

Ministry of Education and Science of Ukraine  
**ODESSA NATIONAL ACADEMY OF  
FOOD TECHNOLOGIES**

International Competition of  
Student Scientific Works

**BLACK SEA  
SCIENCE 2021**  
**PROCEEDINGS**



**ODESSA, ONAFT 2021**

Ministry of Education and Science of Ukraine  
Odessa National Academy of Food Technologies

International Competition of Student Scientific Works

# **BLACK SEA SCIENCE 2021**

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## **2. ECONOMICS AND** **ADMINISTRATION**

## COMPETITION OF HIGHER EDUCATION INSTITUTIONS IN REGIONAL MARKETS OF EDUCATIONAL SERVICES IN UKRAINE: IS FAIR COMPETITION?

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**Abstract.** *Ukraine belongs to the top of countries with the largest number of higher education institutions. Although Ukraine has a fairly wide network of higher education institutions, this does not mean that there is only pure competition in the regional markets of educational services. In the work the authors research the competition of higher education institutions in the regional markets of educational services in Ukraine. Cartograms of competition of higher education institutions in 29 fields of knowledge in Ukraine have been constructed. For each field of knowledge, the types of competition of higher education institutions in the regional markets of educational services in Ukraine have been identified, including such as “monopoly”, “oligopoly” and “pure competition”. If there are no higher education institutions in the region that train specialists in a certain field of knowledge, then such a region was referred as a “free niche”. Only pure competition of higher education institutions in Ukraine takes place in the fields of knowledge “Social and Behavioral Sciences” and “Management and Administration”. In other fields of knowledge to some extent there are signs of oligopoly and/or monopoly of higher education institutions in the regional markets of educational services in Ukraine. There is no pure competition of higher education institutions in Ukraine in such fields of knowledge as “Theology” and “Veterinary Medicine”.*

**Keywords:** *competition, higher education institution, regional market of educational services, field of knowledge.*

### I. INTRODUCTION

Higher education in Ukraine is not a “privilege for the elect”, having become an integral part of professional training.

According to the Information and Analytical Report “Education in Ukraine”, the domestic system of higher education institutions currently has 619 institutions [1], of which the “lion's share” (50.89%) falls on universities.

According to the number of universities, Ukraine currently ranks only 17th in the world according to current data from Statista [2], second only to India, USA, China, Indonesia, Brazil, Mexico, Russia, Japan, Iran, France, Germany, Poland, Malaysia, South Korea, Canada and Pakistan. After Ukraine, the top 25 countries in the world with the largest number of universities also include Colombia, the Philippines, Great Britain, Spain, Nigeria, Italy, Turkey, and Tunisia. If we conduct a comparative analysis of the relative number of universities per 100 thousand population, then among these countries, Ukraine moves to 11th place (Table 1).

The data show that Ukraine still holds a high position in the ranking of countries in the world in terms of the availability of higher education institutions.

Table 1. Top 25 countries in the world by number of universities (in absolute and relative terms) in 2019

Countries	Number of universities [2]	Rating place [2]	Population, persons [3]	Number of universities per 100 thousand population *	Rating place**
India	4354	1	1371688751	0,32	20
USA	3228	2	330933934	0,98	4
China	2596	3	1406052200	0,18	23
Indonesia	2304	4	269603400	0,85	8
Brazil	1335	5	212559114	0,63	14
Mexico	1205	6	127792286	0,94	6
Russia	1091	7	146748590	0,74	12
Japan	992	8	125710000	0,79	9
Iran	653	9	84086775	0,78	10
France	608	10	67153000	0,91	7
Germany	455	11	83122889	0,55	16
Poland	398	12	38335000	1,04	3
Malaysia	384	13	32726490	1,17	2
South Korea	375	14	51834302	0,72	13
Canada	367	15	38303100	0,96	5
Pakistan	343	16	220892331	0,16	24
Ukraine	315	17	41670812	0,76	11
Colombia	290	18	50372424	0,58	15
Philippines	277	19	109651470	0,25	21
United Kingdom	276	20	66796807	0,41	18
Spain	260	21	47332614	0,55	16
Nigeria	249	22	206139587	0,12	25
Italy	238	23	59388035	0,40	19
Turkey	211	24	83154997	0,25	21
Tunisia	196	25	11708370	1,67	1

\* calculated by the authors, \*\* defined by the authors.

Ukraine has traditionally been characterized by significant regional differentiation of socio-economic development and education sector is no exception.

## II. LITERATURE ANALYSIS

It is fair to note that the issue of ensuring the competitiveness of domestic higher education institutions and the higher education system of Ukraine is in the focus of many researchers. According to scientists in the context of globalization of the educational space and informatization of society, the higher education institutions must transform their activities in such directions:

– marketing of educational services, image-making and branding of higher education institutions with a focus on contractors (V. Polianko, N. Kanut [4], S. Matiukh [5], K. Kravchenko, E. Khrykov [6], O. Trokhimets, O. Tkachuk [7], M. Barvinok [8], O. Soroka, M. Kryvtsova [9], H. Chekalovska [10], S. Yatsentiuk [11], N. Kholiavko [12], I. Kyrchata, O. Shersheniuk [13]);

– internationalization and activation of academic mobility of participants in the educational process in order to form the international image of higher education institutions (N. Konstantiuk [14], T. Antoniuk [15], M. Terovanesov [16], M. Sandul [17], O. Hrynkevych [18], A. Verbytska [19], D. Plynokos, M. Kovalenko [20], I. Shevchenko [21]);

– improving the quality of educational services through the creation of an innovative educational environment, practice-oriented training, an effective system of quality assurance in higher education (O. Dannikov, I. Basha [22], Ya. Horyn, O. Senyshyn, M. Horyn [23], T. Kuznetsova [24], M. Skyba [25], L. Antoshkina [26], M. Kolodiazna, V. Polova [27], R. Trynko [28], I. Tsarenko [29], S. Breus [30], O. Yakovchuk [31], L. Shtefan [32], H. Zhuravel, M. Shynkaryk [33]).

While fully supporting researchers on the importance of these aspects to ensure the competitiveness of domestic higher education institutions, it should be noted that researchers actually ignore the meso-level of competition of higher education institutions in Ukraine.

### III. OBJECT, SUBJECT, AND METHODS OF RESEARCH

The object of the research is the competition of higher education institutions in Ukraine in the context of intensification of regionalization processes.

The subject of the research is the competition of higher education institutions in the regional markets of educational services in Ukraine.

The research methodology consists of the method of analysis and synthesis, system approach, comparative analysis, generalization method, cartographic method.

### IV. RESULTS

Higher education institutions in Ukraine are distributed by regions as follows (Table 2).

Table 2. Institutions of higher education in the regions of Ukraine in 2019

Regions	Number of higher education institutions *	%**
1	2	3
Vinnitsia region	22	3,55
Volyn region	14	2,26
Dnipro region	55	8,89
Donetsk region	27	4,36
Zhytomyr region	18	2,91
Transcarpathian region	14	2,26
Zaporizhia region	20	3,23
Ivano-Frankivsk region	15	2,42
Kyiv region	18	2,91
Kirovograd region	15	2,42
Luhansk region	12	1,94
Lviv region	42	6,79
Mykolaiv region	16	2,58
Odessa region	35	5,65
Poltava region	18	2,91
Rivne region	12	1,94

1	2	3
Sumy region	14	2,26
Ternopil region	17	2,75
Kharkiv region	60	9,69
Kherson region	21	3,39
Khmelnysky region	18	2,91
Cherkasy region	16	2,58
Chernivtsi region	16	2,58
Chernihiv region	14	2,26
Kyiv City	90	14,54

\* compiled by authors [34], \*\* calculated by the authors.

From the table. 2 we see that the leading regions in the number of higher education institutions are Kyiv City (14.54%), Kharkiv region (9.69%), Dnipro region (8.89%), Lviv region (6.79%), Odessa region (5.65%), Donetsk region (4.36%). In other regions of Ukraine, 1.94-3.55% of higher education institutions are concentrated.

Although Ukraine has a fairly wide network of higher education institutions with centralization in the cities of Kyiv, Kharkiv, Dnipro, Lviv, Odesa and Donetsk, this does not mean that there is only pure competition in the regional markets of educational services and there is no shortage of higher education institutions, carry out training of specialists in certain fields of knowledge in the regions of Ukraine.

The list of fields of knowledge and specialties in which higher education in Ukraine is currently trained is enshrined in the provisions of the Resolution of the Cabinet of Ministers of Ukraine of April 29, 2015 № 266 and provides for 29 fields of knowledge: 01 “Education/Pedagogy”, 02 “Culture and Art”, 03 “Humanities”, 04 “Theology”, 05 “Social and Behavioral Sciences”, 06 “Journalism”, 07 “Management and Administration”, 08 “Law”, 09 “Biology”, 10 “Natural Sciences”, 11 “Mathematics and Statistics”, 12 “Information Technology”, 13 “Mechanical Engineering”, 14 “Electrical Engineering”, 15 “Automation and Instrumentation”, 16 “Chemical and Bioengineering”, 17 “Electronics and Telecommunications”, 18 “Production and Technologies”, 19 “Architecture and Construction”, 20 “Agricultural Sciences and Food”, 21 “Veterinary Medicine”, 22 “Health Care”, 23 “Social Work”, 24 “Service Sphere”, 25 “Military Sciences, National Security, Security of the State Border”, 26 “Civil Security”, 27 “Transport”, 28 “Public Administration”, 29 “International Relations” [35].

Using search engines osvita.ua [36] and education.ua [37], we present in Table 3 data on the availability and number of higher education institutions in the regions of Ukraine that train specialists in the fields of knowledge.

In Table 3: 1 – Vinnytsia region; 2 – Volyn region; 3 – Dnipro region; 4 – Donetsk region; 5 – Zhytomyr region; 6 – Transcarpathian region; 7 – Zaporizhia region; 8 – Ivano-Frankivsk region; 9 – Kyiv region; 10 – Kirovograd region; 11 – Luhansk region; 12 – Lviv region; 13 – Mykolaiv region; 14 – Odessa region; 15 – Poltava region; 16 – Rivne region; 17 – Sumy region; 18 – Ternopil region; 19 – Kharkiv region; 20 – Kherson region; 21 – Khmelnytsky region; 22 – Cherkasy region; 23 – Chernivtsi region; 24 – Chernihiv region; 25 – Kyiv City; *n/a* – not available in the region.

ECONOMICS AND ADMINISTRATION

Table 3. Availability and number of higher education institutions that train specialists in certain fields of knowledge in the regions of Ukraine [compiled by the authors]

Fields of knowledge	Higher education institutions in the regions of Ukraine																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
01	4	4	8	10	2	4	7	1	3	3	3	6	7	3	4	3	3	3	11	1	6	2	1	2	15
02	3	4	7	4	2	2	6	5	3	5	1	10	6	9	7	4	2	4	9	2	5	4	1	2	32
03	5	2	11	12	2	5	8	4	4	2	2	9	7	10	8	5	3	3	11	2	5	4	1	3	26
04	n/a	1	n/a	n/a	n/a	2	1	3	n/a	n/a	n/a	2	n/a	2	1	2	n/a	n/a	1	n/a	1	n/a	1	n/a	1
05	11	4	21	23	4	6	12	7	9	6	9	22	13	19	9	7	5	7	32	6	9	7	4	7	57
06	3	1	2	4	1	1	5	2	3	1	1	4	3	4	3	3	1	2	3	1	2	2	1	n/a	18
07	13	5	21	24	6	8	12	5	9	8	9	23	12	19	10	7	4	6	30	7	9	7	4	5	62
08	4	4	8	9	3	3	9	4	5	4	3	8	4	12	7	3	4	2	8	5	5	4	3	5	42
09	2	1	6	2	1	2	2	1	1	1	1	2	2	1	1	2	2	2	5	1	2	2	1	2	9
10	5	2	10	8	3	4	5	3	2	2	6	9	3	6	6	3	4	3	10	2	4	4	1	2	15
11	3	2	5	5	1	2	3	1	n/a	1	2	3	3	5	2	2	3	1	6	1	2	3	1	2	8
12	5	3	16	12	4	2	12	5	5	5	6	12	10	16	8	5	3	3	19	3	4	4	2	4	36
13	2	1	10	6	1	3	3	2	n/a	2	4	6	2	4	3	1	1	1	10	2	1	1	n/a	1	9
14	1	1	8	5	1	1	2	1	n/a	1	2	3	2	7	2	1	2	1	11	2	2	1	1	1	11
15	2	1	9	7	2	3	2	1	n/a	1	3	5	2	6	3	1	1	2	10	1	2	2	1	1	11
16	2	1	6	2	2	1	2	1	n/a	1	2	5	1	3	3	1	2	2	8	1	1	1	1	1	8
17	2	1	3	1	2	1	2	1	n/a	1	3	2	1	4	2	n/a	1	1	7	n/a	2	1	1	1	8
18	7	2	8	4	1	3	4	3	1	1	3	9	n/a	6	4	1	2	2	10	2	1	3	2	3	14
19	1	2	6	4	1	3	4	3	1	1	3	3	3	3	2	1	1	2	9	1	2	2	1	2	9
20	2	2	4	n/a	1	2	4	1	1	1	2	4	1	3	1	2	1	2	8	1	2	2	2	3	5
21	n/a	n/a	1	n/a	1	n/a	n/a	n/a	1	n/a	1	1	n/a	2	1	n/a	1	n/a	1	n/a	1	n/a	n/a	n/a	1
22	3	3	6	4	1	1	7	2	n/a	1	4	6	6	3	3	4	2	2	3	1	3	1	2	1	20
23	2	4	4	4	1	2	6	1	1	1	2	3	4	4	3	1	3	3	3	1	4	3	1	5	15
24	3	4	9	6	3	3	9	4	3	2	1	8	6	6	6	3	3	4	13	2	5	5	3	3	21
25	1	n/a	1	n/a	1	n/a	1	n/a	n/a	n/a	n/a	1	n/a	2	n/a	1	n/a	n/a	5	n/a	1	n/a	n/a	1	9
26	n/a	1	4	5	n/a	1	4	n/a	3	n/a	2	3	n/a	1	1	1	n/a	1	7	1	2	2	1	2	3
27	1	1	6	6	1	1	2	1	n/a	2	1	5	3	6	3	1	1	1	10	3	3	1	n/a	1	8
28	2	1	10	6	1	n/a	2	1	1	n/a	2	3	2	4	n/a	n/a	3	1	10	1	1	3	n/a	n/a	14
29	3	2	8	6	n/a	2	6	1	2	2	2	9	4	5	4	3	3	2	12	3	3	1	2	n/a	34

Data from Table 3 indicate the presence of certain “fields of knowledge gaps” in the system of training specialists in higher education institutions in Ukraine. For example, there are regions of Ukraine where it is impossible to receive professional training in certain fields of knowledge – such regions will be identified as a “free niche”. Often in the Table 3 we observe a situation when there is only one institution of higher education in the region, which trains specialists in a certain field of knowledge, which in general can be identified as a “monopoly”. If in the region the training of specialists in a certain field of knowledge is carried out by only 2-3 institutions of higher education, then such a situation can be considered a sign of “oligopoly”. We will consider “pure competition” as a situation when 4 and more higher education institutions are trained the specialists in a certain field of knowledge in the region.

Using the functional datawrapper.de [38], we present in Fig. 1-29 cartograms of competition of higher education institutions in the regional markets of educational services in Ukraine (by fields of knowledge).

In Fig. 1-29:



Fig. 1. Cartogram of competition of HEI in Ukraine in the field of knowledge 01 [developed by the authors]



Fig. 2. Cartogram of competition of HEI in Ukraine in the field of knowledge 02 [developed by the authors]



Fig. 3. Cartogram of competition of HEI in Ukraine in the field of knowledge 03 [developed by the authors]



Fig. 4. Cartogram of competition of HEI in Ukraine in the field of knowledge 04 [developed by the authors]



Fig. 5. Cartogram of competition of HEI in Ukraine in the field of knowledge 05 [developed by the authors]

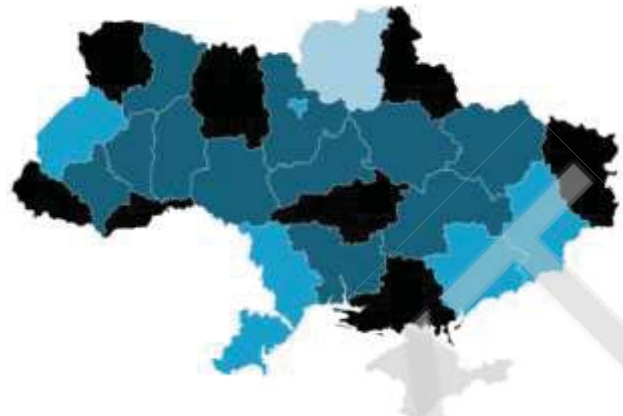


Fig. 6. Cartogram of competition of HEI in Ukraine in the field of knowledge 06 [developed by the authors]



Fig. 7. Cartogram of competition of HEI in Ukraine in the field of knowledge 07 [developed by the authors]



Fig. 8. Cartogram of competition of HEI in Ukraine in the field of knowledge 08 [developed by the authors]



Fig. 9. Cartogram of competition of HEI in Ukraine in the field of knowledge 09 [developed by the authors]



Fig. 10. Cartogram of competition of HEI in Ukraine in the field of knowledge 10 [developed by the authors]

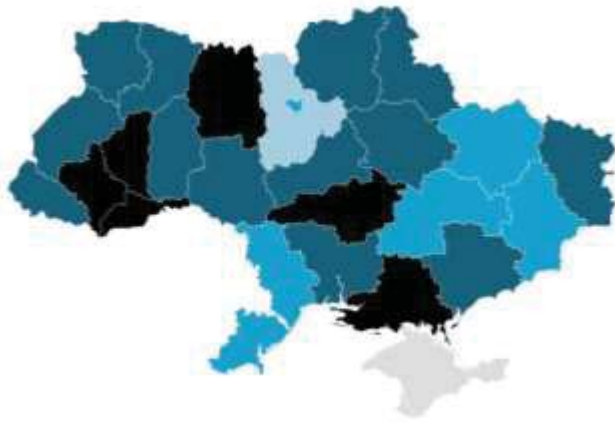


Fig. 11. Cartogram of competition of HEI in Ukraine in the field of knowledge 11 [developed by the authors]



Fig. 12. Cartogram of competition of HEI in Ukraine in the field of knowledge 12 [developed by the authors]

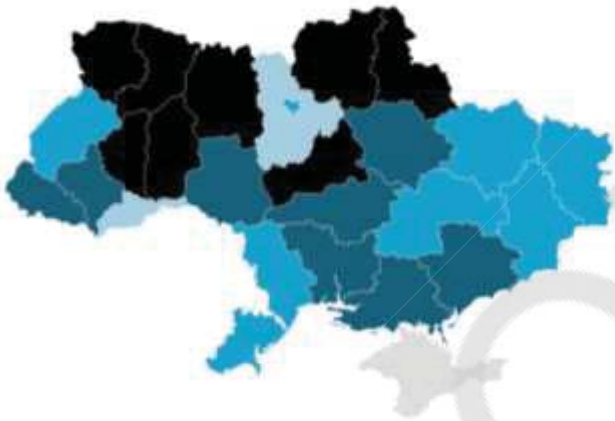


Fig. 13. Cartogram of competition of HEI in Ukraine in the field of knowledge 13 [developed by the authors]



Fig. 14. Cartogram of competition of HEI in Ukraine in the field of knowledge 14 [developed by the authors]



Fig. 15. Cartogram of competition of HEI in Ukraine in the field of knowledge 15 [developed by the authors]

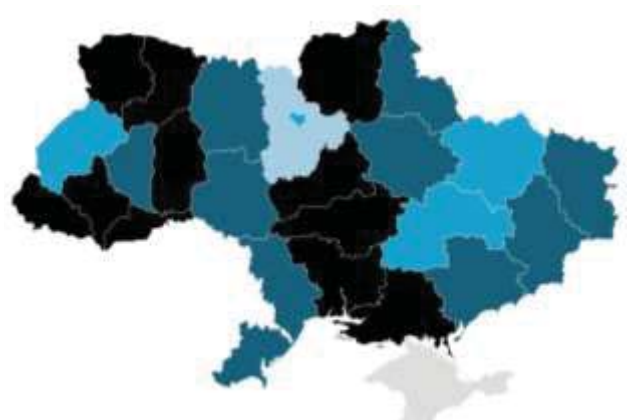


Fig. 16. Cartogram of competition of HEI in Ukraine in the field of knowledge 16 [developed by the authors]

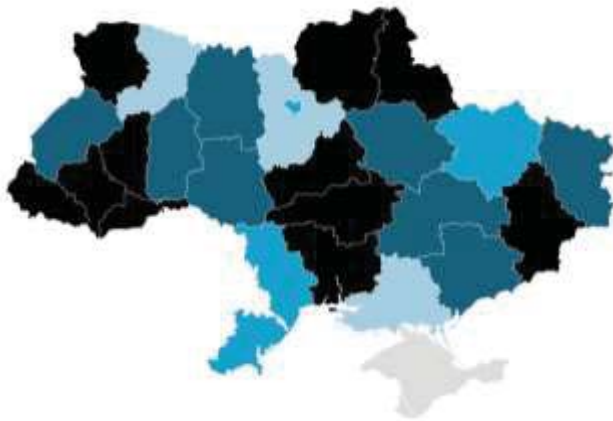


Fig. 17. Cartogram of competition of HEI in Ukraine in the field of knowledge 17  
[developed by the authors]



Fig. 18. Cartogram of competition of HEI in Ukraine in the field of knowledge 18  
[developed by the authors]



Fig. 19. Cartogram of competition of HEI in Ukraine in the field of knowledge 19  
[developed by the authors]



Fig. 20. Cartogram of competition of HEI in Ukraine in the field of knowledge 20  
[developed by the authors]

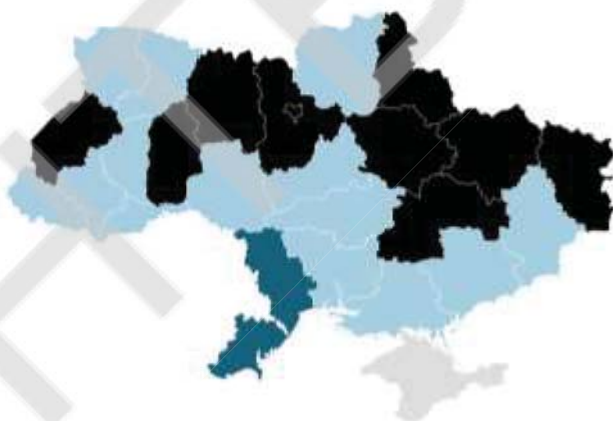


Fig. 21. Cartogram of competition of HEI in Ukraine in the field of knowledge 21  
[developed by the authors]

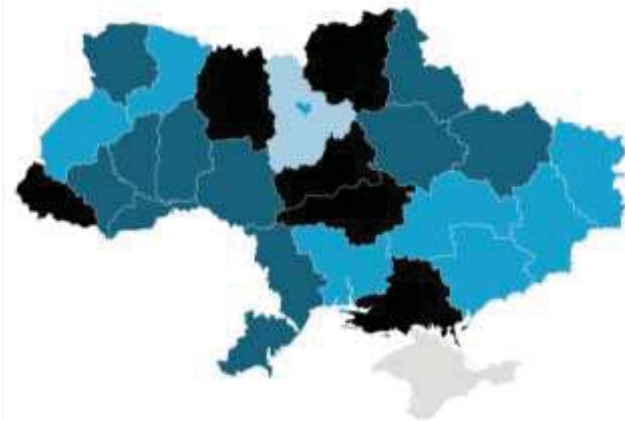


Fig. 22. Cartogram of competition of HEI in Ukraine in the field of knowledge 22  
[developed by the authors]



Fig. 23. Cartogram of competition of HEI in Ukraine in the field of knowledge 23  
[developed by the authors]



Fig. 24. Cartogram of competition of HEI in Ukraine in the field of knowledge 24  
[developed by the authors]

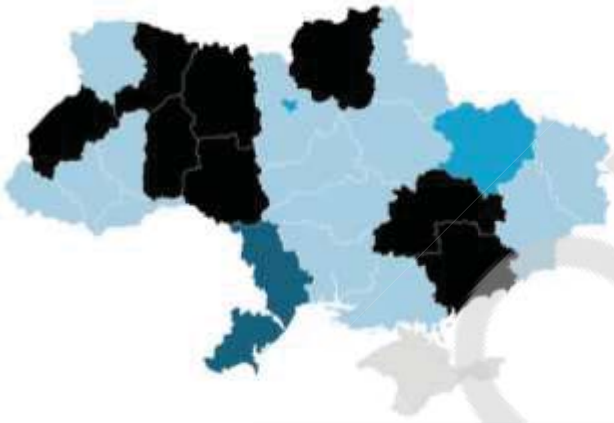


Fig. 25. Cartogram of competition of HEI in Ukraine in the field of knowledge 25  
[developed by the authors]

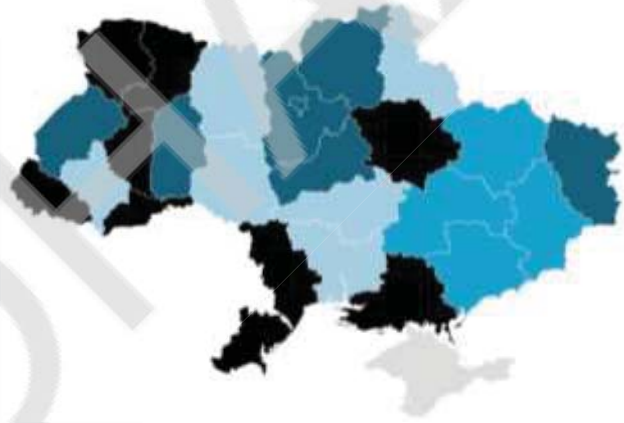


Fig. 26. Cartogram of competition of HEI in Ukraine in the field of knowledge 26  
[developed by the authors]



Fig. 27. Cartogram of competition of HEI in Ukraine in the field of knowledge 27  
[developed by the authors]

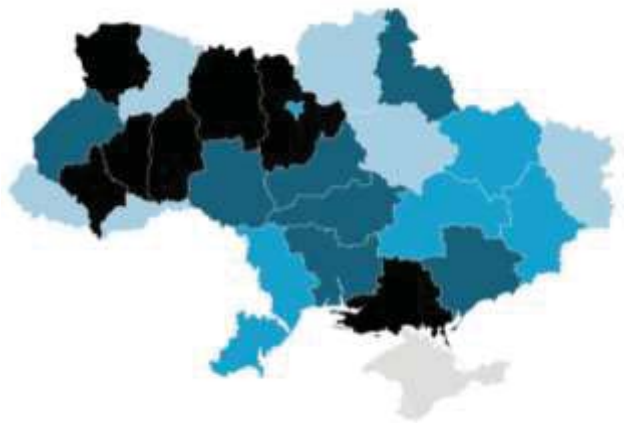


Fig. 28. Cartogram of competition of HEI in Ukraine in the field of knowledge 28  
[developed by the authors]



Fig. 29. Cartogram of competition of HEI in Ukraine in the field of knowledge 29 [developed by the authors]

The obtained data indicate that pure competition of higher education institutions in the regional markets of educational services in Ukraine takes place only in the fields of knowledge 05 “Social and Behavioral Sciences” and 07 “Management and Administration”. In other fields of knowledge to some extent there are signs of oligopoly and/or monopoly of higher education institutions in the regional markets of educational services in Ukraine. There is no pure competition of higher education institutions in the regional markets of educational services in Ukraine in such fields of knowledge as 04 “Theology” and 21 “Veterinary Medicine”.

## V. CONCLUSIONS

Therefore, higher education institutions in different regions and in different fields of knowledge have completely different conditions of competition, which needs to be regulated.

The Law of Ukraine “On Higher Education” (Article 4) stipulates that “citizens of Ukraine are free to choose a higher education institution, a form of higher education and a specialty” [39]. But what choice can we talk about if there are no necessary higher education institutions in the region or there is only one?

At the same time, the restriction of citizens' choice of higher education institution contradicts Article 1 of the Law of Ukraine “On Protection of Economic Competition” [40], which states economic competition as “competition between economic entities to gain advantages over other entities, as a result of which consumers and entities have the opportunity to choose between several sellers, buyers, and a single entity can not determine the conditions of turnover in the market”.

Identified violations of the laws of economic competition in the regional markets of educational services in Ukraine need to be eliminated, which is the prospect of further research by the authors.

## VI. REFERENCES

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