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CENSUS 2021

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➢ Census of population, households and dwellings 2021 was not an option – it was a necessity.
➢ Use of the new combined census method was implemented.
➢ For the first time, practical use of administrative sources for census purposes, new technologies for data collection through on-line electronic channels as well as new organisation for census data acquisition, requires enormous organizational, intellectual and financial efforts, which are applied into the Census.
➢ All activities planned for the Census were completed on time (considering all circumstances)- the SSO is satisfied with this operation;

Planning
Twining, IPA
2015

Preparation
2017

Testing
Pilot Census – April,2019/ June 2021

Census- April 2020,
April 2021,
September, 2021
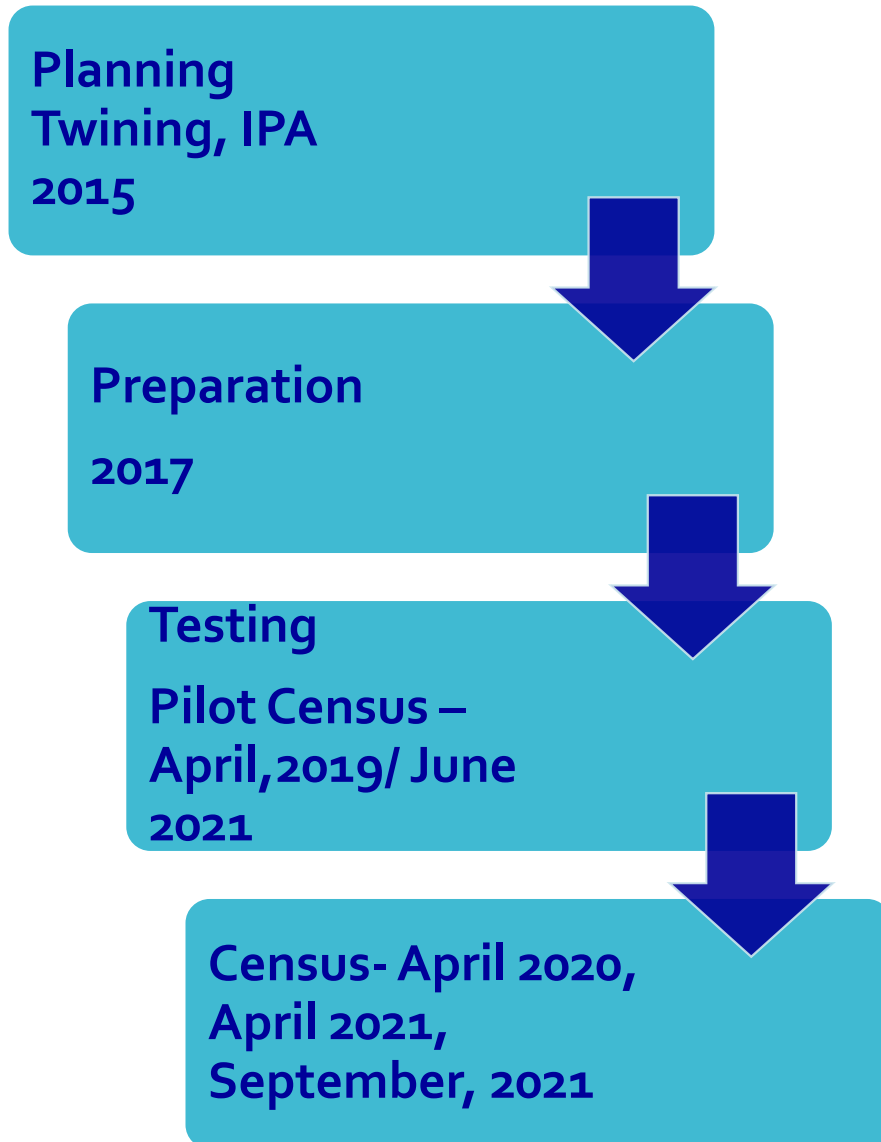
Census 2021 – Overview

➤ **New combined census method** – (*combination of data from multiple administrative data sources-(pre census data base), with full field enumeration was implemented.*)

➤ **New technologies for acquisition of the census data** – (*new architecture of the IT system, online application, CAPI method using laptops +web application for self-enumeration of the citizens of the Republic of North Macedonia who are absent abroad.*)

➤ **Increasing importance of outsourcing -** (*public tender, consortium of 3 IT firms contractors + 1 for web. application*)

➤ **Pilot Census** – (14 -30 June 2019;)

➤ **Census Low** - January 2021;

➤ **Census Methodology and census questionnaires -** February 2021

➤ **COVID 19** - protocol

➤**Organization of field activities** – (*public announcement, selection of candidates, training, field work*)

➤**Public relations and media coverage**

➤**General evaluation of enumerator's field work**

➤ **Census data processing-** *less than 6 months*

➤**Dissemination plans –** *publication of the census data, 30 March 2021*

Census 2021 – Overview

➢ **Census Low, Methodology and Budget**

Two main international methodological documents have been respected and almost fully implemented:

- Commission Implementing Regulation (EU) 2017/543 of 22 March 2017 laying down rules for the application of Regulation (EC) No 763/2008 of the European Parliament and of the Council on population and housing censuses as regards the technical specifications of the topics and of their breakdowns

- Conference of European Statisticians Recommendations for the 2020 Censuses of Population and Housing, United Nations, New York and Geneva, 2015.

➢It is important to state here the Eurostat position:

''The Census Law and the Methodology were recently shared with Eurostat. In most respects, they are broadly compliant with the relevant standards defined in the European Union's statistical legislation, although EU legislation is not yet binding on North Macedonia as a candidate country".

➢**Census Budget-** 8.5 millions euro i.e 4.1 euro per capita

Census questionnaires, methodology and harmonization with UNECE Recommendations 2020 and EU legislation on the 2021 population and housing censuses

➢ Enumeration of North Macedonian citizens living abroad is an innovative solution which could be followed by other countries that face huge emigration and lack quality and updated data on citizen outflows.

➢Actual stay of at least 12 months before the   reference date is the time threshold for determining usual residence in the case of international immigration. The same   methodological solution is applied for respondents living abroad.

➢In general, also the definitions and classifications of census variables from EU Regulation and UNECE Recommendations are harmonised with international standards.

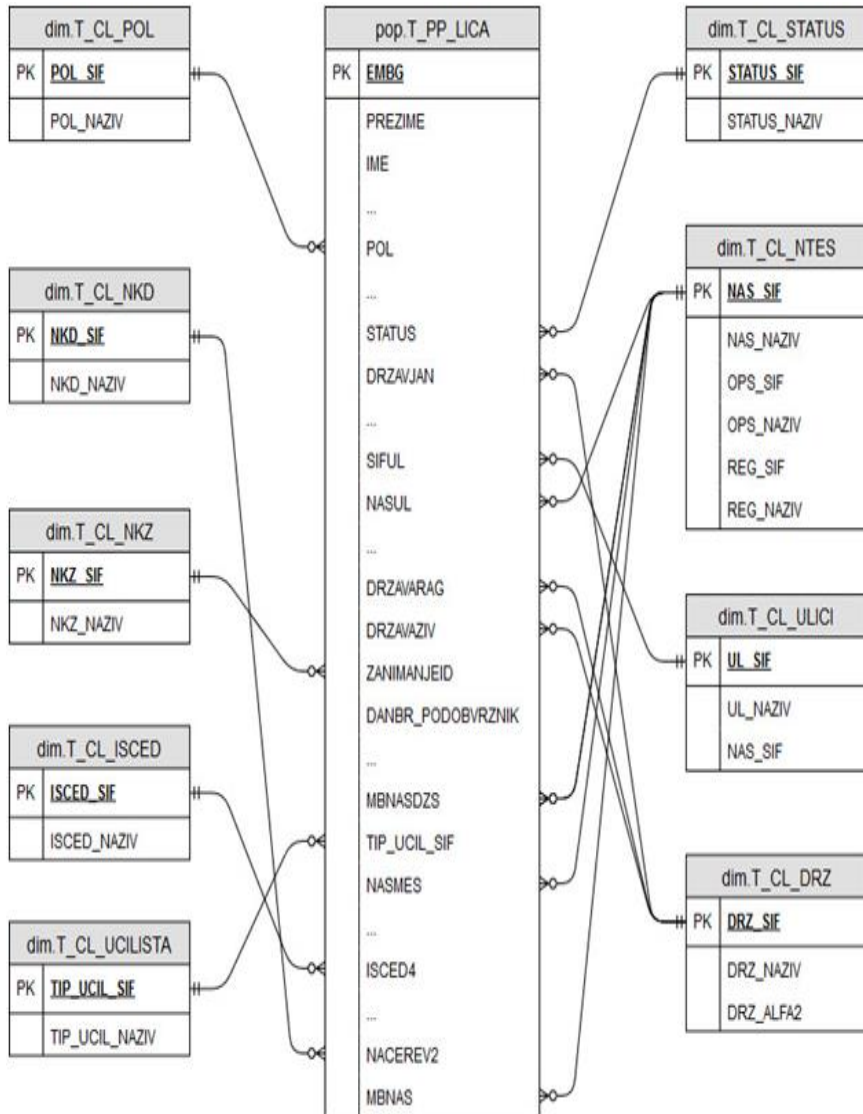Republic of North Macedonia
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Architecture of the IT system

The system contains the modules for:
➢ User administration
➢ Address data – GIS
➢ Building data
➢ Dwelling data
➢ List of members of household
➢ Enumerated person
➢ Household data
➢ Control module
➢ Validation rule

Conceptual model of the Pre-Census Database

Usage of the Pre-Census Database

❏ Integral part of the Census data model

❏ Census web data collection application retrieves data on persons

❏ PIN – used for effective and reliable linkage of records from different administrative data sources:

- ✓ *Employment Agency*
- ✓ *Ministry of Education and Science*
- ✓ *Public Revenue Office*
- ✓ *Ministry of Labor and Social Policy*
- ✓ *Pension and Insurance Fund*
- ✓ *Statistical survey on education*
- ✓ *Statistical survey on births*
- ✓ *Statistical Business Register*

❏ Retrieved data for persons

- ✓ *Personal data*
- ✓ *Residence address*
- ✓ *Country of birth*
- ✓ *Citizenship*
- ✓ *Work/Attending Education*
- ✓ *Social transfers*
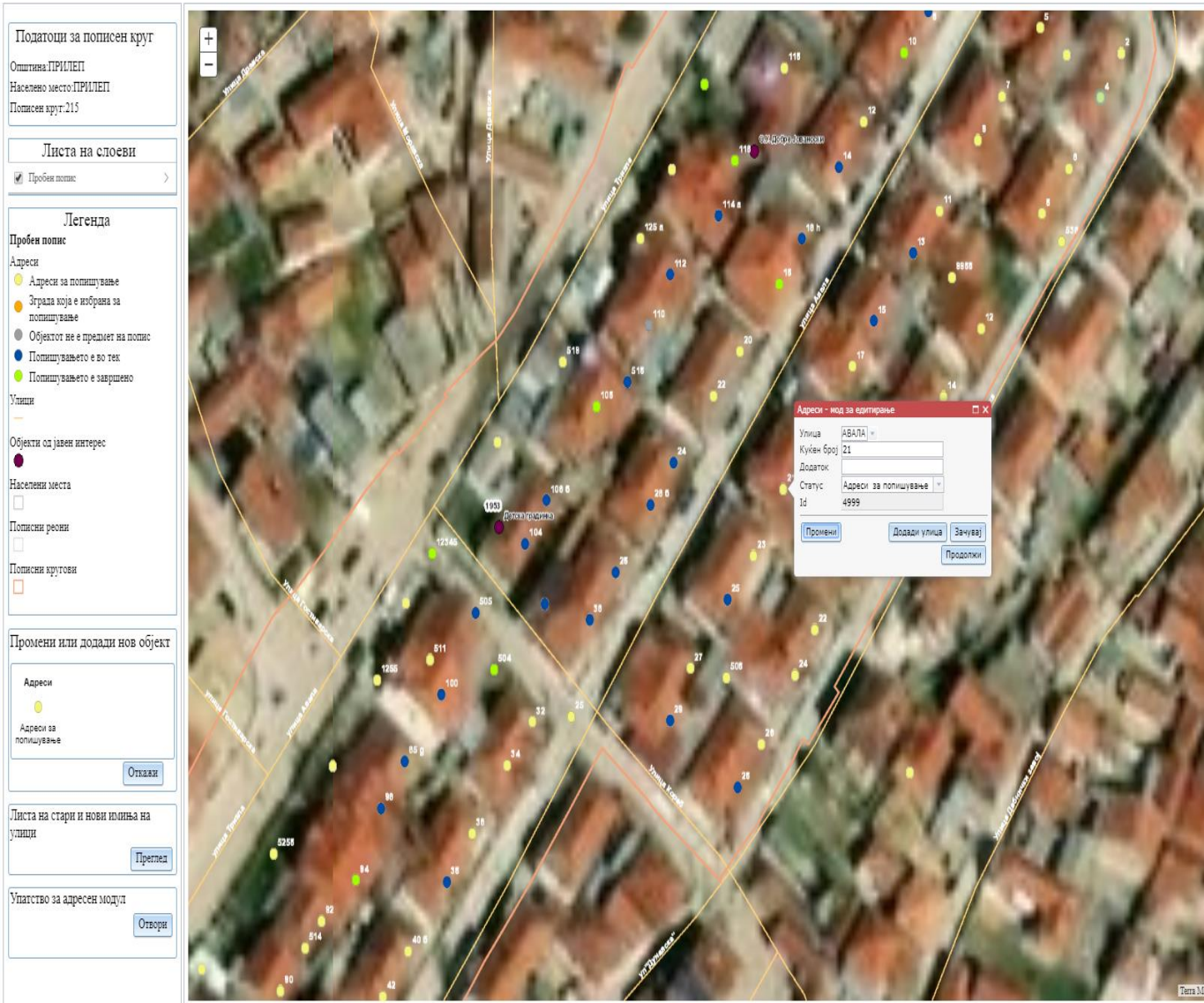
Usage of the Pre-Census Database

❑Easier data collection by having immediate access to administrative data

❑Real-time data transfer and access to results

❑Real-time validation and increased response quality

❑Reduced limitations of time and available data

❑Possibility for dynamic data visualization and analyses

GIS visualisation - Functionalities

☐ Useful for enumerator to now what is enumerated or not

☐ Select centroid,

☐ Corect address,

☐ Change the status

☐ Add centroid for new building with address

☐ No possibilities to move or remove existing centroids

☐ Enumerator manually change the status

☐ Different statuses of building centroids:

✓ Is not subject of enumeration

✓ The enumeration is finished

✓ The enumeration started but is not finished

✓ The building where enumerator enumerate at the moment (automatically assigned)

Centroids structure

- ObjectID
- ID
- Municipality (Code and Name)
- Settlement (Code and Name)
- EA number
- Street (Code and Name)
- House number, addition of HN
- Status
- Estimated number of dwellings
- X, Y, User and Time Stamp

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Census field activities
➢Field organizational started on 20 July - when the (50) Regional Census Commissions are re-elected.
➢Public announcements for :
- 506 regional instructors and
- 5055 enumerators, has been published on 20 July – until 05 August.
➢Central application with crucial key variable included (PIN) allow direct use of administrative data with minimizing the errors and to remove duplications of the registered candidates.
➢Due to the unexpected non-interest to candidate for regional instructors and enumerators (there was lack of field census staff in the 30 enumeration regions) the announcement has been repeated three times:12.08., 17.08. and 25.08 2021

Census field activities

- Only 4 017 candidates applied.
- The testing of the registered candidates was implemented: 19-20.08.2021.
- Training of the census participants:
  - 150 state instructors: 14- 20 .08. 2021(in multiple groups due to COVID – 19 protocols) in SSO
  - 350 regional instructors: 24- 26. 08.2021
  - 3 700 regional enumerators: 28. 08- 31.08.2021
- Early enumeration of certain categories of the population in the country (prisoners, soldiers and homeless people) – 28 August to 4 September 2021

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Self-enumeration of Macedonian citizens abroad

➢ Specially created web application by outsourcing company - for easy access and filling in the required data.

➢ Application was also used for enumeration of diplomatic representatives and other officials sent abroad by government or other institutions/enterprises (including their family members).

➢ Registration using PIN and e-mail address of the person are pre-condition for partaking in selfenumeration.

➢ Registration is possible only from outside the country, filtered by IP address (access from North Macedonia is disabled);

➢ By registration also all household members of the registered person shall be enumerated by using their PINs (persons without North Macedonian PIN cannot be enumerated);

Self-enumeration of Macedonian citizens abroad
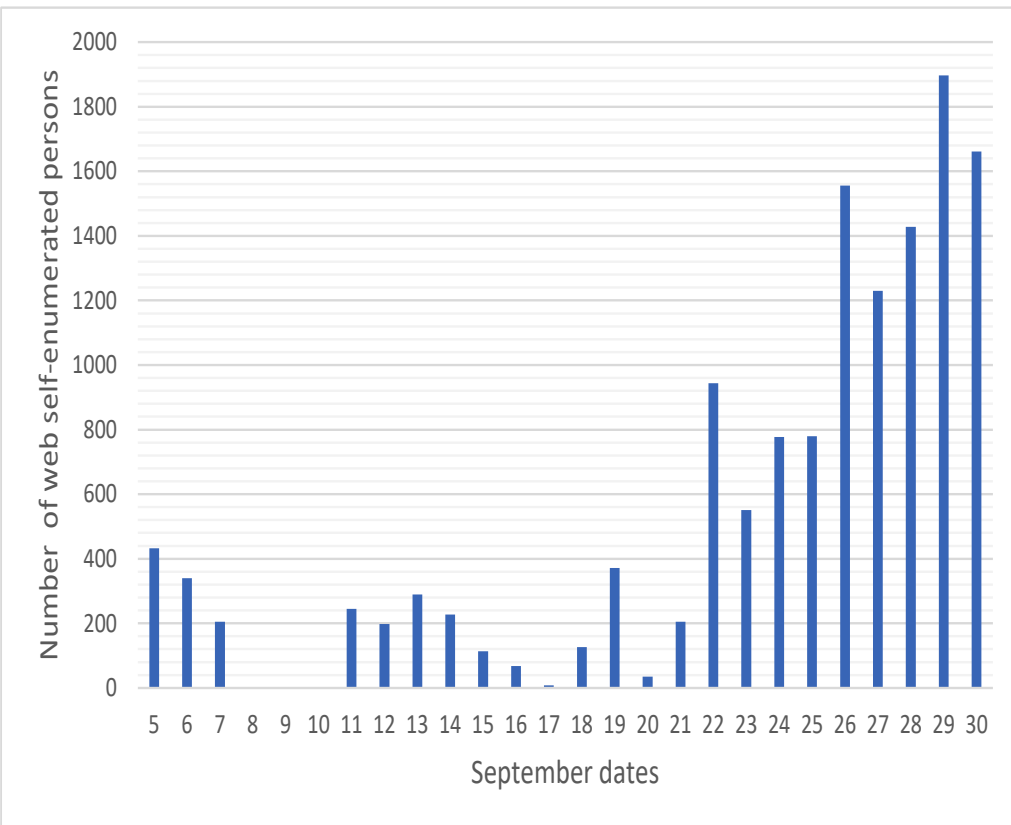
➤Simple guidelines (in Macedonian and Albanian languages) in the form of short video are available from first page of special website dedicated to the Census 2021;
➤More detailed guidelines in Macedonian and Albanian are attached to the video ;
➤The application is available in 8 languages – the seven languages used in North Macedonia and English.
➤The SSO disseminates on daily basis information on the number of MKD citizens who used the possibility to participate in the national count.
➤The self-enumeration lasted from 1 April to 30 September
➤A total of 204 805 self-enumerated Macedonian citizens

Census field activities
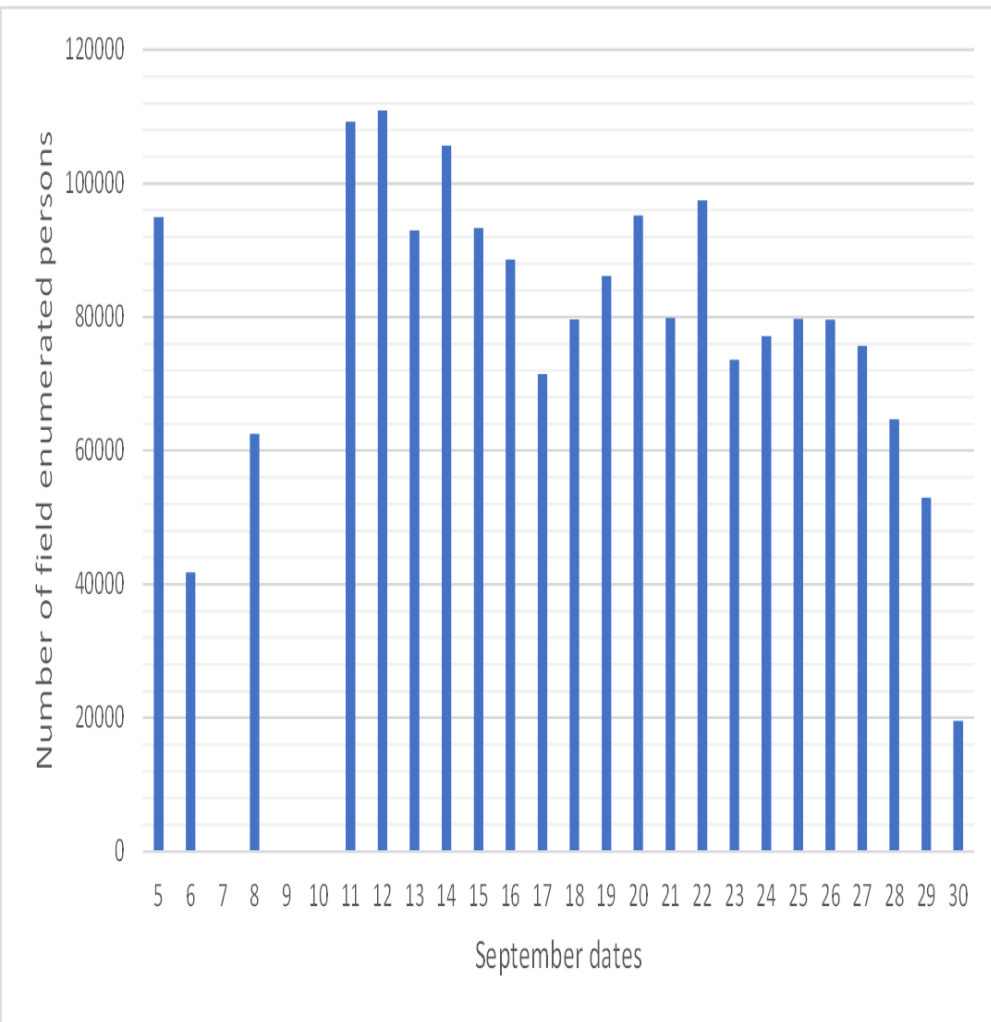
➤Successful start on 5 September: 95 000 people enumerated in one day.

➤Technical issues;

➤Cyber attacks;

➤Enumerators quitting;

➤Most successful days: 11 and 12 September with 109 000 and 111 000 enumerated people.

➤Average number of members per household – 3.2 members

➤Average enumeration time for a four-member household 17-20 minutes.

➤In general, the respondents were very well informed about the census and they welcomed enumerators.

➤COVID protocols were respected by all enumerators.

➤From 24 September – enumeration in the headquarters of the Regional Census Commissions and at the SSO – 19 000 enumerated persons.

Monitoring system

➢Very effective monitoring system which allows to extract information on field work at any point of time by selecting starting time and current time.

➢Number of enumerators currently working ;

➢Number of enumerated persons per enumerator ;

➢Number of already enumerated persons during the selected time period.

➢The total number of enumerated persons is displayed at all times;

➢5 types of the census monitoring reports per enumerator/ EA.

➢Dashboard - for visualisation.

➢Ticket support system

➢Viber

Solution1 - brojac3.sql - 172.21.0.227.master (semos (123))*

brojac3.sql - 172.2...aster (semos (123))* ⊠ ✕

SET @TimeFrom = '2021-09-20 08:00'; -- MENUVAJ OVDE
SET @daysBefore = 1; -- MENUVAJ OVDE

100 %

Results Messages

DatumVcera

1	2021-09-19 08:00:00.000

	Opstina	L(D)	L(V)	D/V	K(D)	K(V)	L/K(D)
19	КАВАДАР...	669	399	167%	45	31	14
20	ЧАИР	643	530	121%	52	43	12
21	КОЧАНИ	631	791	79%	45	50	14
22	ЃОРЧЕ ПЕТ	581	989	58%	41	58	14
23	ЛИПКОВО	531	824	64%	26	37	20
24	ТЕАРЦЕ	531	360	147%	32	29	16
25	ИЛИНДЕН	506	209	242%	28	16	18
26	ШТИП	445	698	63%	41	56	10
27	ЖЕЛИНО	432	389	111%	19	18	22
28	БОГОВИЊЕ	421	540	77%	21	22	20

Query executed succ... 172.21.0.227 (15.0 RTM) semos (123) master 00:00:00 81 rows

brojac3.sql - 172.21.0.227.master (semos (123))* - Microsoft S...

Quick Launch (Ctrl+Q)

File Edit View Query Project Tools Window Help

New Query

master ▶ Execute

Object Explorer

brojac1.sql - 172.2...aster (semos (195))* ⊠ ✕

SET @daysBefore = 1; -- MENUVAJ GO OVA
SET @TimeFrom = '2021-09-20 14:40'; -- MENUVAJ GO OVA
-- DRUGO NEKA NE SE MENUVA

100 %

Results Messages

	DATUM DENES	DATUM VCE
1	2021-09-20 08:00:00.000	2021-09-19 0

	Den	Od	Do	L/m	Lica	Users
1	Mon	14:40	14:47	149	1,049	577
2	Mon	08:00	14:47	91	37,095	2305
3	Sun	14:40	14:47	122	856	427
4	Sun	08:00	14:47	85	34,662	2292

LicaVkupno

1	1,086,255

Query executed successfully. 172.21.0.227 (15.0 RTM) semos (195) master 00:00:00 6 rows

Ln 9   Col 33   INS

ENG   1451   20/09/2021

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The media and the general public - the biggest and most important observers of the entire process

- Special website Census 2021
- Media campaign for Census 2021
- Intensive campaign on social networks
- Constant contact with the media and media coverage throughout the country
- Info-centre available from 8 am to 10 pm for the Census in the country, as well as for the enumeration of Macedonian citizens abroad
- Daily presence of representatives of the Office in TV shows, news, articles
- Appropriate and dedicated presentation of the census activities by all media - local, national, regional

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Census Data processing -much more demanding and complex;

➢ Procedure for data processing has been adopted;

➢ Strategic document has been developed were main principles of data processing in the broader sense and every principle has been elaborated more detailed;

➢ Original data from the field or web are stored without any statistical processing;

➢ By comparing original datasets and final census outputs it is possible to follow on a very simple way every change of data for any variable that occurred during the statistical data processing;

➢ Much faster and controlled data editing as all input databases already exist in electronic form.

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Main principals of census data processing

➢ Determine the structure of the primary datasets (field data and web data)
➢ Harmonization of primary datasets = metadata description (name of variables, format, topics, classifications used)
➢ Determine the structure of integrated processing working environment (variables from primary datasets + derived (working) variables) + variables from administrative data sources + metadata)
➢ Data integration;
➢ Checking completeness, uniqueness and adequacy of the PIN;
➢ Determine usual residence population using step by step methodology;
➢ Determine the original residency status of each record in integrated database based on selected variables before data processing.

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Main principals of census data processing

➢ Solving double counting;
➢ Calculation of the quality indicator <u>Usual residency status from records available</u> in different administrative data sources.
➢ The quality indicator is calculated on the basis of six quality indicators derived for each individual database. Two main criteria were included to set up the methodology:

  - *Hierarchy of the sources - three main quality components have been elaborated (relevance, coverage and timeliness);*
   - *Date of the last update – taking into account the census methodology to determine usual resident population (12 months);*

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Main principals of census data processin

➢ Five categories in terms of trust ability, that person numerated in the field has also so-called 'sign of life' in administrative records:

- *Completely trustable*

- *Trustable*

- *Less trustable*

- *Non-trustable*

- *Not available in any data source*

➢ Verification of suspicious records, particularly those not available in any administrative data source - for solving over coverage.

➢ Determination of the final indicator of the usual resident population and linkage of the usual resident population to the updated pre-census database to detect under-coverage.

➢ Solving expected under-coverage;

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Main principals of census data processin

➢ Statistical editing only with records on usual resident population.Data that are not the subject of data editing are : age, sex, nationality, religion, mother tongue, language spoken and disability.

➢ Determination of location of usual resident population.

➢ Statistical editing of households/families is the last stage of population data processing.

➢ Transparent statistical processing with main aim to establish public trust and credibility of final outcomes;

Dissemination of the Census data

❑The Programme for data dissemination is being prepared;

❑Setting-up the final dissemination databases for individual census units;

❑Publication the definitive data from the Census 2021 – 30 March 2021.

- *New release, pamphlet,*
- *new organization data set for the Census 2021 in the MAKSTATdata base*
- *data of the* usual residents only , by age, sex and ethnicity at national ,region and municipality level.

❑Five final databases should be set-up with data from processing phase + derived data that are useful for dissemination:

   ✓Building `
   ✓Dwelling (occupied and unoccupied)
   ✓Population (usual residents only)
   ✓Household (private households only)
   ✓Family.

Through the project IPA MB 2017 - enabled presence and professional support of the expert **<u>Danilo Dolenc from Slovenia</u>**- in the entire census process: preparation, implementation, processing and dissemination of data from the Census 2021.

Thank you for your attention!

Mr. Apostol Simovski, director of the SSO
apostol .simovski@stat.gov.mk