

## Analysis of specialization of economic activity of medium-sized cities of Russia

The study of the spatial distribution of specialization of medium-sized cities of Russia (the number of inhabitants from 50 to 100 thousand people) and the relationship of this distribution with the economic structure of the regions allows us to draw conclusions about the role of these cities for their neighboring small settlements. It is interesting to answer the question of whether these cities are social service centers for the area around them or centers of economic activity where people come to work, or centers of trade and other commercial services.

Many works of Russian scientists have been devoted to the study of the specialization of the city of Russia: Zubarevich N., Mikhailova T., Kolomak E., Pilyasova A., Zamyatina N., Turgel I. and many others. The difference of this study lies in the comprehensive consideration of the distribution of medium-sized cities of various specialties and the subsequent deeper study of the relationships between enterprises in the identified highly specialized cities.

The specialization of cities is determined based on the values of the localization coefficient calculated using the following formula:

$$LQ_{ij} = \frac{s_{ij}^s}{s_i}$$

$s_{ij}^s$  is the share of industry  $i$  in city  $j$ ,

$s_i$  is the share of industry  $i$  in the economy of the region/country

The share of the industry was determined by the indicator of the average number of employees of organizations in 18 enlarged sections of the OKVED classifier

The data were collected for the period from 2017 to 2019 from the Rosstat database "Indicators of municipalities". Localization coefficients were determined for each year, then the arithmetic mean for all three years was calculated from the obtained values.

In total, of the 18 types of economic activity considered in the study, there are only 8 specialized cities (see Figure 1). The data obtained allow us to conclude that medium-sized cities of Russia are more often centers of social and transport infrastructure than sources of attraction for scientific, commercial, financial, cultural and sports innovations. It can be assumed that this is due to the relatively small size of the cities in the sample considered. Most likely, larger cities should be more suitable for the role of such centers. This hypothesis requires verification during further research.

It is interesting to further consider the structure of the economy of cities that have signs of high specialization according to the results obtained. There are cities with which everything is more obvious. For example, Sosnovy Bor, which has a large nuclear power plant on its territory. However, in most cases it is not clear what exactly the enterprises of the city are doing, since the sections of the OKVED for which data are available in the Rosstat database "Indicators of Municipalities" are too enlarged.

For a trial, more detailed study, databases of enterprises of cities with a narrow specialization are considered. 2 cities with the highest localization coefficients in manufacturing industries were taken – Fryazino (LQ = 4.1) and Vyksa (LQ = 3.8). For these cities, information on contracts and ownership schemes of manufacturing enterprises has been collected from the SPARK database. The networks built on the basis of the information received allow us to draw conclusions about the economic ties of the selected cities within themselves and with neighboring territories.

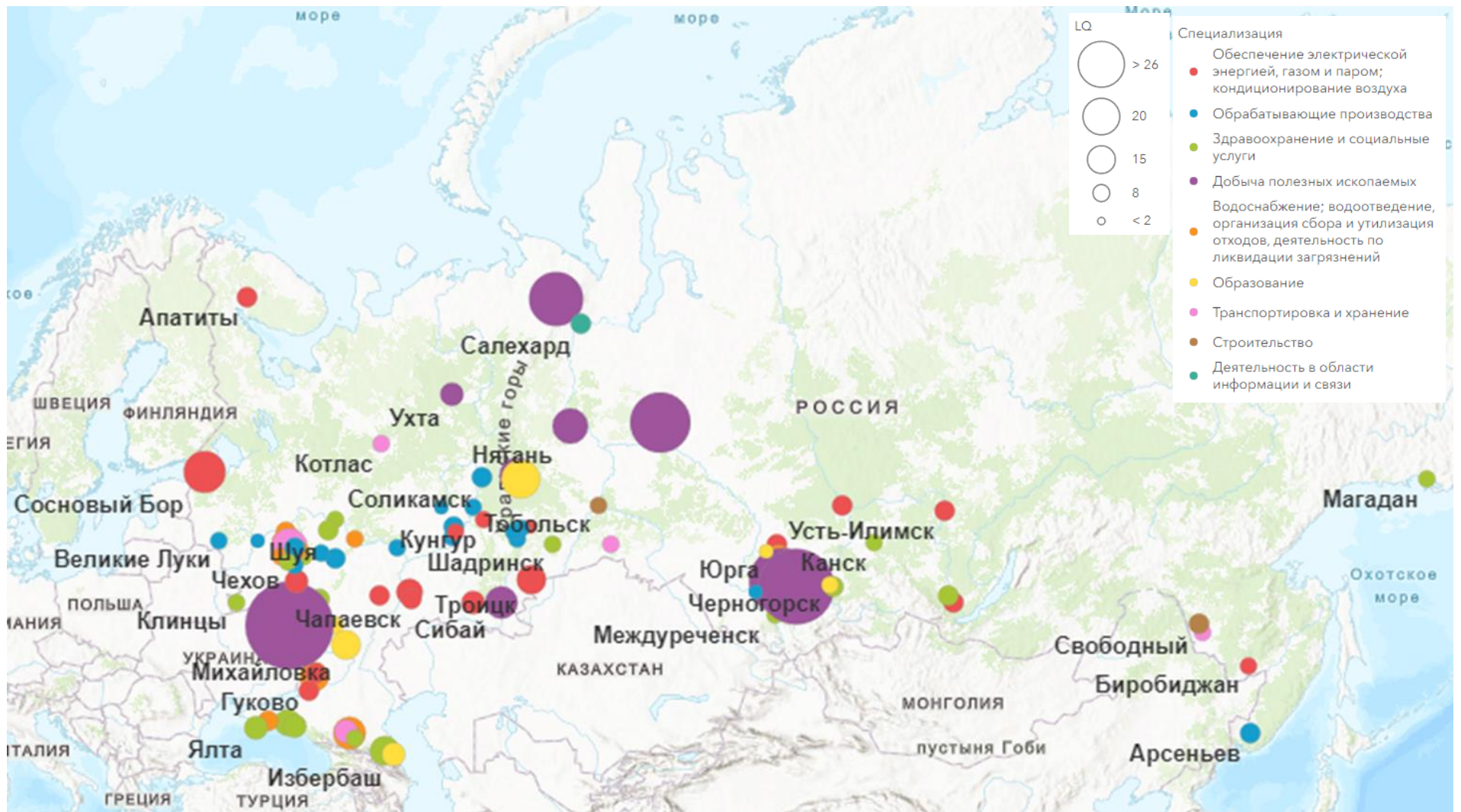


Figure 1 - A map of the location of medium-sized cities in Russia with an indication of their specialization