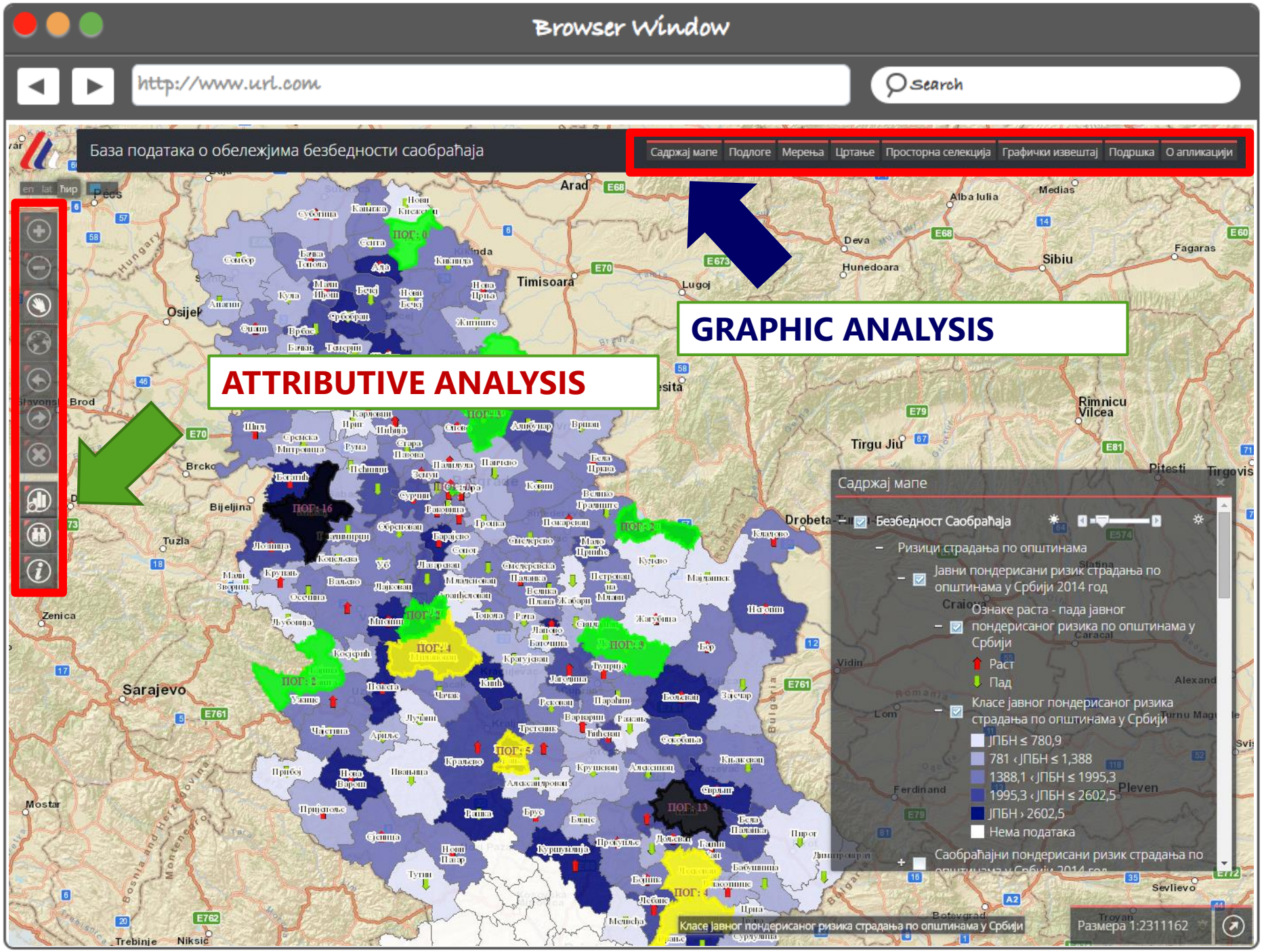
Answers from the Database…

Who are injured or killed in road accidents?

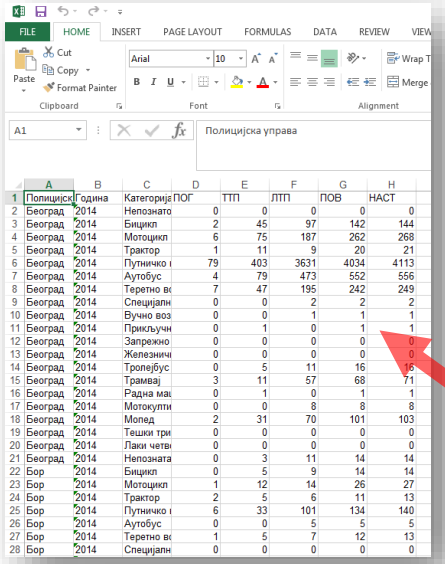
When accidents happened?

Which are the types of road accidents?

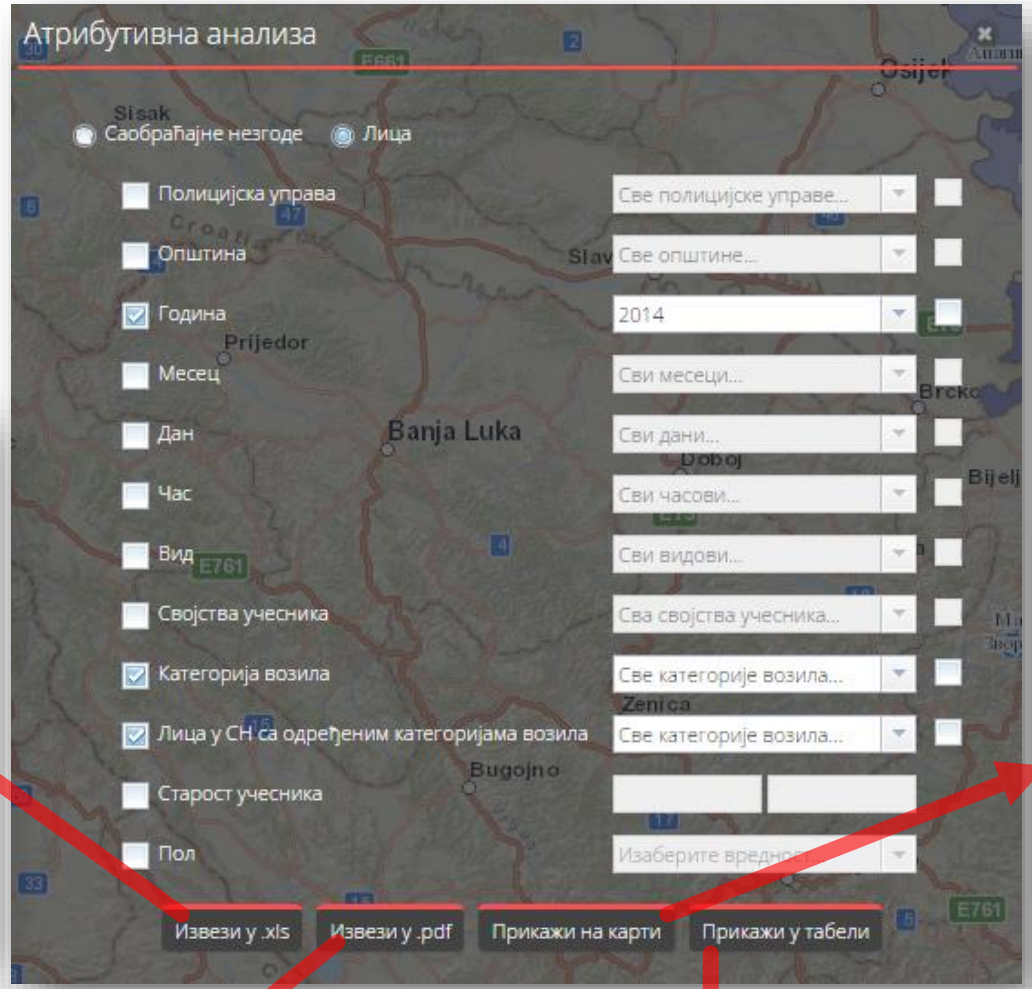
Where* accidents happened?

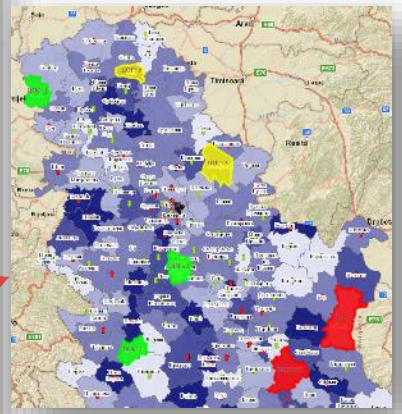

Browser Window
http://www.url.com
Search
База података о обележјима безбедности саобраћаја
Садржај мапе
Подлоге
Мерења
Цртање
Просторна селекција
Графички извештај
Подршка
О апликацији
GRAPHIC ANALYSIS
ATTRIBUTIVE ANALYSIS
Садржај мапе
Безбедност Саобраћаја
Ризици страдања по општинама
Јавни пондерисани ризик страдања по општинама у Србији 2014 год
Ознаке раста - пада јавног пондерисаног ризика по општинама у Србији
Раст
Пад
Класе јавног пондерисаног ризика страдања по општинама у Србији
ЈПБН ≤ 780,9
781 ‹ ЈПБН ≤ 1,388
1388,1 ‹ ЈПБН ≤ 1995,3
1995,3 ‹ ЈПБН ≤ 2602,5
ЈПБН › 2602,5
Нема података
Саобраћајни пондерисани ризик страдања по
Класе јавног пондерисаног ризика страдања по општинама у Србији
Размера 1:2311162

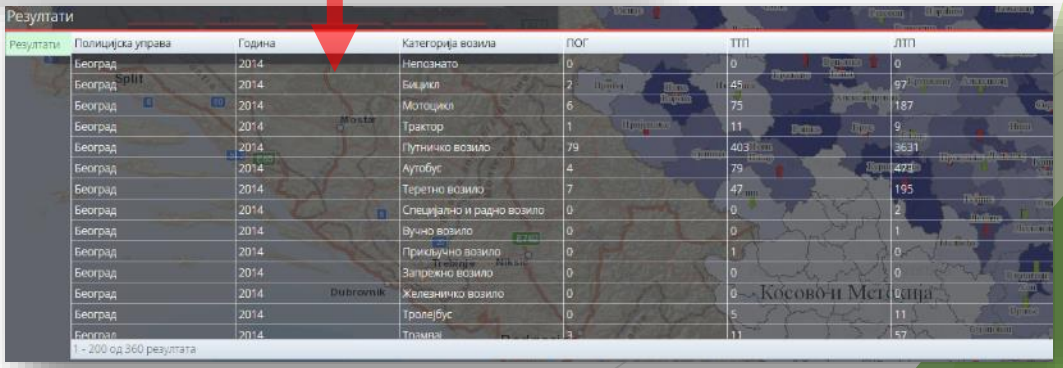
DATA VIEW



Полицијска	Година	Категорије	ПОГ	ТТП	ЛТП	ПОВ	НАСТ
Београд	2014	Непознато	0	0	0	0	0
Београд	2014	Бицикл	2	45	97	142	144
Београд	2014	Мотоцикл	6	75	187	262	268
Београд	2014	Трактор	1	11	9	20	21
Београд	2014	Путничко	79	403	3631	4034	4113
Београд	2014	Аутобус	4	79	473	552	556
Београд	2014	Теретно во	7	47	195	242	249
Београд	2014	Специјалн	0	0	2	2	2
Београд	2014	Вучно воз	0	0	1	1	1
Београд	2014	Прикључн	0	1	0	1	1
Београд	2014	Запрежно	0	0	0	0	0
Београд	2014	Железнич	0	0	0	0	0
Београд	2014	Тролејбус	0	5	11	16	16
Београд	2014	Трамвај	3	11	57	68	71
Београд	2014	Радна ма	0	1	0	1	1
Београд	2014	Мотокулти	0	0	8	8	8
Београд	2014	Мопед	2	31	70	101	103
Београд	2014	Тешки три	0	0	0	0	0
Београд	2014	Лаки четв	0	0	0	0	0
Београд	2014	Непозната	0	3	11	14	14
Бор	2014	Бицикл	0	5	9	14	14
Бор	2014	Мотоцикл	1	12	14	26	27
Бор	2014	Трактор	2	5	6	11	13
Бор	2014	Путничко	6	33	101	134	140
Бор	2014	Аутобус	0	0	5	5	5
Бор	2014	Теретно во	1	5	7	12	13
Бор	2014	Специјалн	0	0	0	0	0

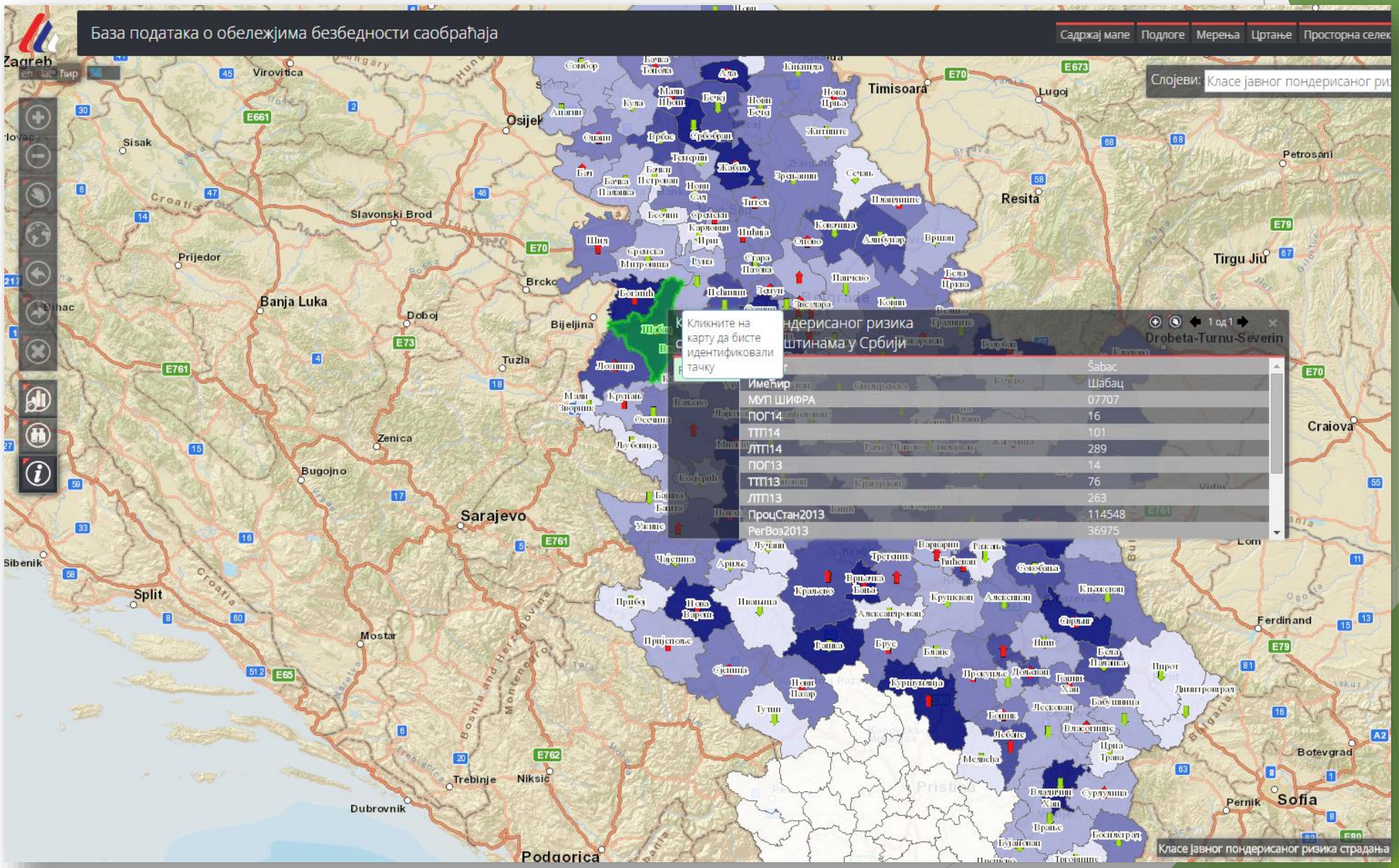






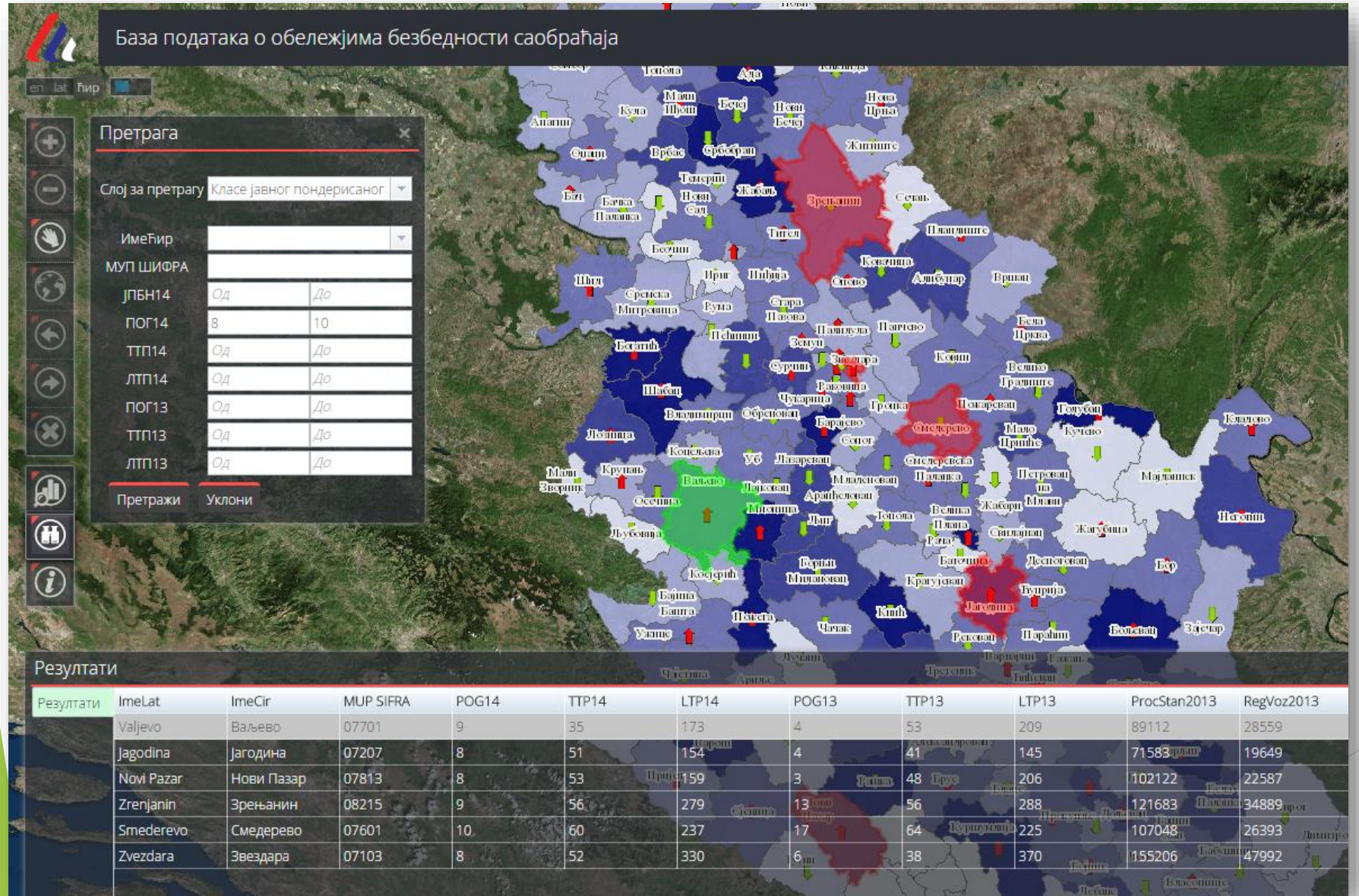
SEARCH TOOL

Possibilities of reviewing data from the map

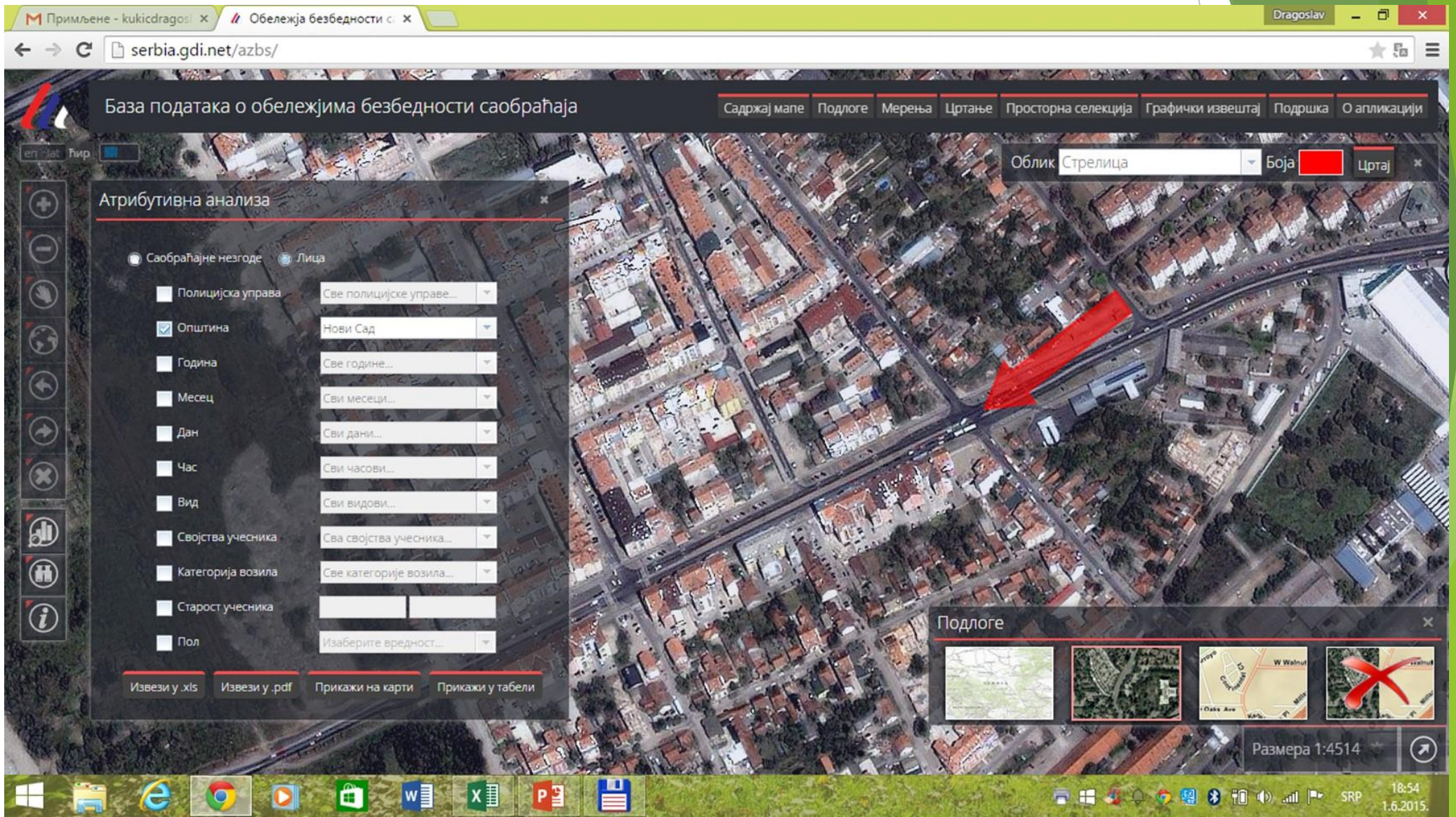


SEARCH TOOL

Possibilities of searching of all Layers

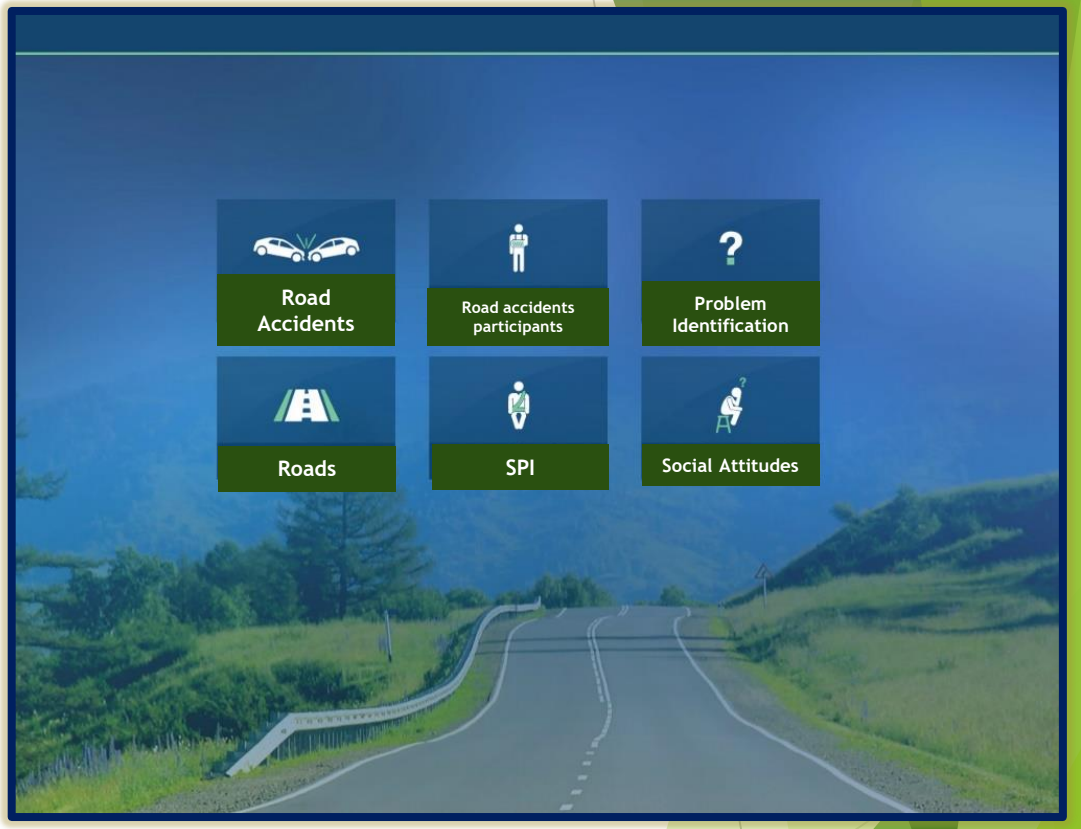


Positioning of road accidents



Next approach for Improvement

Cities and municipalities!



Road Safety Portal for cities and municipalities

1.

2.

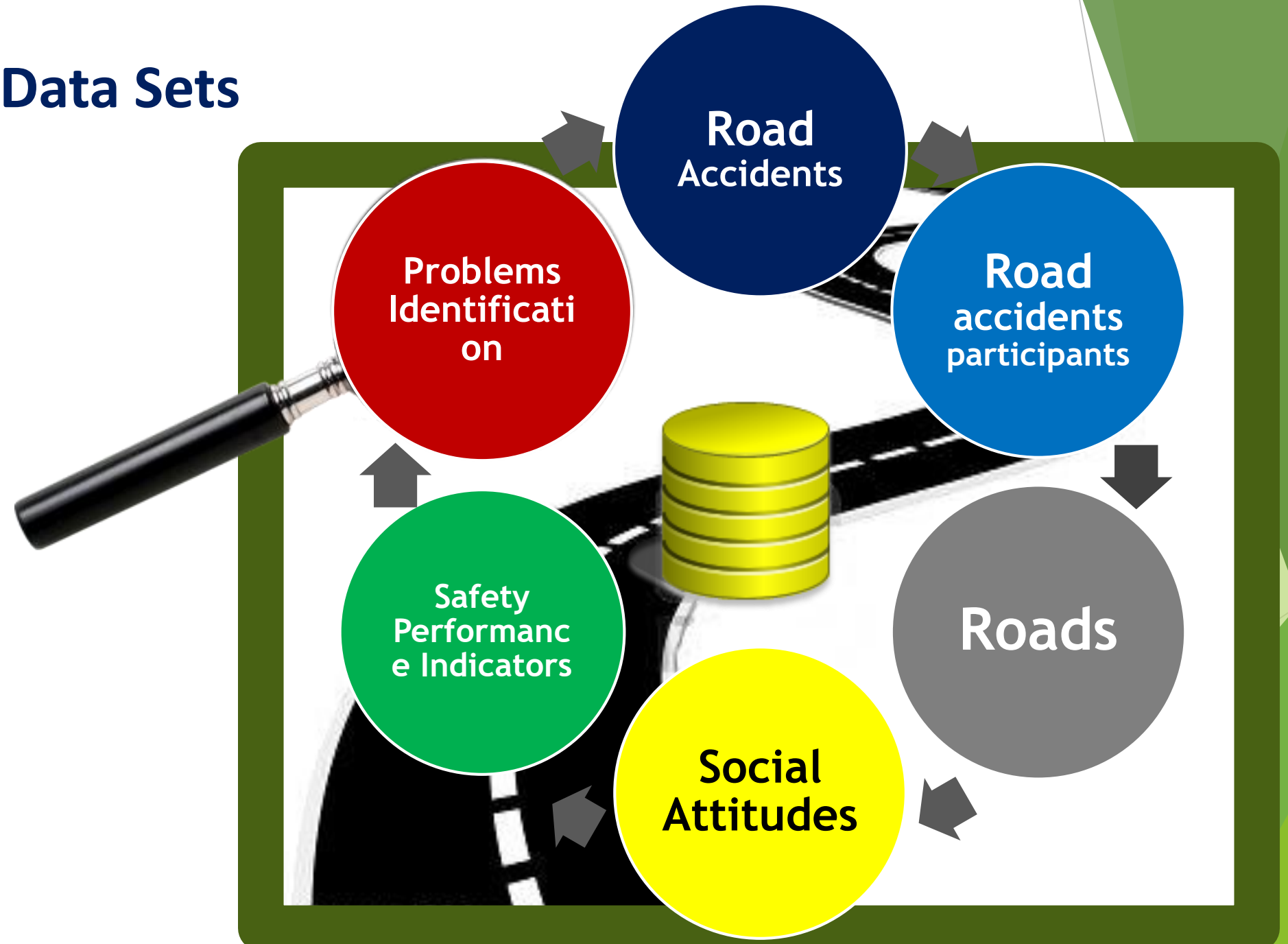
3.

4.

5.

6.

Data Sets

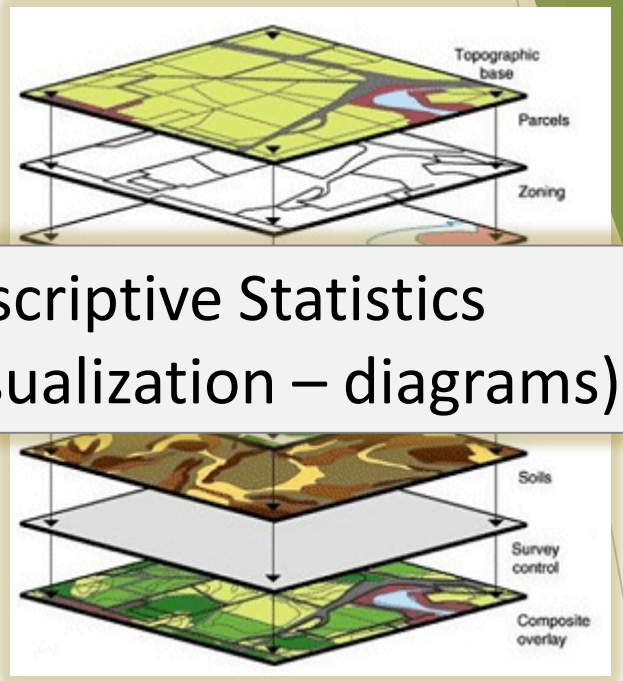


1. i 2. Data sets

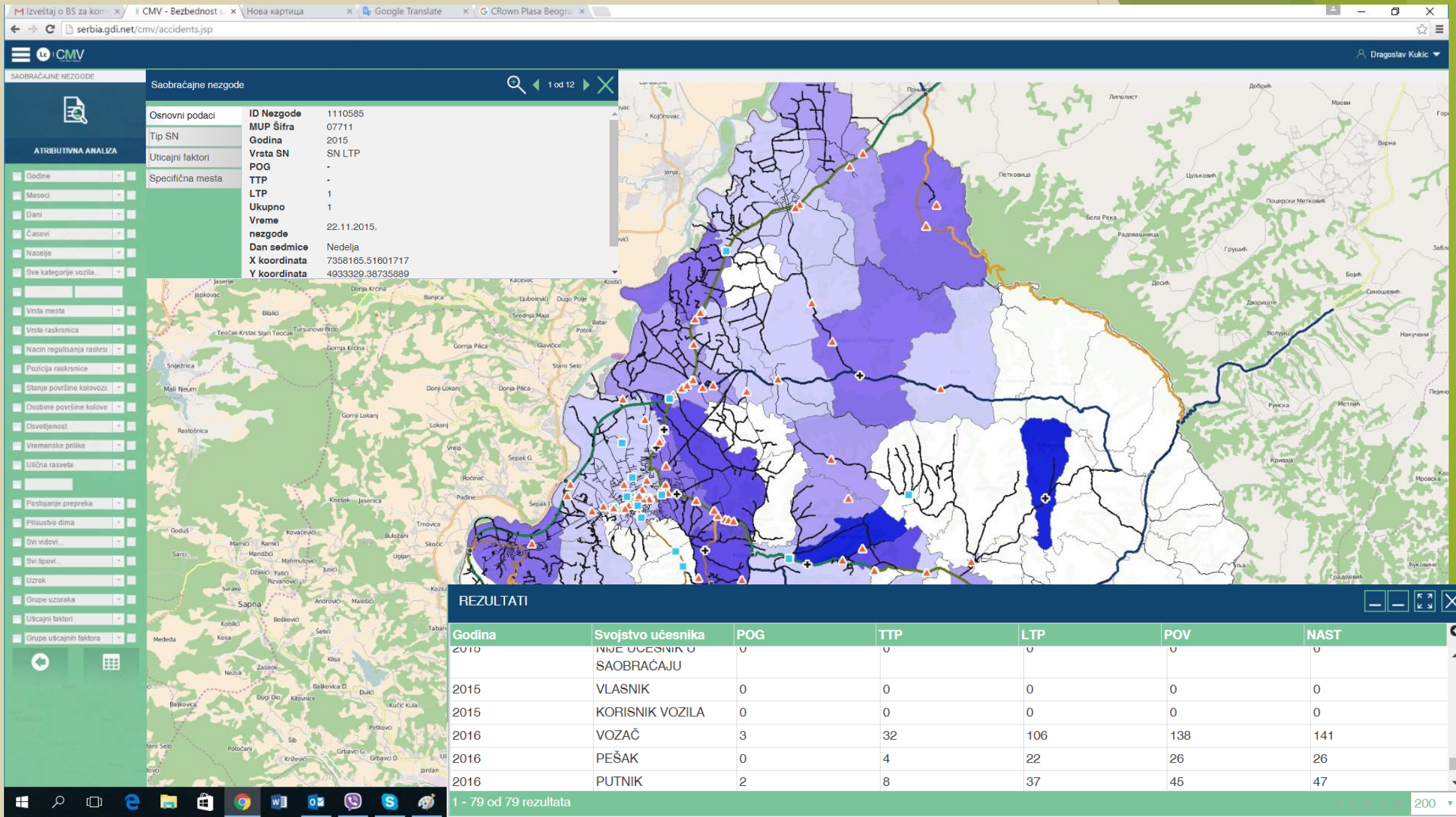
Absolut indicators (number and consequences of road accidents – level of injuries), Source: MI-TPA

Descriptive Statistics (visualization – diagrams)

Road accidents locations (coordinates of road accidents) Source: MI-TPA



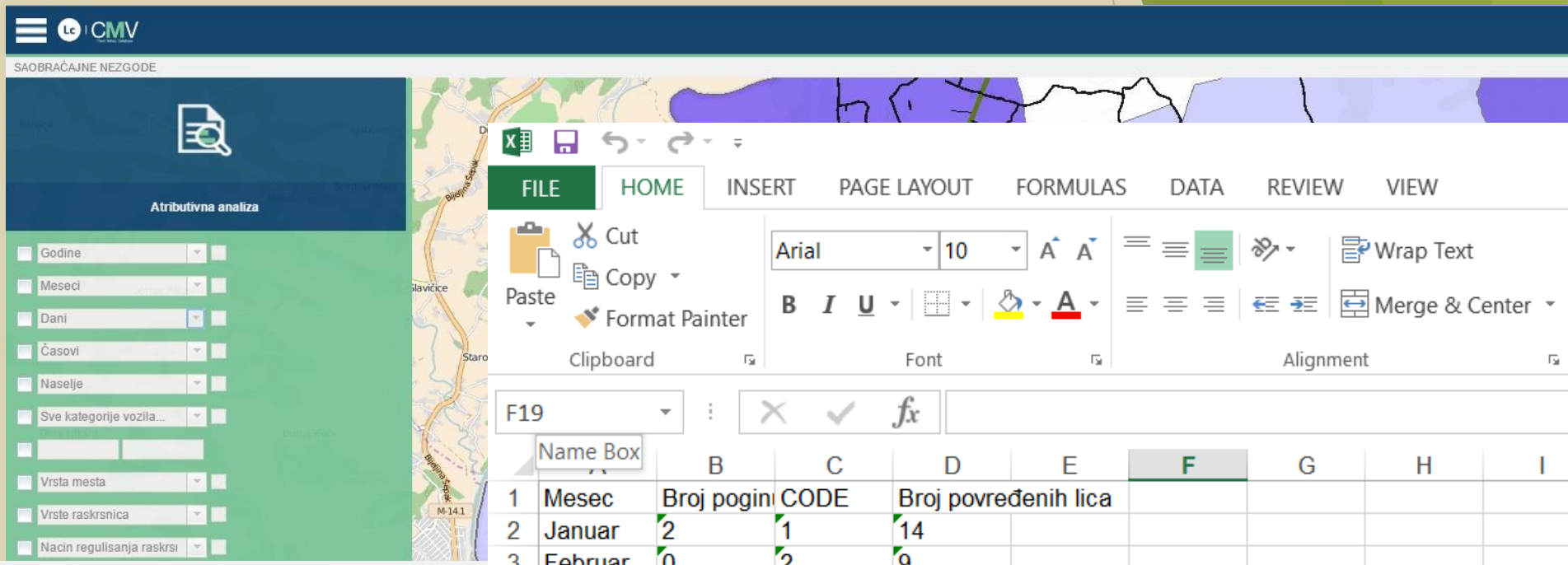
1. Road accidents and Participants

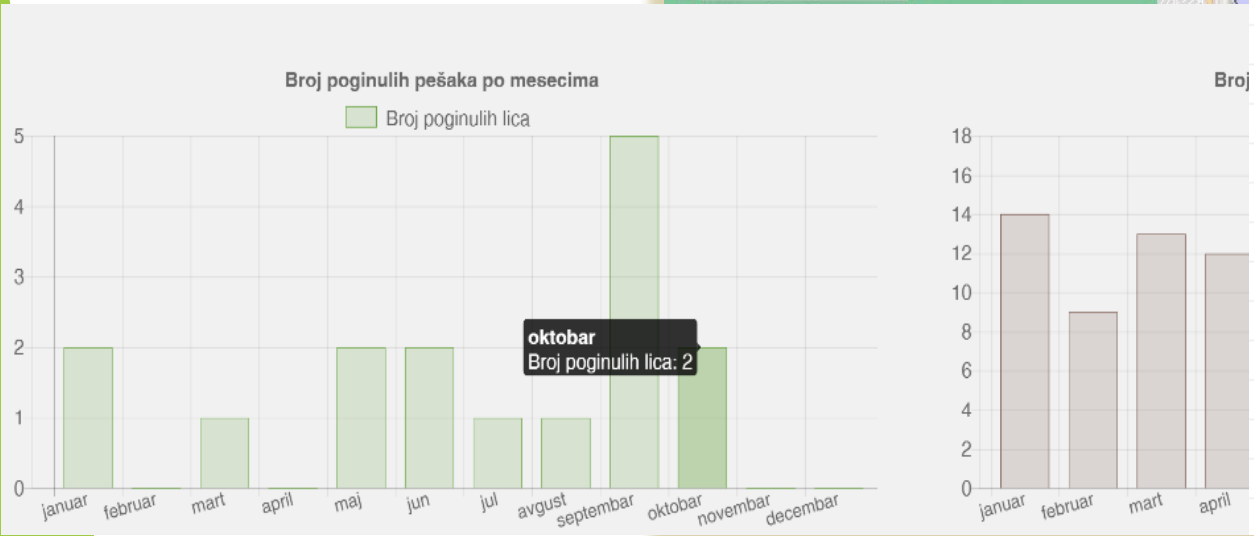


Godina	Svojstvo učesnika	POG	TTP	LTP	POV	NAST
2015	NIJE UČESNIK U SAOBRAĆAJU	0	0	0	0	0
2015	VLASNIK	0	0	0	0	0
2015	KORISNIK VOZILA	0	0	0	0	0
2016	VOZAČ	3	32	106	138	141
2016	PEŠAK	0	4	22	26	26
2016	PUTNIK	2	8	37	45	47

1 - 79 od 79 rezultata

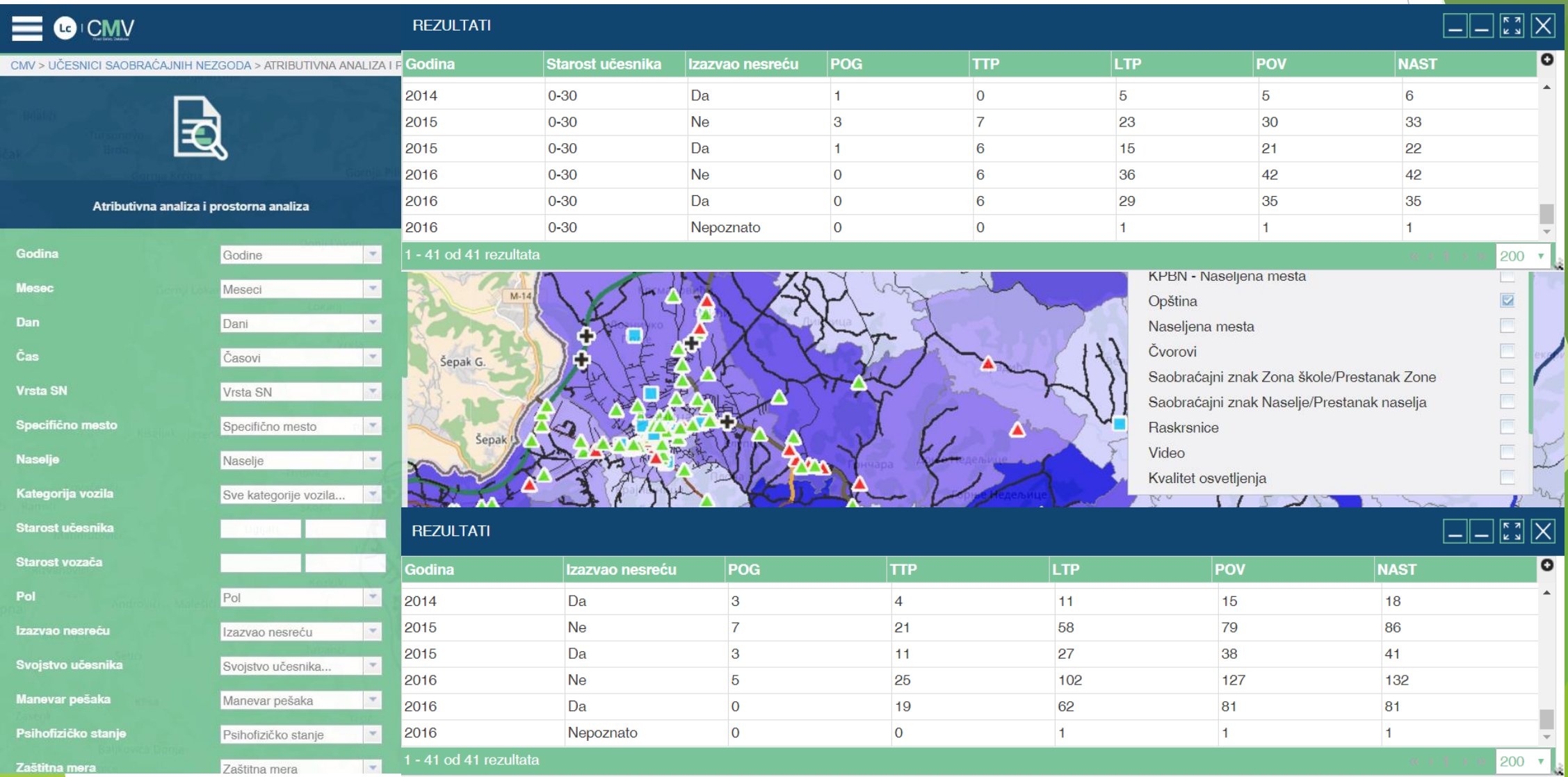
1. Road accidents and Participants



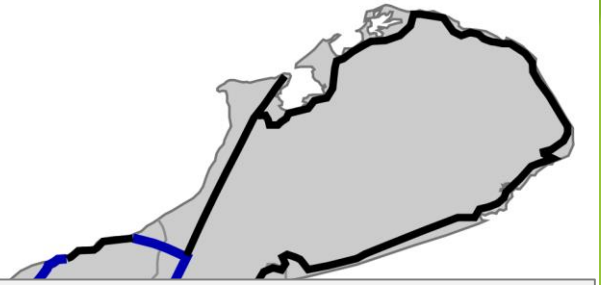


	A	B	C	D	E	F	G	H	I
1	Mesec	Broj pogin	CODE	Broj povređenih lica					
2	Januar	2	1	14					
3	Februar	0	2	9					
4	Mart	1	3	13					
5	April	0	4	12					
6	Maj	2	5	17					
7	Jun	2	6	8					
8	Jul	1	7	13					
9	Avgust	1	8	13					
10	Septembar	5	9	18					
11	Oktobar	2	10	12					
12	Novembar	0	11	13					
13	Decembar	0	12	13					
14									
15									
16									

2. Road accidents and Participants



3. Data about Roads – Roads Characteristics

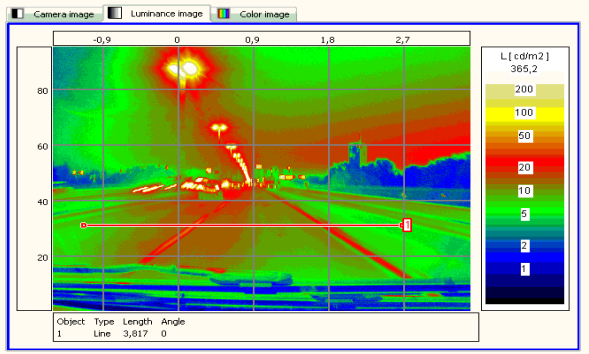


Roads, Source: AMSS-CMV ltd., PERS, MI-TPA, Local communities…

→ The reference system (sections, nodes), AADT
Source: PERS and MI-TPA

Road Safety Assessment
Source: AMSS-CMV ltd.

→ Output Data from VIDA software,
Source: AMSS-CMV ltd.



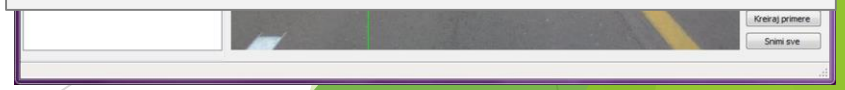
The Cadaster of Road signs
Source: AMSS-CMV ltd.

→ Road signs quality (visibility, reflection…)
Source: AMSS-CMV ltd.

The brightness levels
Source: AMSS-CMV ltd.

The Road Structure Conditions
Source: AMSS-CMV ltd.

→ (Road lightning, pedestrian walking, sidewalk, etc)
Source: AMSS-CMV ltd.



3. Data about Roads – Roads Characteristics

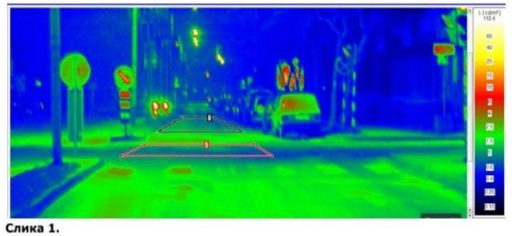
Parametri VIDLJIVOSTI

AMSS CMV

АНАЛИЗА ПАРАМЕТАРА ВИДЉИВОСТИ У ГРАДСКОЈ ЗОНИ ГРАДА ЛОЗНИЦЕ

На више градских локација града Лознице извршено је снимање и мерење параметара видљивости везаних за осветљење и сигнализацију. Приликом снимања мерена је луминанција коловозних површина, осветљеност окружења, као и вредности контраста као основног параметра за оцену видљивости пешачких прелаза.

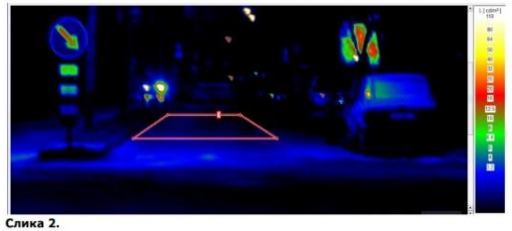
Снимци са добијеним вредностима су приказани на сликама и графицима у даљем делу текста.



Слика 1.

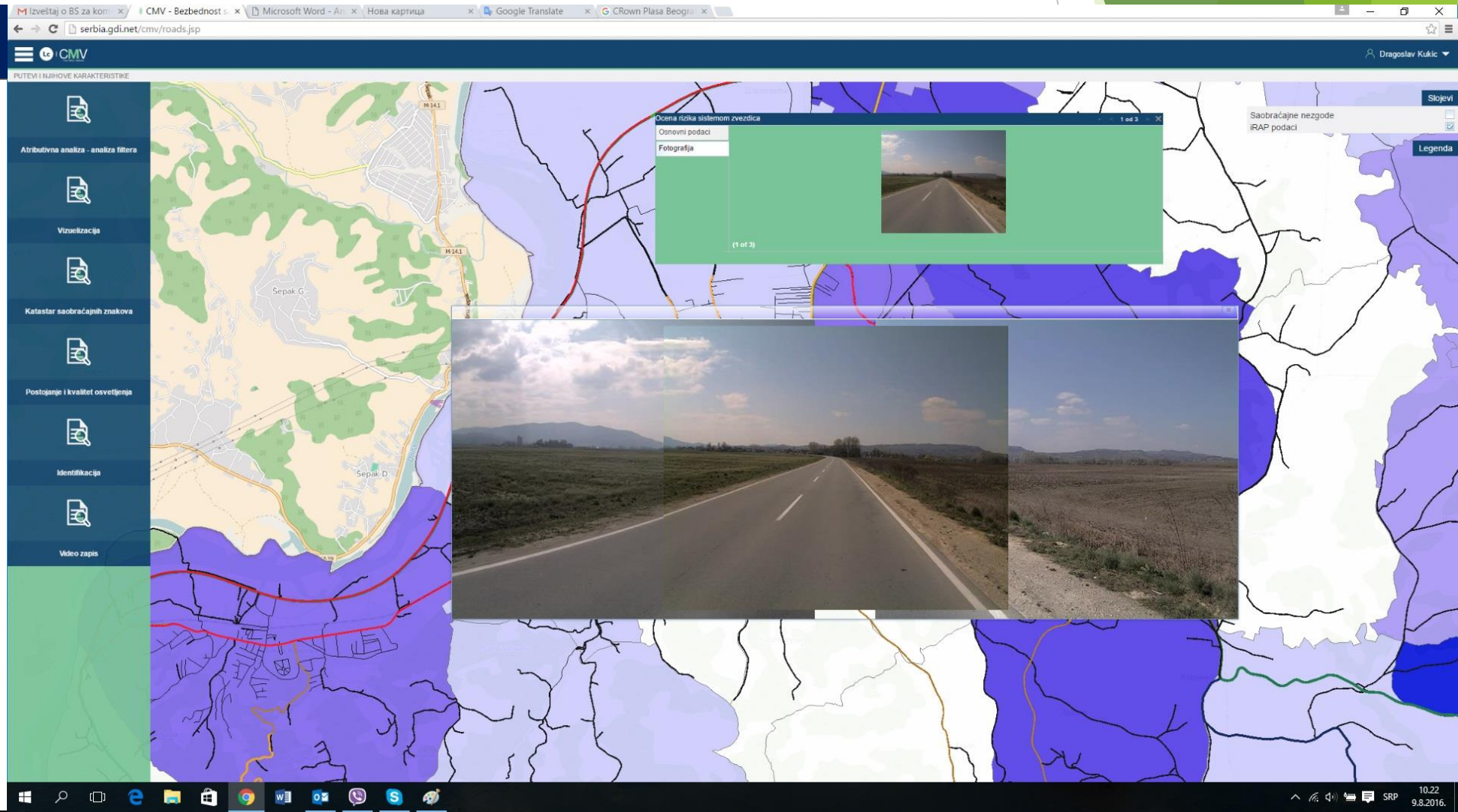
Табела 1.

	Min (cd/m²)	Max (cd/m²)	Просечна вредност (cd/m²)
1	0.597	1.645	1.048
2	0.5841	1.886	0.965



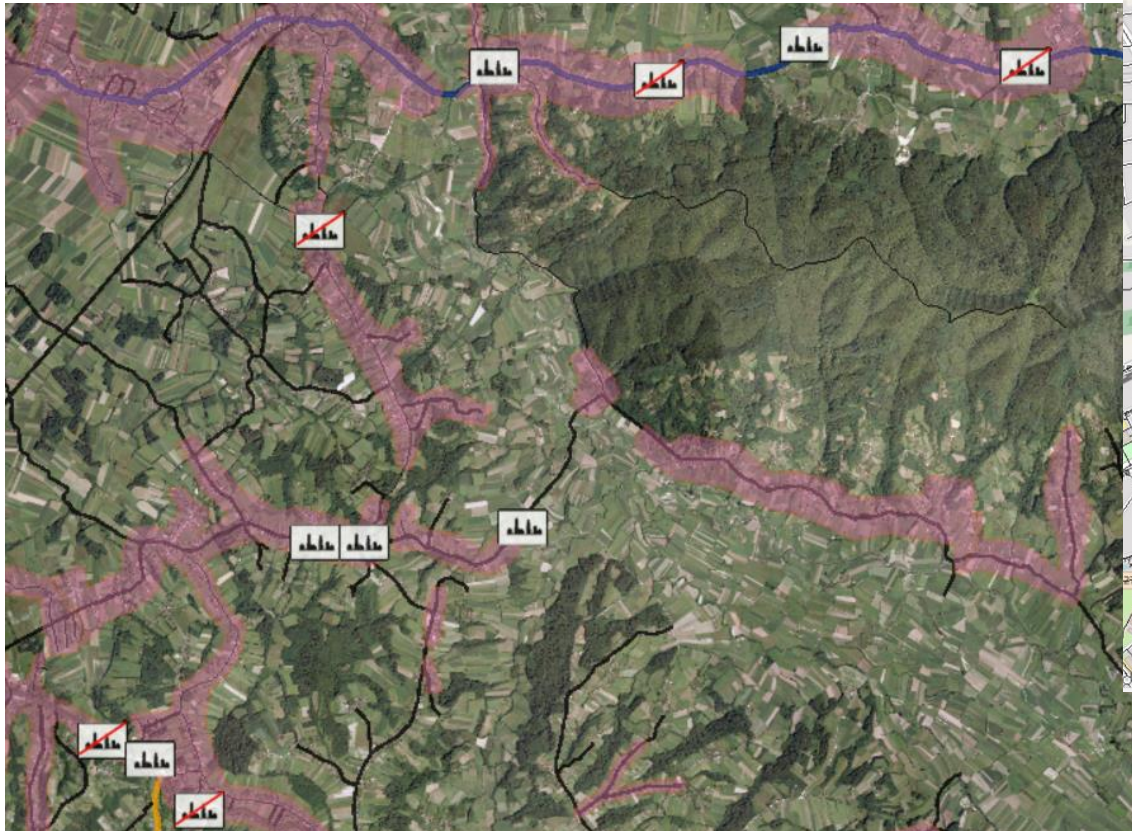
Слика 2.

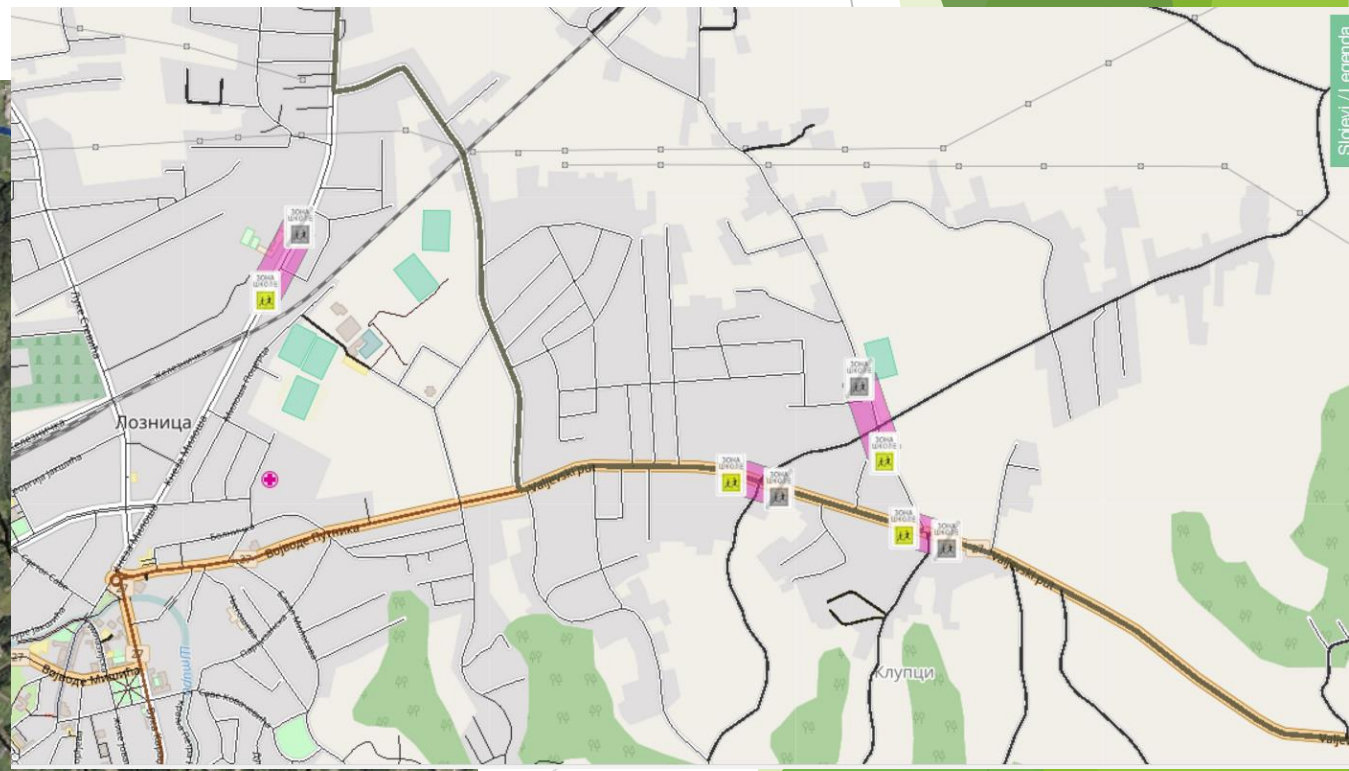
1 |



3. Data about Roads – Roads Characteristics

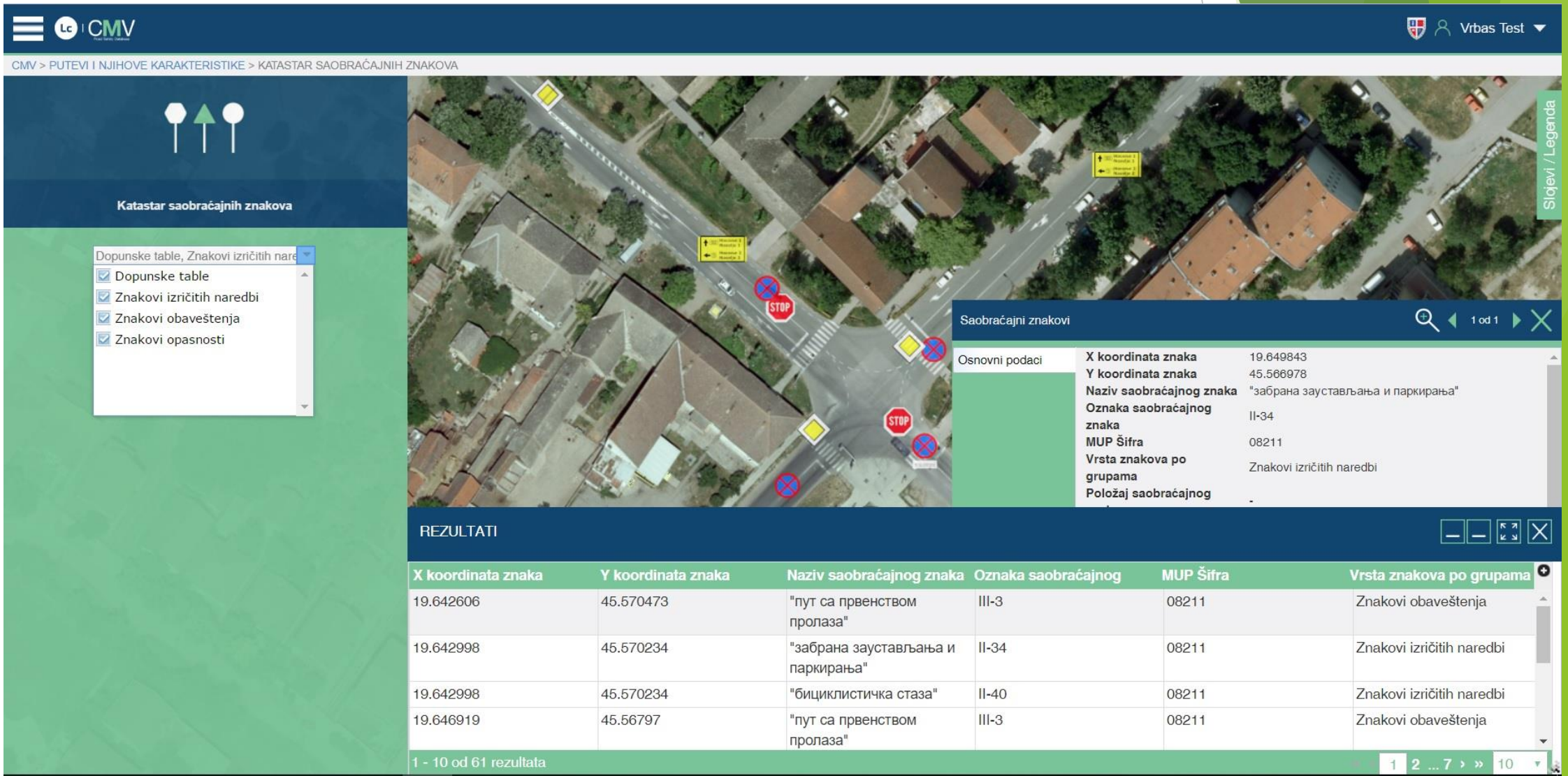
- Traffic signs Settlement/Outside of settlement
- Border of urban part of settlement
- School zones





3.

Data about Roads – Roads Characteristics



6. Problems identification – for city or municipality

Relative Indicators – Rates – Road casualties risks

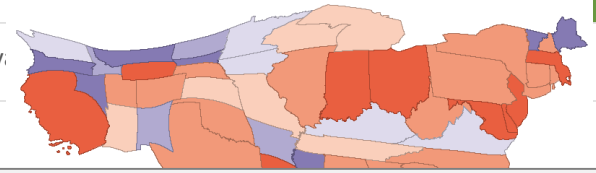
Descriptive Statistics (visualization – diagrams)

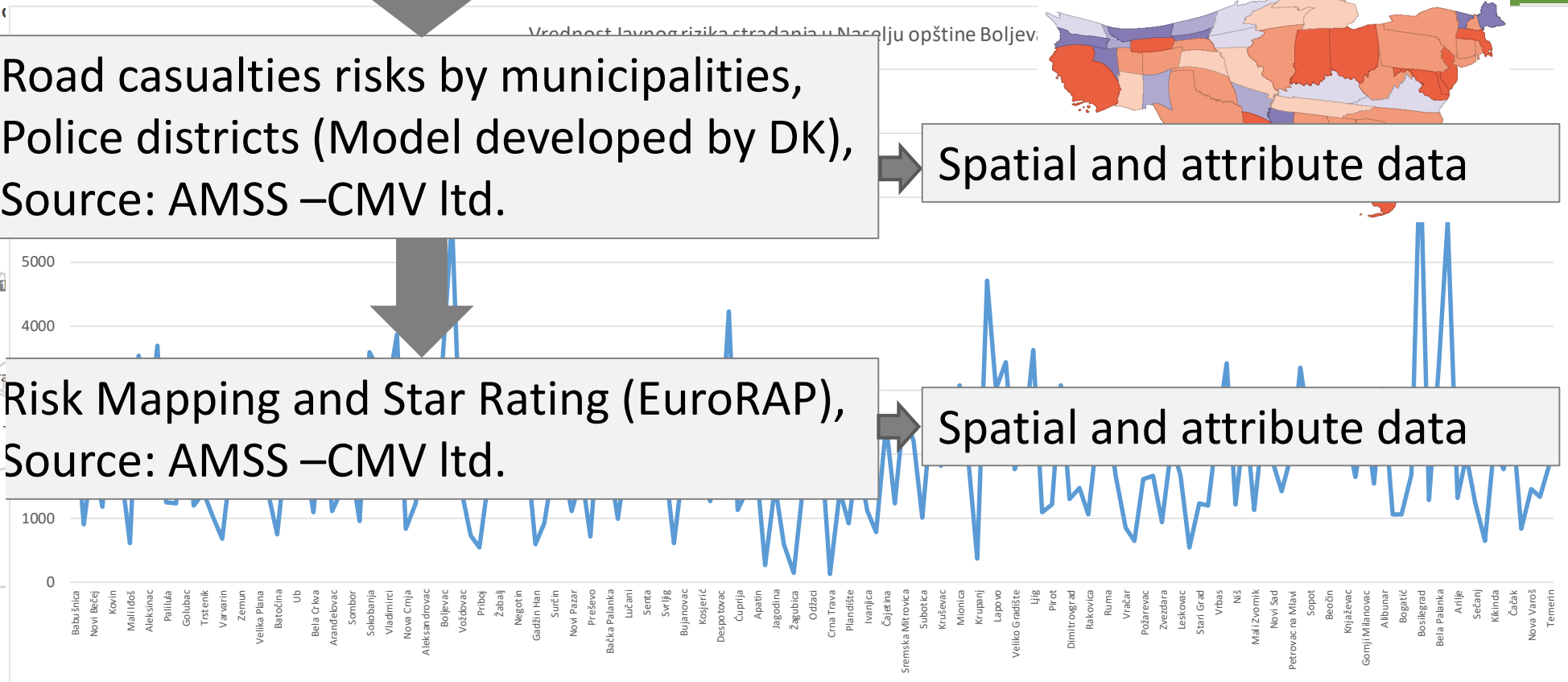
Road casualties risks by municipalities, Police districts (Model developed by DK), Source: AMSS –CMV ltd.

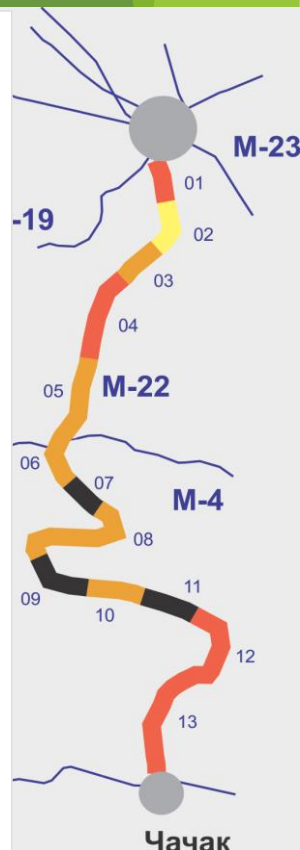
Spatial and attribute data

Risk Mapping and Star Rating (EuroRAP), Source: AMSS –CMV ltd.

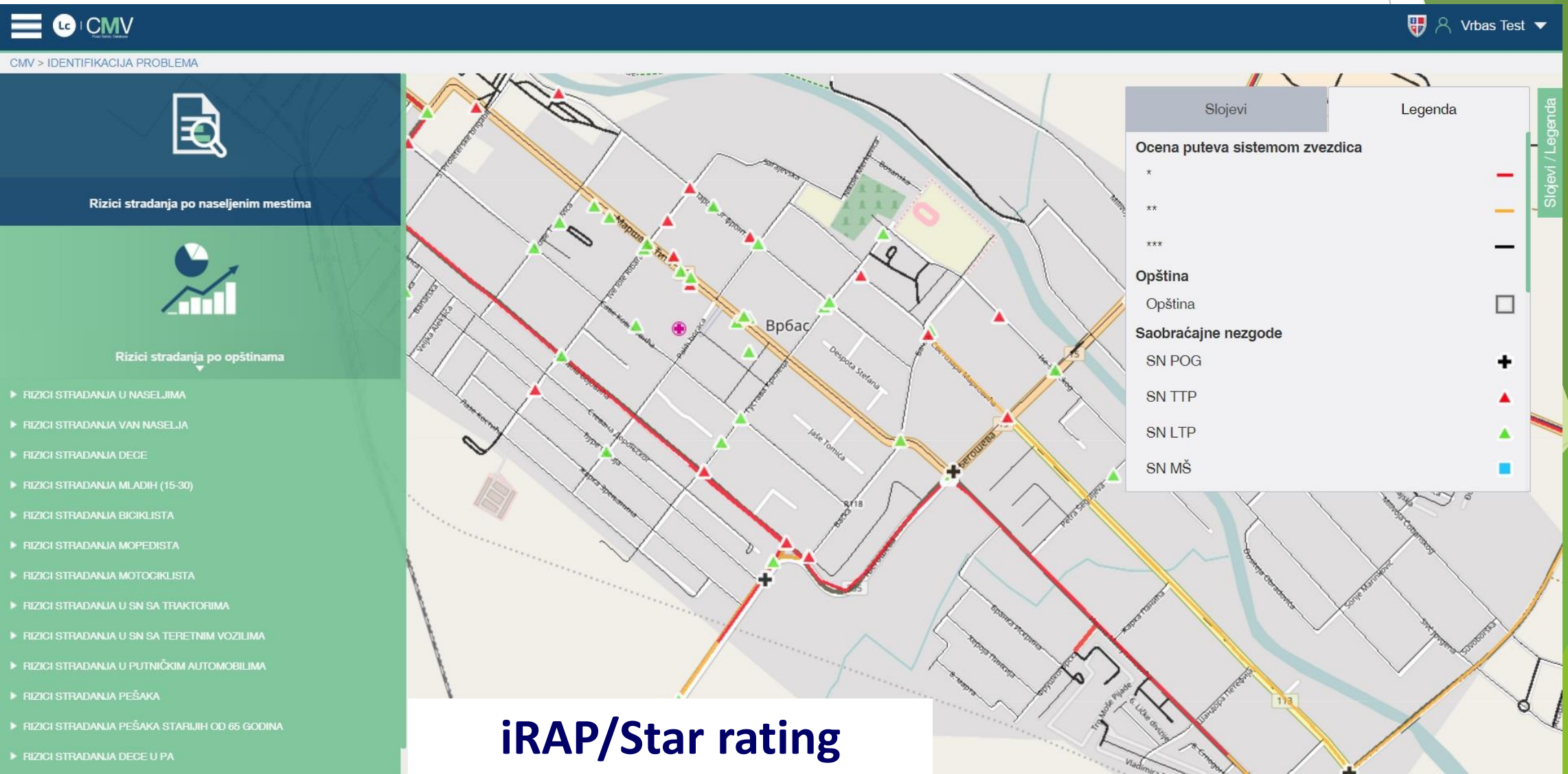
Spatial and attribute data





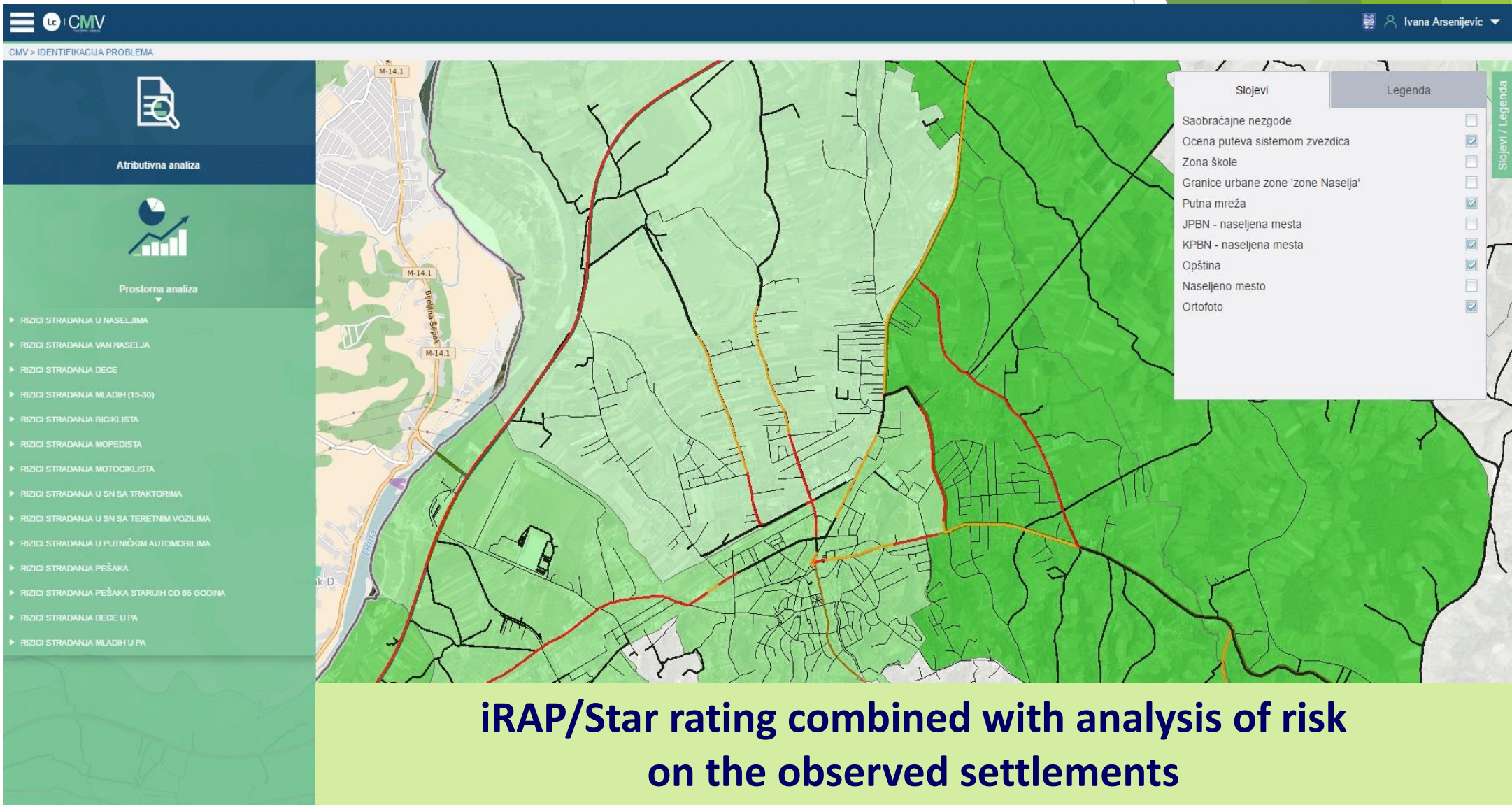


6. Problems identification – for city or municipality



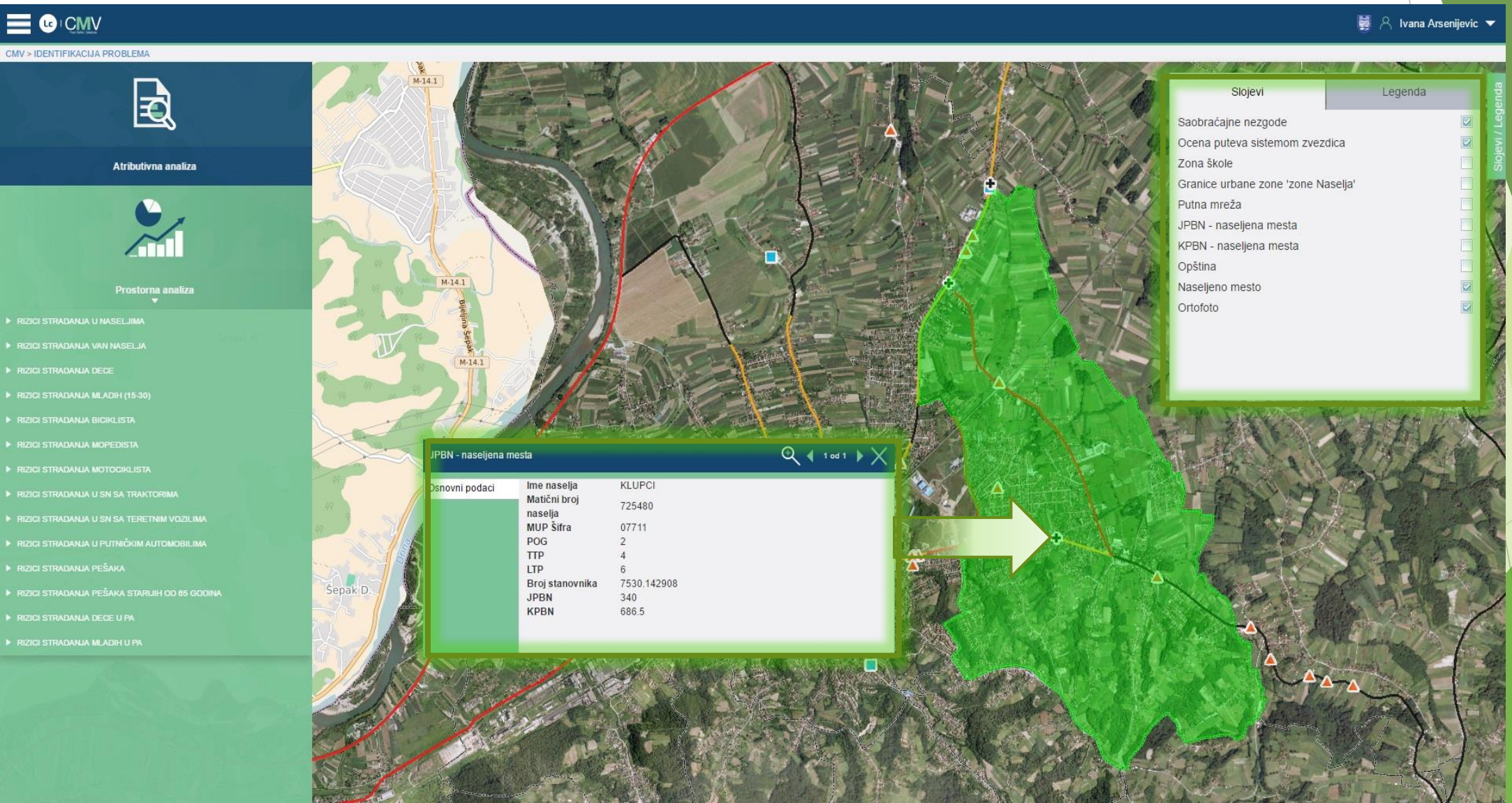
iRAP/Star rating

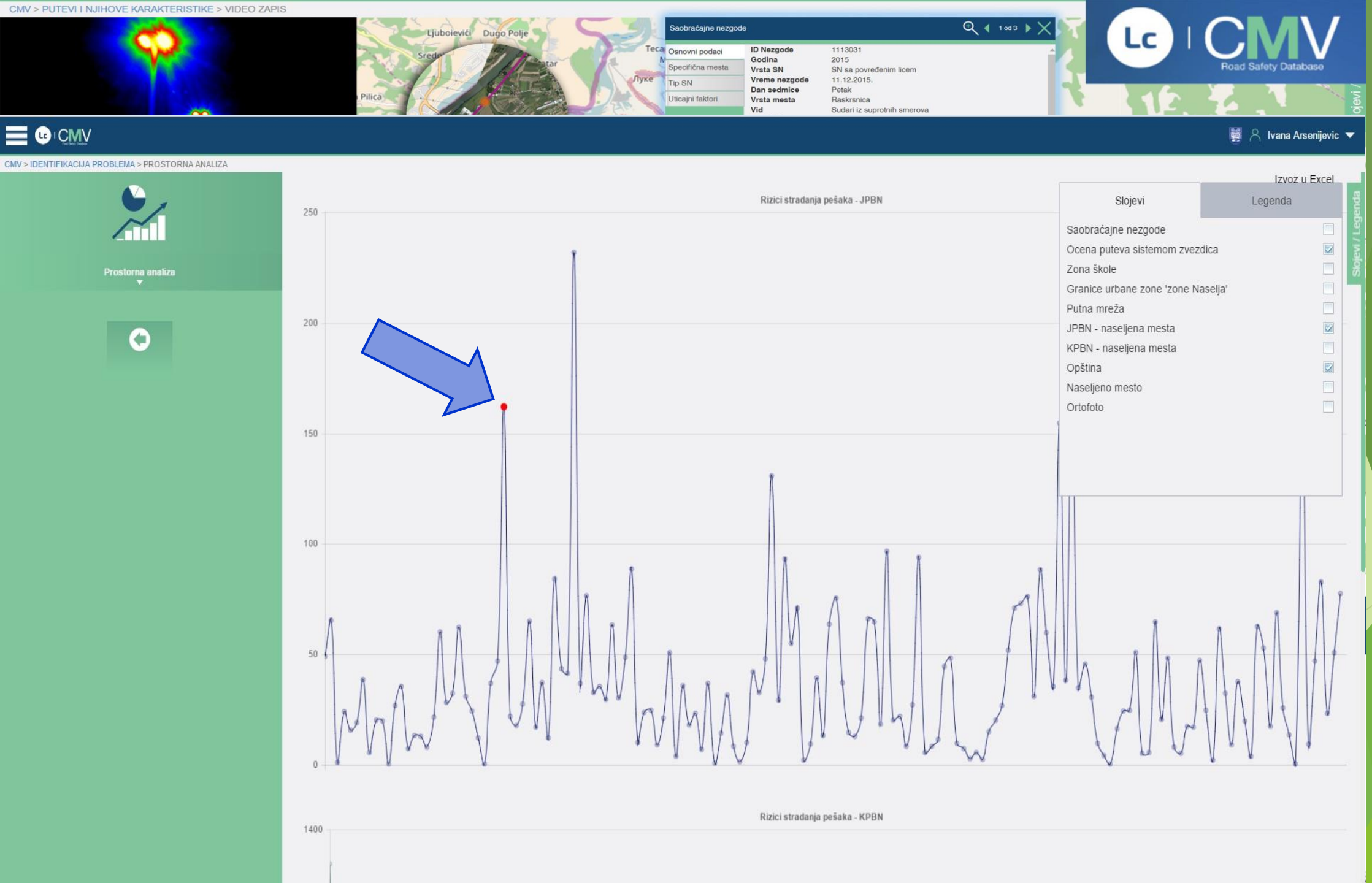
6. Problems identification – for city or municipality



iRAP/Star rating combined with analysis of risk on the observed settlements

6. Problems identification – for city or municipality – iRAP/Star rating combined with analysis of risk on the observed settlements

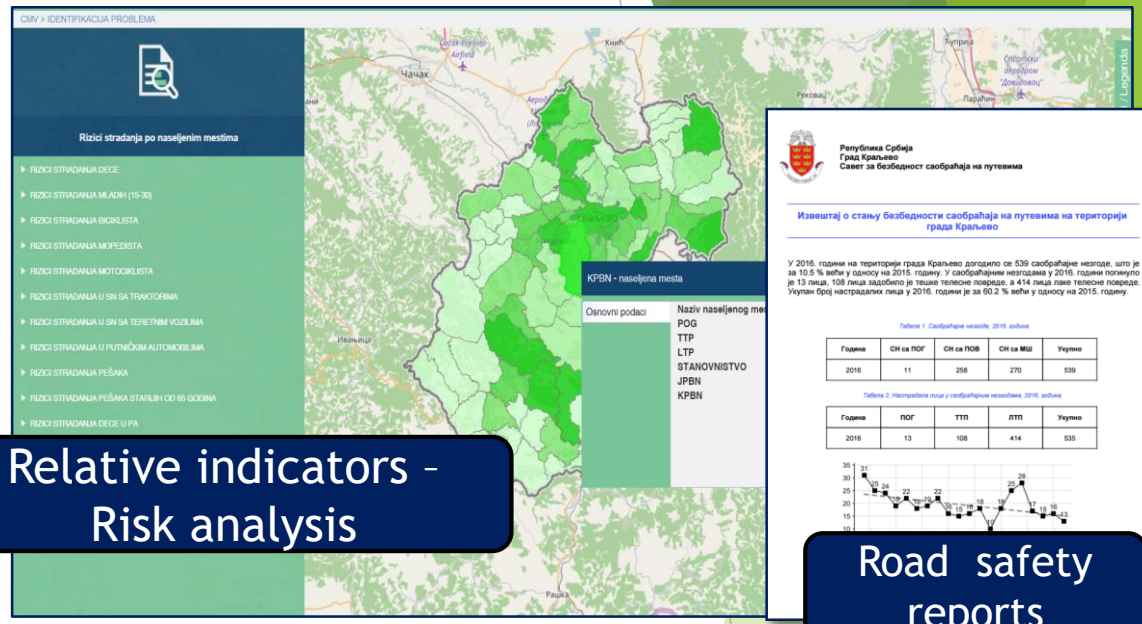




DATA VISUALISATION

Experience from Serbia - Road Safety Portal for cities and municipalities – LOCAL LEVEL

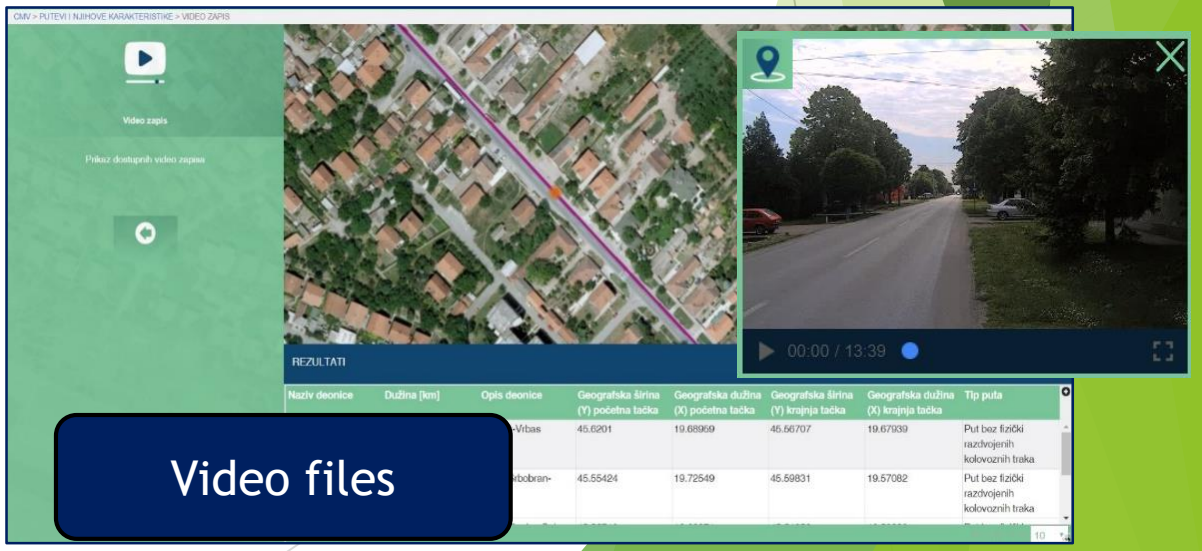
Road accident data in accordance with CADaS (EC)



Relative indicators – Risk analysis

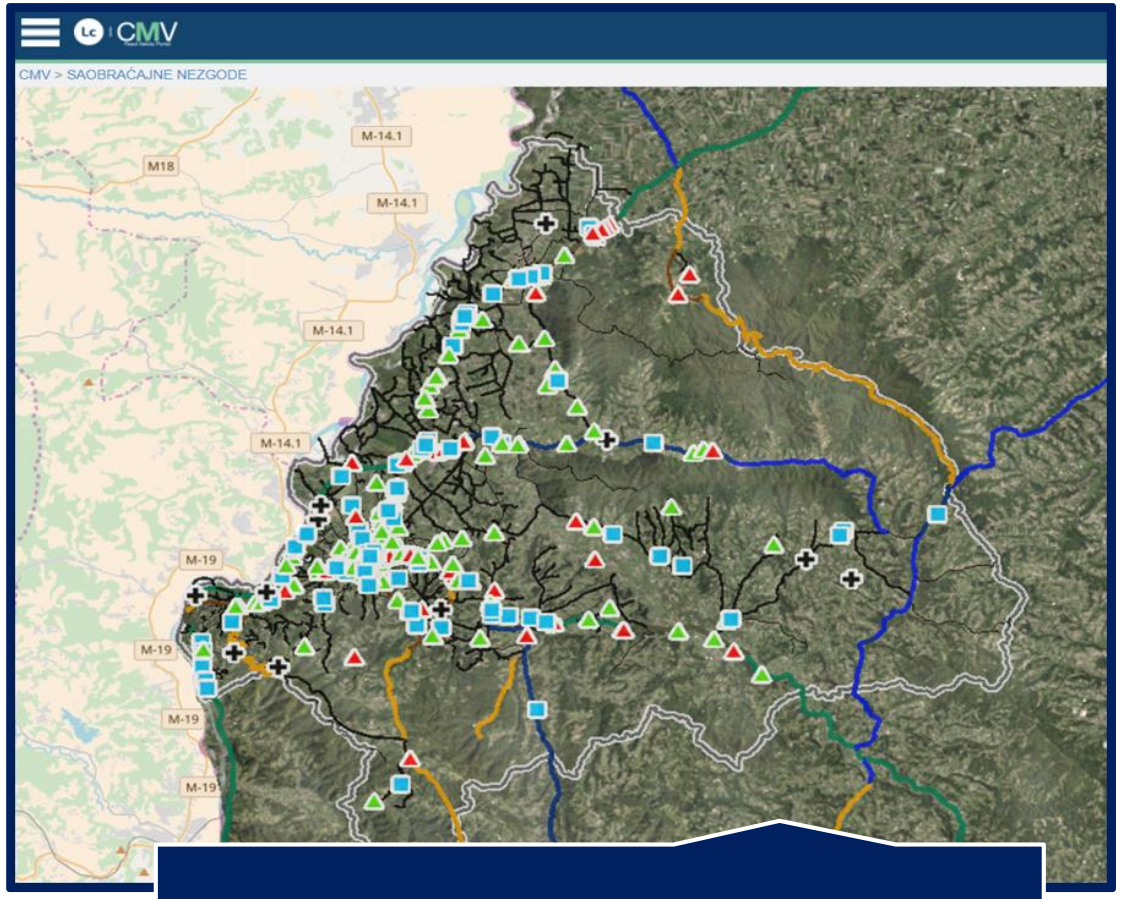
Road safety reports

Traffic sign cadaster

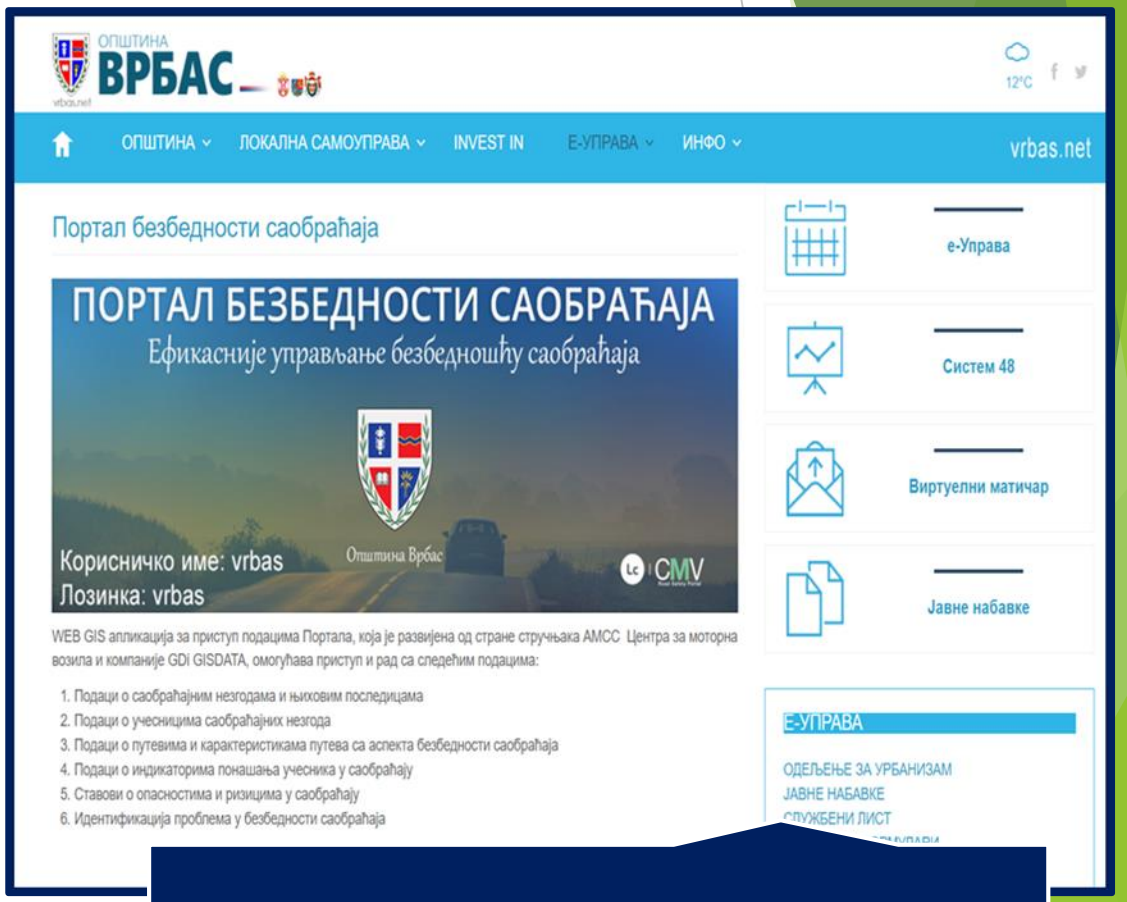


Video files

Experience from Serbia - Road Safety Portal for cities and municipalities – LOCAL LEVEL

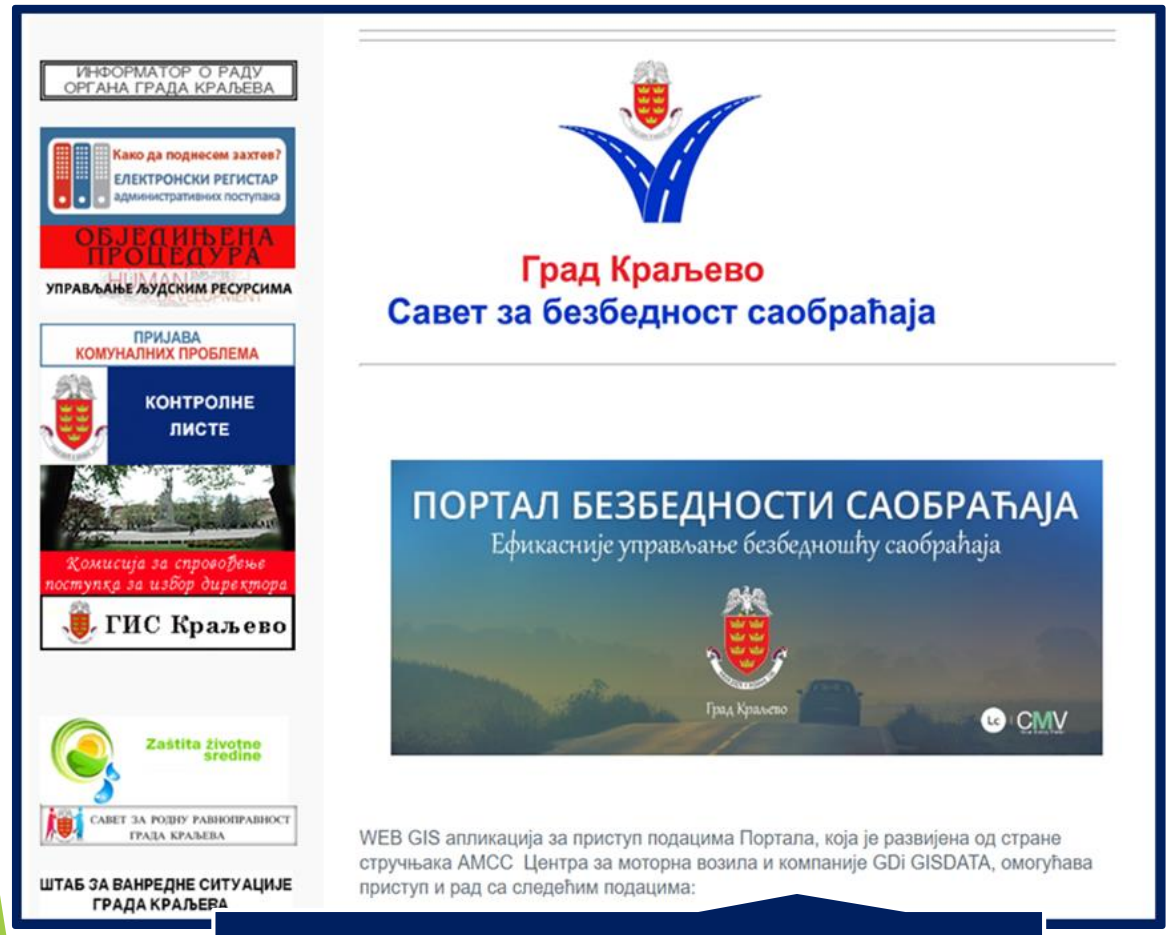


Loznica city

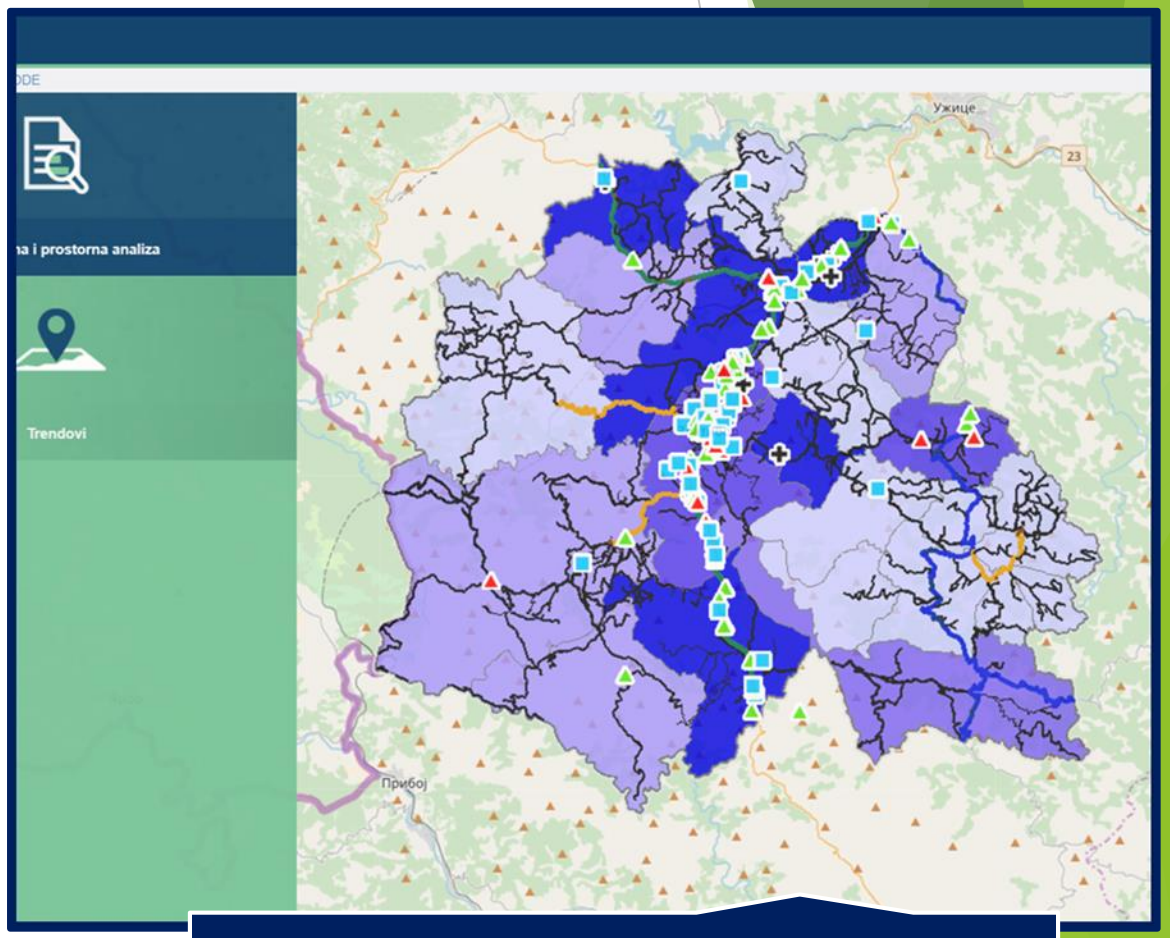


Vrbas city

Experience from Serbia - Road Safety Portal for cities and municipalities - LOCAL LEVEL



Kraljevo city



Cajetina city

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Dr. Dragoslav Kukić

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