SERSCIDA

PODRŠKA STVARANJU DRŽAVNIH/REGIONALNIH ARHIVA
ISTRAŽIVAČKIH PODATAKA IZ OBLASTI DRUŠTVENIH NAUKA

SUPPORT FOR ESTABLISHMENT OF NATIONAL/REGIONAL
SOCIAL SCIENCES DATA ARCHIVES

Analysis of existing potentials for the establishment of a social sciences digital data base archive in Serbia

SEVENTH FRAMEWORK
PROGRAMME

Disclaimer

The information in this Report does not necessarily represent the view of the European Commission (EC).

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Preface

SERSCIDA is designed as a strategic project for supporting the cooperation and exchange of knowledge between the EU countries associated within the Council of European Social Sciences Data Archives (CESSDA) and the Western Balkan Countries (WBC) in the field of social science data archiving. The project addresses the issues of potential usage of information-communication technologies for the benefit of scientific research and exchange of knowledge as laid down in the call for proposals topic. The project aims to produce tangible results and improve the capacities for exchange of knowledge and data collected through research in the social sciences between the European countries and WBC involved.

The four main objectives of SERSCIDA are:

- to **support the establishment of social science data archives** in order to increase the level of sharing and preservation of data collected through research in WB countries;
- to **identify potentials and infrastructures for establishment of social science data archives** in WB countries involved;
- to **enhance the exchange of knowledge and sharing of data** collected through research in the social sciences in the WB and EU – CESSDA countries; and
- to **increase the level of understanding and support for open access policies** through involvement of policy and decision-makers in WB countries.

The analysis that this document describes was a mapping exercise of the existing capacities and scope for the establishment of a digital data archive(s) in Serbia. The same exercise is simultaneously taking place in Croatia and Bosnia and Herzegovina. The analysis will serve as a baseline for this project, and as a foundation from which other SERSCIDA activities will be developed.

The tasks foreseen in the preparation process of the analysis included:

- development of a methodology for analysis of existing potentials for establishment of social science digital data archives in the WB region;
- analysis of existing potentials and infrastructure for data archiving in the WB countries involved; and
- provision of recommendations for making use of the existing potentials.

Acknowledgements

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Abbreviations

AMRES - Academic Network of Serbia

CESSDA - Council of European Social Sciences Data Archives

CIP - Classification of Instructional Programs

CITRA - International Conference of the Round Table on Archives

DOI - Digital Object Identifier

EIB - European Investment Bank

FP6 - Sixth Framework Programme for Research and Technological Development

FP7 - Seventh Framework Programme for Research and Technological Development

FRY - Federal Republic of Yugoslavia

GDP - Gross domestic product

GESIS - German Social Science Infrastructure Services

ISBN - International Standard Book Number

ISSN - International Standard Serial Number

KOBSON - Consortium of Libraries of Serbia for Joint Acquisition)

MAS - Section for Media and Society

MOST - Management of Social Transformations Programme

PASW - Predictive Analytics SoftWare

RCUB - Computer Center of the University of Belgrade

RRPP - Regional Research Promotion Programme

RS - Republic of Serbia

RZS - Statistical Office of the Republic of Serbia

SANU - Serbian Academy of Sciences and Arts

SAS - Statistical Analysis System

SCDA - Social Sciences Data Archives

SERSCIDA - Support for Establishment of National/Regional Social Sciences Data Archives

SPSS - Statistical Package for the Social Sciences

UNESCO – Unites Nations Educational Scientific Cultural Organization

WBC - Western Balkan Countries

WP2 – Work package 2

Introduction

The purpose of this report is to map the existing potentials for establishing social science data archives in Serbia, as well to extent the current activities of CESSDA institutions to new member countries. In addition to illustrating the existing potentials for the establishment of data archives, the report will include recommendations for setting up a data archive in Serbia.

To collect the information that could illustrate the existing potentials and areas to be improved, three main pillars for a data archive were determined. These three pillars are:

1. the researchers;
2. the research/data service infrastructure; and
3. the research policy and funding institutions.

The pillars address different potentials that are of importance for establishing and maintaining a data archive. Considering the first pillar, researchers would provide and use data, as well as be a potential resource for the archive with respect to knowledge on the ground. For the research infrastructure pillar, it could both provide technical infrastructure, such as servers and data capacity, as well as more service infrastructure, such as survey collection platforms. For the research infrastructure part of the analysis, institutions were included as well, since they may eventually serve as a host for the data archive. For the research policy and funding pillar, this involved consideration of the support for the establishment a data archive both in financial terms and within a research policy setting.

Due to the differences across these three pillars, a general survey covering all pillars was not feasible. Instead, three separate instruments were designed to fit the distinct specific potentials. Below each pillar instrument is presented briefly, with main areas of interest and how the data collection was carried out to examine the existing potentials for establishing a data archive in Serbia.

1. The Researcher Instrument

The instrument that was designed to collect information about existing potentials for researchers was an online survey questionnaire. The questionnaire considered both their experience of documentation, re-use, and dissemination of research data, as well as which types of statistical/analytical software packages, methodologies, and data they used primarily in their work. In addition to these different areas, the researchers were asked if their institution had any policy regarding long term preservation and/or documentation of data. The survey data thus provide a view of the demand for data, training and support, and the supply of data and experiences with documentation.

Direct invitations to the survey were sent out to 1,467 individual researchers in Serbia, and 322 filled out/completed the survey. The questionnaire is attached in Annex 2.

2. The Research Infrastructure Instrument

The instrument that was designed to examine the research infrastructure background was a semi-structured interview/survey, conducted either face to face or via phone with representatives of research infrastructures and research institutions within the social sciences. The Statistical Office of the Republic of Serbia was also contacted. The respondents had to answer questions about whether they could provide technical infrastructure or research service. They were also asked whether their institution had any policy or competences for long-term preservation and documentation of data. The institutions and infrastructures were also asked whether they had any available technical capacity or data collecting services that could be

valuable for establishing a data archive. This was also an opportunity to get in touch with potential collaborators for a future data archive.

Twenty five social science research infrastructures and institutions were contacted for interviews in Serbia, as well as the Statistical Office of the Republic of Serbia. Out of these, 16 were interviewed.

3. The Research Policy and Funding Instrument

In this case the ministry that handles the research policies in Serbia as well as the major research funders were interviewed, either face to face or via phone. The purpose was to establish contacts, better understand the science policy and legal background, and to find out about the possibilities for financing a data archive, both for its establishment and long- term sustainability. Finding from these analyses are presented in the next section.

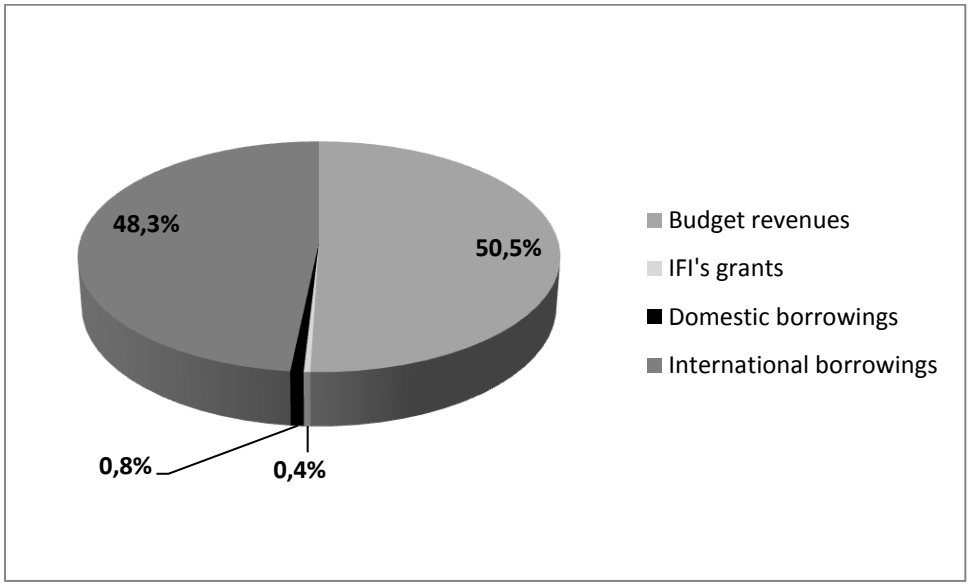
Policy, Legal, and Financing Provisions for Science in Serbia

Basic Characteristics of Scientific-Research Activities in Serbia

Scientific research in the Republic of Serbia is centralized and administered by the Ministry of Education, Science and Technological Development (hereafter: Ministry). Research activity is financed in accordance with the Law on Scientific Research. The Law foresees budget funding of research exclusively through scientific research and developmental projects, while it is expected to carry out funding of other science-related activities through special programs mentioned in the Law. The budget funds that are intended for scientific research activities can be given only to the scientific research organizations that are registered in the Ministry of Science and Environmental Protection, if they fulfill defined conditions. The reasons for this strict condition lay in the budget funding limitations, although a future increase of these may be expected to relax financing conditions.

The investment in research and innovation represents a priority in Serbia, while financing from state the budget is realized within the frame of multiple-year projects, with the goal of providing stability and long-term influence.

Figure 1. Structure of funds for science financing in Serbia



Source: Republic of Serbia science budget for 2012.

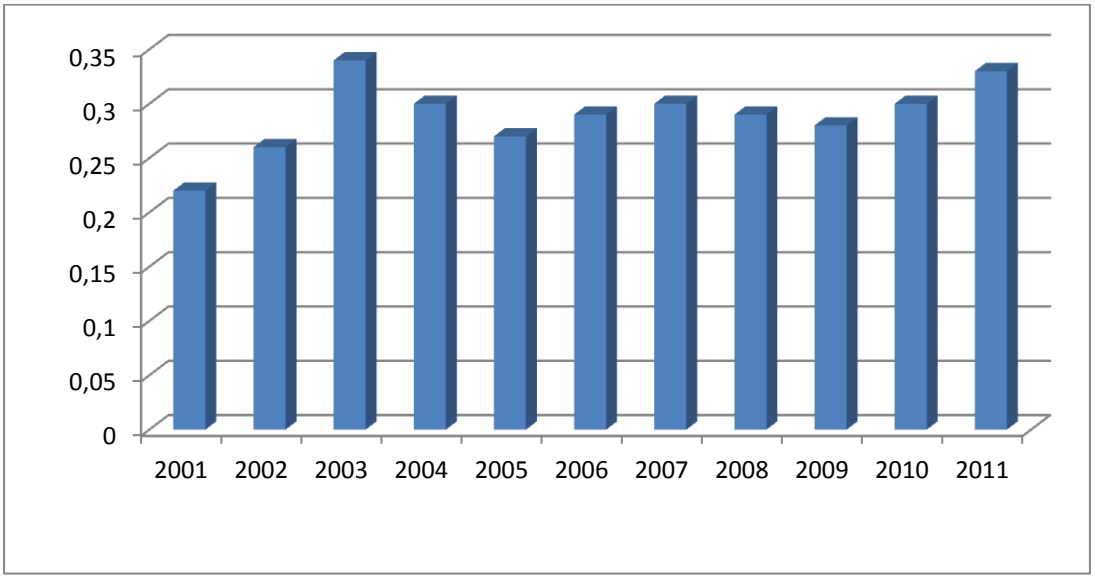
The project financing, resulting from many decades of practice, is based on the public announcement for projects of basic and technological research. During recent years, the Republic of Serbia Government has shown the tendency to finance competitive projects that have the possibility of applying, compared to the past when institutional financing of scientific research activities prevailed. According to the document "Strategy of Scientific and Technological Development of Republic of Serbia 2010-2015", which was adopted by the Government in early 2010, seven national priorities have been defined in the domain of science and technology, while institutional-level financing at a reasonable minimum was proposed, first of all for the institutions owned by the state. One of these priorities is information and communication technology, which complements the SERSCIDA project. The key goal of the Government Strategy until 2015 is a restructuring of

public scientific research systems and their harmonization with innovative sectors in the business milieu, first of all through integral and interdisciplinary research projects.

The university and independent research organizations realise more than 35% of all the research activities conducted at the level of EU countries. These organizations are holders of the largest number of basic and applied research activities and research activities of importance for the public interest. The research capacities are increasing, and innovative approach establishment in the field of creation of data-based policies are defined as one of the priority fields at the level of EU countries. Apart from that, although the importance of social sciences and humanities in economic, social, and state development is often highlighted, that influence on reform changes in Serbian society is not visible and developed to a sufficient extent. Holistic approaches and multi-disciplinary scientific-research teams in Serbia are still rare, while decision-making processes based on research activities and data are not sufficiently developed.[1]

All scientific and academic research institutions in Serbia constantly face insufficient financing of their activities and projects, and especially in the domain of empirical research. Individual research institutions make use of foreign funding sources for short-term projects, but such this type of funding is decreasing.

Figure 2. Allocation for science, as GDP percentage (2001-2012)



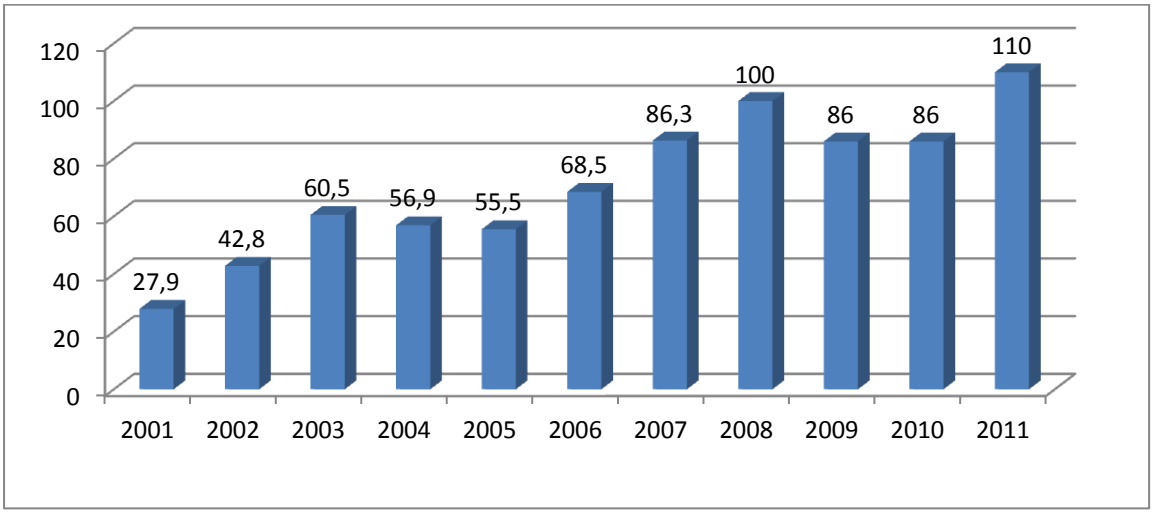
Source: Budget RS

A realistic expectation for an increase of budget allocations for science and technological development for the next five years is an annual growth rate of 0.15% of GDP. With this rate, the budget allocations will reach 1.05% by 2015, that is, until this strategy frame is valid. This is a realistic goal that will be achieved only after long delays: already in 2003 it was planned for the allocation percentage for science to reach 1% of GDP in 2007. Countries like Slovenia reached this goal a long time ago. However, even with the growth of allocations for science to 1% of GDP in the next five years, this will not provide enough funds to compensate for modest allocations for science in the past nine years and very poor allocations in the nineties of the 20th century. That would be a first serious step. Such allocation growth will make possible financing of more

[1] Ministry of Science and Technological Development of Republic of Serbia Team for Social Inclusion and Poverty Reduction, analysis of capacities and resources and making proposals for research-analytical practice promotion in the country, 2011

expensive inter-disciplinary projects on which a large number of researchers work, and it will provide easier daily functioning and better expendables supply, greater support to young researchers, and strengthening of international cooperation, but it will not solve the problem of lack of capital equipment, nor poor conditions of scientific research infrastructure. This infrastructure and equipment are necessary not only for work on projects, but it also opens the possibility of easier inclusion in international projects, and it makes our scientific institutions attractive partners.

Figure 3. Allocation for science in millions of €.

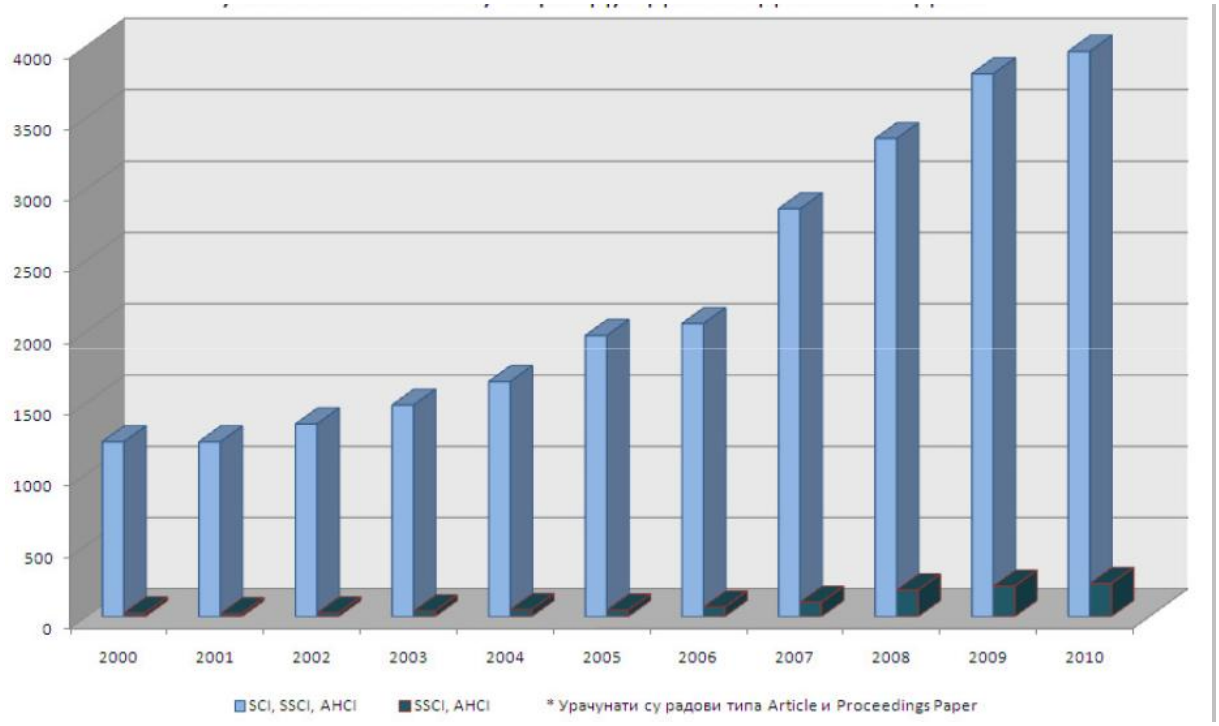


Source: Budget RS

According to Innovation Union Scoreboard 2011, Serbia's performance in the research field are below average. It has relative advantages in human resources, open and attractive research systems, ways of financing and economic effects, but it has relative weaknesses in investments from the business sector, links with entrepreneurship, intellectual property, and innovators.

Despite the above-mentioned limitations, researchers in Serbia put significant efforts into improving their results. This can be observed by analysis of a number of papers published by Serbian scientists in the fields of social sciences and humanities relative to the total number of scientific papers between 2000 and 2010 in Serbia.

Figure 4. Number of papers published by Serbian scientists in the fields of social sciences and humanities between 2000 and 2010.



Source: Thomson/Reuters, ISI Web of Knowledge

After a slight increase in the period 2000-06, a sharp rise in number of published papers occurred. Accordingly, we could conclude that the growth rate of published papers in relevant international publications by Serbian scientists overcame the growth of funds for financing of their activities.

Table 1. Number of scientific papers (article and proceedings papers) published by scientists in Serbia and other countries in the region

Country	2000-2003*	2004	2005	2006	2007	2008	2009	2010
Serbia	1320	1650	1973	2057	2861	3353	3807	3964
Slovenia	2002	2146	2541	2526	3245	3685	3643	3482
Croatia	1760	2101	2495	2353	2989	3758	3787	3539

* average

Source: Thomson/Reuters, ISI Web of Knowledge

Legal Framework

The Law on Scientific Research ("RS Official Gazette", no: 110/05, 50/06) is the basic law that has been applied in this field since 2005. It defines the activity itself and its basic principles. Strategy and programs of general interest for Serbia, as well as criteria ensuring quality of scientific-research work and scientific-research activity development are presented in it. The Law determines the conditions for the founding and work of institutes and excellence centers, as well as researchers who can be engaged in them. Finally, the Law addresses financing of this activity. This Law underwent certain corrections in 2010, which are contained in the Law on Changes and Amendments of Law on Scientific-Research ("RS Official Gazette", no: 18/10).

Besides the fact of being regulated by the basic law, this field is regulated by the ***Law on Innovative Activities*****,** which also came into force in 2005 ("RS Official Gazette", no: 110/05 and 18/10). This Law regulates the basic principles, goals, and organization of application of scientific knowledge, technical and technological knowledge, inventiveness and innovation, in relation to an existing technical-technological base, new and improved products, processes and services, as an engine of development of the Republic of Serbia.

Apart from the mentioned laws, two by-law documents are in force in Serbia, and the most important ones are the following:

1. ***Book of Rules on Evaluation of Scientific-Research Work and Accreditation Procedures of Scientific-Research Organizations*** ("RS Official Gazette", no. 90/06), which establishes the criteria for evaluation of scientific-research work and scientific-research organizations (institutes, faculties, and centers of exceptional values), accreditation procedures, and assessment of the fulfillment of conditions for carrying out scientific-research activity of general interest.
2. ***Book of Rules on Procedures and Ways of Evaluation, Quantitative Presentation of Scientific-Research Results of Researchers*** ("RS Official Gazette", no. 38/08), which regulates: 1. Procedures for acquiring scientific research titles, as well as re-selection for title, and 2. Way of evaluation and quantitative presentation of scientific-research results of researchers.

The electronic or digital archiving in the Republic of Serbia **is not regulated by special law**. However, several legal regulations regulate the work of archives and electronic documents, in the way that they touch upon this field in their provisions. A part of the respective legislation is inherited as a federal regulation from the former Federal Republic of Yugoslavia (FRY), while another part was and remained at the level of Republic regulations.

In that sense, there are three legal regulations. First of all, it is necessary to highlight the ***Law on Archival Material*** ("FRY Official Gazette", no. 12/98, 13/98). It is about previous federal law, which has been applied since 2006, as Republic regulation in Serbia. This Law defines the notion of archival material as *original and reproduced written, drawn, printed, photographed, filmed, recorded with phonograph, recorded legibly with typewriter, or recorded in some other way* - **documented material of permanent value and importance for science,** culture, and other social needs. As archival material of Federal Republic of Yugoslavia, nowadays in the Republic of Serbia there is considered to be the archival material that appeared, amongst other things, in the work of public enterprises, public institutions, and other organizations founded by federal law, and of international gatherings the organizers of which are Federal Republic of Yugoslavia bodies, nowadays bodies of the Republic of Serbia. Also, it defines registry material as overall original and reproduced written, drawn, printed, photographed, filmed, recorded with phonograph, recorded legibly with typewriter or recorded in some other way – documented material and books, files and other records of such material, from which archival material was not selected.

According to the law, the bodies and organizations in the work of which **the archival material emerges** are obliged to mark, date, classify, carry out current archiving and preservation, select archival material, give data, and hand over the registry material to the competent bodies.

The next important regulation is the ***Law on Cultural Property*** ("RS Official Gazette", no. 71/94). Although it regulates quite a broad field, in article 24, this Law regulates the notion of archival material. The archival material consists of original and reproduced written, drawn, computerized, printed, photographed, filmed, micro-filmed, recorded with phonograph or recorded in some other way – documentary material of special importance for science and culture, which emerged in the work of state bodies and organizations, bodies of units of territorial autonomy and local self-government, political organizations and their bodies, institutions and other organizations, religious communities, as well as individuals, regardless of when and where it emerged and if it is in protection institutions or not.

Article 56 of Law prescribes which public institutions may establish the material that represents the archival material. The central registers are kept for each of type of cultural property. The central registers of cultural property are kept by: Republic Institute for Cultural Monuments Protection, National Museum in Belgrade, Archives of Serbia, National Library of Serbia, and Yugoslav Film Archives.

Finally, since 2004, the ***Law on Electronic Signature*** ("RS Official Gazette", no. 135/2004) has been in force in the Republic of Serbia. This regulation regulates the notion of an electronic document**.** So article 2 of the Law implies that the electronic document is the document in electronic form which is used in legal matters and other legal activities**,** as well as in administrative, judicial, and other procedures before the state body. Although this definition does not cover the entire field of digital archiving, it is a very important step forward in legislation modernization, following modern trends in the world. Also, the notion of electronic certificate is regulated and it represents the electronic document confirming the link between the data for electronic signature checking and a signatory's identity. Finally, the user is a legal entity, entrepreneur, state body, territorial autonomy body, local self-government body, or physical entity to whom the electronic certificate is issued.

There is no denying the electronic document's validity or probative force just because it is in electronic form, except in the cases expressly foreseen by the law. The user is obliged to keep the means and data for a electronic signature away from unauthorized access and use, and s/he should use it in accordance with the law.

Since the project subject relates to the authorship works of scientific staff, the ***Law on Copyrights and Related Rights*** ("RS Official Gazette", no. 104/2009) is applied perforce on this field. The Law prescribes that the authorship work is the author's original intellectual property, which is expressed in certain form, regardless of its artistic, scientific, or other value, its purpose, size, contents and other ways of expression, as well as permissibility of public disclosure of its contents. As the authorship work, there are considered especially written works, such as books, brochures, articles, translations, computer programs in any form of their presentation, including the preparatory material for their production, etc.

The author enjoys moral and economic rights in terms of his/her authorship work from the moment of creation of authorship work. The author has the exclusive right to be admitted to the authorship of his work, the right that his/her name, pseudonym, or mark are indicated on each copy of work, that is, are mentioned in any public communication on the work, except if, considering the concrete form of public communication on the work, it is technically impossible or inappropriate.

If the author has created a work during the work relationship while fulfilling his/her work duties, the employer is authorized to publish this work and is the holder of the exclusive property rights to its exploitation as part of their economic activity within five years of completion of work, if not determined otherwise by the general document or work contract. The author is entitled to special compensation depending on the effects of exploitation of work. The author of work created in the course of employment reserves all copyrights for that work, except for the rights belonging to the employer. After the expiry of five years, the author gains the exclusive property rights of the work. If the authorship work is the computer program, the employer is the permanent holder of all the exclusive property rights of the work, if not determined otherwise by the agreement.

Meanwhile, the Government of the Republic of Serbia in early 2012 adopted the ***Proposal of Law on Archival Material***. Although it is not an official regulation, the provisions of this Proposal can be used for reflection on the respective legislation *de lege ferenda.* The Proposal of Law defines first of all the notion of cultural heritage of general interest. The archival material is the cultural heritage of special state and national interest of the Republic of Serbia, and as such it enjoys special protection, as determined by the Law on Culture, this Law, and other regulations. The archival material and documentary material are protected by the provisions of this Law, regardless of whose ownership or possession they are, that is, at whose location they are and if they are registered and made records of.

The archival material is original, and in the absence of the original, also any form of reproduced documents or records that emerged by legal and physical entity activity while carrying out their works, and which are of permanent importance for culture, science, and other social needs, regardless of the time and place of their origin and whether they are in the conservation of cultural heritage institutions or outside them, and regardless of the form and media of record on which they have been preserved. The documentary material represents the ensemble of documents or recordings created or received by activity and work of legal or physical entity (manuscript, printed record, drawing, photography, sound recording, film and video recordings, microfilm and electronic recording that includes also e-mail messages, databases, accounting tables, graphics, images, all types of electronic documents, multimedia and complex document, website presentations and other types of documents created by legal or physical entity and so on), as well as prescribed records on it, regardless of the form and format of recording.

Finally, when it comes to scientific work and its voluntary “handing over to” digital archives, it is necessary to note here that there is room for implementation of the provisions of Art. 10 of the Law on Contractual Obligation Relationships ("Official Gazette of SFRY", no. 29/78, 39/85, 45/89 – decision of “USJ” and 57/89, "Official Gazette of FRY", no. 31/93 and "Official Gazette of SCG "no. 1/2003 - Constitutional Charter). Specifically, the parties in contractual obligation relations are free, within the limits of mandatory regulations, public order and good customs, to regulate their relations at will.

Public Institutions and Bodies That Ensure the Development and Quality of Scientific-Research Activity

The most important public institution that takes care of the development and quality of scientific and research activities is the ***Ministry of Education, Science and Technological Development of Republic of Serbia.*** The Ministry was formed in 2011 through integration of the Ministry of Education of the Republic of Serbia and the Ministry of Science and Technology of the Republic of Serbia. The Science Department consists of following sections:

- Sector for Basic Research, the work of which covers the following sciences:
    - Physics
    - Chemistry
    - Biology
    - Mathematics
    - Medicine
    - Geosciences and astronomy
    - History, archeology and ethnology
    - Language and literature
    - Social sciences
- Sector for Technological Development
- Sector for Innovative Activity and
- Sector for Integral and Interdisciplinary Researches, the priorities of which are:
    - Biomedicine
    - Energy and energy efficiency
    - Environmental protection and climate changes
    - Information and communication technologies
    - New materials and nano-sciences
    - Agriculture and food
    - Improving enactment of state decisions and national identity affirmation.

The basic tasks of the Ministry are:[2]

1. To propose to the Government the policy in the field of scientific-research activity;
2. To monitor and encourage development of scientific-research activity in the Republic;
3. To distribute financial means from the Republic budget to scientific-research organizations for program realization, and to control their specific use;
4. To enact by-law documents, in accordance with this Law;
5. To enact a document on fulfillment of conditions for carrying out scientific-research activities of general interest;
6. To enact a document on the selection, evaluation, and financing of programs, as well as on financing of other programs of general interest for the Republic, for each program individually;
7. To keep a Register of Scientific-Research Organizations and a Register of Researchers;
8. To realize international scientific and technological cooperation and to take care of connecting and including scientific-research organizations in the European and international area, and so on.

Based on the statistical records, the Ministry engages 10,220 scientific workers in Serbia, 44.3% of whom are women. Of the total number, only 1,900 researchers are involved in research in the field of social sciences. A constant brain-drain is one of the biggest problems the sciences face in Serbia. Since 1990, 20,000 inhabitants with university degrees have left Serbia.[3]

Provincial Secretariat for Science and Technological Development of Vojvodina

[2] Law
[3] RRPP

Vojvodina is an autonomous province in northern Serbia, and Novi Sad is the capital. The University of Novi Sad is the second largest university in Serbia.

The Provincial Secretariat for Science and Technological Development with its activities is geared towards registered scientific institutions that exist in the territory of the Autonomous Province of Vojvodina, and the faculties of University of Novi Sad. The Provincial Secretariat for Science and Technological Development carries out activities in the field of science and technological development concerning organizational structure of science, scientific potential, scientific infrastructure (equipment, premises, investments); programs in the fields of science and technological development, system of scientific and technological information, international technological cooperation, NGOs, industry researches, technological parks, research centers in economy, transfer of knowledge, and normative regulation.[4]

National Council for Scientific and Technological Development

In order to provide for scientific and technological development, the quality of scientific research and the development of scientific-research activities in Serbia, in 2010 the Ministry established the National Council for Scientific and Technological Development **as the highest expert body in the system of scientific research activities in Serbia.**

The National Council has 17 members, including academics, scientists, university professors, and businessmen. Members of the National Council are appointed and dismissed by the Government. In the National Council, the Government appoints: six members from six areas of science upon proposal of the Community of Institutes of Serbia; six members from the six areas of science upon the University Conference proposal; two members upon the proposal of the Serbian Academy of Arts and Sciences; one member upon the proposal of Matica Srpska; and one member upon the proposal of Chamber of Commerce of Serbia. The Minister is a member of the National Council by position. The following areas are of interest for the National Council activities: natural-mathematical, technical-technological, medical, biotechnological, and **social sciences and humanities**. The National Council members can be recognized scientific and expert authorities in local and world science circles, having the title of scientific adviser and of full professor of the university, as well as prominent people in the business world.

National Council

1. Monitors the situation and development of scientific-research activities;
2. Proposes to the Ministry the Strategy, monitors its implementation, and proposes amendments to the Strategy;
3. Proposes to the Minister programs of general interest for the Republic;
4. Gives opinions on the laws and other regulations in the field of scientific-research activities;
5. Proposes to the Minister the document on selection, evaluation, and financing of programs;
6. Proposes to the Minister scientific fields, groups, and disciplines for which main scientific boards are established;
7. Proposes to the Minister the document on standards for the allocation of budgetary resources to finance programs of general interest;

[4] INFORMATOR o radu Pokrajinskog sekretarijata za nauku I tehnološki razvoj

8. Enacts the document on the procedure and method of evaluation, and quantitative presentation of scientific research results of researchers, upon proposal of main scientific boards;
9. Appoints and dismisses the members of the Commission for acquisition of scientific titles;
10. Enacts the document on the evaluation of scientific-research work and procedures of accreditation of institutes, higher education institutions, and centers of exceptional values;
11. Enacts the document on criteria and standards for allocation, verification, and revocation of status of the centers of exceptional values, scientific-research work, and financing of centers of exceptional values;
12. Establishes international scientific and technological cooperation, as well as cooperation with the relevant body in the field of higher education, and other bodies and organizations;
13. Awards prizes and certificates of merit for scientific achievements and lifetime achievement of researchers;
14. Awards the title of meritorious scientist, and so on.

Board for Accreditation of Scientific-Research Organizations

In order to carry out the evaluation of quality and efficiency in scientific-research work of institutes, higher education institutions, and centers of exceptional values, the Board for Accreditation of Scientific-Research Organizations was formed. The Board for Accreditation is an independent expert body that respects in its work the principles of competence, objectivity, and internationally recognized standards and criteria of scientific–research work.

The Accreditation Board:

1. Proposes to the National Council the document on evaluation of scientific-research work and accreditation procedures of scientific-research organizations;
2. Conducts accreditation procedures of scientific-research organizations;
3. Cooperates with the relevant body in the field of higher education;
4. Establishes international cooperation in the field of evaluation of scientific-research work with relevant bodies and institutions in Europe and the world and so on.

Commission for Acquirement of Scientific Titles:

In order to enact decisions on the acquisition of scientific titles, the Commission for Acquisition of Scientific Titles was formed. The Commission works at the sessions at which it enacts decisions on acquisition of scientific titles, in accordance with this Law, after obtaining the opinion of the main scientific board.

The main scientific board:

1. Gives its opinion to the Commission on the quality of scientific-research work and contribution by researchers - candidates for selection relating to scientific titles, in accordance with Law;
2. Gives to the Ministry the assessment of researcher's scientific competence, that is, higher education teacher for realization of programs and projects established by Law;
3. Considers project proposals for program implementation, and proposes to the Minister ranking lists of projects for funding;
4. Considers reports on project realization;
5. Enacts document on categorization and ranking of scientific magazines;
6. Enacts document on categorization and ranking of scientific gatherings and so on.

Community of Institutes of Serbia

The institutes may join the Community of Institutes of Serbia in order to achieve common interests and scientific-research cooperation, harmonization of procurement, and use of scientific-research equipment and laboratory premises, procurement and utilization of scientific publications, interconnection and cooperation with appropriate forms of association in the field of higher education, development of international cooperation, fostering scientific critique, and evaluating their own research achievements.

Bringing science closer to preschool and school-aged children influences further academic development of future generations of scientists and researchers. For this purpose, **the Centre for Promotion of Science** will be formed, which inspires curiosity and contributes to making acquaintance with science since preschool age. The center, which will have its seat in Belgrade, but also will have activities throughout the Republic of Serbia, will provide long-term learning, the ideal setting for a meeting of the broader public and scientists, to supplement the educational system and to contribute to the cultural and economic vitality of society.

The public is not sufficiently informed on the work of scientists, and it is therefore necessary to organize a series of presentations of scientific projects, debates and round tables throughout the Republic of Serbia. The role models are the scientists as lecturers and trainers for youth, which should be applied in local communities. The venue of the presentations and promotions should be in public areas, accessible to everyone. The scientists who are engaged in the promotion and popularization of science will be given the incentives for these activities, while the project financing in this area will continue, particularly financing projects for which the public has shown a great interest, as with the Science Festival and many others. In addition to applying for the science promotion projects, there will systematically be provided also funds for regular projects for the dissemination of the results, as is the case in EU FP7 system by which each researcher on MNTR projects will be required to, at least to some extent, present his/her results to the broader public.[5]

Existing Policy Related to Scientific Infrastructure

The most important document that defines this area is the Strategy of Scientific and Technological Development of the Republic of Serbia for the period from 2010 to 2015. One of the main objectives of the Strategy is also the rationalization of a scientific-research organization network. The existing institutes founded by the Republic of Serbia must be transformed, that is, their structure must be clearly defined, while their organizational form, way of financing and work process should be adapted to their mission, type and program of research, as well as to functions they perform. In doing so, the following forms of research institutes or centers can be formed:

• *The national scientific institute or center* is the public institution offering both basic and applied research in the strategic long-term scientific-research programs that are contracted with MNTR. Institutes should be realized in collaboration with faculties and doctoral studies.
• *The research and development institute or center* is designed for competitive applied and developmental research, as well as for providing technical and other non-research services in the market. It may be an institution or an organization in the state (public), private, or mixed ownership.

[5] Strategy

The quality of education at the universities is largely linked to the quality and intensity of their scientific work. The possibility must be given for the unity of scientific and teaching work at universities and significant improvement of research at the university. In order to integrate scientific institutes in educational and scientific process at the university, the institutes should be allowed to become equal members of the university, provided they meet the conditions for accreditation for doctoral studies realization. The institutes would thereby acquire the right to, in cooperation with other units of the university, participate in the organization of doctoral studies and to be a place where the doctoral candidates would do their Ph.D. dissertations. The university and its units (faculties, departments) might be the founders of scientific institutes, scientific and research centers (with or without capacity of legal entity), as defined in the Statute of University. Linking higher education and science is one of the most important topics of this Strategy application.

The key sources of financing of infrastructure projects that reflect and facilitate the development of priority disciplines over the next five years will be the international financial institutions, particularly the European Investment Bank (EIB), which has already approved EUR 200 million worth of loans for this purpose. In addition to EIB, the initiative will include the European Bank for Reconstruction and Development, the World Bank, the Council of Europe Development Bank, and various international donors, particularly the EU pre-accession funds. The infrastructure investment project, which is worth around EUR 400 million, began its implementation in January 2010 and will last until 2015.

For this investment, the projects have been selected on which will be based the development of the priority disciplines, but also those which will provide successful development and identification of scientific personnel, preventing further brain-drain, and in the end, those which will partly compensate for nearly 20 years of poor investment in scientific infrastructure. The projects of initiatives for investment in the infrastructure of the Republic of Serbia in the field of science and technology include the repair of existing capacities (about EUR 70 million). This part of the initiative is intended to partially compensate for the deficiencies in funding of science in the past 20 years, to repair critical infrastructure problems faced by our faculties and institutes, and to bring laboratories to world research and educational standards. It includes: adaptation of existing buildings and laboratories, and purchase of new capital equipment for research. Following are the development of human capital (about EUR 33 million), development of centers of excellence and academic research centers (about EUR 60 million), infrastructure development in the field of techniques and information and communication technologies (from EUR 50 to 80 million), and creation of a knowledge-based economy through the construction of the scientific-technological parks in Belgrade, Novi Sad, Niš and Kragujevac (about EUR 30 million).

Basic Elements of Research Infrastructure

The organizations that carry out the scientific-research activities in the Republic of Serbia are:

1. Serbian Academy of Arts and Sciences;
2. Matica Srpska and
3. Scientific-research organizations (institutes, higher education institutions, and centers of exceptional values).

Serbian Academy of Sciences and Arts

The Serbian Academy of Sciences and Arts (SANU) is the highest academic institution in Serbia, founded in 1892. The Academy organizes scientific gatherings, lectures, and art exhibitions, and has a strong publishing activity.

The Academy has eight departments, including the Department of Social Sciences. The Academy has also established ten institutes concerning technical sciences, history, literature and languages.

In terms of scientific research related to the social sciences, the Academy has established two research centers from the Universities of Kragujevac and Niš. The research takes place in these centers, and is mainly related to literature, language, and history (for more information about these centers, see the sections for the University of Kragujevac and the University of Niš).

Matica Srpska

The activities of Matica Srpska have been directed from the very beginning, in 1826, to representing Serbian culture in Europe, and on the other side to enlighten people. The capital projects were financed from its funds, and these projects were of importance for Serbian language standardization and the development of various scientific disciplines. Simultaneously, Matica took care of gifted pupils and students, and thereby of creation of the Serbian intellectual elite.

Nowadays Matica Srpska has about 2,000 associates. They are involved in several dozens of scientific and developmental projects, within the Department of Literature and Language, Lexicography Department, Department of Social Sciences, Department of Natural Sciences, Department of Visual Arts, Department of Performing Arts and Music and Manuscript Department. The associates prepare the contributions for ten Matica scientific journals and work on the preparation of publications of capital importance for Serbian culture and science.

Scientific-Research Organizations (Institutes, Higher Education Institutions, and Centers of Exceptional Values)

Depending on the type of research and activity, forms of organization and ways of financing activities, the institute can carry out scientific-research activities as: a) research Institute and b) research-development institute.

The scientific institute is the institution the main activity of which consists of basic research and applied research that are in function of valorization of basic research results. The scientific institute in the field of the social sciences and humanities can perform scientific-research activities of general interest.

The Research-Development Institute is an organization the prevailing activity of which consists of applied and developmental research aimed at meeting the needs of direct users of research results, and basic research as the basis for applied and developmental research.

The University of Belgrade is the most important academic institution in Serbia. The University is state-owned and incorporates 31 faculties with 78,000 students. It employs about 2,500 teachers. The University has established 10 institutes, 9 of which cover natural sciences, and only the Institute of Philosophy and

Social Theory is dedicated to the social sciences. The University also has six centers, which are basically related to organizational issues.

Results of Survey on Infrastructure for Data Preservation

During the period from September-November 2012, a study was conducted in Serbia regarding the existing infrastructure and experiences in Serbia in the field of long-term preservation of data collected by researchers, as well as regarding the potential for the creation of a national data archives in the social sciences. Sixteen relevant respondents from a wide ranges of institutions participated in the survey:

1. Institute of Social Sciences (field of research: survey of public opinion, demography, economics)
2. Institute of Sociological Research, department of Faculty of Philosophy in Belgrade (field of research: sociology, psychology, public opinion research)
3. Institute of European Studies (field of research: European integration, history)
4. Institute of Criminological and Sociological Research (field of research: criminology, sociology)
5. Institute of Philosophy and Social Theory (field of research: philosophy, sociology, psychology)
6. Institute of Economic Sciences (field of research: economy, promotion of competitiveness, European integration)
7. Faculty of Political Sciences, University of Belgrade (field of research: politics, sociology, psychology),
8. Faculty of Economics, University of Belgrade, Scientific-Research Center of Faculty of Economics - NICEF (field of research: economy),
9. Faculty of Economics, University of Kragujevac (field of research: economy),
10. Faculty of Economics Subotica, University of Novi Sad (field of research: economics, business informatics)
11. Belgrade Banking Academy – Faculty for Banking, Financing and Insurance, University of Union (field of research: banking and finances)
12. Faculty of Economics, Finances and Administration - FEFA, University of Singidunum (field of research: economy, promotion of competitiveness, European integration)
13. National Library of Serbia,
14. Statistical Office of the Republic of Serbia,
15. Computer Center of the University of Belgrade – RCUB
16. Archives of Serbia

The fields of research of the above-mentioned Institutes and Faculties are within the social sciences, including primarily: sociology, psychology, philosophy, criminalistics, business informatics, promotion of competitiveness, European integration, demography, history, and public opinion research.

In addition to the interviews in the relevant institutes and faculties, the survey also included national infrastructure institutions: National Library of Serbia, the Computer Center of the University of Belgrade, and the Statistical Office of the Republic of Serbia and Archives of Serbia. All of these institutions are financed from the budget of the Republic of Serbia, but also from certain commercial (local and international) projects.

The National Library of Serbia data collections that are relevant for our research are aimed at KobSoN (Consortium of Libraries of Serbia for Joint Acquisition). The basic goals of such an association are: optimized acquisition of foreign scientific information, transition from paper to electronic editions, improving access to electronic information and promotion of national scientific publishing. Also, the

National Library of Serbia collects metadata on all researchers in Serbia (and thus also in the social sciences), but also qualitative data on degree of satisfaction of the scientific community with services of that institution. Apart from funding by the Ministry of Education, Science and Technological Development, the National Library of Serbia is funded also by commercial projects and services (e.g., payment of ISBN and CIP number of monographs or ISSN numbers for magazines).

The primary activity of the **Computer Center of the University of Belgrade** (RCUB) is the provision of computer and information-communication services to faculties and other institutions that are members of the University of Belgrade. In addition, RCUB performs the function of a central communication hub of the Academic Network of Serbia (AMRES) and therefore it is a natural infrastructure partner of the Institute of Economic Sciences in Serbia. RCUB is funded by the relevant ministry, but also it carried various projects (FP7, FP6, etc.) to help in the funding and development of this important national infrastructure institution.

Director of RCUB estimated that this institution would be an excellent choice to host the archive, at least in a technical sense. They would be able to provide the entire necessary technical infrastructure for data archiving, but this would require enriching their knowledge in the data archiving process.

Statistical Office of the Republic of Serbia (RZS) is a particular expert organization in the system of state administration in the Republic of Serbia which carries out expert tasks related to: program adoption, organizing and conducting statistical research, that is, creating methodology, data collection, processing, statistical analysis and publishing of statistical data; preparation and adoption of uniform statistical standards; development, maintenance and use of Republic administrative and statistical records; formation and maintenance of national accounts system, cooperation and expert coordination with bodies and organizations authorized to conduct statistical researches; cooperation with international organizations for standardization and assuring the comparability of data; data processing to determine the results of the elections and the referenda on the Republic level, as well as other duties specified by law. RZS is funded by the state, but there is a very developed commercial segment of business because it charges for different types of services provided to economy and individuals, and relating to the availability of their research data from various fields.

Statistical Office of the Republic of Serbia in its composition has 14 departments formed to better organize the collection of statistical data from statistical research in the field. In addition, it is the only institute that collects and provides data dissemination so that they can be used by other researchers.

RZS has a catalog of data, that is, there is an application that allows viewing a part of so far collected and processed data that are given in the publications. Long-term preservation of research data is done in accordance with instructions from the appropriate regulation. The right to intellectual property is transferred from the researchers, i.e., the creators of data, to the institution. In the RZS there are specific organizational parts that deal with this issue. Personnel who have previous corresponding training for the storage and dissemination of data are the IT specialists and archivists. They have work experience in the following software: SAS, SPSS, and Excel.

During the research of potentials, we conducted an interview with representatives of Statistical Office of the Republic of Serbia. They showed great interest for our project and concluded that there are

significant opportunities for cooperation. We also reached an agreement that the future forms of cooperation will be initiated during the second year of the project.

The Archives of Serbia is the central institution for protection of archival material in the Republic of Serbia. Its basic activity is collecting, preserving, protecting and sorting archives and allowing its use for scientific and other purposes, in addition to performing tasks of protection of cultural heritage. In the role of central archival institution, the Archives of Serbia direct and coordinate development and promotion of archival activities in Serbia. It also monitors over 36 archival institutions, makes expert guidelines, educates expert staff, and awards expert titles.

The Service for Protection of Archival Material and Register Material outside Archives carries out the protection jobs of archival and registry material outside Archives. The task of this service is to exercise complete control over archival material while it is still with creators, to offer expert assistance to creators of archival material according to all forms of protection, especially when making the List of Categories of Registry Material with deadlines for preservation, and it takes over arranged and listed archival material within the deadlines prescribed by law. Receiving, storing, preserving archival material, and issuing it for the purposes of arranging and using it, as some of the most important functions of the institution, are carried out by Depot service, which is obliged to keep records of the overall archival material which the Archives of Serbia perserve. Arranging and processing archival material is the expert job of highest rank on which the possibility of qualitative use of archival material essentially depend, then consequently also scientific interpretation of the past, as well as practically any other job carried out by the Archives. Within this type of job, the archival material is classified into archival units, work is carried out on processing archival books, separating worthless registry materials, classification and systematization of archival material, making scientific-informative means for units and collections, such as summary and analytical inventory, registers and lists of archival material, as well as guidebooks through archival material of Archives of Serbia.

The survey was conducted by face-to-face interviews with relevant representatives of these institutions. Respondents confirmed that the scope of publicly funded primary research in the social sciences is very modest and is mostly concentrated on sociological research. In all of the research both quantitative and qualitative methodologies have been applied.

None of the involved institutions perform systematic collection, preservation, and dissemination of primary data in research conducted. Practices implemented in these institutions are reduced only to storing data on local media of researchers involved in the project or the head of the project. Thus, the stored data were subjected to double risk. First, they are likely to be permanently lost because of the lack of appropriate formal procedures of data storage and backup; second, they are likely to be lost in terms of their unavailability for a wider scientific and professional community.

The only two institutions deviating from this practice are the Institute of Social Sciences, Belgrade and Institute for Social Research, which is a department of Faculty of Philosophy in Belgrade. Ten years ago, the Institute of Social Sciences made the first steps toward establishing a national archive of research data in the social sciences. This effort was made in 2001 within the project Eastern European Data Archives, headed by UNESCO's Management of Social Transformations Programme (MOST) and the German Social Science Infrastructure Services (GESIS), including the final event Workshop on "Social Science Data Archives in Eastern Europe – Results, Potentials and Prospects of the Archival Development". From the Serbian side, the Institute of Social Sciences was involved in this project. The report on the current state in the social sciences was submitted by Ljiljana Baćević, which gives just a snapshot of social science development in Serbia;

however there were no concrete steps in implementation of a data archiving project. Today, the Institute of Social Sciences has a new initiative in this area, as part of an international project. One of the project objectives is establishment of a digital repository that would preserve research data at the institutional level. In addition, this archive should be established in accordance with international standards in this area.

The Institute for Social Research also has made efforts in the area of data preservation and sharing. Despite the fact that the Institute does not use standards for documentation, nor implement the standards for trusted digital repositories, it preserves some of the data produced together on one computer. The data, stored in such a manner, are available to all researchers at the Institute within two years from the completion of the research, and afterwards they are fully publicly available for academic use. The biggest drawback of this is the lack of a catalog, which will provide browsing of stored data. In the absence of a catalog, the researchers must find the required data by browsing the references in the published works of the Institute. These data are available free of charge on CD-ROM. The drafting of the catalog is being prepared, and so far covers about 10% of the stored data. In the past, a larger interest in downloading of data was exhibited by the foreign researchers.

It is likely that in the absence of long-term data preservation in Serbia most data are lost. According to some estimates, the loss is around 60-70%, although by lost what is meant is the neglect of data, rather than necessarily physical loss. Answers to the last part of the survey clearly indicate that there is *significant interest in establishing a national digital archive* in which data collected in research in the social sciences would be archived. Representatives of institutions have a unique attitude toward this issue and point out that the establishment of archives would allow improvement of the standards and methodology in research, facilitate the establishment of longitudinal research and improve the conditions for the implementation of interdisciplinary research.

Representatives of institutions have proposed several possible models of functioning for a digital archive in the social sciences:

1. The first model assumes the organization of the archive within the National Library of Serbia, given their extensive experience in the field of archiving;

2. The second model assumes a scientific institution to be a central point for archiving the data collected by all other institutions, funded by the budget for science, with an additional proposal to introduce a minimum price for the service, which would allow the concept of sustainability; and

3. The third model assumes that the archive could be created at the University of Belgrade, but the center would operate independently or in computer center of the University of Belgrade.

The dominant opinion of our respondents on the topic of long-term preserving of data collected in research in the social sciences is that the largest part of data gets lost. A rough estimation of quantity of data collected in Serbia that gets lost, because they are not preserved by applying safety procedures for which they provide long-term preservation, ranges from 60% of lost research data, to completely lost data (100%). Namely, the attitude of our interlocutors is that the data related to the last few years can be traced with a lot of effort, but that for data older than 3-4 years it is almost impossible and that they can be considered as lost.

Establishment of a national data archive in the social sciences is supported by all our interlocutors, and they find it necessary. The reasons for this are the following:

- significant expenses of primary research is reduced,
- saving time for research,

- more efficient use of research results, because there is no double research on the same or similar subject,
- possibility to upgrade research onto existing data,
- use and improvement of available methodology,
- promotion of analytics and comparing results of primary research,
- raising the quality of the data,
- a high level of transparency,
- more efficient overview of research in various fields in the social sciences.

The archives of data in Serbia, according to our interlocutors' opinion, should operate by utilizing Open Access and online access systems that would be free for the entire scientific community. The KOBSON system is mentioned in this sense as a good model of the existing base, but for different objectives and purposes.

Also, the undivided opinion is that the archives should be created according to international standards with the potential allocation of DOI numbers to sets of data classified by fields of research, which would facilitate the search by the given variables. It is essential that there are direct links with research institutions, without any additional complications in access. In addition, this includes the links with relevant institutions in the country, as well as with other archives of similar type abroad.

For the moment, in Serbia there is no similar database in the social sciences. However, in medical sciences, astronomy, and climatology, there are certain databases that researchers use around the world and by means of them they share their research data.

Report on Survey on Gathering, Preserving and Use of Research Data

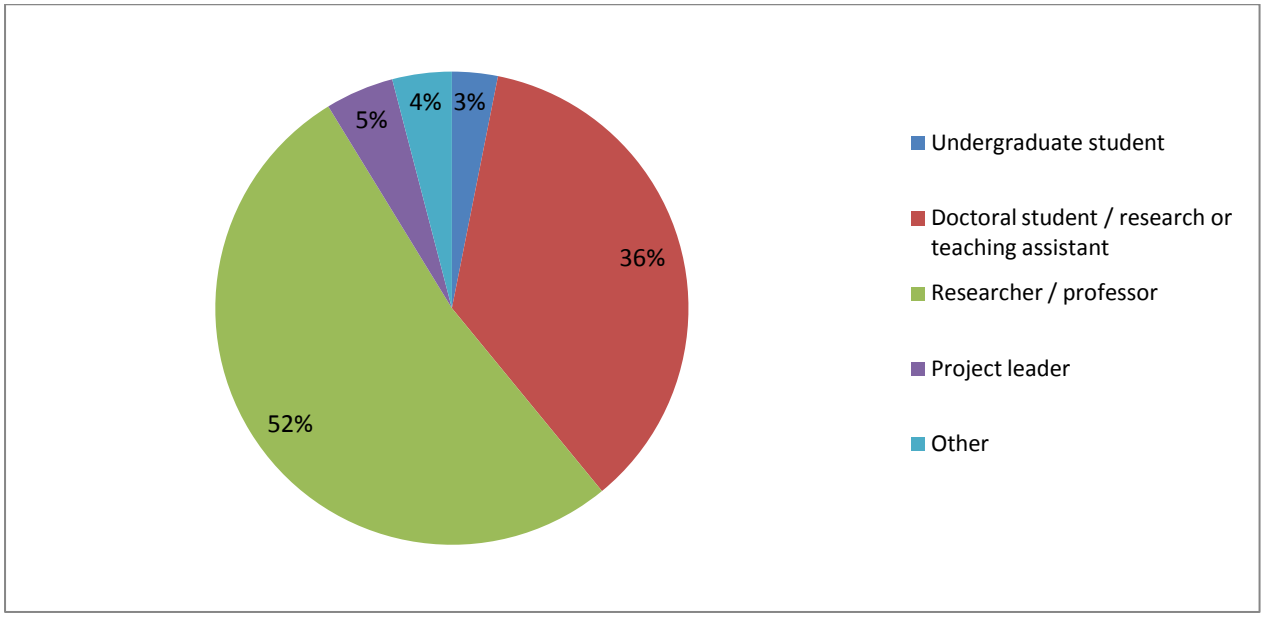
Research on the practice of gathering, preserving, and use of data collected in the social sciences was conducted through an online questionnaire. Two calls were forwarded to researchers, the first in mid-June and the other in the first half of the month of July 2012. An email was sent to 1,467 addresses of institutes, faculties, and individual researchers in the social sciences.

Access to the on-line questionnaire was open, no registration was needed. 493 respondents responded to the survey, but 171 respondents gave up from filling in, that is, did not provide answers about their research or use of data. On this basis, the number of fully completed questionnaires was 65% of the total number of questionnaires. The approximate response rate, taking into account only complete questionnaires, was 22%.

Characteristics of Respondents

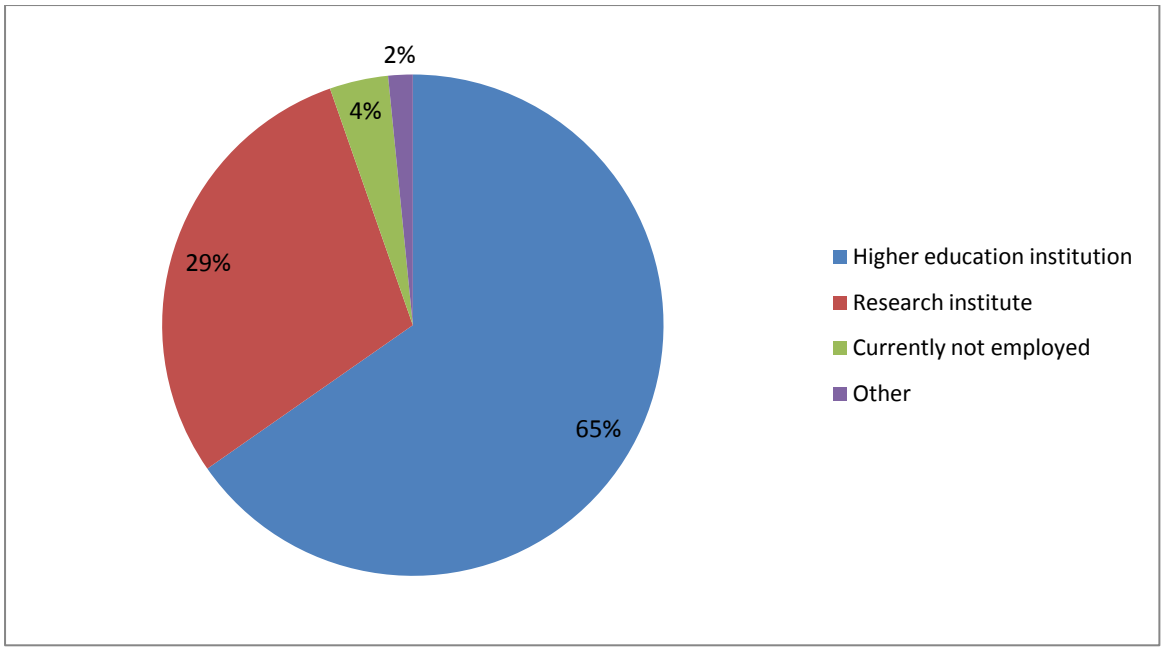
Of the total of 322 respondents, 10 of them were students of graduate studies, 115 were assistants, researchers - interns and students of doctoral studies, 167 were researchers/professors. In addition, there were 15 project managers, 5 directors of institutions, and 8 respondents who declared themselves as "something else" (teachers, advisors, independent researchers, etc.).

Q1: What is your current principal activity?



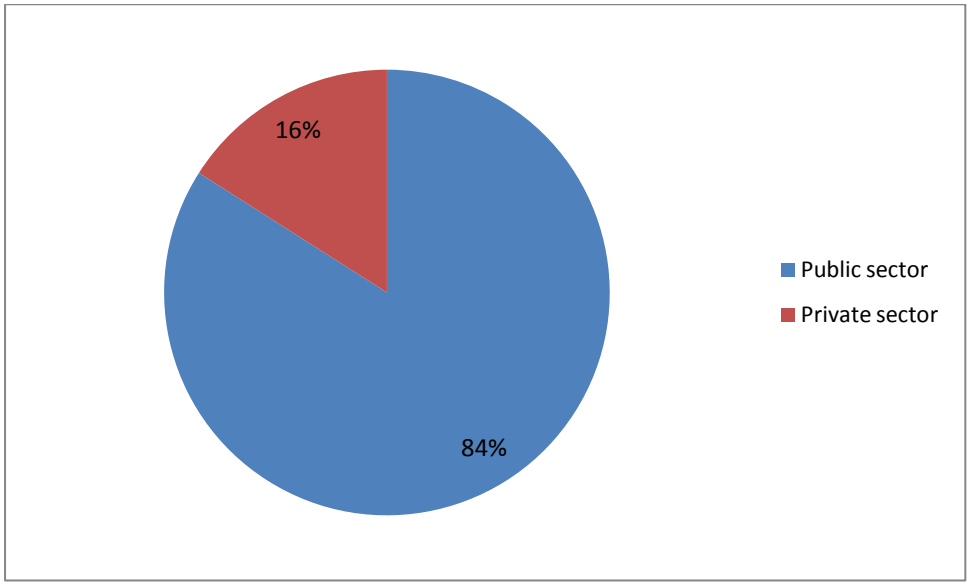
The largest number of respondents (65%) was employed in a higher education institution, while 29% were employed in the research institutes, and about 6% were either unemployed or employed in some other institutions.

Q2: With what type of institution are you currently principally affiliated?



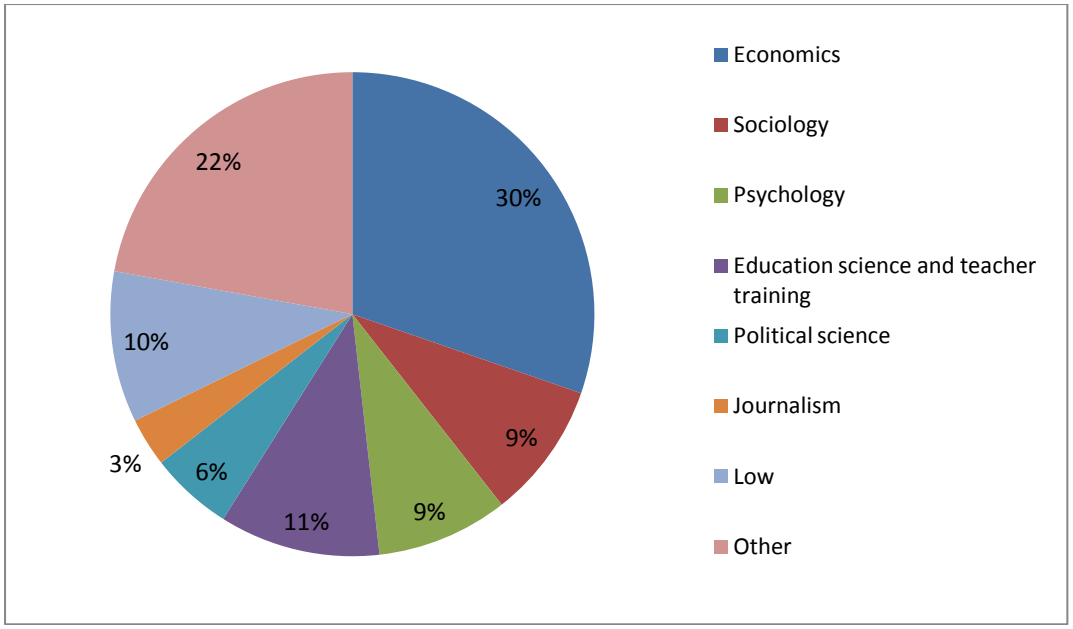
Of the total number of respondents, 84% worked in public sector, while 16% were employed in the private sector.

Q2_1: Do you work in public, private or nongovernmental sector?



The respondents were positioned according to the social sciences in the following way: 30% were in economic sciences, 9% were in field of sociology, 9% in psychology, 11% in science of education, 6% in political sciences, 3% in journalism, 10% in law, and 22% in other disciplines.

Q3: What is your principal research discipline?

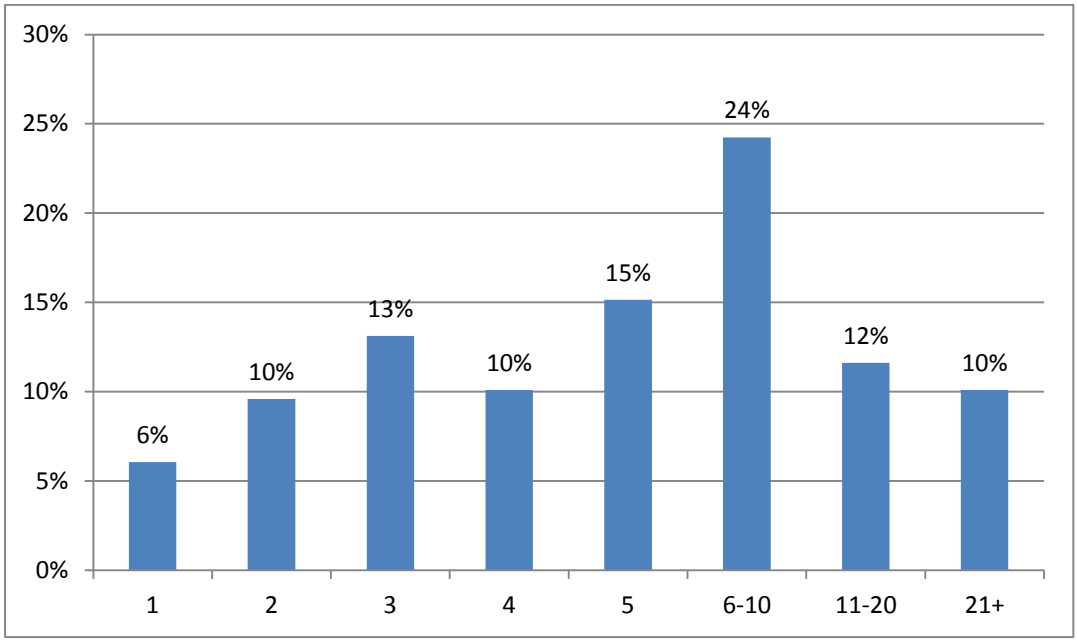


Producing Data

According to the respondents' answers, within the context of research activities in the last five years, 70% were personally engaged in the collection of research data. Given the self-selection when completing the questionnaire and a relatively high rate of withdrawal, it is probably not representative of the researchers and professors in the social sciences in general. Of this number, 6% produced one set of data, 10% produced 2 sets, and 13% produced 3 sets. Slightly less, 10%, produced 4 sets, and 15% produced 5 sets. The largest

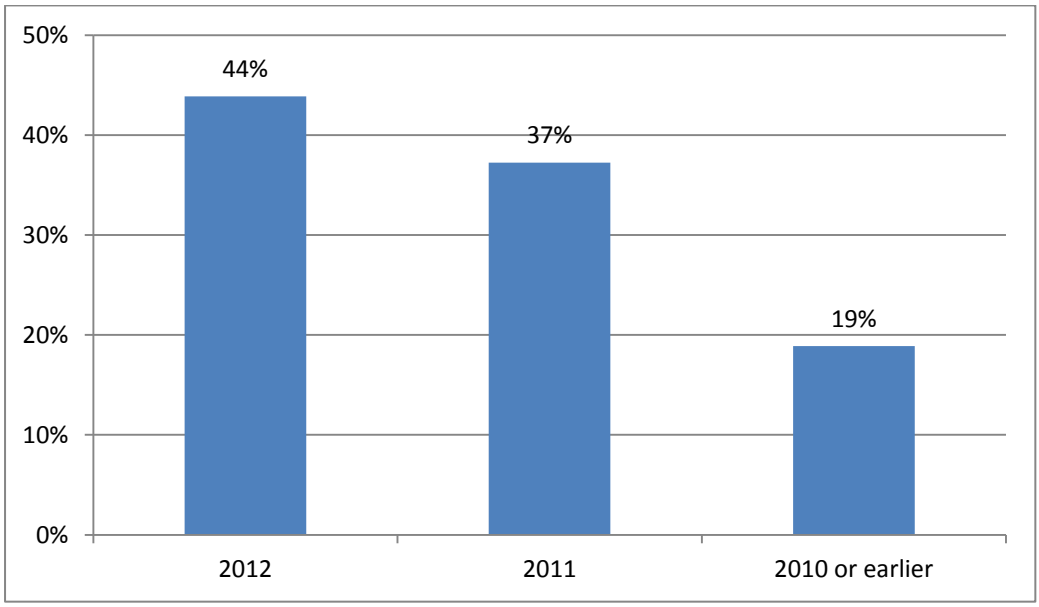
number of researchers, 24%, produced 6-10 sets, 12% produced 11-20 sets, and 10% more than 21 sets of data.

Q6: How many datasets have you produced or helped to produce during the past 5 years?



In the next set of questions, from Q7 to Q18, the percentages are calculated in relation to the number of researchers who produced research data. Very interesting answers are related to the time horizon of the conducted research. The survey results show that 19% of researchers completed field research in 2010 or earlier, over 37% in 2011, while 44% of researchers in Serbia completed research in the first half of 2012. This result is in direct positive correlation with the increase of allocation for the sciences in the period from 2009-12. Namely, during this period the allocation for science increased by about 30% (from EUR 86 million in 2009 to more than EUR 110 million in 2012).

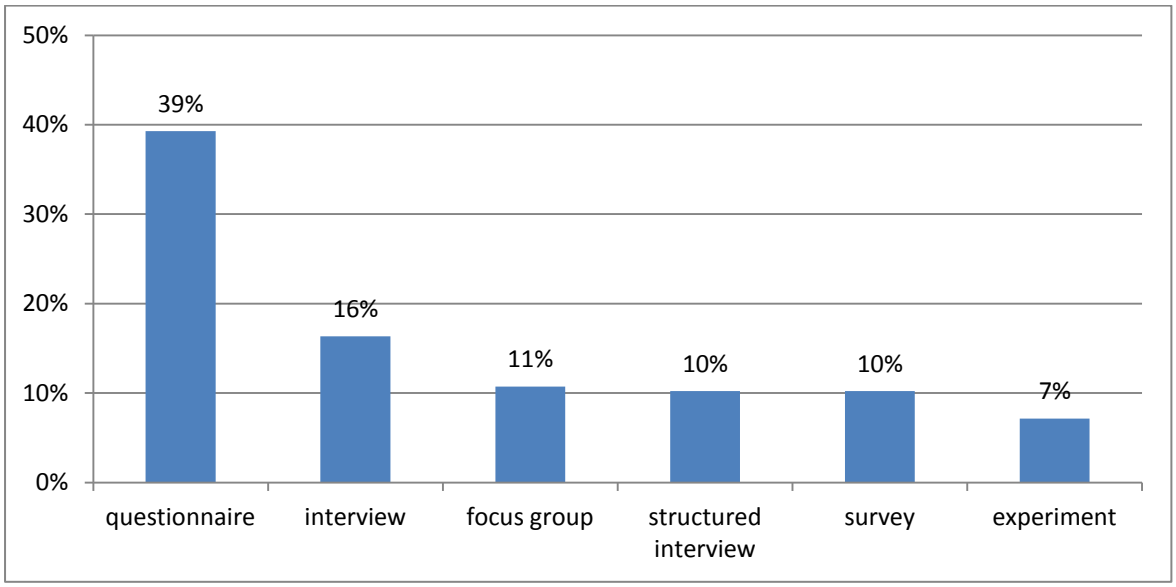
Q7: In which year was the fieldwork (or data collection phase) completed?



Methods of Data Gathering

Dominant methods of data collection in the social sciences in Serbia is the questionnaire[6] (39%) and the interview (16%), while three other methods were equally mentioned: focus group, 11%; structure interview, 10%; survey, 10%; and experiment, 7%) (Q8).

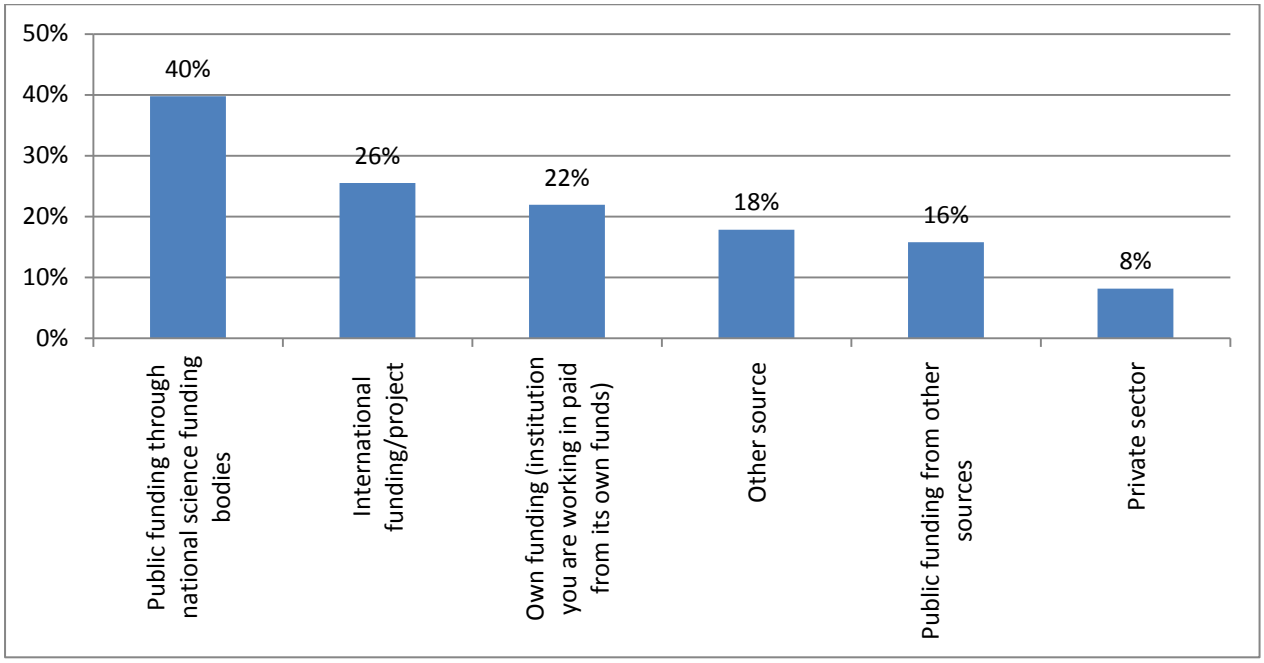
Q8: Which data collection method was applied in this research?



In terms of funding research, in 40% of cases the last respondents' research project was financed by national funds of the Ministry of Education and Science of RS, 16% of the research projects were funded by public funding from other sources, in 26% of cases the financing was done through international projects, and only in 8% of cases it was done from business sector funds, i.e. from economy (Q10). In 22% of cases, the funding was from the researchers' own institutional resources, while in 18% of cases the financing was done from other sources. It is noticeable that the dominant source of funding for science and scientific projects is still the Ministry of Education and Science, and that the linkage of the economy and science is still weak, and consequently there is less interest of the private sector to fund research projects. We can conclude that it is necessary to increase investment in scientific-research personnel, and in parallel with that, to strengthen linkage of economic entities and scientific-research institutions, through interdisciplinary projects and developing the technological capacities of Serbia.

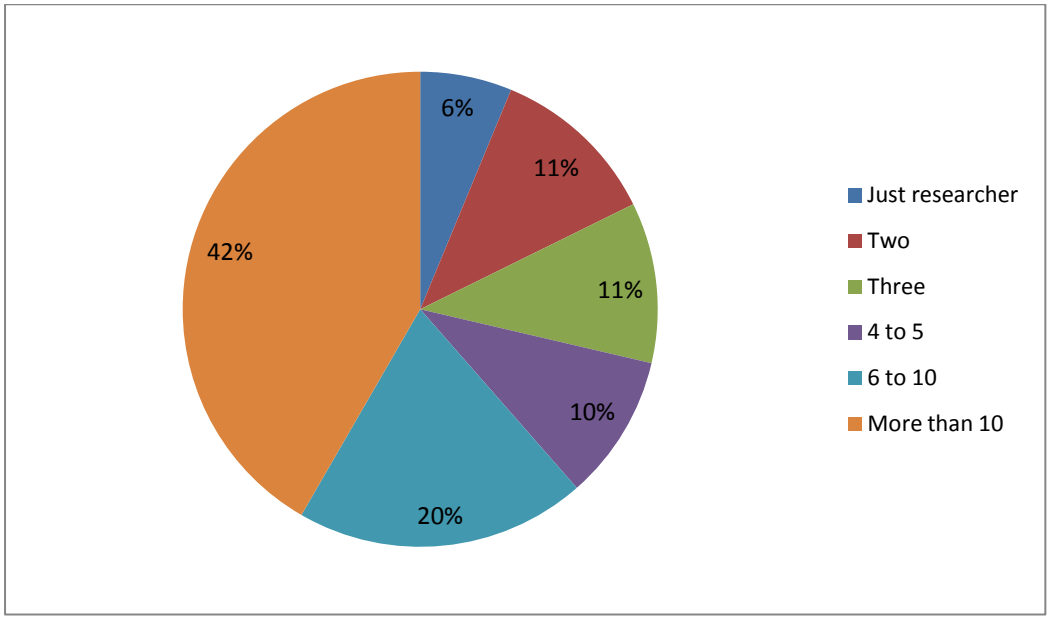
[6] This question was open ended, so researchers put answers without previously suggested answers; results show that researchers in Serbia perceive questionnaire as particular research method, although in standard scientific terminology questionnaire is considered as a type of survey; the same holds for structured interview.

Q10: How was this research financed?



As shown for question 11, for 6% of projects the research was carried out by only one researcher. Teams with two (12%), three (11%), and four (10%) researchers are relatively uniform, and the set is dominated by project teams with 6-10 researchers (20%) and more than 10 researchers (42%). The results show that in Serbia teamwork is present and that it functions effectively through project principle.

Q11: Apart from you, how many researchers were involved in this research project?

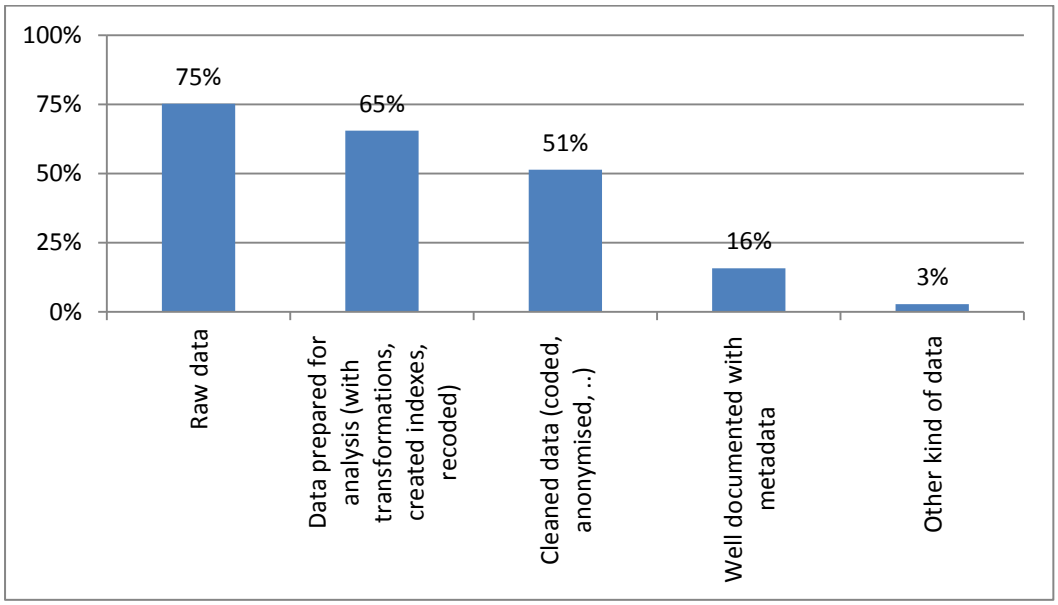


Archiving Practices and Preferences

In the section of archiving practices and preferences, 97% of researchers reported that they preserve the collected data. The question of the forms of data preserving implied multiple answers, so that 75% of the total number of surveyed researchers responded that they preserve originally collected data, half (51%) of

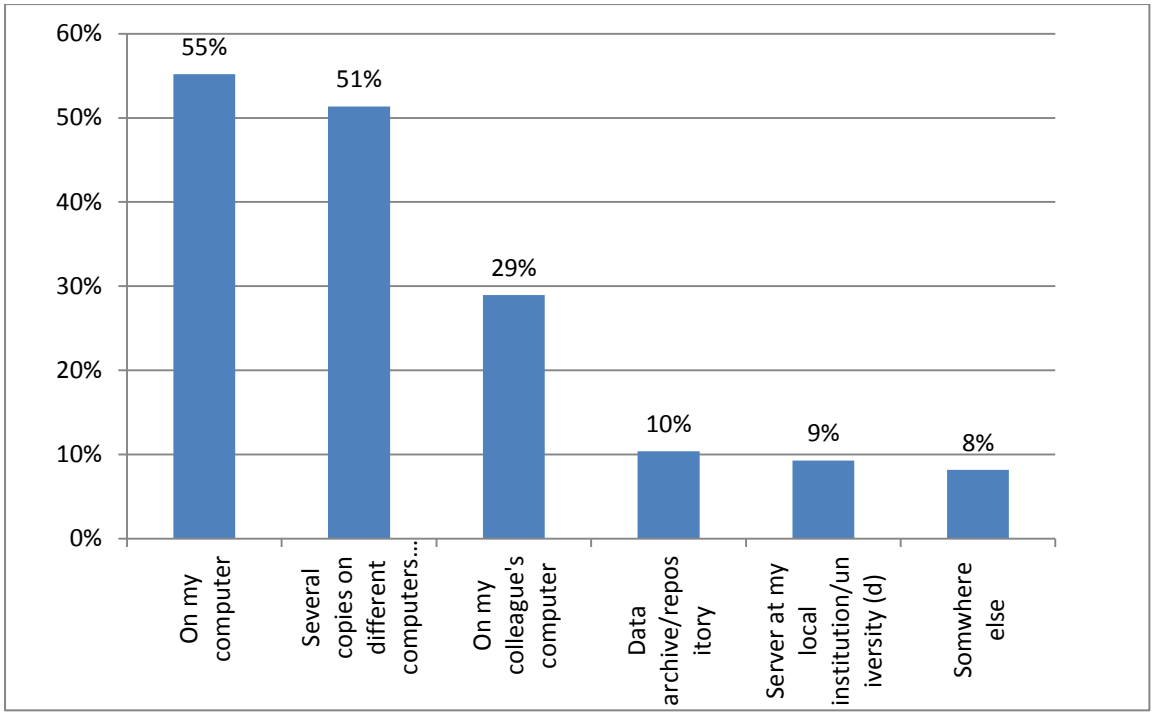
them preserve also cleaned data, and 65% preserved data prepared for further analysis, while in only 3% the data are preserved in other forms (Q13). Responses also indicate that very few preserve well documented preserved with meta-data, representing 16% of the total quantity of preserved data. Except for insufficiently described data, the problem is also in the absence of the application of accepted standards for documents and meta-data among researchers. Of the total number of surveyed researchers, only 8% responded that when preserving data, they use certain internal standards for documentation and data description.

Q13: What kind of data was kept?



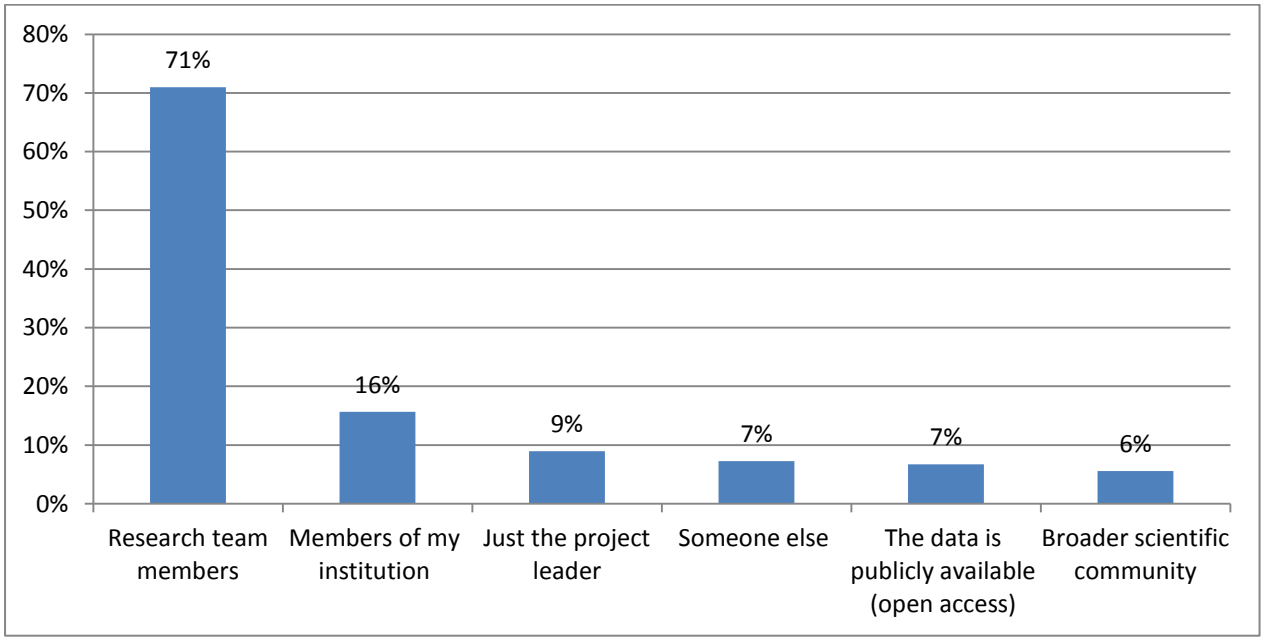
Those researchers who preserve data after the end of research gave an answer about where they keep those data (Q13). Bearing in mind that they were offered multiple responses, of the total number of respondents, 55% answered that their data are kept on their own computer, 29% on a colleague's computer, and half of them (51%) kept the data also on several different computers. A very small number of researchers (9%) kept their data on the server in the institution in which s/he works, 10% in foreign specialized archives, while 8% reported that they keep the data at another place (at the client's place, cloud computing server, Economic and Social Data Store, etc.).

Q15: Where is the data from your last project kept?



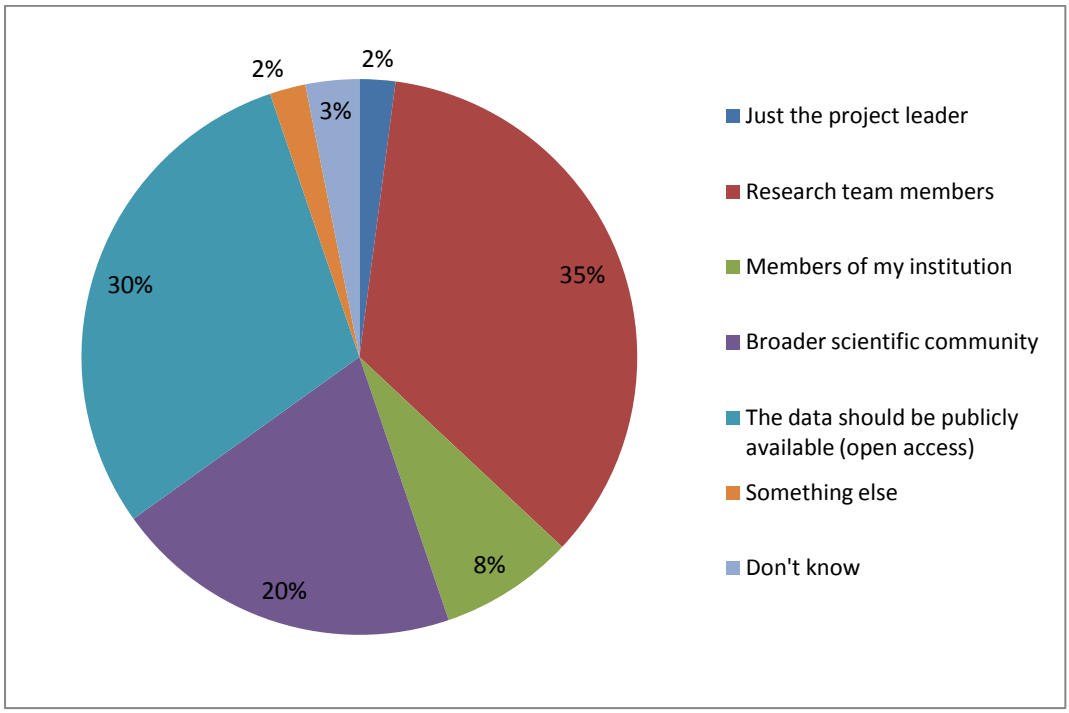
When it comes to access to data for secondary analysis purposes (Q16), in 71% of cases, the data may be accessed by all team members, while in 9% of cases only the project manager has access to data. In 16% of cases the data may be accessed by all members of the institution where the research was conducted, and in 6% of cases data can be accessed by broader scientific community. Only in 7% of cases are the data publicly available. In another 7% of cases the data can be accessed also by someone else (ordered from project, data can be used as utility data to create graduate, master, doctoral theses, or co-author of research works, everyone who contacts the manager and gets approval, etc.).

Q16: Who may be granted access to the data from your last project for research use?



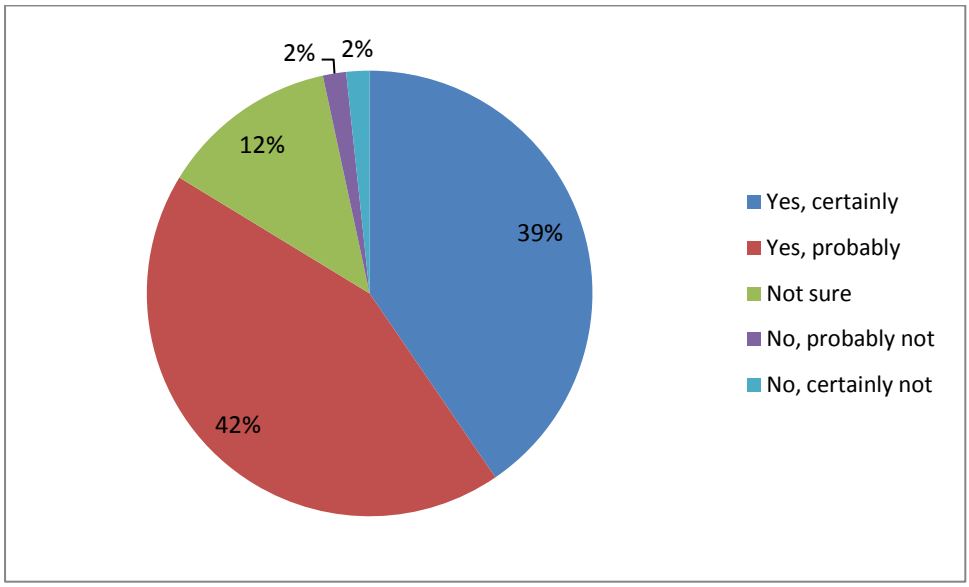
The respondents expressed also their opinion regarding the issue of ideal level of access to these data (Q17). Only 2% said that it would be ideal if only the project manager has the access, 35% said all research team members should have access, and 8% said that all researchers in the institution which realized the research should have access. Then, 20% said that the data should be available to the broader scientific community, and 30% said that the data should be publicly available (Open Access). These results underline the fact that the Serbian scientific community has the willingness and a desire to share the data and that research data should be made publicly available.

Q17: In your opinion, what would be the ideal level of access to this research data?



When asked whether they are ready to preserve data in order to know that their data will be preserved for a long term in a safe environment (Q18), a large number of researchers (39%) said they would certainly do so, and 42% would probably do this. 12% of them are not certain whether they would preserve their data provided that the mentioned conditions are met. Only a small number (2%) probably would not even do that under these conditions, and the same number of researchers (2%) would not share their data under any circumstances. These results confirm the dominant opinion of Serbian researchers that a database needs to be created according to international standards, classified by fields of research, which would facilitate the search by the given variables. It is essential that there are direct links with research institutions, without any additional complications in access. In addition, the links with relevant institutions in the country are presumed, as well as with other archives of similar type abroad.

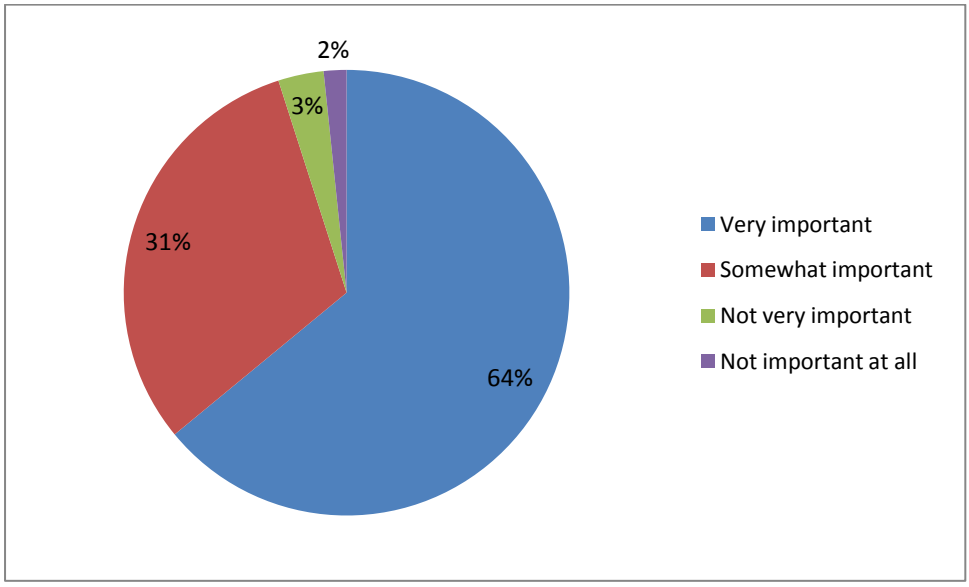
Q18: If you knew that your data would be preserved for the long-term in a secure environment, and shared only with accredited researchers, would you be willing to provide your data to a social science data archive?



Use of Data and Secondary Analysis

The respondents' answers on whether the possibility of access to research data is important in their scientific field indicate that in most cases it is very important (64%) or important to some extent (31%). Only in a small number of such cases (3%) is it not considered very important or not important at all (2%).

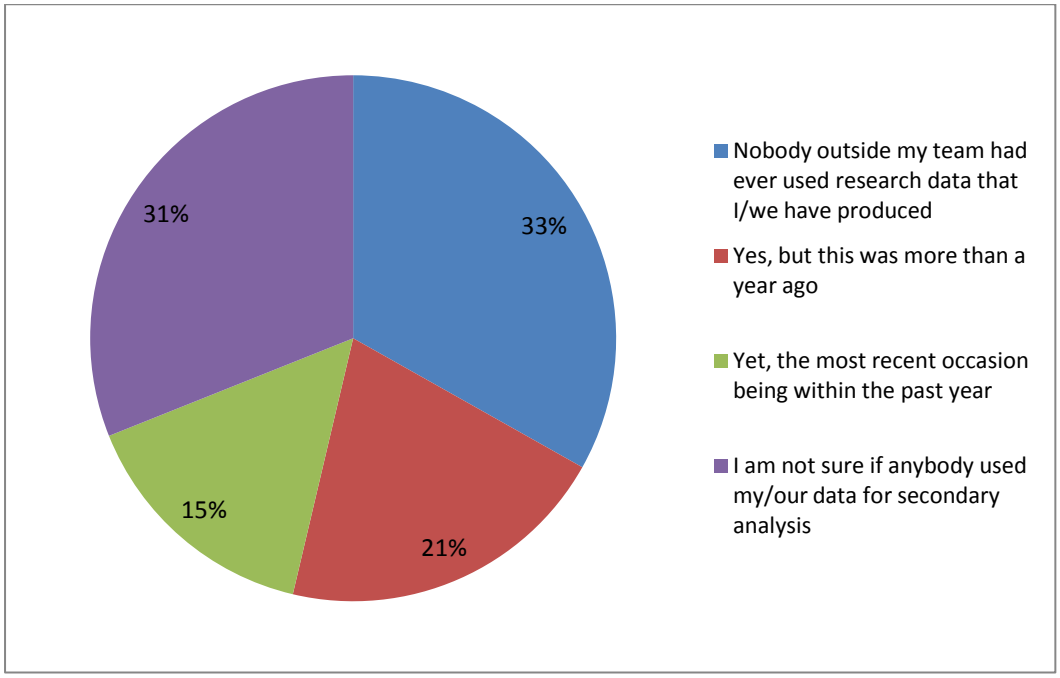
Q19: With respect to your own discipline, how important is the sharing of research data?



The next question (Q20) was aimed to determine the extent to which researchers have information that other researchers, outside of their project team, have ever used some of their data for secondary analysis. Of the total number, 33% of researchers reported that no one outside the original project teams used the data, 21% reported that they did, but more than a year ago, and 15% of researchers know that the latest access was less than a year ago. The remaining (31%) researchers were not certain of the answer to this

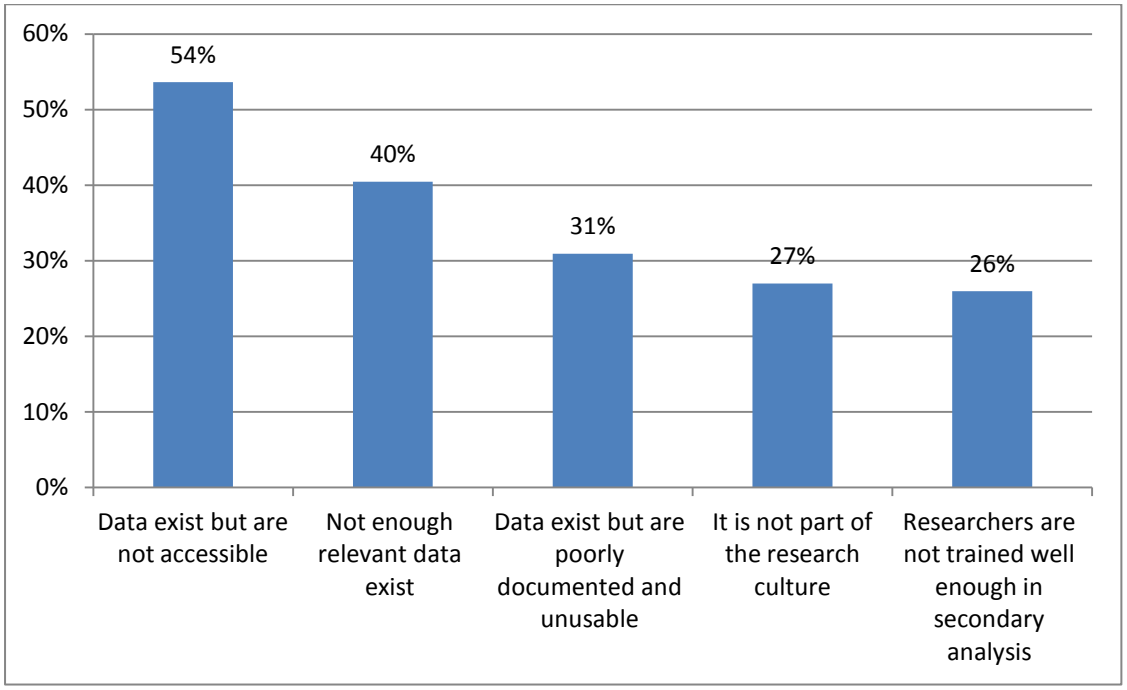
question. These results indicate a lack of systematic monitoring and the use of primary as well as secondary data in an organized manner. National archives of data would certainly solve also this major problem of proper use of research data collected by others.

Q20: Do you know if any other researcher outside your own team had used for secondary analysis any of the research data that you produced?



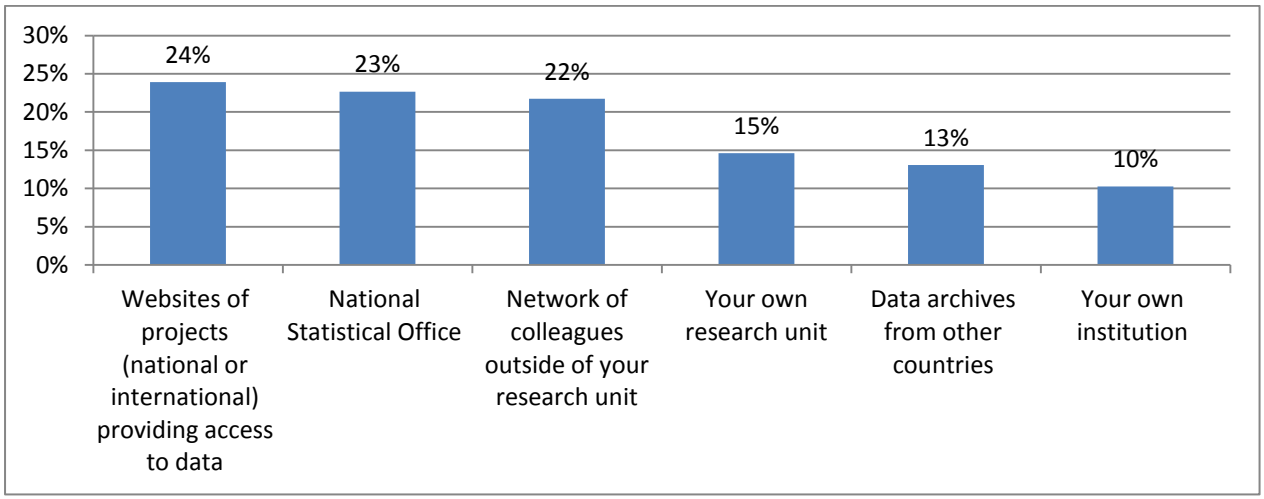
When asked what the barriers for general use of secondary data in Serbia are, generally speaking, the option of multiple responses was offered (Q23). Responses indicated that 40% of respondents believe that there is not enough relevant data, 54% believe that the data do exist but they are not accessible, 31% believe that the data exist and are accessible, but they are poorly documented, 26% believe that researchers are not sufficiently trained to perform secondary analyses, while 27% think that it is not part of the research culture.

Q23: In general, what are the barriers to conducting secondary analysis in your country?



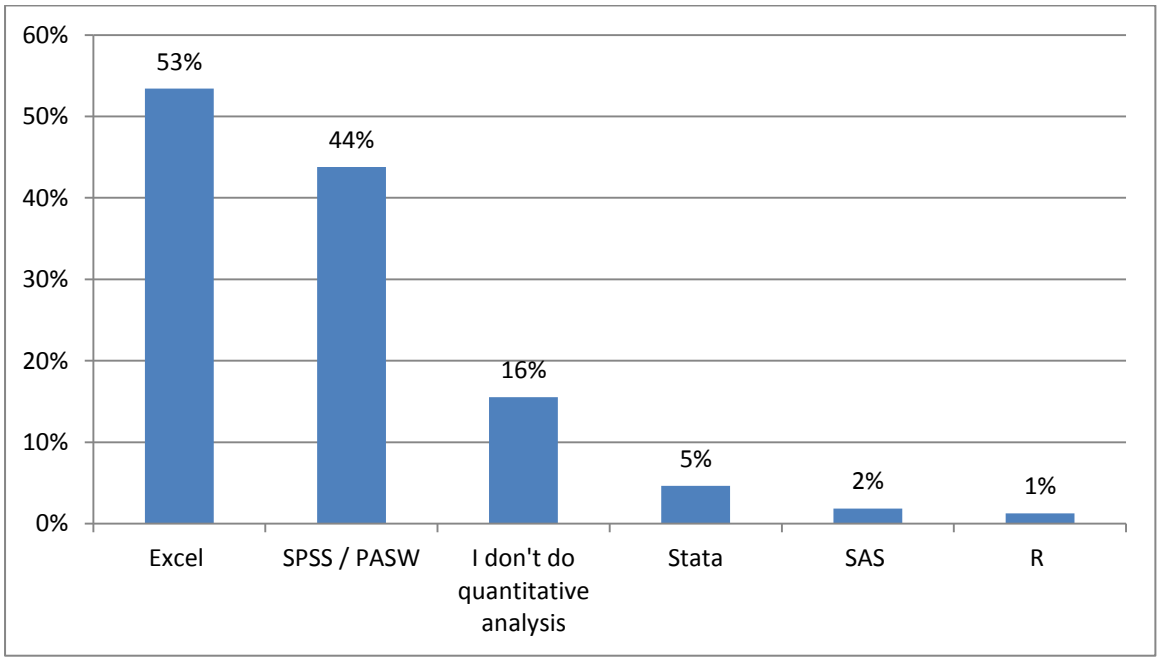
When asked how they managed to get the secondary data from other projects (Q24), 15% of respondents said that the data were provided by their research unit (group / project / chair etc.), and in 22% of cases it was through the network of colleagues outside of their research unit. In 10% of cases they managed to provide data through their institutions, in 13% of cases it was by means of research data archives from other countries, in 23% of cases it was through Statistical Office of the Republic of Serbia, while in 24% of cases it was through the institution that did the research.

Q24: There are different ways to obtain research data produced by others. Please indicate all the sources that you ever used successfully to obtain such data



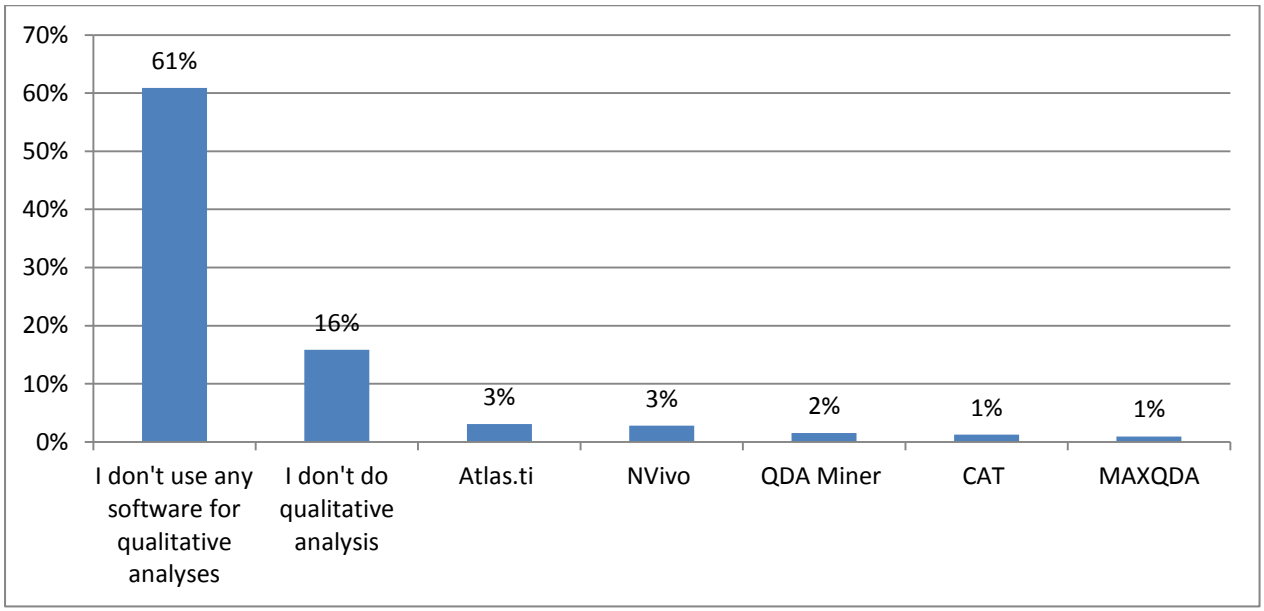
During the quantitative analysis of the data, when it comes to software, the researchers in Serbia use dominantly Excel (53%) and SPSS / PASW (44%) (Q25). The programs R (1%), SAS (2%), and Stata (5%) are used to a negligible extent. In addition, 16% of respondents do not apply quantitative analysis in their research.

Q25: What statistical software do you commonly use for your quantitative analyses?



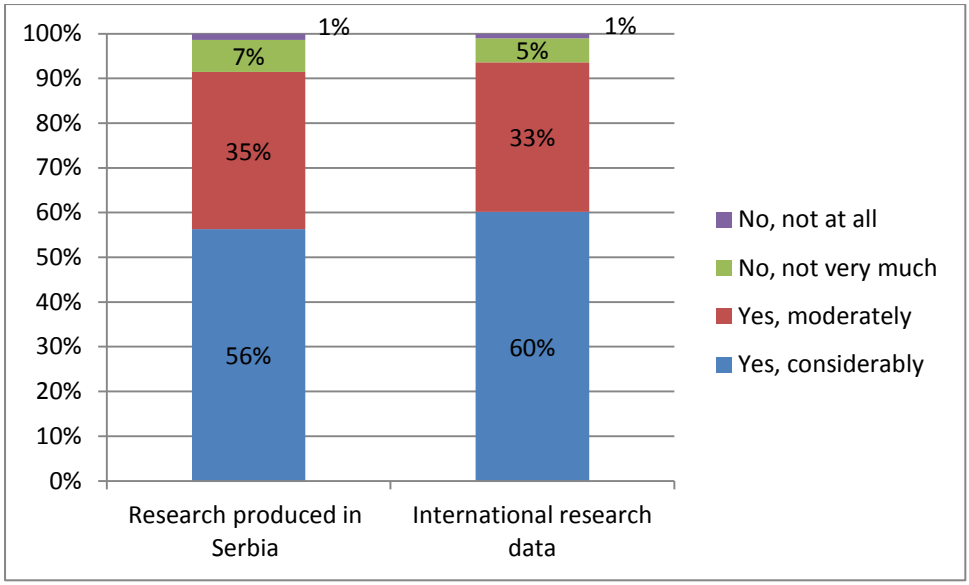
For respondents who in their research use qualitative data, in the majority of cases (61%) they do not use software in their analyses, while others use ATLAS.ti (3%), Nvivo (3%), MAXQDA (1%), QDA Miner (2%) and CAT (1%).

Q26: What software do you commonly use for your qualitative analyses?



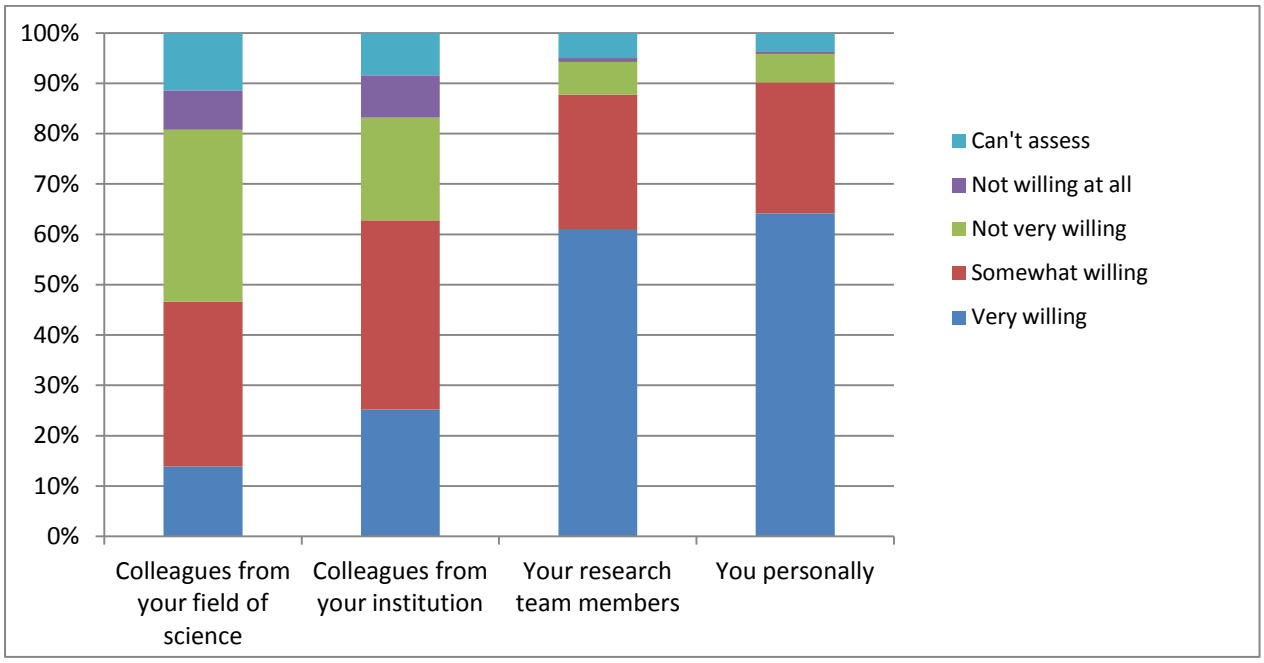
The majority of respondents in the sample (more than 90%) believe that their work will benefit if they have better access to Serbian and international data (Q27).

Q27: Would your scientific work benefit if you had better access to research produced in Serbia and international research data



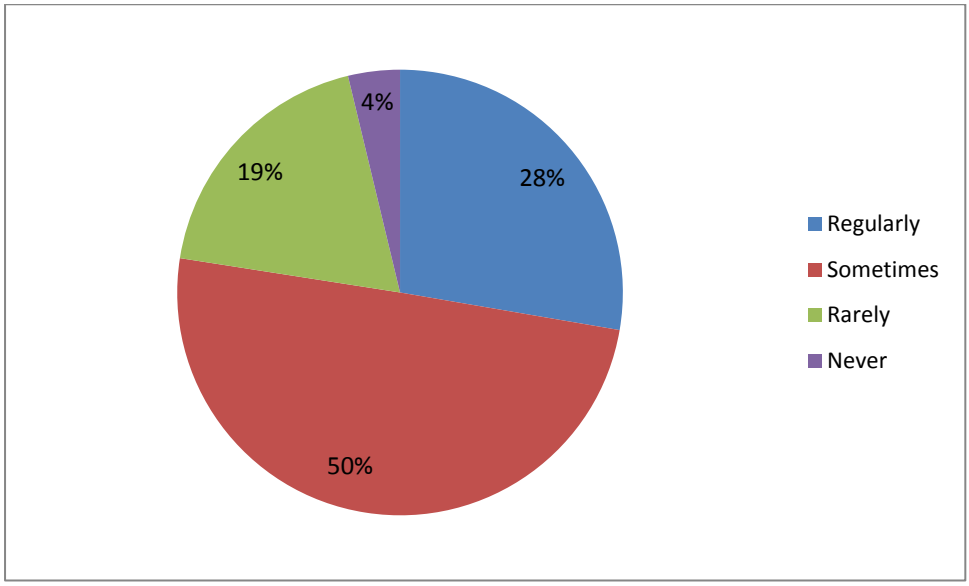
The following graph gives an insight into respondents' assessments of the extent to which researchers are willing to share their own research data in Serbia.

Q29: In your opinion, what is the prevalent attitude with respect to sharing one's own research data among...



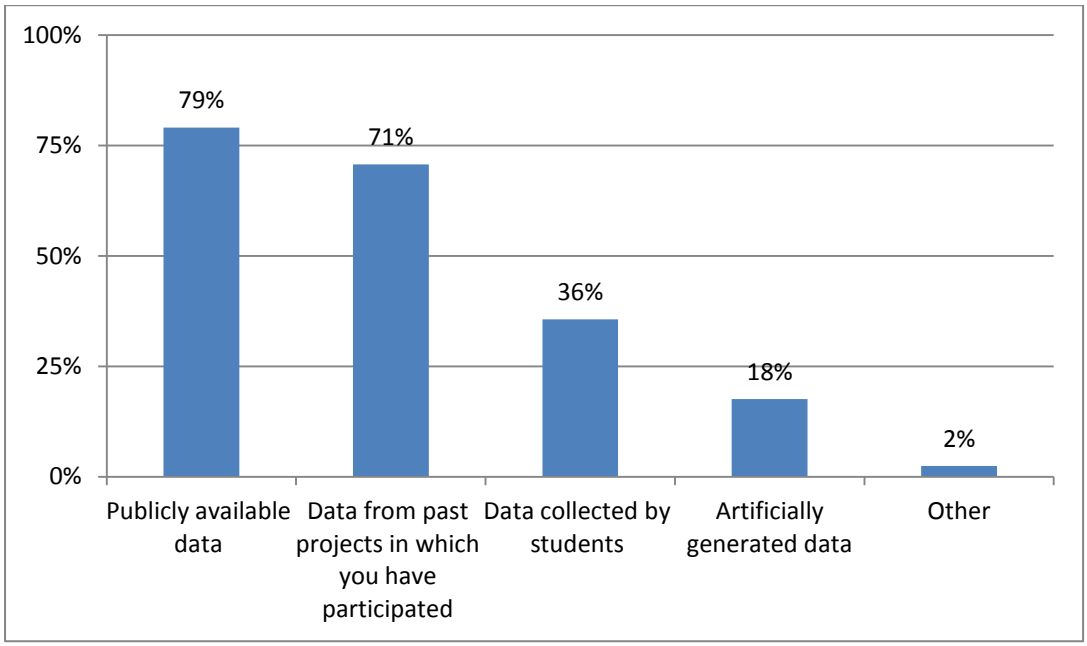
The respondents in this sample were predominantly (77%) engaged in teaching and in the context of teaching they analyze and process research data. In the next set of questions, from Q32 to Q35, the percentages are calculated in relation to the number of researchers who use research data in teaching. 28% of them do it regularly, 50% occasionally, and 19% rarely (Q32). The remaining 4% do not practice using research data during lectures.

Q32: In the context of your teaching, how often do you analyze or discuss research data?



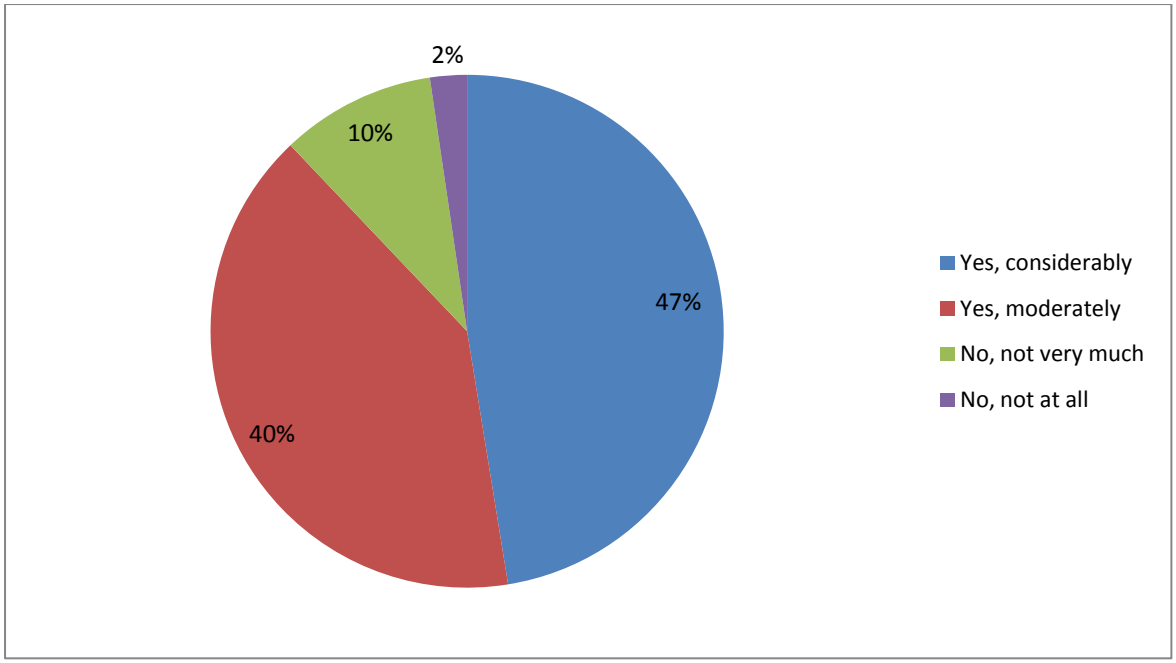
Respondents who use research data in teaching in most cases use data that are publicly available (79%) or that they themselves have collected in previous research (71%) (Q33). Less than half of respondents (36%) use data compiled by students, while only 18% use artificially generated data. A negligible number of respondents (2%) uses other sources, such as media reports.

Q33: Which type of data do you use in your teaching?



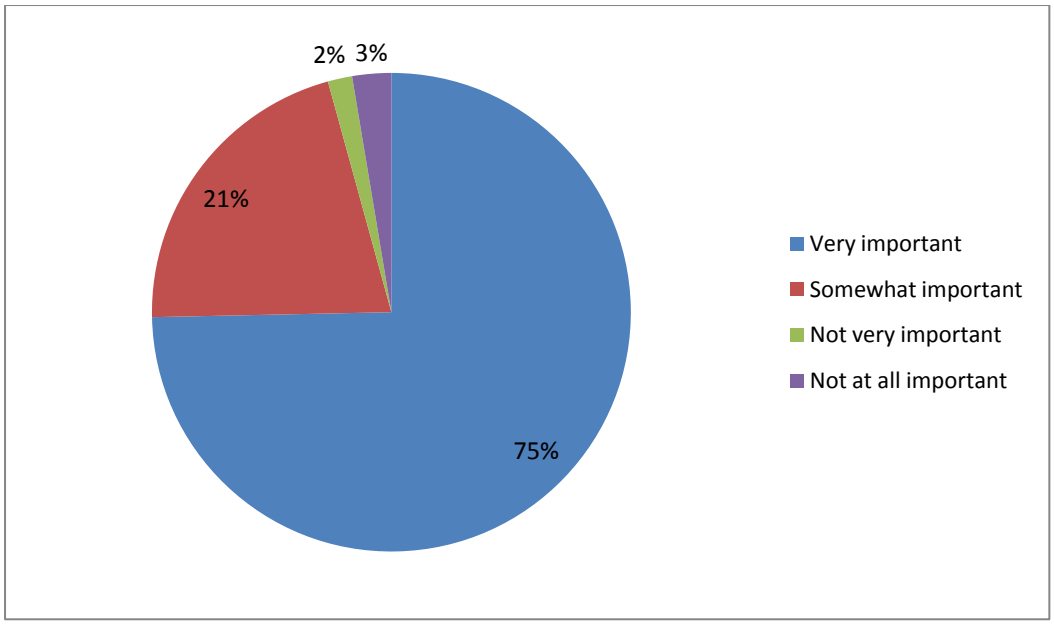
When asked whether it would help them, in the process of teaching, to access data of a large number of local or international research projects, 47% of respondents said that it would strongly help them, 40% said that it would help them to some extent. The remaining respondents said that it would not be particularly helpful (10%), or that it would not help at all (2%) (Q34).

Q34: Would your teaching benefit if you had greater access to more national or international data?



The last question in the survey (Q35) was related to the attitude of the respondents as to which extent the existence of an institution specialized for data archiving for social sciences in Serbia would be useful. A significant majority said that it would be very important (75%) or important to some extent (21%), and only a negligible number of respondents thought that it would not be particularly important (2%), while 3% of respondents had no opinion on this subject. These results reaffirm once again the dominant opinion of Serbian researchers that a database in the social sciences is necessary, that it needs to be created according to international standards, classified by areas of research, which would facilitate the search by given variables. In addition, the linkage with the relevant institutions in the country is presumed, as well as with archives of similar type abroad.

Q35: In your view, how useful could be an institution that specializes in data archiving in your country?



Preliminary Conclusions and Recommendations

Conclusons

- Our analysis conducted in Serbia has shown that the social science research community does not have a digital archive or anything resembling it. We did not find any institution in the social science research sector that performs a systematic and standardized way of archiving or sharing data.
- Scientific research in Serbia has been financed through projects for a period of 3 to 5 years, and it could be a good funding model for the national digital archive.
- There are certain differences between the growth of investment in research and published papers on relevant international lists. If we consider that growth of listed papers exceeds the growth of investment in research projects, we can conclude that researchers in Serbia have a strong motivation to improve the results of their work.
- Legal regulation and especially one document: "Evaluation of scientific contribution of each researcher" expects from the researchers continuous improvement in the quality and quantity of results, but with limited financial support. As a result of that, researchers are placed in a position that they must use all available resources.
- Serbia has a solid network of institutions engaged in social science research. Those institutions produce enough data each year, so we conclude that the existence of a digital data archive will be fully justified.
- Results of the researcher survey conducted in Serbia clearly indicate the full approval of researchers for establishment of a social sciences data archive.
- The predominant number of researchers (84%) work in the public sector, while 15.9% are employed in the private sector, and that is directly related to the public funding of their research and all mentioned problems related to this issue.
- It is evident that the dominant source of funding for science and research projects in Serbia is the Ministry of Education and Science, and there is a weak interaction between the science and business sectors. As a result of that there is the lack of interest of private sector as a funder of research projects. We conclude that it is necessary to increase investments in scientific researchers and to strengthen connection between businesses and research sectors, through interdisciplinary projects along with strengthening of technological capacities in Serbia.
- Most of the researchers, over 70%, save the collected data, but they don't have appropriate knowledge of international standards and procedures for data archiving.
- Most researchers in Serbia do not use advanced quantitative and qualitative techniques for data analysis.
- Most researchers in Serbia are engaged in the educational process and consider it to be a great benefit to have a digital data archive.
- We found some inconsistency between the dominant interest of researchers to share data (over 90%) and support for public access to the data (about 50% share with wider scientific community). This suggests that researchers have a certain fear and misunderstanding of the concept of data archiving. The largest numbers of arguments against public sharing of data are related to safety issues: fear of plagiarism, arbitrary interpretation of the data and the sense of injustice by allowing other researchers access to data in secondary analyses, taking into account the effort put into

process of data collecting. This is supported by the prevailing willingness of researchers (80%) to share the data if full security and data protection is guaranteed.

Recommendations

- We recommend centralized organization of a national archive in Serbia; this is supported by the experience up to now that a large number of datasets are lost in the absence of a well- established, structured, and organized system.
- Development of centralized archive would allow:
    - More effective approach to establishment of national policy on data archiving in the social sciences and consequently definition of relevant rules, procedures, contracts etc.
    - More efficient support to researchers in data archiving and milestones for their further research.
    - Education of researchers in the area of data archiving through workshops and training programs.
    - Secure the funds for project financing, but also its promotion to the wider scientific community.
- With regard to predominantly public sources of research funding, there is no justification for denying the public disclosure of data produced by such research on the government requirements.
- Key institutions to be involved in the process of social science data archive establishment and further activities in Serbia are:
    - Ministry of Education, Science and Technological Development
    - Institute of Economic Sciences
    - Computer Center of the Belgrade University
    - Institute for Social Research, Faculty of Philosophy, University of Belgrade
    - Institute of Social Science
    - Statistical Office of the Republic of Serbia.

- Generally, with regard to the conclusions of the analysis, we think that each country in the region should have its own national data archive, which should be financed on a national basis. We suggest that in Serbia a national data archive should be organized as a centralized institution within some existing research institution, with the technical support of the University Computing Center. Also, we think that the most realistic scenario for stable financing for maintaining an archive is in line with the existing practices of financing scientific research - in 3-5 year cycles.

References

- Budžet Republike Srbije za 2012. godinu
- Informator o radu Pokrajinskog sekretarijata za nauku i tehnološki razvoj , Pokrajinski sekretarijat za nauku i tehnološki razvoj Vojvodine, http://apv-nauka.ns.ac.rs/vece/index.jsp

- Matica srpska, http://www.maticasrpska.org.rs/
- Ministarstvo za prosvetu, nauku i tehnološki razvoj Republike Srbije, http://www.mpn.gov.rs/sajt/
- Pravilnik o postupku i načinu vrednovanja, i kvantitativnom iskazivanju naučnoistraživačkih rezultata istraživača („Službeni glasnik RS“, br. 38/08)
- Pravilnik o vrednovanju naučnoistraživačkog rada i postupku akreditacije naučnoistraživačkih organizacija („Službeni glasnik RS“, br. 90/06)
- RRPP, The assessment of research capacities in the social sciences in Serbia, 2010.
- Srpska akademija nauka i umetnosti, http://www.sanu.ac.rs/
- Strategija naučnog i tehnološkog razvoja Republike Srbije 2010-2015
- Tim za socijalno uključivanje i smanjenje siromaštva, Ministarstvo nauke i tehnološkog razvoja Republike Srbije, analiza kapaciteta i resursa i izrada predloga za unapređenje istraživačko-analitičke prakse u zemlji, 2011.
- Zakon o arhivskoj građi („Službeni list SRJ“ br. 12/98, 13/98)
- Zakon o autorskom i srodnim pravima ("Službeni glasnik RS", br. 104/2009)
- Zakon o elektronskom potpisu („Službeni glasnik RS“, br. 135/2004)
- Zakon o inovacionoj delatnosti („Službeni glasnik RS“, br. 110/05 i 18/10)
- Zakon o kulturnim dobrima („Službeni glasnik RS“ br. 71/94)
- Zakon o naučnoistraživačkoj delatnosti („Službeni glasnik RS“, br. 110/05, 50/06-ispravka)

Annexes

Annex 1. Legal Framework

Broader analysis of regulation in the field of archiving in Serbia

In that sense, there are three legal regulations. First of all, it is necessary to highlight the ***Law on Archival Material*** ("FRY Official Gazette", no. 12/98, 13/98). It is about previous federal law, which has been applied since 2006, as republic regulation in Serbia. This Law defines the notion of archival material, as *original and reproduced written, drawn, printed, photographed, filmed, recorded with phonograph, recorded legibly with typewriter or recorded in some other way* - **documented material of permanent value and importance for science,** culture and other social needs. As archival material of Federal Republic of Yugoslavia, nowadays of Republic of Serbia there is considered to be the archival material which appeared, amongst other things, in work of public enterprises, public institutions and other organizations founded by federal law and of international gatherings the organizers of which are Federal Republic of Yugoslavia bodies, nowadays bodies of Republic of Serbia. Also, it defines registry material, as overall original and reproduced written, drawn, printed, photographed, filmed, recorded with phonograph, recorded legibly with typewriter or recorded in some other way – documented material and books, files and other records of such material, from which archival material was not selected.

According to the law, the bodies and organizations in the work of which **the archival material emerges**, are obliged to mark, date, classify, carry out current archiving, safeguard, select archival material, give data and hand over the registry material to the competent bodies.

Next important regulation is the ***Law on Cultural Property*** ("RS Official Gazette", no. 71/94). Although it regulates quite a broad field, in article 24, this Law regulates the notion of archival material. The archival material consists of original and reproduced written, drawn, **computerized**, printed, photographed, filmed, micro-filmed, recorded with phonograph or recorded in some other way – documentary material of **special importance for science** and culture, which emerged in the work of state bodies and organizations, bodies of units of territorial autonomy and local self-government, political organizations and their bodies, institutions and other organizations, religious communities, as well as individuals, regardless of when and where it emerged and if it is in protection institutions or not.

Article 56 of Law prescribes which public institutions establish the material which represents the archival material. The **central registers** are kept for each of types of cultural property. The central registers of cultural property are kept by: Republic Institute for Cultural Monuments Protection, National Museum in Belgrade, **Archives of Serbia, National Library of Serbia** and Yugoslav Film Archives.

The jobs within the frame of cultural property protection activity can be carried out by the persons **having corresponding expert education and having passed expert exam**. The protection institutions are: **institute for cultural monument protection, museum, archives and film archives.** The archives carry out activity of protection of archival material and registry material.

The central cultural property protection institutions are: Republic Institute for Cultural Monument Protection, Archives of Serbia, National Museum in Belgrade, National Library of Serbia and Yugoslav Film Archives.

Finally, since 2004, the ***Law on Electronic Signature*** ("RS Official Gazette", no. 135/2004) has been in force in the Republic of Serbia. This regulation regulates **the notion of electronic document.** So article 2 of Law implies that the electronic document is the document in electronic form **which is used in legal matters and other legal activities,** as well as in administrative, judicial and other procedure before the state body. Although this definition does not cover the entire field of digital archiving, it is a very important step forward in legislation modernization and following of modern trends in the world. Also, the notion of electronic certificate is regulated and it represents the electronic document confirming the link between the data for electronic signature checking and signatory's identity. Finally, the user is legal entity, entrepreneur, state body, territorial autonomy body, local self-government body or physical entity to whom the electronic certificate is issued.

There is no denying the electronic document's validity or probative force only because it is in the electronic form, except in the cases expressly foreseen by the law. The user is obliged to keep the means and data for electronic signature forming from unauthorized access and use, and s/he should use it in accordance with the law.

Since the project subject relates to the authorship works of scientific staff, the ***Law on Copyrights and Related Rights*** ("RS Official Gazette", no. 104/2009) is applied perforce on this field. The Law prescribes that the authorship work is the author's original intellectual property, which is expressed in certain form, regardless of its artistic, **scientific or other value**, its purpose, size, contents and other ways of expression, as well as permissibility of public disclosure of its contents. As the authorship work, there are considered, especially written works, such as books, brochures, articles, translations, computer programs in any form of their presentation, including the **preparatory material for their production**, etc.).

The author enjoys **moral and economic rights** in terms of his/her authorship work from the moment of creation of authorship work. The author has the exclusive right to be admitted to the authorship of his work, the right that his/her name, pseudonym or mark are indicated on each copy of work, i.e. are mentioned in any public communication on the work, except if, considering the concrete form of public communication on work, it is technically impossible or inappropriate.

Apart from that, **the author has the exclusive right** to publish his/her work and **to determine on the way in which it will be published.** Until the publication of work, only the author has the exclusive right to give the public information on work contents or to describe his/her work, right to protect his/her work's integrity, and especially to oppose changes to his/her work by side of unauthorized persons and to oppose public communication on his/her work in changed or incomplete form, **taking care of concrete technical form** of communication on work and good business practice, as well as of giving permission for processing of his/her work. The author has the exclusive right to oppose using his/her work in the way which jeopardizes or can jeopardize his/her honor or reputation.

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In cases of exploitation of authorship work based on the provisions of this Law on the restriction of copyright, the name of author of work and the source from which it has been taken over (publisher of work, year and place of publication, magazine, newspaper, television or radio station where the work or work fragment was originally published or directly downloaded, etc.) must be mentioned. In each case, the scope of limitations of the exclusive rights should not be contrary to the normal exploitation of the work nor unreasonably offend the legitimate interests of the author.

If the author has created a work during the work relationship while fulfilling his/her work duties, the employer is authorized to publish this work and is the holder of the exclusive property rights to its exploitation as part of their economic activity within five years of completion of work, if not determined otherwise by the general document or work contract. The author is entitled to special compensation

depending on the effects of exploitation of work. The author of work created in the course of employment reserves all copyrights for that work, except for the rights belonging to the employer. After the expiry of five years, the author gains the exclusive property rights of the work. If the authorship work is the computer program, the employer is the permanent holder of all the exclusive property rights of the work, if not determined otherwise by the agreement.

Meanwhile, the Government of the Republic of Serbia in early 2012 adopted the ***Proposal of Law on Archival Material***. Although it is not an official regulation, the provisions of this Proposal can be used for reflection on the respective legislation *de lege ferenda.*

The Proposal of Law defines first of all the notion of cultural heritage of general interest. The archival material is the cultural heritage of special state and national interest of the Republic of Serbia and as such it enjoys special protection, as determined by the Law on Culture, this Law and other regulations. The archival material and documentary material are protected by the provisions of this Law, regardless of whose ownership or possession they are, i.e. at whose location they are and if they are registered and made records of.

The archival material is original, and in the absence of the original, also any form of reproduced documents or records that emerged by legal and physical entity activity while carrying out their works, and which are of permanent importance for culture, **science**, and other social needs, regardless of the time and place of their origin and whether they are in the conservation of cultural heritage institutions or outside them, and regardless of the form and media of record on which they have been preserved. The documentary material represents the ensemble of documents or recordings created or received by activity and work of legal or physical entity (**manuscript, printed record, drawing, photography, sound recording, film and video recordings, microfilm and electronic recording that includes also e-mail messages, databases, accounting tables, graphics, images, all types of electronic documents, multimedia and complex document, website presentations and other types of documents created by legal or physical entity and so on**), as well as prescribed records on it, regardless of the form and format of recording.

The documentary material is considered to be the archival material in creation, and according to its protection, the regulations are applied which relate to the archival material. The documentary material is kept from damage, misuse and destruction and cannot be appropriated until the archival material is selected from it.

The document represents any record, i.e. testimony, of any kind, shape and production technique (manuscript, printed document, drawing, electronic documents, etc.) which by contents, context and structure provides evidence of activity that legal or physical entity undertakes, conducts or concludes in the process of their activity, which is certified and signed.
The main elements of the document are: authenticity, credibility, integrity and usability, in accordance with the definitions set out in the **international standard for document management**. The electronic document is a document created in analog or in electronic form that is used in legal matters and other legal activities, as well as in administrative, judicial and other proceedings before the state authority.

Private archival material emerges by activities of private legal and physical entities performing tasks, activities or works of general interest, and it did not emerge through performing of public authorities or public service and is not state-owned.

The creator of archival material and documentary material is legal or physical entity and it appears through their activities. The holders of archival material and documentary material are holders of the rights to the archival material and documentary material (owner or acquirer of other real right or party of contractual obligation relationships) or any other (physical or legal) entity, which in any way, on any basis, has the possession of that.

The digitizing is the transfer of archival material from other forms into electronic form in order to facilitate search, use and publication. The digitalization cannot substitute microfilming.

The creators and owners of public archival material that create and preserve original documentary material in electronic form must, for the entire duration and preservation time of such material, ensure that policies, procedures and processes related to document management guarantee authenticity, credibility, integrity and usability of electronic documents in order that such documents have strength of reliable and official documents.

The Government of the Republic of Serbia establishes Uniform Technical and Technological Requirements for the electronic storage of documentary material in electronic form.

Protected personal data is any information relating to the private life aspect of individual for which law, legal regulations or court consider that it was impossible to give them to be used without fear of violation to the interests of that individual.

The archival material as cultural heritage, if it has the properties of special historical, artistic, **scientific or technical interest,** is categorized by declaring it as: 1. cultural heritage of exceptional importance (I first category), 2. cultural heritage of great importance (II second category) and 3. cultural heritage (III third category).

The private archival material is the property of physical or legal entities of private law. The private legal entity and physical entity cannot be holders of archival material that has emerged in the work of the creator of public archival material. The provisions of this Law are to be applied for creators and owners of private archival material and documentary material, unless the provisions of another law provide otherwise.

The technical measures of protection of archival material include: preventive care, microfilming, digitization, conservation and restoration.

Finally, when it comes to scientific work and its voluntary “handing over to” digital archives, it is necessary to note here that there is room for implementation of the provisions of Art. 10 of Law on Contractual Obligation Relationships ("Official Gazette of SFRY", no. 29/78, 39/85, 45/89 – decision of “USJ” and 57/89, "Official Gazette of FRY", no. 31/93 and "Official Gazette of SCG "no. 1/2003 - Constitutional Charter). Specifically, the parties in contractual obligation relations are free, within the limits of mandatory regulations, public order and good customs, to regulate their relations at will.

Annex 2. Questionnaires

Annex 2. A Questionnaires Researchers' questionnaire

What is your current principal activity?
1. Undergraduate student
2. Doctoral student / research or teaching assistant
3. Researcher / professor
4. Project leader
5. Head of institution
6. Other

With what type of institution are you currently principally affiliated?
1. Higher education institution
2. Research institute
3. Currently not employed
4. Other
(if not student)

Do you work in public, private or nongovernmental sector?
Public sector
Private sector
Nongovernmental sector

What is your principal research discipline?
Teacher training and education science
Humanities
Law
Psychology
Sociology and cultural studies
Political science and civics
Economics
Journalism and reporting
Library, information, archive
Social work and counselling

Reseach participation during past 5 years
Yes

Number of datasets the researcher had produced or helped to produce during the past 5 years

Year the most recent fieldwork (or data collection phase) completed?

Which data collection method was applied in this research?

How was this research financed?
Public funding through national science funding bodies (science ministry, science foundation...)

Public funding from other sources (other ministries, state agencies, cities and municipalities...)
International funding/project
Private sector
Own funding (institution you are working in paid from its own funds)
Other source
Don't know
Personal effort/funding

Number of co-researchers involved in given research project
0
1
2
3
4 to 5
6 to 10
more than 10

After the last research project, did you or your research team members retain the data?
Yes

What kind of data was kept?
Raw data
Cleaned data (coded, anonymised, ..)
Data prepared for analysis (with transformations, created indexes, recoded)
Other kind of data
Well documented with metadata
Don't know

Where is the data from your last project kept?
On my computer
On my colleague's computer
Several copies on different computers and/or different media
Server at my local institution/university
Data archive/repository
Somwhere else
Don't know

Who may be granted access to the data from your last project for research use?
Just the project leader
Research team members
Members of my institution
Broader scientific community
The data is publicly available (open access)
Someone else
Don't know

In your opinion, what would be the ideal level of access to this research data?
Just the project leader
Research team members
Members of my institution
Broader scientific community
The data should be publicly available (open access)

Someone else
Don't know

Willingness to provide your data to a social science data archive?
1. Yes, certainly
2. Yes, probably
3. Not sure
4. No, probably not
5. No, certainly not

With respect to your own discipline, how important is the sharing of research data?
1. Very important
2. Somewhat important
3. Not very important
4. Not important at all
5. No opinion

Do you know if any other researcher outside your own team had used for secondary analysis any of the research data that you produced?
Nobody outside my team had ever used research data that I/we have produced
Yes, I know of occassion when my/our data was used, but this was more than a year ago
Yes, I know that my/our research data was used for secondary anaylsis recently, the most recent occasion being within the past year
I am not sure if anybody used my/our data for secondary analysis

When was the last time that you analysed quantitative data that were not produced by yourself or your research team.
this month
last month
2-5 months ago
6-12 months ago
13-24 months ago
more than two years ago
never

When was the last time that you analysed qualitative data that were not produced by yourself or your research team.
this month
last month
2-5 months ago
6-12 months ago
13-24 months ago
more than two years ago
never

In general, what are the barriers to conducting secondary analysis in your country?
Not enough relevant data exist
Data exist but are not accessible
Data exist but are poorly documented and unusable
Researchers are not trained well enough in secondary analysis
It is not part of the research culture
Something else

Don't know

Please indicate all the sources that you ever used sucesfully to obtain such data
Your own research unit
Network of colleagues outside of your research unit
Your own institution
Data archives from other countries
National Statistical Office
Websites of projects (national or international) providing access to data
Other source

What statistical software do you commonly use for your quantitative analyses?
Excel
R
SAS
Stata
SPSS / PASW
Other (statistica, eviews, amos)
I don't do quantitative analysis

What software do you commonly use for your qualitative analyses?
I don't do qualitative analysis
I don't use any software for qualitative analyses
Atlas.ti
NVivo
MAXQDA
QDA Miner
CAT
RQDA
Dedoose
Other (AntConc. Tosmana, SPSS)

Would your scientific work benefit if you had better access to...
research data produced in your country
international research data

In your opinion, what is the prevalent attitude with respect to sharing one's own research data among...
you personally
your research team members
coleagues from your institution
coleagues from your field of science

Does your professional activity include teaching responsibilities?
Yes, No

In the context of your teaching, how often do you analyze or discuss research data?
Regularly
Sometimes
3. Rarely
4. Never

Which type of data do you use in your teaching?
Data collected by students through the coursework
Data from past projects in which you have participated
Publicly available data and datasets (e.g. international surveys)
Artificially generated data or datasets included with the textbooks/software

Would your teaching benefit if you had greater access to more national or international data?
1. Yes, considerably
2. Yes, moderately
3. No, not very much
4. No, not at all

In your view, how useful could be an institution that specializes in data archiving in your country?
1. Very important
2. Somewhat important
3. Not very important
4. Not at all important
5. No opinion

Please leave your email if you wish to participate in the SERSCIDA project activities

Annex 2. B Questionnaires Guidelines for semi-structured interviews with government counterparts and potential

Research policy setting: interview with policy makers/funders

PREPARATION

Stakeholder identification

- who is involved in making science policies?
- what are the main sources of financing scientific work?

Reading relevant documents, domestic and international

relevant documents:
- current documents o znanstvenim poliotikama
- project funding criteria and rules
- criteria for evaluation of scientific work

- identify everything concerning science infrastructure and data archiving in relevant documents
- are we one of the members of ESFRI? (Croatia and Serbia are associated members)

http://ec.europa.eu/research/infrastructures/pdf/esfri/membership/esfri_membership_july_2011.pdf#view=fit&pagemode=none
http://ec.europa.eu/research/infrastructures/pdf/esfri/home/esfri_inspiring_excellence.pdf#view=fit&pagemode=none

Good data source (not all infomation are up to date)
http://erawatch.jrc.ec.europa.eu/erawatch/opencms/information/country_pages/

Invitation letter

- maximum one page
- introduce the project and yourself, explain what is data archive
- aks for meeting to talk about relevant issues on establishing data archive
- attach topics for disscussion and questions (so that they can prepare themselves

TOPICS FOR DISCUSSION

A. Needs
B. Current policies and activities, plans for future
C. Possible institutional solutions
D. Financing

QUESTIONS

A. Have you met the need for archiving of research data in the social sciences?

Do you rely on the results of research in social sciences when proposing/designing scientific policies and for other activities? If so, can you give some examples?
In this process was there a need for examining the raw data obtained in these studies?

Have you ever used the online available source data or the results of research (eg Eurostat)? What data sources did you use?

Have you met the requirements of the users / authors of the study (scientists and researchers) to archive research data in order to preserve and use them in future research?

B. Is there something in the scope of your current policy and actions with regard to data archiving in the social sciences? What are the plans for the future?

What is the current science policy in relation to the archiving of research data?

Are there any requirements related to research data when financing projects or other activities? (eg if funding publishing scientific journals, criteria could include and requirement related to research data arhcihivng)

Is there a policy relating to open access to research results?

If there is nothing currently:
- Why is not there?
- Can this be changed and how?
(assumption is that If there is need, and no current activities, there must be plans for the future)

C. What do you think how an institutional solution for data archiving should be established?
what kind of isntitution should carry this task? (scientific instutute? faculty? university? library?)
centralized, distributed?

D. What are the possible sources of funding for activities related to the collecting, processing, use and disemnination and permanent preservation of research data?
available or prospective (EU)

Annex 2. C Questionnaires Data Services

Data Service Infrastructure Survey 2012

SERSCIDA

SERSCIDA is a project funded by the European Commission to study the conditions of social science research in Balkan countries toward establishing durable data infrastructure at the service of researchers in the region.

We are particularly interested in existing work within [*name of country*] with respect to the long-term preservation of research data and the potential for a national social science data infrastructure.

*(For the interviewer: Please instruct and remind where relevant that the term "data" refers to **raw data**, that is, information collected in specific research projects that is recorded in machine readable format and used for analytic purposes. This could be survey data, interviews in sound files, video footage, notes, images, etc. By "data", we do **not** include analyses, descriptions, statistics, facts, or conclusions that appear in reports, papers, websites, or scientific publications.)*

About your institution

1) Name of institution

2) Type of institution

   a) University
   b) Public research institute
   c) Private research institute
   d) Library
   e) National/Regional archive
   f) National Statistical Institute
   g) Other (specify)

3) What is your institution's principal research discipline? (*Only applicable if respondent answered b or c on Question 2*)

4) What is your institution's principal research methodology focus? (*Only applicable if respondent answer b or c on Question 2*)

   a) Quantitative methodology
   b) Qualitative methodology
   c) Mixed methodology
   d) Other (specify)
   e) Not applicable

5) What is the scope (discipline) of your data collection? *(Only applicable if respondent answered d, e, or f on Question 2)*

Existing infrastructure and data capacities

6) Does your institution store or disseminate data for use by researchers?

   a) Yes (*go to question 8*)
   b) No (*go to question 7*)

7) What happens to the data produced at your institution? Are they at risk of being lost forever? (*skip to question 34 after answering this question.*)

8) What discipline(s) are covered by the data you store or disseminate?

   a) Social sciences
   b) Humanities
   c) Other (specify)_____

Data preservation

9) How does your institution store research data for the long-term? Could you briefly describe this process?

10) How safe are the research data that are preserved at your institution? That is, are the data kept on servers that are protected? Are there backup or formal preservation systems? (*Interviewer to explore which.)*

11) Are the data treated in a way that assures that they can be accessed and used again in 20-50 years? (e.g., kept, with necessary documentation, in a non-proprietary machine readable format)

Data documentation and standards

12) Does your institution use any documentation standards for the research data that it preserves? (*If yes:*) Which standards does it use, e.g., DDI, Dublin Core, other?

13) Does your institution follow a particular standard for trusted digital repositories, such as OAIS or the Data Seal of Approval?

14) Does your institution participate in any international survey projects that aim to harmonise datasets from different countries for comparative purposes?

15) Does your institution make use of any thesaurus to translate and/or index your data? *(If answer is yes, interviewer to ask for details).*

Tools and technologies

16) Does your institution have any experience with particular data service tools for the social sciences, such as NESSTAR, FEDORA or Dataverse? (*If yes:*) Could you briefly describe the purpose for which you use these and your experiences of using them?

Data discovery and dissemination

17) Does your institution allow access to the research data that it preserves?
(*If no, skip to next section*.)

18) Who is allowed to have access to the data? *(Explore if respondent answers researchers, whether this includes researchers in their own organization only or also in other organisations)*

19) What are the conditions that must be met to access these data?

20) Do you have some kind of authentication system that identifies who is eligible to access the data?

21) Are all of the data equally accessible? That is, are there some data that are more accessible than others?

22) Can the data be accessed from outside of the country? (*Interviewer: If yes, probe to see whether the access is for national researchers who are abroad, or whether there are also foreign researchers who can access the data.*)

23) By what means does your institution disseminate its research data? For example, are the data sent out on CDs, or are they available on screen, or can they be downloaded from a website?

24) Does your institution have a data catalogue that allows people to find the data that they are looking for? (*If yes:*) Is the catalogue visible outside of your institution, and what software is used to enable this?

Data policy and service funding

25) Does your institution have any policy or other documents regarding long-term preservation of research data? (*If yes:*) Could you briefly describe the policy or documents? (*Also, ask if they could send it to us by e-mail.*)

26) Does your institution use any legal agreements for storing, disseminating, and/or using research data? This might be in the form of deposit contracts or end-user licenses. (*If yes:*) Could you give a brief description of these legal agreements*? (Also, ask if they could send them to us by e-mail.)*

27) Do the intellectual property rights remain with the researcher/data producer, or are they transferred to your institution?

28) Does your institution receive any external funding for archiving/data service activities? (*If no:*) How is the work of data preservation and dissemination paid for at your institution? *(If yes, ask how much, whether the income is constant and whether it is dedicated to particular activities, e.g., preservation, dissemination, user support).*

29) In your view, would your institution do more to preserve and disseminate research data if it had more resources?

Staff capacities

30) Does your institution have dedicated staff for the preservation and dissemination of research data? (*If yes:*) How many?

31) Do these staff members have specific training in data preservation and dissemination? (*If yes:*) Please explain.

32) What sort of additional training do you think would be needed for your staff to acquire sufficient knowledge about data service policies and practices?

33) What kind of statistical software package experience do they have?

a) SAS
b) SPSS
c) STATA
d) R
e) MathLab
f) Excel
g) Other (specify)

About a possible National Data Service for the social sciences

34) In general, to what extent are *social science* research data preserved for the long-term in [*name of country*]?

35) Could you estimate roughly how much research data produced in [*name of country*] are lost because they are not stored in a safe setting for the long term (in percentage)?

36) Do you think it would be useful or important to establish a national data service for the social sciences in [*name of country*]? Please explain why or why not.

37) (*If yes to question* 35) We are interested in your views about what a national social science data service might look like in [*name of country*]. Can you say what key functions such an institution should serve? How might it be structured and what kinds of relationships should it have to other institutions?

38) Are there any existing national data service infrastructures for other disciplines in [*name of country*] (for example, in the humanities, medicine, climate and environment, natural sciences, or technology)?

    a) Humanities
    b) Medicine
    c) Climate and environment
    d) Natural Science
    e) Technology
    f) Other (specify)
    g) No

Annex 3. List of interviews held

No.	Date	Institution	Responder
1.	25.09.2012.	Institute of Sociological Research, department of Faculty of Philosophy in Belgrade	Slobodan Cvejić, professor
2.	27.09.2012.	Institute of European Studies, Belgrade	Milan Igrutinović, researcher
3.	28.09.2012.	Faculty of Economics, University of Kragujevac	Nenad Stanišić, vice dean
4.	2.10.2012.	Institute of Criminological and Sociological Research, Belgrade	Maja Savić, researcher
5.	3.10.2012.	Institute of Philosophy and Social Theory, Belgrade	Mirko Blagojević, researcher
6.	9.10.2012.	Faculty of Economics, Finances and Administration - FEFA, University of Singidunum	Tanja Kuzman, department director
7.	10.10.2012.	Computer Center of the University of Belgrade	Slavko Gajin, director
8.	10.10.2012.	Institute of Social Sciences, Belgrade	Vladimir Nikitović, department director Aleksandar Bošković, department director Bojan Todosijević, researcher
9.	12.10.2012.	Faculty of Economics Subotica, University of Novi Sad	Pere Tumbas , professor
10.	19.10.2012.	Faculty of Political Sciences, University of Belgrade	Miroljub Radojković, professor
11.	23.10.2012	National Library of Serbia	Biljana Kosanović, head of department
12.	26.10.2012.	Statistical Office of Serbia	Zoran Jančić, department director
13.	31.10.2012.	Belgrade Banking Academy – Faculty for Banking, Financing and Insurance, University of Union	Zoran Grubišić, vice dean
14.	1.11.2012.	Institute of Economic Sciences, Belgrade	Dejan Erić, director
15.	14.11.2012.	Faculty of Economics, University of Belgrade, Scientific-Research Center of Faculty of Economics	Jelena Kočović, professor