



# Integration of statistics and geospatial information at Kosovo Agency of Statistics

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SCORUS CONFERENCE NEW SCALE – NEW NEEDS – NEW STATISTICS  
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# Summary

1. Introduction
2. Spatial references and Territorial identification registry at Kosovo Agency of Statistics
3. The geographic hierarchy data in Statistics
4. Integration Statistics - Methods georeferencing statistical data
5. Analysis and dissemination of statistical data using GIS
6. Spatial analysis (Commuting data Case study – Prishtina city, Kosovo)
7. Conclusions

# Facts about Kosovo

Total Area: **10 906 km<sup>2</sup>**

Administrative Units: **38 Municipalities**

Settlements: **1469**

Resident population: **1.8 mill. est. 2016**

Population density : **165 p/km<sup>2</sup>**

Capital : Prishtina

Currency: Euro



# 1. Introduction

## GIS in Kosovo official statistics

- Nowadays the development process of obtaining and providing statistical information to a large extent is based on its spatial reference.
- For many statistical indicators, geographic locations play an essential role for the analysis, especially on an international scale.

Census GIS database is developed in line with UN and Eurostat recommendations taking into consideration the local context.

The main guides are extracted from UN Manual on Geographical Information Systems and Digital Mapping , as one of the standards available for definition the frame for Rules of Conduction the European Union Directive called Infrastructure Spatial information in European Community (INSPIRE).

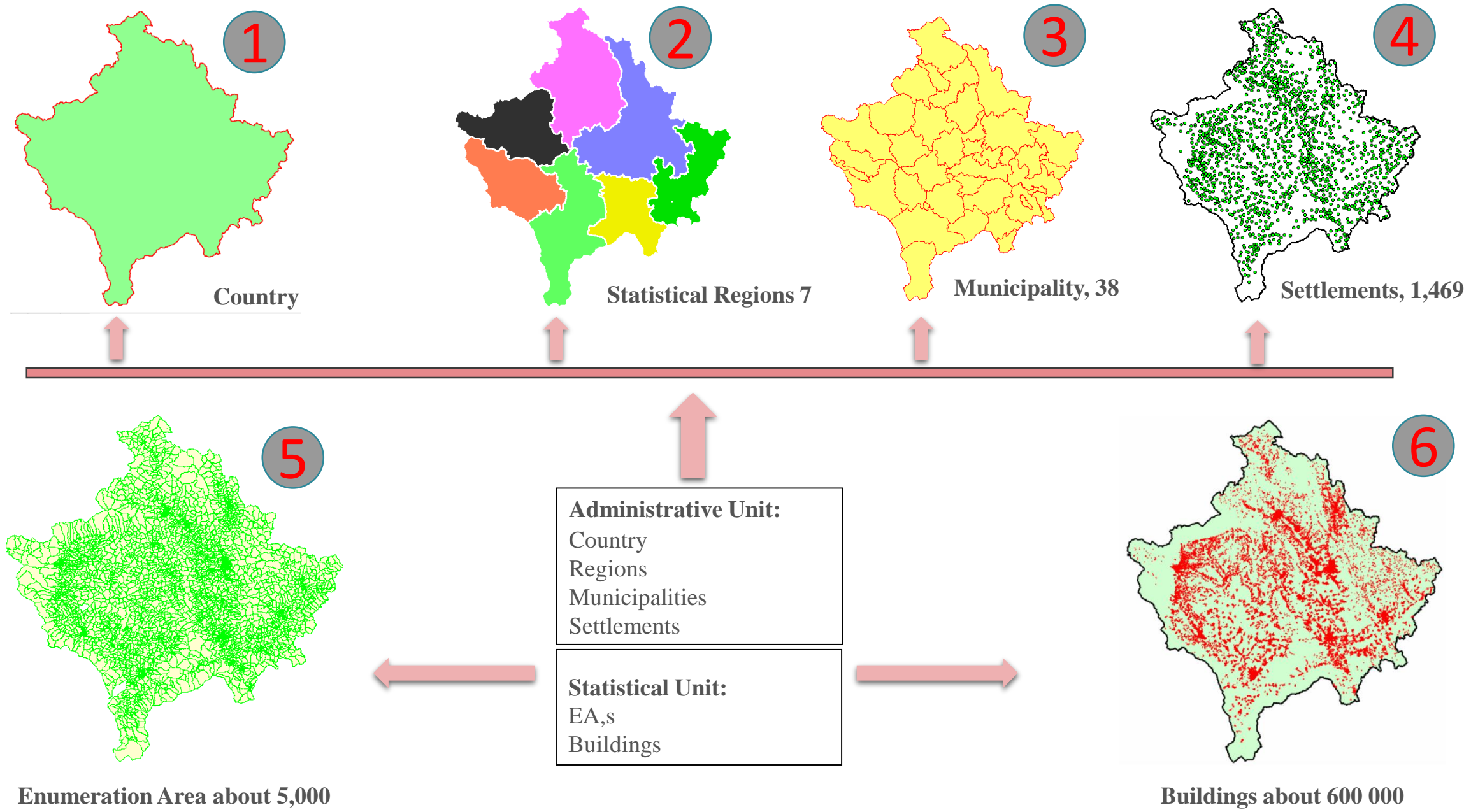
## Objective : GIS resource

- Integrate GIS in more statistics/analyzes
- Possibilities for establishing new statistics, and analysis by the use of GIS
- Assist with integrating of GIS in already establish statistics
- Increase the expertise in GIS

Provide support to common resources associated to GIS including:

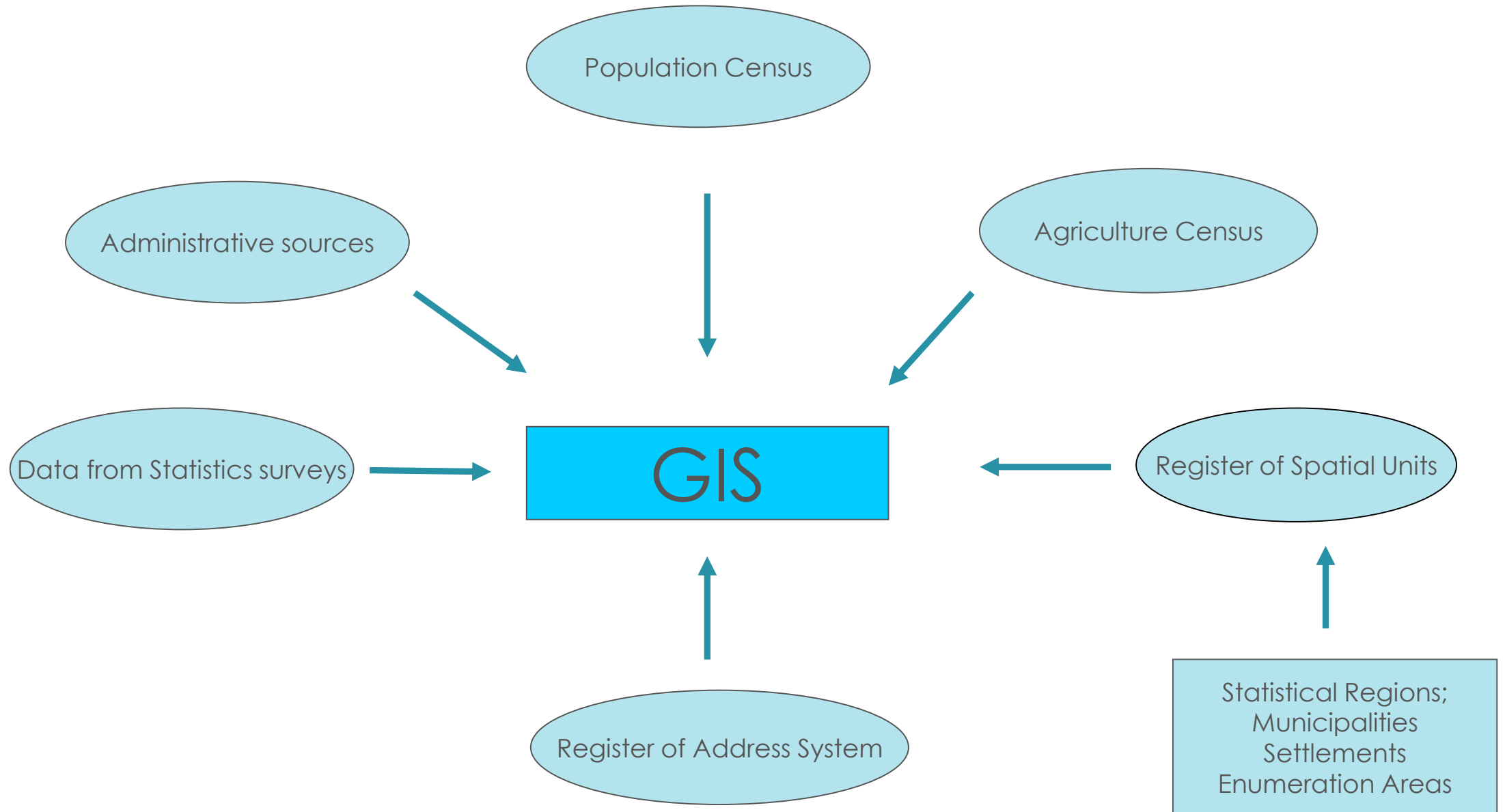
- IT infrastructure, hardware/software
- National and International coordination and cooperation

## 2. Spatial references and Territorial identification registry at Kosovo Agency of Statistics

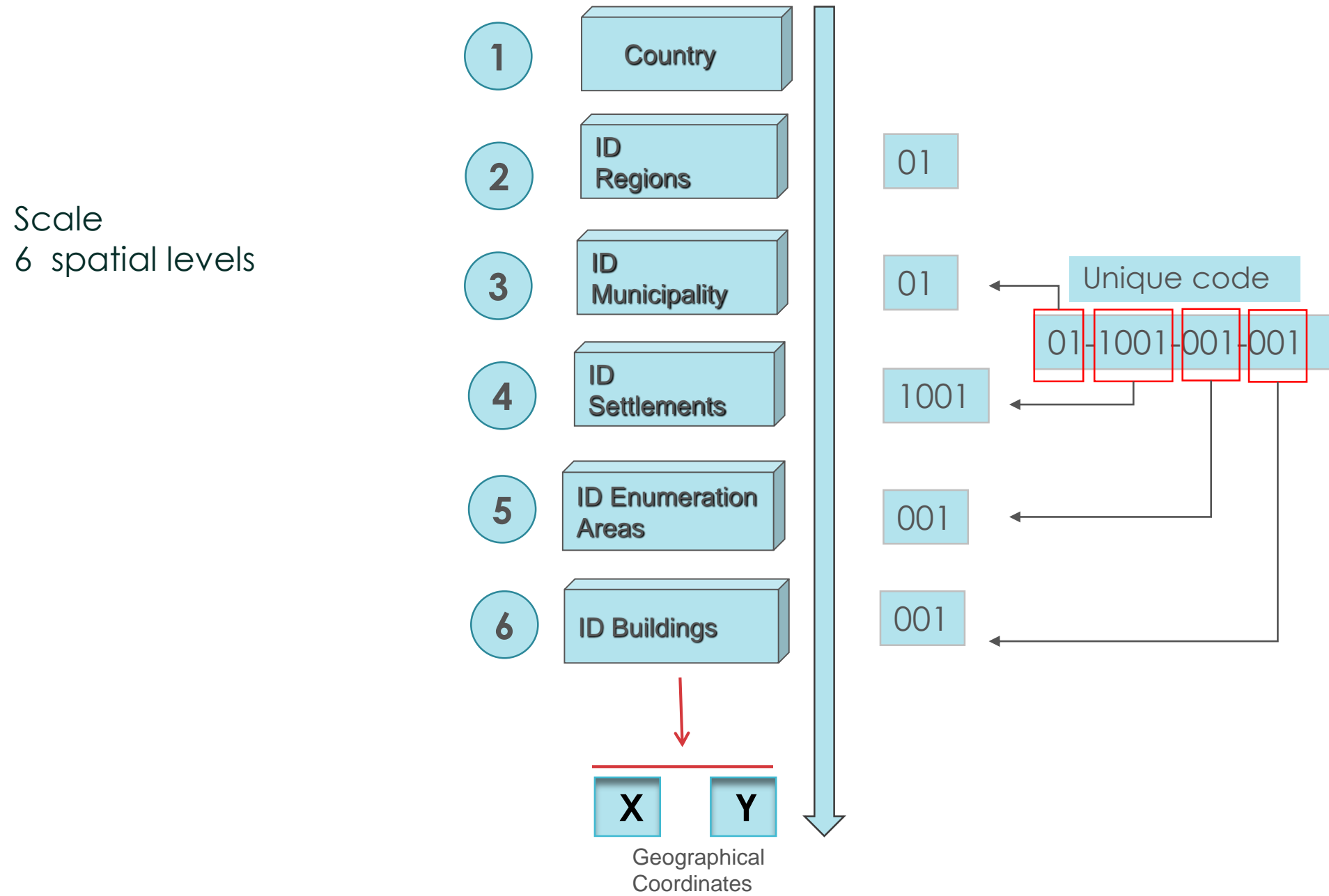


## 2.1 Data Source

### Status of use of GIS in production and dissemination of statistics



### 3. Hierarchy of Census and other statistical data organized in GIS



# 4. Integration Statistics - Methods geo-referencing statistical data

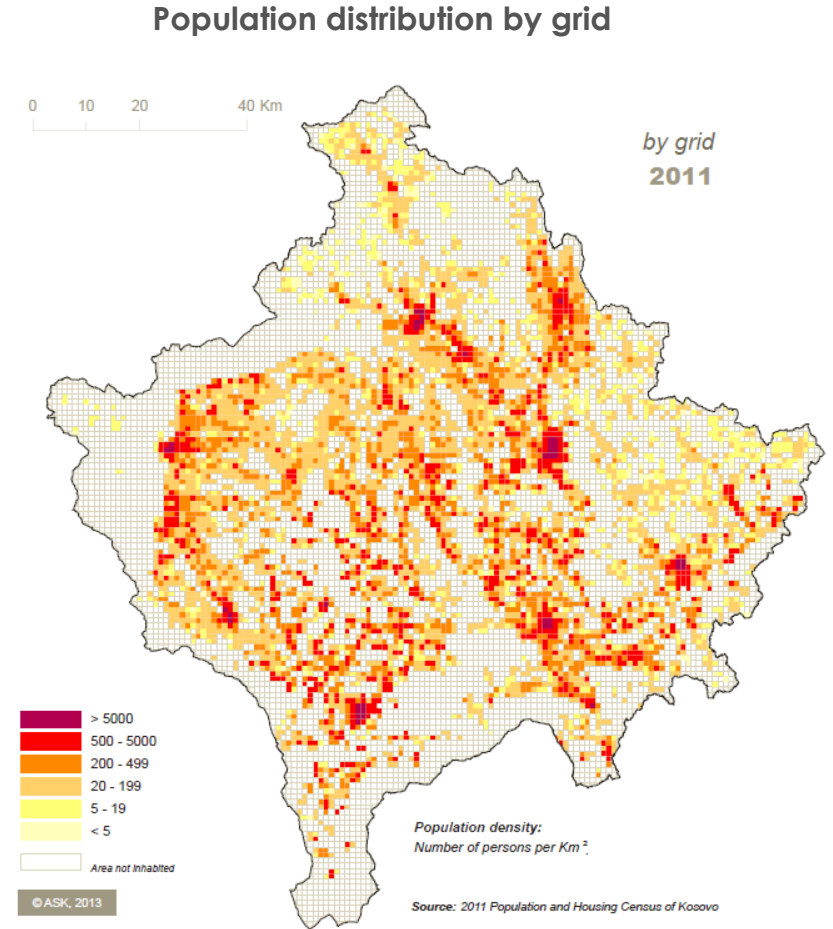
Point-base data Census 2011 georeferenced data x,y coordinates at building level

X Y



Statistical data in coordinates X,Y

Settlements_Pop_Ages																			
FID	Shape*	KOMUNA	VENDOBANIMI	EMRAT_SH	Kvendi	M0_4	M5_9	M10_14	M15_19	M20_24	M25_29	M30_34	M35_39	M40_44	M45_49	M50_54	M55_59	M60	
0	Multipoint	03	1021	Bece	1021	240	253	202	224	265	258	199	130	101	102	78	89		
1	Multipoint	36	1075	Berran	1075	18	20	17	10	8	9	8	9	7	10	7	3		
2	Multipoint	03	1248	Çokmahar	1248	132	137	129	152	163	132	106	96	92	70	60	53		
3	Multipoint	03	1259	Çorran	1259	74	48	79	72	84	63	44	36	35	41	38	21		
4	Multipoint	03	1328	Fushitë e Uj	1328	116	96	116	119	96	80	81	87	80	39	23			
5	Multipoint	03	1578	Kornice e P	1578	75	92	102	88	122	93	76	54	55	54	49	32		
6	Multipoint	03	2407	Zatari i Urit	2407	81	86	115	138	121	80	58	78	77	67	48	41		
7	Multipoint	03	1352	Gllanese	1352	148	148	173	184	167	107	124	107	86	78	72	59		
8	Multipoint	03	1350	Gllan	1350	140	141	141	156	162	138	137	107	84	58	71	58		
9	Multipoint	03	1369	Godanc	1369	31	37	31	40	31	31	33	24	20	19	13	14		
10	Multipoint	03	1327	Fushitë e E	1327	114	95	93	95	89	89	96	76	69	39	48	22		
11	Multipoint	03	1577	Kornice e E	1577	123	119	119	113	144	118	102	97	57	40	55	47		
12	Multipoint	03	1002	Abri e Epam	1002	179	159	166	189	193	163	121	134	100	87	58	54		
13	Multipoint	03	2408	Zatari Epam	2408	58	57	47	48	58	48	61	49	32	24	23	13		
14	Multipoint	03	1394	Gllan	1394	73	76	96	91	82	81	70	53	51	27	33	24		
15	Multipoint	03	1536	Kallmet	1536	130	150	164	137	154	135	111	135	85	69	44	47		
16	Multipoint	03	1861	Komari	1861	438	411	425	421	480	412	385	297	253	215	187	141		
17	Multipoint	03	1606	Kragujev	1606	102	117	124	121	143	117	92	82	60	53	46	38		
18	Multipoint	03	1721	Liqubrit	1721	359	380	350	347	322	284	278	238	208	145	131	110		
19	Multipoint	03	1871	Liqubrit	1871	49	60	76	52	48	63	52	41	34	30	20	14		
20	Multipoint	03	1854	Negoc	1854	147	167	170	148	153	123	126	119	75	76	58	43		
21	Multipoint	03	1855	Negoc	1855	334	343	335	285	308	274	266	228	170	132	103	74		
22	Multipoint	03	1200	Çetare e R	1200	201	199	241	183	146	182	153	167	117	84	64	51		
23	Multipoint	03	1006	Arber	1006	325	324	312	310	317	295	260	214	175	138	123	82		
24	Multipoint	03	1961	Polan	1961	166	197	178	183	223	186	156	139	100	121	84	70		
25	Multipoint	03	1966	Polan	1966	109	82	103	104	104	98	100	84	58	43	38	25		
26	Multipoint	03	2119	Sanac	2119	171	137	110	110	140	169	129	96	81	70	64	33		
27	Multipoint	03	1201	Çetare e Uj	1201	112	121	142	147	166	115	82	77	63	80	36	39		
28	Multipoint	03	2261	Shtrudh	2261	98	86	107	107	130	116	82	72	58	58	39	32		
29	Multipoint	03	2266	Shtrudh	2266	91	101	110	88	94	82	80	61	55	41	33	23		
30	Multipoint	03	2279	Terdic	2279	89	111	141	120	119	85	93	77	61	63	50	30		
31	Multipoint	36	2288	Tepaj	2288	106	114	135	118	130	84	82	72	53	60	37	30		
32	Multipoint	03	2292	Tersanik	2292	333	357	455	434	444	325	274	262	209	193	167	121		
33	Multipoint	03	2337	Vasilev	2337	55	58	83	70	71	53	35	48	41	36	24	15		
34	Multipoint	03	2354	Vitoc	2354	113	126	133	147	129	84	91	84	76	80	43	32		
35	Multipoint	03	2400	Vugaj	2400	43	28	33	35	47	50	39	22	9	13	17	14		
36	Multipoint	05	1018	Bayir	1018	0	0	0	1	10	4	2	4	4	9	4	2		
37	Multipoint	05	1136	Brnd	1136	101	112	88	87	83	84	116	122	128	128	111	103		



Location of buildings is specified using geographical x,y coordinates, giving the exact location of each building and make possibility to linking micro data and aggregated them with others Statistical and Administrative units.



## 5. Analysis and dissemination of statistical data using GIS



### Atlas Contents

- 90 maps
- 9 themes
- 46 indicators
- 6 Spatial levels  
(Country, Municipalities, Settlements,  
Grid, Enumeration Areas, and Buildings)

The atlas is divided  
in 4 chapters

Population distribution, density  
and dynamics

Demographic characteristics

Socio-economic  
characteristics

Households and housing

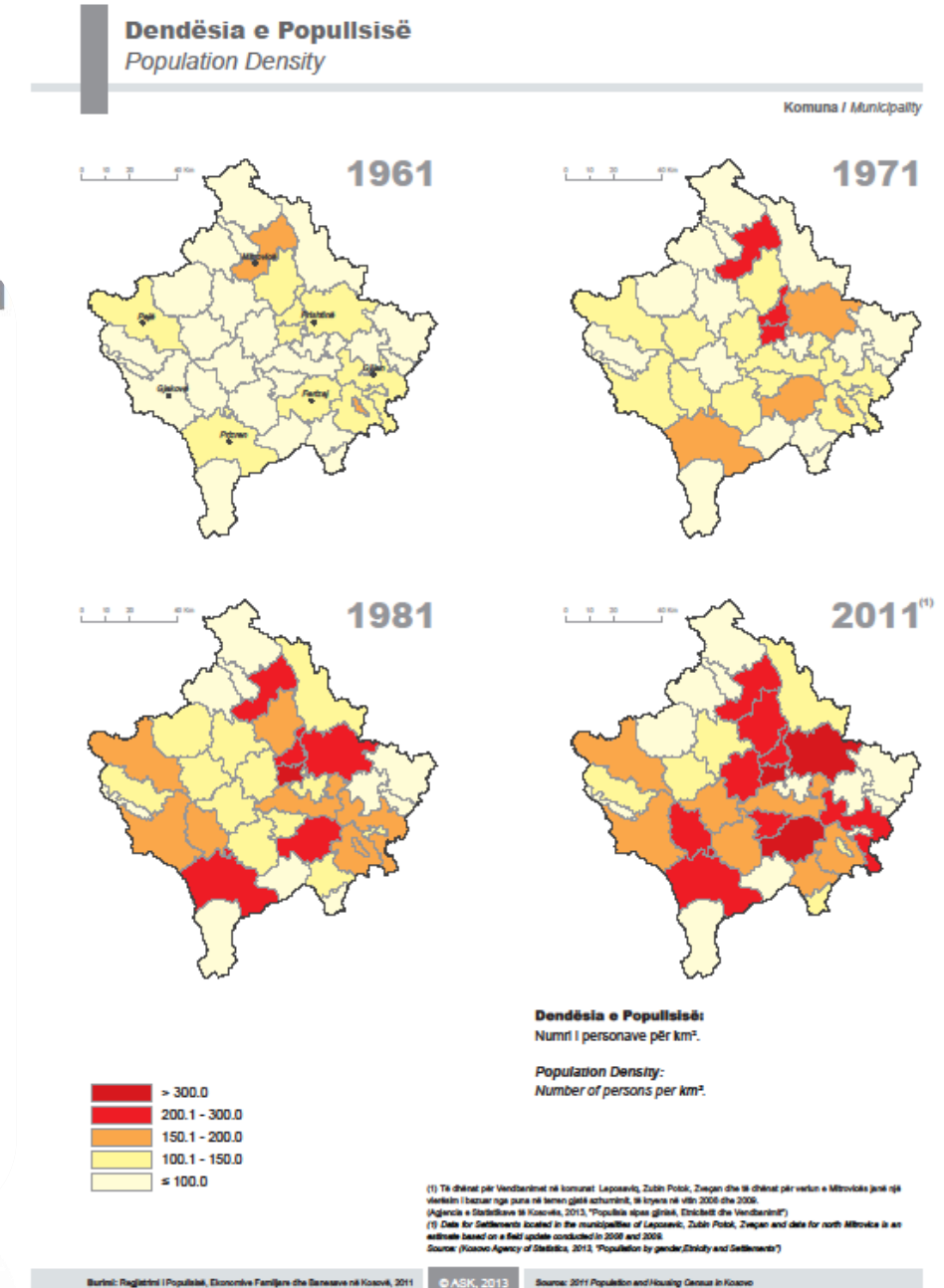
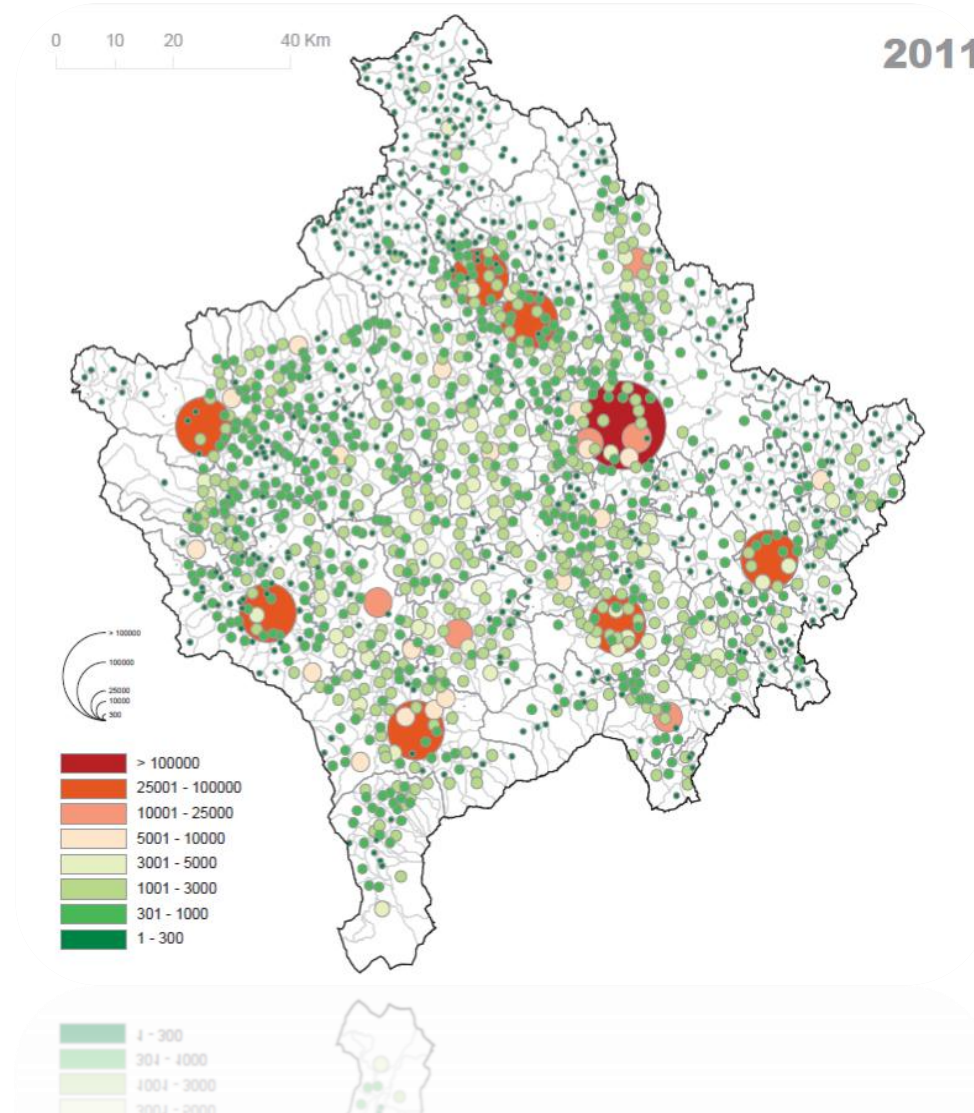
# Analysis and dissemination of statistical data using GIS

Thematic maps help to understand not only Kosovo as a whole, but also particular areas in the country, Underlining their specific demographic, social, and economic characteristics.

- \* Maps communicate a concept or an idea or support textual information

- \* Maps are attractive

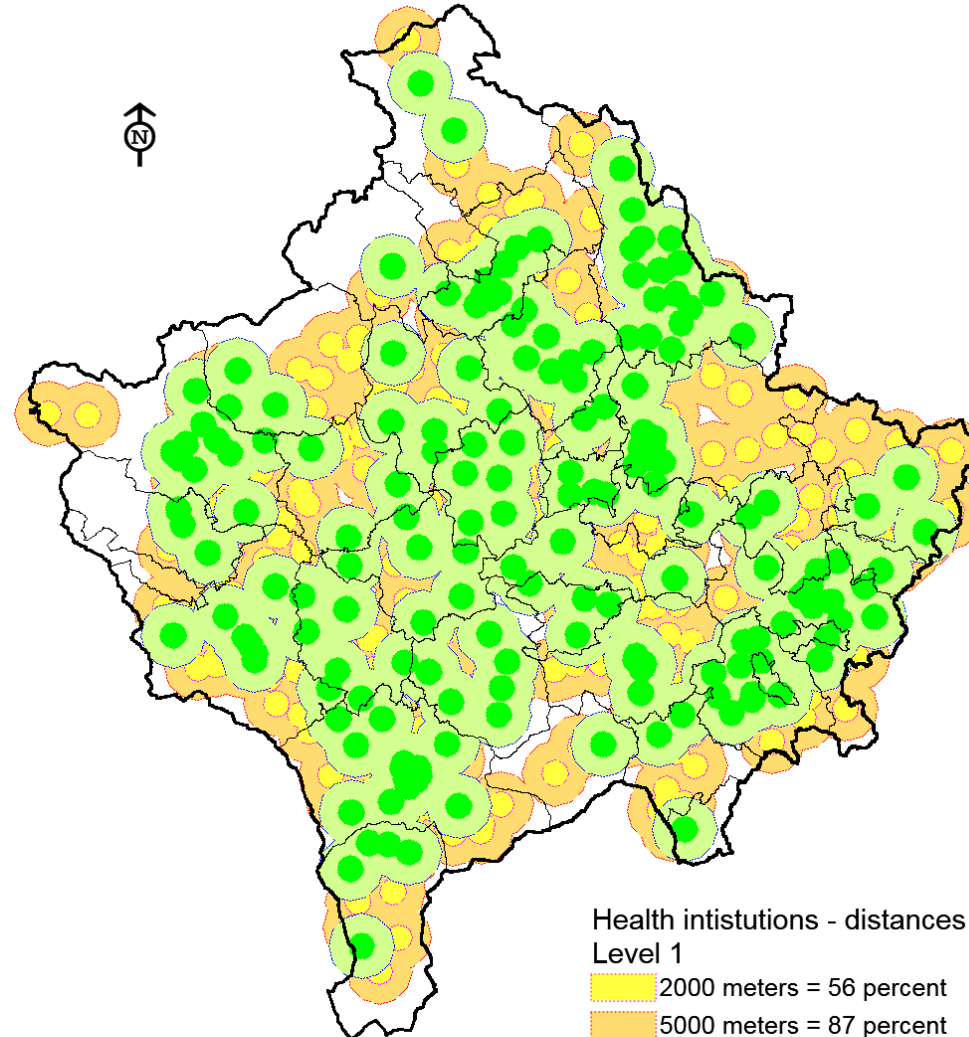
- \* Maps encourage comparisons



# Analysis and dissemination of statistical data using GIS

## Spatial analysis techniques

### Distances for health institutions in Kosovo and % of population



# Spatial Analysis techniques – Buffering:

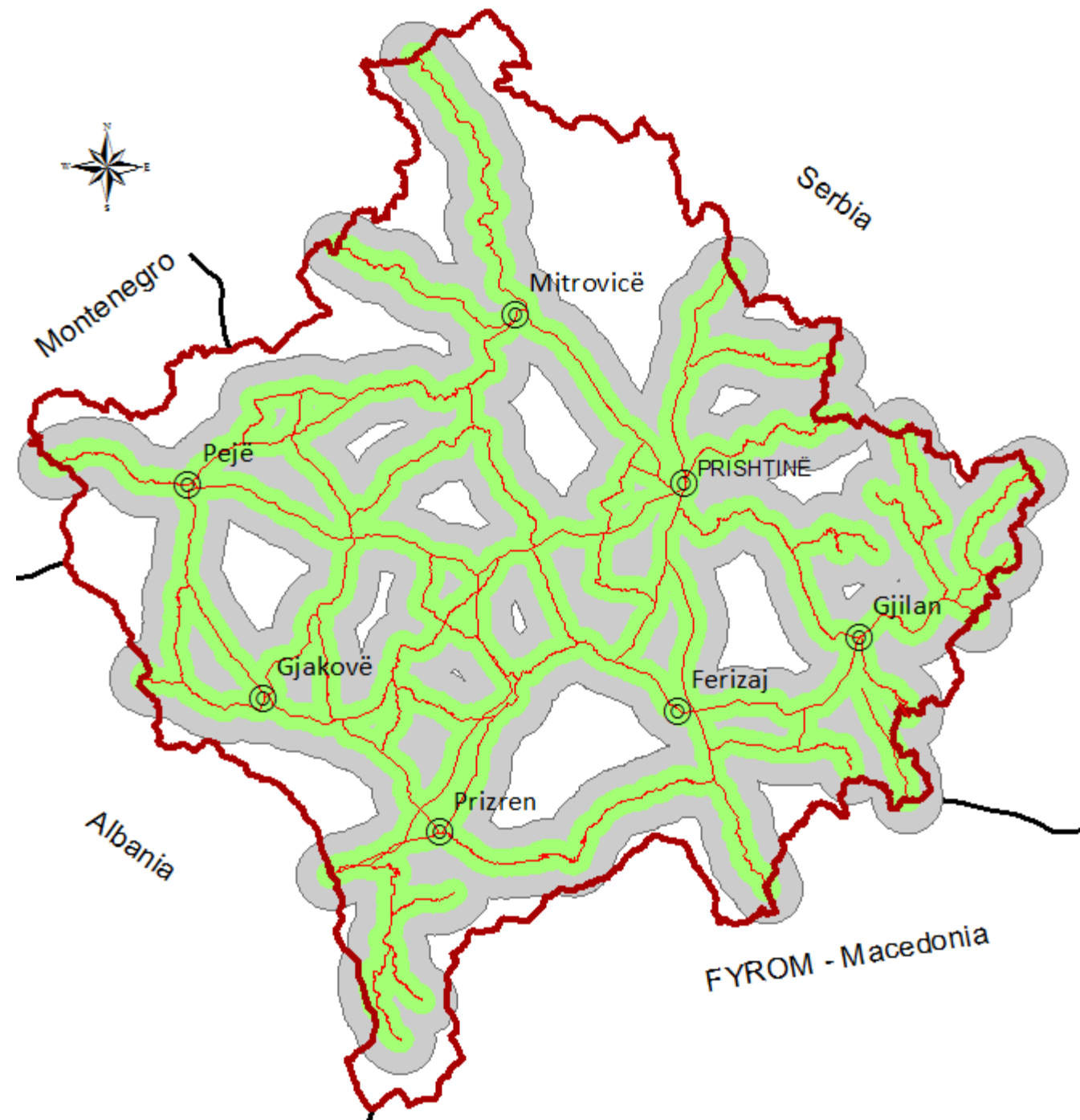
Access to main roads

First and second level

Distances and % of population

2 km = 74.4 % of population

5 km = 92.5 % of Population





## 6. Commuting data analyses , Case study – Prishtina city, Kosovo

The information presented commuting flows between other settlements to Prishtina,

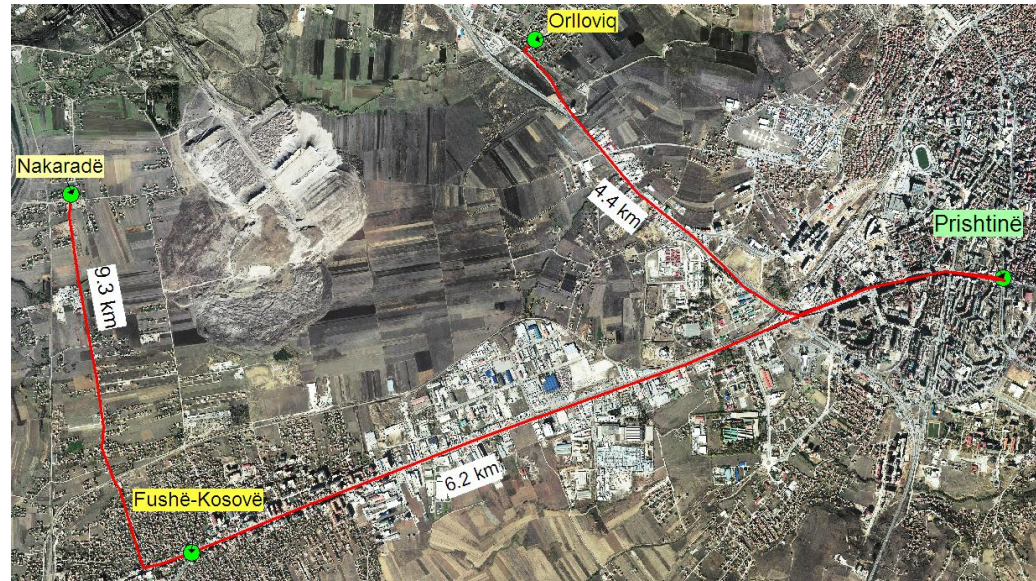
### Methods and results

In this analysis, data about commuting are organized at settlements level.

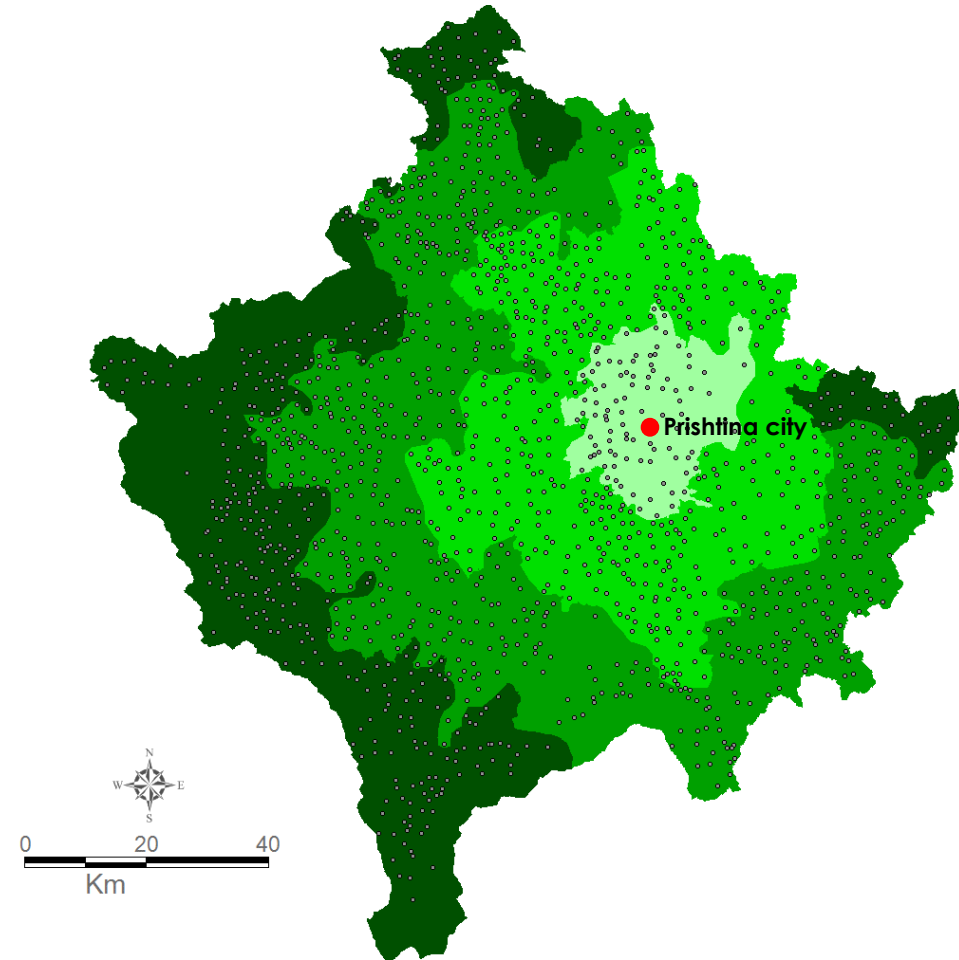
The work for this analysis was divided in three phase:

- GIS activity ( create measurement from which settlements to Prishtina)
- Prepare and analysis tabular data (taken from census database)
- Matching data (vector data and attribute data) and calculation distances

The data source for this analysis is the Census 2011







## Commuting data analyses , Case study – Prishtina city, Kosovo



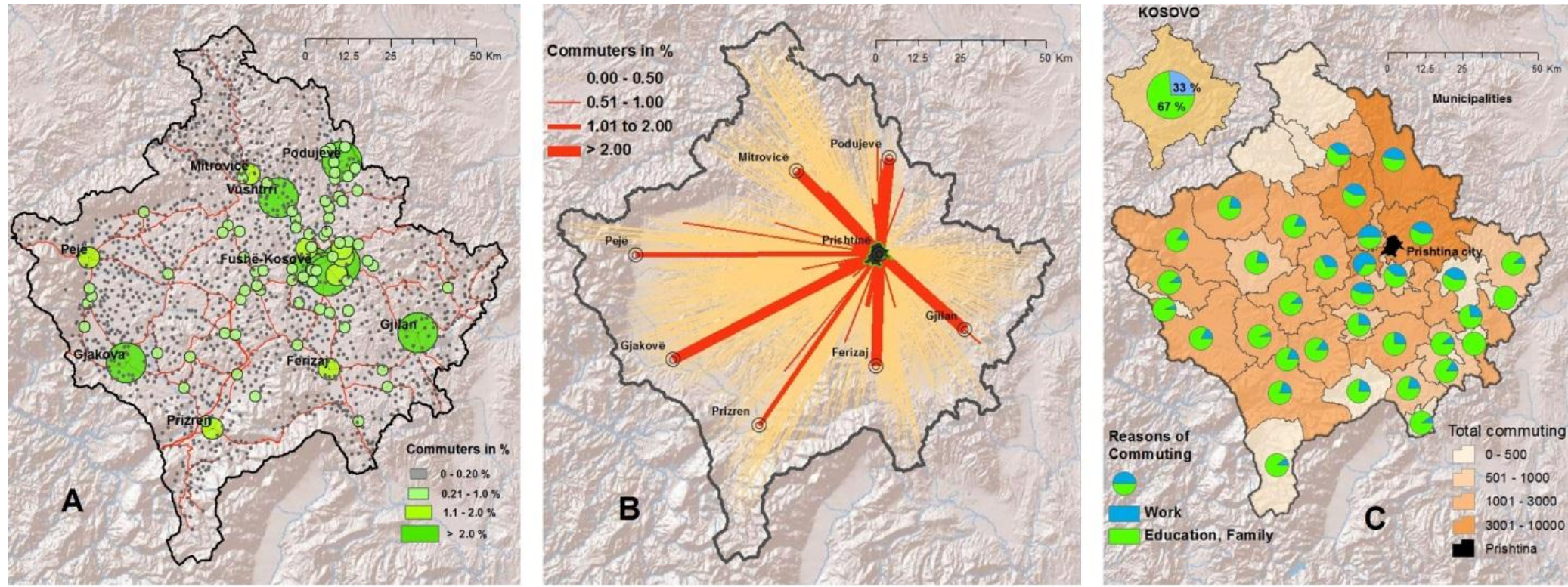
*People who do not live in Prishtina city,  
but they work or study in Prishtina city*

Source: Kosovo Agency of Statistics

Distances by zone and roads		Number of Settlements	Distance covered and persons commuting
	< 20 km	(95)	26.9 %
	20 - 50 km	(429)	40.6 %
	51 - 80 km	(579)	20.0 %
	More than 80 km	(363)	12.5 %
• Settlements			



# Commuting data analyses , Case study – Prishtina city, Kosovo

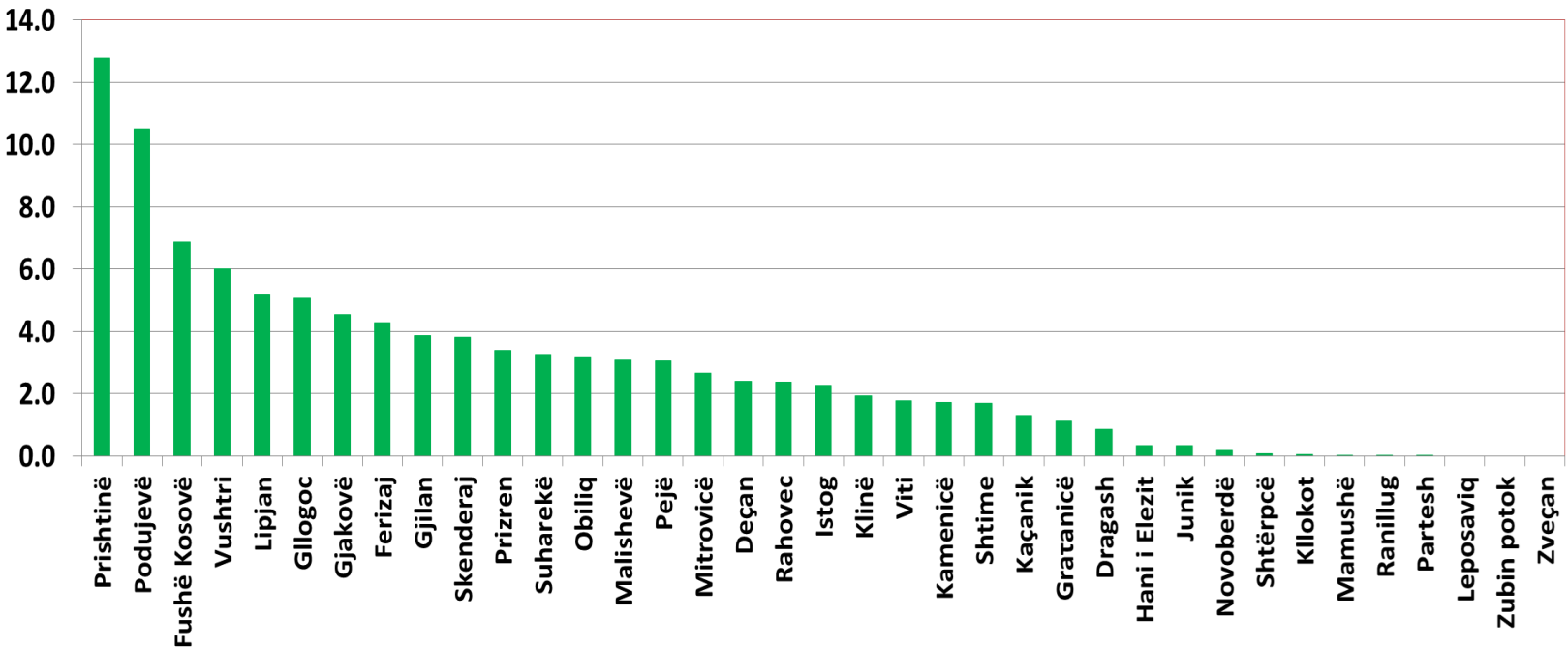


- A- Spatial distribution of commuters from other settlements to Prishtina city by road distances in %.
- B- Spatial distribution of commuters from other settlements to Prishtina by direction
- C- Spatial distribution about commuters from other settlements (Data are aggregated in municipalities level) to Prishtina settlement by work, education and family reasons in %.

- Average distance is 34 kilometres per person, for persons who are work commuters from other settlement to Prishtina.
- The average distance for all commuters (work, education and family reason) from other settlements to Prishtina is 40 km (distances are calculated by roads).

# Commuting data analyses , Case study – Prishtina city, Kosovo

Commuters to Prishtina settlement, by municipality (in percentage)



The commuters arrive in Prishtina city mostly from neighbouring settlements – more than 30% of total number of commuters – Podujevë, Fushë Kosovo and the rest of the Prishtina municipality.

Prishtina is the most attractive city, its population having increased by 34% when taking into consideration commuters (more than 56 thousand).

Commuters who are coming in Prishtina mostly are from rural areas - about 62 % - and 38 % are from urban areas.



## 7. Conclusions

- Commuting data can be used from transport planners, researcher of this field that is challenging to the city of Prishtina.
- Drawing on this experience, commuting should be incorporated as one of the subjects to be surveyed during the National Census of Population and Housing 2021.
- In the next Census (2021) we have to include more questions about commuting:
  - Mode of travel (Walking, Bike, Train, Taxi, Bus, Car),
  - Trip of Purpose (Home or Family, Work, School, shopping, social/recreation),
  - How often you travel between your home and your place of work/study (Daily, weekly, and less often than once a week).



**Thank you  
for your attention !**

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