МИНОБРНАУКИ РОССИИ

ОПТИКО-ЭЛЕКТРОННЫЕ ПРИБОРЫ И УСТРОЙСТВА В СИСТЕМАХ РАСПОЗНАВАНИЯ ОБРАЗОВ И ОБРАБОТКИ ИЗОБРАЖЕНИЙ

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BIG DATA ANALYTICS FOR DIGITAL DEMOGRAPHY

In the paper, the possibilities of digital demography and Big Data Analytics in the assessment of demographic processes have been present.

Since the beginning of the 21st century, rapid digitalization has become a serious problem for states. The rapid growth of the population creates new challenges to the processing of large volumes of demographic data that require new digital solutions. As demography has always been a statistical study of data based on human populations, demographers and statistical agencies have recognized the importance of digitizing population data on paper. Digitalization of demographic data allowed the creation of digital national registers such as census and population records, productivity, health, mortality and migration records, and so on. Electronic demographic registry systems have become the most important component of created and developed e-government. If earlier information systems in government agencies were created for the usage within the organization, now these systems provide G2C, G2B, and G2G electronic interaction in both vertical and horizontal directions. All data collected in state registers are the main source for demographic research. We should note that today, social media information is receiving special attention as a new source of data for demographic research. Geolocation data has already shown a great deal of promise for the development of new demographic measures and for the improvement of existing ones. IP geolocation has been successfully used to measure international migrations, while call-record data has been used in the development of socio-spatial measures of segregation or intra-country migrations. The establishment of e-demographic registry systems allows monitoring of demographic indicators in the country and the study of demographic behavior and processes. This also provides the establishment of an effective management system [1, 2, 3].

Separate e-demographic registers of the population in government agencies contain the demographic system of the e-government as a whole, integrating into the e-government portal. In this case, the usage of national identification schemes (eg, personal identification numbers - PIN) to link the data is necessary. Studying entire populations at the individual level opens up new possibilities for the enrichment of demographic data. Digital datasets often individual-level attributes: gender, birth cohort, education, family and social relation-ships, or interests.

Generally, demography is a multidisciplinary field of science that studies the distribution of population, their birth and death, marriage and divorce, education,

age group, national and ethnic composition, migration, its dependence on socio-economic and other factors, and the patterns of population change.

Demographers have used various methods to analyze population data, citing traditional sources (population censuses and population registers) at different periods. Beyond the tabulation of census estimates, regression methods and simple data mining, modern demographic methods are often tasked with establishing causal relation-ships.

But digital demography requires new sources and intelligent computational methods. Big Data Analytics (BDA), which has become a major area of academic research, is a very effective approach to the analysis of a large amount of data collected in various e-demographic registers by time and space on these demographic indicators. Researchers use the BDA to study and eliminate poverty and hunger, improve health, study births and deaths, marriages and divorces, classify, forecast and visualize data on demographics, identify demographic trends, and so on.

In our future research, we plan to develop a machine learning model to classify and forecast big data collected in the e-demographic system by demographic indicator.

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DEMOGRAPHIC RESEARCHES WITH DIGITAL DATA: OPPORTUNITIES AND CHALLENGES

The increasing availability of digital data holds many promises for demographic researches, but brings lots of challenges to it. In this paper are presented