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Topic (iii): Accessibility and usability of IT applications

PRESENTATION OF POPULATION AND HOUSING CENSUSES IN SLOVAKIA ON THE WEBSITE

Supporting Paper

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I. BRIEF HISTORY

1. Population censuses belong to the oldest statistical activities in the human history. Efforts aimed at counting the number of inhabitants are as old as all advanced civilisations. We know only a little about ancient censuses, mostly from the testimony of historical documents. Babylonians had established a registration system already before 3800 B.C. Similar systems were used in ancient Egypt, China, Palestine, Greece and Rome. Censuses were undertaken primarily for military and tax purposes.

2. Early attempts to establish administrative registers were made in Europe in the Middle Age and in first centuries of modern times. The Domesday Book is probably the best know. This land registry of England what established by William the Conqueror in 1086, and it served tax assessment purposes. Population censuses were undertaken in Europe more or less regularly only from the last half of the 18th century. Topics like, biological, social and economic characteristics were gradually added to censuses.

3. The last half of 19th century can be considered as a significant milestone in censuses history. Since then when we can speak about modern population censuses. The Statistician A.L. Quetelet made an important progress in census methodologies. His principles were for the first time applied in the 1846 Belgium census.

4. Slovakia, then a part of Hungary, had its population data regularly collected since 1715. Registration efforts aimed at family heads subject to a tax. Registry of agricultural population was established in 1767 – 1771. The first census was undertaken 1778 – 1785. The data collected at that time included name, age, marital status, class rank, employment of registered persons and some data related to migration. A statistical office was established in Hungary in 1847. Since then censuses were taken in approximately 10 years periodicity. Statistical congresses held since 1869 defined the principles for census data collection and processing. Holerith punch card machines were used for data processing from 1890.

5. Slovakia was integrated into the newly created Czechoslovak Republic in 1918, after break-up of the Austrian-Hungarian Empire. Seven censuses were undertaken in Czechoslovakia, of which five after the World War II. Only the war disrupted the ten year periodicity of censuses. Computer processing (CDC 3300 computers) was implemented the first time for the 1970 census. Czechoslovakia split into two independe republics in 1993. The first census of the independent Slovak Republic took place on 25 May 2001. Census questionnaires for this census were designed for automatic processing. Scanning and optical character recognition were used for the first time.

II. GOALS OF THE PROJECT

6. The population and housing censuses, give a complex picture of demography and social and economic characteristics of a country. The census data are very specific and it is impossible to replace them by data from other types of surveys.

7. The purpose of our project was to enhance the knowledge of domestic and foreign general audience and professionals about modern population and housing censuses realised in the area of Slovakia through Internet as Internet is becoming increasingly important dissemination channel for statistical data. As the way in which websites are designed can either improve or impede users to look up for information on Internet, great attention was paid to the website design to facilitate access to data. A website with an easy to use and comprehensible navigation is required.

8. The objectives of the project can be described as follows:

a) to offer to the general public and professionals detailed results and other related basic information (legislation, census scope, historical context, questionnaires, processing technologies, maps...) concerning population a and housing censuses realised in Slovakia in years 1921, 1930, 1950, 1961, 1970, 1980, 1991 and 2001.
b) to increase the accessibility and comprehensibility of data by presenting data and other relevant documents in one place and in the unified form,
c) to increase the attractiveness of census results by presenting them in various modes like tables, diagrams, maps and their combinations,
d) to provide the possibility to compare selected indicators in their historical context (the website contains time series, some of which start as early as in 1848),
e) to create an open scalable application allowing its trouble-free expansion in the future,
f) to make available the results to the international community (creating the English mutation of the presentation).

III. IMPLEMENTATION OF THE PROJECT

9. As already mentioned, the project provides results from censuses that took place in Slovakia between 1921 and 2001. The first version of the website was launched in March 2006. The presentation is bein gradually improved. This website is a unique source, in particular for data from older censuses.

10. Census questionnaires changed considerably between 1921 and 2001. The modifications reflected changing expectation on the use of statistical data from censuses. The census questionnaires underwent technical changes as well. For example the 2001 census questionnaires were designed for the automated processing. Completed questionnaires were scanned, data automatically recognised and stored in the database. Images of all questionnaires from 1921 - 2001 censuses can be seen on the website.

11. The project in the following phases:

(a) selection of census data and information to be presented,
(b) design and implementation of data and metadata storage and development of templates for tables and maps to be used on the website,

(c) compiling the history, legislative regulations, administrative division and other information relevant to individual censuses
(d) website design for presentation of census data and related information,
(e) initial feeding of the data and metadata storage.

12. Censuses presented on the website are divided into two groups:

- Data from the censuses realised before 1980 were available in paper form;
- Since 1980 data were also available in electronic form too.

Results of the 1970 census exist also as electronic text files. However, the files were incomplete, so thay had to be combined with paper sources.

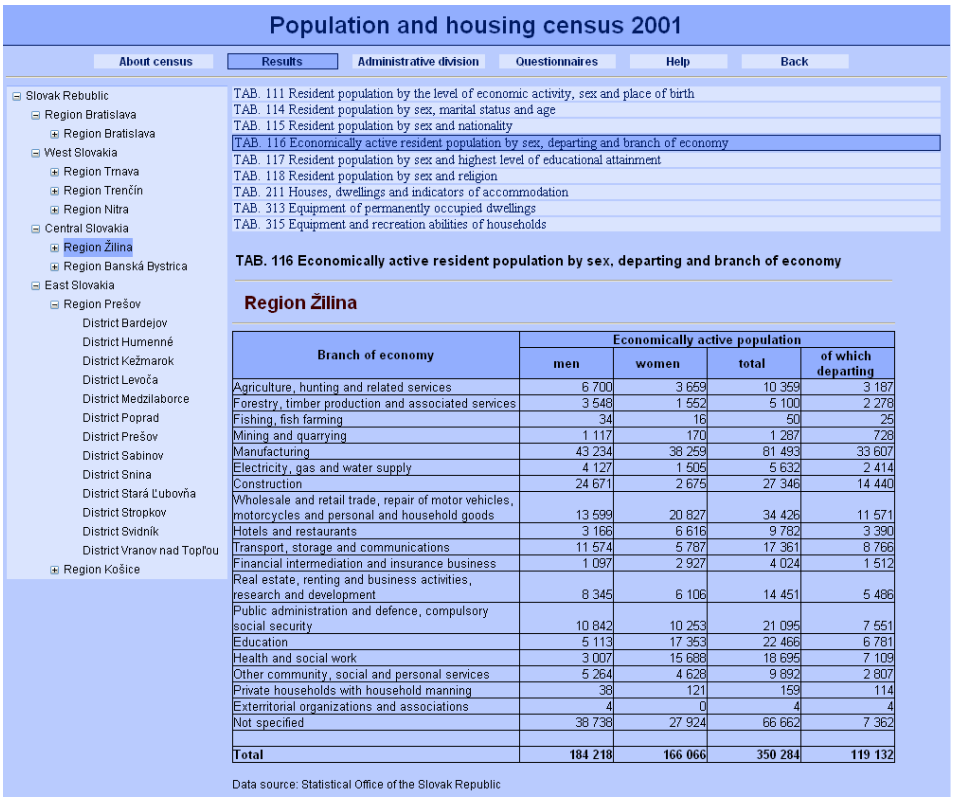
13. SQL Server was used as the database management system for the application. The web pages are either static HTML pages or dynamic ASPX pages. The dynamic pages are created in ASP.NET environment. The application runs on MS IIS webserver. This implies that the pages are optimised for the Internet Explorer but they can be viewed using other browsers (e.g. Mozzila, Opera) as well.

A. Censuses from 1980 to 2001

14. Data from the last three censuses (1980, 1991 and 2001) were processed by computers already at the census taking time. Therefore, results were available in a digital form, as Oracle databases. Data from 1980 and 1991 years were originally stored as text files and converted into Oracle within the frame of another project in 2004. However, data from each of these censuses were in different formats and stored in separate databases. A three dimensional data structure (time, territory and indicator) was created in the first phase of the project. Data were converted into a unified format, and unique data storage was implemented. This solution permitted a simple retrieval of stored data and their use in different presentations (tables, diagrams, maps).

15. The current web presentation of the above mentioned three censuses is available in a dynamic form. Requested data are extracted from the database into predefined table templates. The forms of table templates are based on tables used in original publications. The user obtains the data by selecting the census year, territorial unit and table. The current application supports all territorial levels with the exception of the municipality level. Data can be also displayed in form of thematic cartograms (the age structure, religion, nationality). The territorial division reflects the on valid at the time of individual censuses. A major reform of territorial units too place in 1996.

16. The territorial navigation is adjusted across the hierarchical tree of territorial units for each of these censuses. It is very useful that user can by one click on the tree of territorial units chose a totally different territorial unit. The territorial unit tree also shows user's position in the whole administrative division structure of the Slovak Republic. Figure 1 depicts the hierarchical navigation tree of territories, list of available tables and selected table for the 2001 census. For the 2001 census following territorial levels (aggregations) are available: the Slovak Republic (NUTS1), region groupings (NUTS2), regions (NUTS3), and districts (NUTS4).



Branch of economy	Economically active population			
	men	women	total	of which departing
Agriculture, hunting and related services	6 700	3 659	10 359	3 187
Forestry, timber production and associated services	3 548	1 552	5 100	2 278
Fishing, fish farming	34	16	50	25
Mining and quarrying	1 117	170	1 287	726
Manufacturing	43 234	38 259	81 493	33 607
Electricity, gas and water supply	4 127	1 505	5 632	2 414
Construction	24 671	2 675	27 346	14 440
Wholesale and retail trade, repair of motor vehicles, motorcycles and personal and household goods	13 599	20 827	34 426	11 571
Hotels and restaurants	3 166	6 616	9 782	3 390
Transport, storage and communications	11 574	5 787	17 361	8 766
Financial intermediation and insurance business	1 097	2 927	4 024	1 512
Real estate, renting and business activities, research and development	8 345	6 106	14 451	5 486
Public administration and defence, compulsory social security	10 842	10 253	21 095	7 551
Education	5 113	17 353	22 466	6 781
Health and social work	3 007	15 688	18 695	7 109
Other community, social and personal services	5 264	4 628	9 892	2 807
Private households with household manning	38	121	159	114
Exterritorial organizations and associations	4	0	4	4
Not specified	38 738	27 924	66 662	7 362
Total	**184 218**	**166 066**	**350 284**	**119 132**

Figure 1. The territory navigation tree, list of tables and the selected table of results – 2001 census.

B. Censuses from 1921 to 1970

17. Data from older censuses (1921-1961) were available in a paper form only. Some electronic files were available from the 1970 census, but they were incomplete.

18. Selected tables and other documents were scanned, digitalised and finally transformed into HTML format. Unlike for the more recent censuses, results from years 1921-1970 are available only as static HTML pages. An example of the presentation of the results from the 1921 census is shown in the Figure 2.

19. The possible digitisation of data from older censuses that would allow their presentation in the same form as the data from newer censuses is under consideration. The conversion into a database is time consuming, some sources are of a poor quality, data for small territorial units are often not available, etc.

People census 1921

About census
Results
Administrative division
Questionnaires
Back

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Tab. 2-II. Population in Slovakia by relation to profession
Tab. 8-II. Population by profession classification

Tab. 15-I. Attendant population by size of the municipality of the stay - absolute figures

Comitat	Number of the attendant population in population census of February 15, 1921 in municipalities having								Total number of the attendant population
	up to 500	501 to 1 000	1 001 to 2 000	2 001 to 5 000	5 001 to 10 000	10 001 to 20 000	20 001 to 50 000	more than 50 000	
	inhabitants								
Comitat XV. Bratislava	52 406	102 784	170 838	183 443	80 080	35 460	–	93 189	718 200
Comitat XVI. Nitra	58 326	97 745	131 019	90 717	29 049	38 141	–	–	444 997
Comitat XVII. Turčiansky Svätý Martin	70 207	97 832	87 898	116 414	26 489	22 443	–	–	421 283
Comitat XVIII. Zvolen	96 553	131 981	107 350	68 036	42 093	46 611	–	–	492 624
Comitat XIX. Liptovský Svätý Mikuláš	69 553	76 468	72 855	55 599	20 262	25 426	–	–	320 163
Comitat XX. Košice	185 946	176 043	100 044	45 696	25 399	17 577	–	52 898	603 603
Slovakia in total	**532 991**	**682 853**	**670 004**	**559 905**	**223 372**	**185 658**	–	**146 087**	**3 000 870**

Explanation of symbols:
Macron (–) in the place of a number denotes that the phenomenon did not occur

Bibliography:
Sčítání lidu v republice Československé ze dne 15. února 1921, Díl I.; Praha, Státní úřad statistický 1924

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Figure 2. The list of tables and the selected table of results – 1921 census.

C. Time series

20. Besides the data from individual censuses, the presentation offers time series of selected indicators in numerical and diagram form for the years 1950-2001. Some series start as early as in 1848. An example of time series shows the Figure 3, which depicts the population development in years 1848 - 2001 in the area of Slovakia.

Time series 1848 - 2001

Year 2001
Year 1991
Year 1980
Year 1970
Year 1961
Year 1950
Year 1930
Year 1921
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Chart III.2-1 Population by population censuses in 1848 - 2001

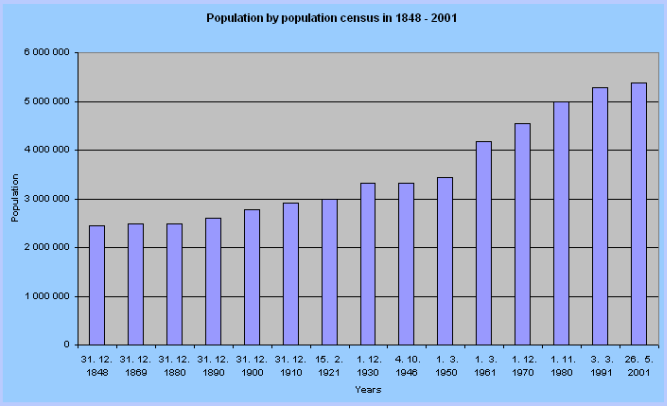

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Figure 3. Population development in years 1848 - 2001 in the area of Slovakia.

IV. HELPDESK

21. The website was built on our assumption what the users wanted. It is necessary to confront this vision with a feedback from users. A helpdesk was put in place, in order to facilitate communication with users. Users have a contact address, list of frequently asked questions and a feedback form. This enables authors to better understand expectations of professional communities as well as the general public. The feedback is used for improvement of the current presentation of censuses.

V. CONCLUSION AND FUTURE DEVELOPING OF THE PROJECT

22. The website is implemented in a compact form. Almost all web pages (except some thematic maps) are shown in one window. Authors paid attention to the user friendliness of the system. The navigation through the web pages was designed to be comprehensible and efficient from the user's point of view. The website represents a one-stop shop for results and other relevant information from all censuses that took place in the territory of Slovakia since 1921. The data are presented in a unique, user friendly and consistent form. The address of the website is http://sodb.infostat.sk/sodb/index.htm

23. Data from newer censuses were stored in a unified database. Older census results were digitalised. The application allows a simple navigation. Format of tables used in original publications is preserved. Data have obtained new qualitative value and an additional dimension of usage.

24. Data comparison across territorial units and time is not possible, because administration division reforms were realised in the 1921-2001 period.

25. The application was prepared with the perspective of its future enhancement. It will be used for the upcoming 2011 census.

26. Depending on users' feedback, the following improvements may take place:
- (a) enlarging amount of data presented,
- (b) improving the presentation by expanded use of diagrams, maps and cartograms, time series, etc.,
- (c) expanding the available territorial units to the municipality level,
- (d) adding detailed bibliographical part for individual censuses,
- (e) expanding the length of time series,
- (f) transforming static presentation system into a dynamic form (subject to a feasibility study),
- (g) adding a search engine to the website,
- (h) adding customisation tools for the users,
- (i) implementing tools for linking census data with data from other sources (e.g. other socio-economic databases),
- (j) expanding the English version to match the, presently more complete, Slovak version.
- (k) Expanding te system to data from censuses before 1921.

VI. ACKNOWLEDGEMENT

27. The authors thank to the Ministry of Transport, Posts and Telecommunications of the Slovak Republic for co-financing the project and the Statistical Office of the Slovak Republic for providing data and other relevant documents.

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