

CHAPTER 2. AVIATION SPHERE OF UKRAINE IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT

DEVELOPMENT AND CONDITION OF AIR TRANSPORT IN THE TRANSPORT SECTOR OF UKRAINE

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Abstract. The article is devoted to identifying the features of the state and development of air transport in the transport sector of Ukraine. According to the results, the share of air transport in the structure of passenger traffic by major modes of transport has increased almost five times, and only in 2019 – three times. With the current reduction in the number of trips by road, water and rail transport, there is a rapid increase in the number of trips by air transport per capita. It is established that due to the large distances of transportation, air transport occupies a significant share in the structure of passenger transportation in Ukraine by different modes of transport. During 2016–2019 there was an increase in the growth rate of all volume indicators of domestic airlines, in particular, passenger turnover – almost twice, 67% more passengers were transported. Due to the growth of the number of flights in the airspace of Ukraine, the volume indicators increased and the financial results of «UKSATSE» (Ukrainian State Air Traffic Service Enterprise) and domestic airports for the period 2016–2019 improved. Domestic airline passenger traffic decreased by 65% in 2020 due to measures against the spread of the COVID-19 pandemic.

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The study showed that the development of air transport contributes to the goal of sustainable development of Ukraine. In particular, it was found that thanks to the development of air transport, air travel will be available to every third citizen of Ukraine in 2019, although in 2000 only every fiftieth citizen could use such a service.

Keywords: transport sector, air transport, airline, airport, volume indicator transportation.

Introduction. In the conditions of intensive development of international cooperation and integration processes with the participation of Ukraine, the importance of transport, which is one of the most important branches of social production, increases. The transport industry of Ukraine is formed as a unified transport system, including rail, sea, river, air, road and pipeline modes of transport. Air transport is the youngest of them, but with the intensification of social life, the spread and deepening of international integration processes, structural changes in the economy, its role in international, intercontinental transportation of passengers, goods and mail is increasing.

Among the published scientific works there is an analytical article by Stasiuk O. Chmyreva L. and Fedya N. [14], which is devoted to the analysis of the development of freight and passenger traffic in Ukraine as of 2018. But this study did not examine the relationship between the development of the transport sector and the state of Ukraine's economy. Analysis of the state and structure of the air transportation market of Ukraine was covered in detail in the works of Kulaeva Y.F., Shchelkunova V.I., Oleshko T.I., Heiets I.O., Ovsak O.P., Vysotskaya M.P., Liskovykh N.Y., Kyrlylenko O.M., Novak V.O. and others [7–11]. Assessment of the development of air transport, its place among other types of transport in ensuring the satisfaction of public needs makes it possible to determine its impact on the development of the economy of Ukraine.

The purpose of this work is to determine the state of development of the transport sector of Ukraine, the state of air transport and identify its impact on the economy of the country, as well as assess the development of air transport market in Ukraine.

1. The development of the transport sector of Ukraine and the importance of air transport

The analysis of statistical reports provided in open sources showed that the volume of cargo transportation by air is insignificant – about 100 thousand tons, which has not changed for the period from 2000 to 2019. The results of the structural analysis of the volume of cargo transportation by transport enterprises of Ukraine and its distribution between modes of transport are systematically presented in Table 1.

Table 1

Dynamics of freight transportation by modes of transport

Volumes of transportation, million tons	2000	2005	2010	2013	2014	2015	2016	2017	2018	2019
Total number of transport	1529	1805	1765	1837	1623	1474	1543	1582	1643	1577
Railway transport	357	450	433	444	386	350	343	339	322	313
Marine transport	6,3	8	4	3	3	3	3	2	2	2
River transport	8,3	13	7	3	3	3	4	4	4	4
Automobile transport	939	1121	1168	1261	1131	1021	1086	1122	1206	1147
Air transport	0	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1
Pipeline	218	213	153	126	100	97	107	115	109	97,5

Source: compiled by the author based on the analysis [15; 16]

The analysis of Table 1 showed that the contribution of air transport in cargo transportation by airlines of Ukraine is insignificant, about 0.01%, which is about 100 thousand tons in absolute terms. Taking into account the cost of air delivery, volume parameters and other features of air transport, airplanes are not designed for transportation of such cargo, which is convenient and economically profitable to transport by such modes of transport as railway, automobile and pipeline. For completeness of the picture by means of systematization of statistical data (Table 2), analysis of distribution of cargo turnover (performed ton-kilometers) by various modes of transport was carried out.

Collective monograph

According to the analysis of the data shown in Table 2, air transport accounts for 0.1% of cargo turnover, which is a steady trend over the period under study. We can conclude that long distances but low weight of cargo leave the last step for air transport.

Table 2

Distribution of cargo turnover by various modes of transport, %

Type of transport	2000	2005	2010	2013	2014	2015	2016	2017	2018	2019
Transport, %	100	100	100	100	100	100	100	100	100	100
Railway transport	43,8	47,3	52,1	56,2	59,4	58,3	54,5	52,7	51,6	51,2
Marine transport	2,2	2	1,2	0,8	1,2	1,1	0,7	0,8	0,5	0,5
River transport	1,5	1,3	0,9	0,3	0,4	0,5	0,4	0,4	0,4	0,5
Automobile transport	4,9	7,5	12,9	14,7	15,8	15,9	16,9	17,1	19,9	18,3
Air transport	0	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1
Pipeline	47,6	41,8	32,8	27,9	23,1	24,1	27,4	28,9	27,5	29,4

Source: compiled by the author based on the analysis [15; 16]

However, in terms of average range of one ton of cargo, air transport steadily takes the lead, as shown in Figure 1.

Thus, the average transportation distance per ton of cargo in international traffic is practically the same as in domestic traffic in dynamics, which illustrates the specialization of air transport for long-distance transportation of expensive, specialized, as well as cargo requiring special conditions. According to the research data, it is due to the long-distance transportation that air transport occupies a competitive share in the structure of passenger transportation by various modes of transport. According to 2018 data, air transport accounted for 29.04% of passenger turnover, rail transport for 32.17%, water transport for 0.03%, and road transport for 38.6%. In 2019, the situation improved in favor of air transport, its share in total passenger turnover increased by 32.7%, while the share of road and rail transport in passenger turnover, respectively, decreased by 36.6% and 30.0%. At the same time, the share of water transport increased by 2.79%.

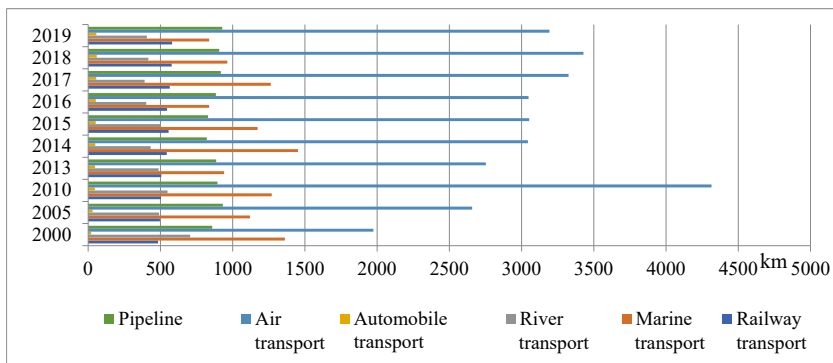


Figure 1. Average distance of one ton of cargo transported by different modes of transport in Ukraine, km

Source: compiled by the author based on the analysis [15; 16]

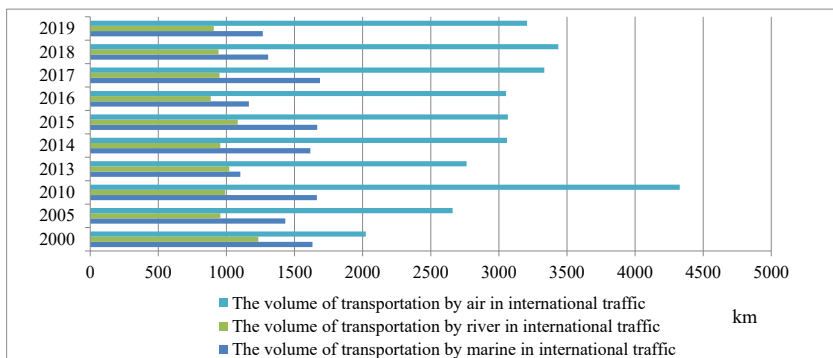


Figure 2. Average distance of one ton of cargo in international traffic by individual modes of transport for 2000–2019

Source: compiled by the author based on the analysis [15; 16]

As shown by the analysis of the structure of passenger turnover of the main modes of transport in the transportation of goods in 2018 and 2019, there is a significant increase in the share of passenger-kilometers performed by domestic airlines. On the basis of systematized statistical data of Ukraine for 2008–2019 a study of the dynamics of passenger turnover of air transport in Ukraine was conducted (Figure 3).

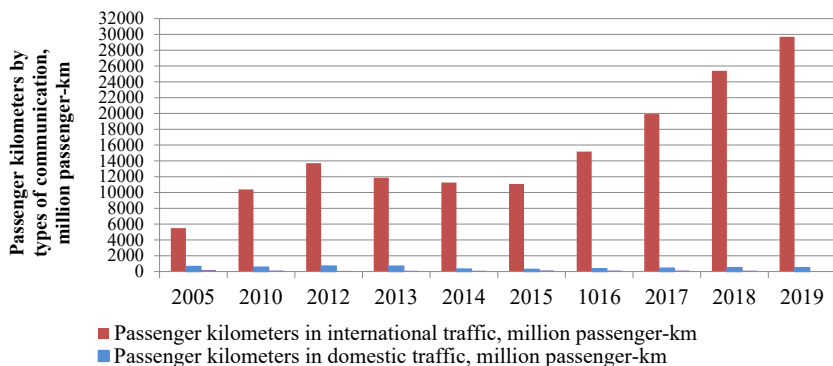


Figure 3. Dynamics of passenger turnover of air transport of Ukraine by modes of communication for the period 2005–2019, passenger-km

Source: compiled by the author based on the analysis [15; 16]

It should be noted that since 2015 domestic air transportation has been developing quite dynamically. As can be seen from the dynamics of passenger turnover shown in Figure 2, the number of passenger-kilometers of international traffic for 2017–2018 grew at a rate of about 30%, and in 2019 – at a growth rate of 25%.

Analysis of the dynamics of changes in passenger turnover in Ukraine by type of service showed that after the decline in 2014, from 2015 to 2016 there was a rapid growth rate of passenger-kilometers, and in the subsequent period the growth rate slowed down, despite the fact that in international traffic in 2019 passenger turnover increased by 16%, and in domestic traffic – only by 1%. As the analysis of dynamics of the number of passengers carried by type of transport, presented in Table 3, for the period under study volume decreased by 2.5 times.

Table 4, due to the systematization of the data in Table 3, presents the structure of passenger traffic in Ukraine «by main modes of transport in significant years: 2008, 2013, 2014 and 2019, the analysis of which allows us to conclude that the share of air transport in passenger traffic compared to 2008, it has increased by 5.3 times, and compared to 2013 (year of increase in the total number of passengers carried) and to 2014 (year of decrease in the total number of passengers carried).

Table 3

**Number of passengers carried by modes of transport
(together in domestic and international traffic), thousand passengers**

	Railway transport	Marine transport	River transport	Automobile transport	Air transport	All modes of transport
2008	445465,7	7361,4	1551,8	4369125,5	6181,0	4829685,4
2009	425974,8	6222,5	1511,6	4014035,2	5131,2	4452875,3
2010	427240,6	6645,6	985,2	3726288,6	6106,5	4167266,5
2011	429784,9	7064,1	962,8	3611829,9	7504,8	4057146,5
2012	429115,3	5921,0	722,7	3450173,1	8106,3	3894038,4
2013	425216,9	6642,0	631,1	3343659,5	8107,2	3784256,7
2014	389305,5	29,4	565,1	2913318,1	6473,3	3309691,4
2015	389794,1	25,5	550,8	2250345,3	6302,7	2647018,4
2016	389057,6	30,3	448,5	2024892,9	8277,9	2422707,2
2017	164941,6	28,6	562,9	2019324,9	10555,6	2195413,6
2018	157962,4	71,9	596,2	1906852,1	12529,0	2078011,6
2019	154811,8	79,4	589,9	1804929,3	13705,8	1974116,2

Source: compiled by the author based on the analysis [15; 16]

Table 4

**The structure of passenger transportation
by the main modes of transport of Ukraine**

Years	The structure of passenger transportation by the main modes of transport of Ukraine			
	Railway transport	Marine and river transport	Automobile transport	Air transport
2008	9,22%	0,18%	90,46%	0,13%
2013	11,24%	0,19%	88,36%	0,21%
2014	11,76%	0,02%	88,02%	0,20%
2019	7,84%	0,03%	91,43%	0,69%

Source: built by the author on the basis of table 3

As the analysis showed, the decrease in the volume of transportation by the main modes of transport of Ukraine is mainly due to the downward trend in the volume of transportation by road transport. Thus, from 2008 to 2019 there was a wave-like gradual decrease in the number of passenger traffic by road transport, for 11 years by 2.25 times (Table 3).

Since 2014, maritime transport has declined sharply (from 0.18% to 0.3%), and since 2016 passenger transport and rail transport began to decline, according to Table 4, its share in the structure decreased by 4% in 2013–2014).

At the same time, over the years of the study the number of passengers transported by air gradually increased. Thus, as presented in Table 4 above, its share in the structure increased almost 5 times in 2008–2019 and 3 times in 2019, although its share in the structure does not exceed 1%.

To assess the contribution of the transport industry of Ukraine to the national production, let us analyze the gross value added created by the enterprises of the industry on the basis of statistical data from public sources. Thus, during the study period there were wave-like changes, starting from 2015 there is a period of rapid growth of gross value added created by transport enterprises, the real value of which grew at a slower rate due to periods of high inflation (2015).

An integral part of the assessment of the contribution of air transport in the economy is a study of the dynamics of foreign economic activity of transport enterprises, which was conducted on the basis of the analysis of the dynamics of export and import of transport services in Ukraine. Figure 4 and Figure 5 show the dynamics of export and import values of transport services of the main types of transport.

According to the results of the analysis of the dynamics of export flows of transport services of Ukraine, it is determined that since 2016 there has been a gradual increase in the total value of exports of transport services of Ukraine mainly due to the contribution of air transport, for 2017 – by 23.7%, for 2018 – by 12%, respectively, for 2019 – by 10%.

According to the analysis of imports of transport services of Ukraine is determined that after a decrease of 20% in 2015, from 2016 to 2019 there is a rapid increase in imports of transport services, again due to the contribution of air transport, export value increased: 4%, for 2017 – by 23.7%, for 2018 – 12%, respectively, for 2019 – 10%.

According to the results of the study, for the key years: 2011 (the highest value of export of transport services), 2016 (the lowest value of export of transport services) and 2019 (the last year for which data is available) there were significant changes in the structure of export of transport services in Ukraine. Thus, at the end of 2019 the share of export of transport services by air is 48% (in 2011 – 30%, in 2016 – 37%).

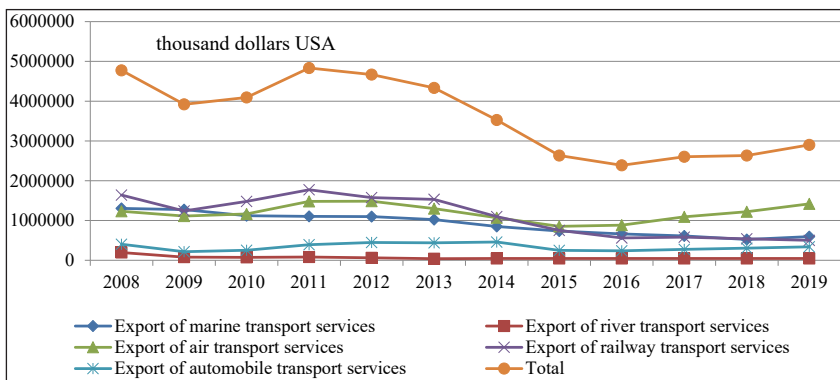


Figure 4. Dynamics of export of transport services of Ukraine for 2008–2019

Source: compiled by the author based on the analysis [1]

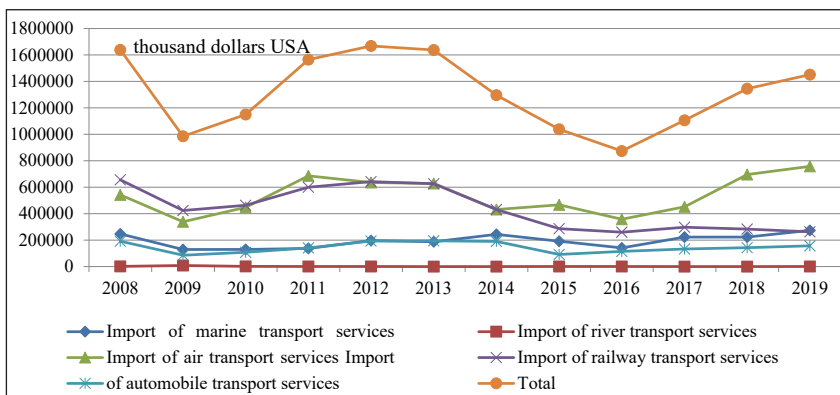


Figure 5. Dynamics of imports of transport services of Ukraine for 2008–2019

Source: compiled by the author based on the analysis [1]

Thus, the analysis of the dynamics and structure of export and import of transport services of Ukraine from 2008 to 2019 showed that it is the growing trade in air transport services that has a positive impact on the overall dynamics of both export and import of transport services, ensuring the growth of foreign trade in transport services of Ukraine.

2. The impact of the development of the air transport industry on the economy of Ukraine

To determine the sources of growth of the contribution of air transport to the economy of Ukraine, at this stage of the study we analyzed the volume indicators of the development of passenger air transportation in Ukraine. Table 5 presents the results of calculating the rates of change in the number of passengers transported by Ukrainian airlines by types of services for the period 2007–2019.

Table 5

Dynamics of annual rates of change in the number of passengers carried by airlines of Ukraine by types of services for the period 2007–2019

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Annual rate of change in transported passengers, %	117	125	83	119	123	108	100	79	97	131	127	118	109
Annual rate of change in the number of passengers carried on international flights, %	119	127	83	124	123	107	101	84	97	131	129	119	110
Annual rate of change in the number of passengers carried on domestic flights, %	112	122	80	97	122	109	94	53	97	129	117	115	107

Source: compiled by the author based on the analysis [12; 15]

As presented in Table 5, there were three waves with increasing dynamics of the number of passengers carried by Ukrainian airlines by type of service during the study period: 2007–2008, 2010–2012, and 2016–2019. Accordingly, periods of decrease in the number of passengers carried by Ukrainian airlines took place in:

- 1) 2008–2009 (international flights), 2008–2010 (domestic flights);
- 2) 2013–2015 (all types of communication).

The first wave of traffic decrease is connected with the consequences of the global financial crisis, and the second – with the termination of air communication with the Russian Federation. The rapid decline in passenger traffic in 2009 compared with the previous year and the same rapid growth of international traffic on domestic airlines in 2010 can be explained by a temporary change in demand for international air travel, despite the fact that in Ukraine in general air transport services are used infrequently, as shown in Figure 6. With a sharp decline in the number of trips by road, water and rail, there has been a rapid increase in the number of trips per capita by air, although 0.3 flights per person per year indicates the availability of air travel for almost every third citizen of Ukraine in 2019, despite the fact that in 2000 only every 50th citizen per year could use such a service.

Meanwhile, the number of passengers using Ukrainian airlines has grown by an average of a quarter annually since 2015, with rapid growth in 2016, slowing in 2017 and 2018. At the end of 2019, the growth rate for domestic airlines slowed to 109%. Gradually, between 2015 and 2019, annual passenger traffic by domestic airlines doubled and was more than one and a half times the 2013 level and more than twice the pre-crisis 2008 level. Thus, the analysis of statistical data on the activities of the aviation industry in 2016–2019 shows its stable development, with a slowdown in the growth of passenger traffic at the end of the study period.

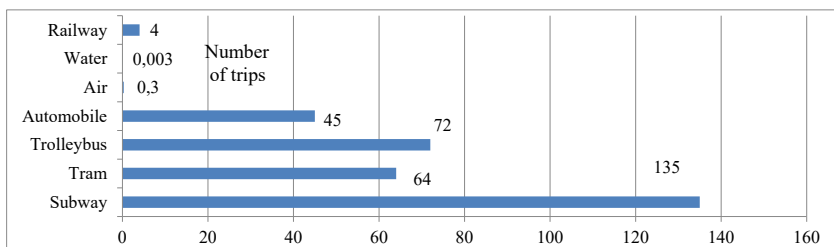


Figure 6. Number of trips per capita of the current population on average per year by mode of passenger transport in 2019

Source: compiled by the author based on analysis [16]

The activity of aviation enterprises providing air navigation services depends on the business activity of airlines. Due to the growing number of flights in the airspace of Ukraine, the volume and financial performance of the State Air Traffic Service Enterprise of Ukraine «UKSATSE» presented in Table 6 – «Flights in the airspace of Ukraine for 2015–2020» in terms of the number of flights of airlines supported by the SEATS «UKSATSE».

Table 6

Flights in the airspace of Ukraine for 2015–2020

Type of flight	2015	2016	2017	2018	2019	2020
Number of flights of foreign airlines through airports of Ukraine	39340	36684	54983	69054	83950	40239
The number of flights of national airlines	66332	79520	97223	106654	109777	49633
The number of transit flights of foreign airlines through Ukrainian airspace	105843	86290	101755	125145	141680	52075

Source: compiled by the author based on analysis [13]

Thus, since 2016 alone there has been an increase in the volume of domestic and foreign airlines that provide air navigation services to SEATS «Ukraerorukh». The growth started in 2016 with an increase in the number of domestic flights in the airspace of Ukraine. The growth rate of all volume indicators for 2017 and 2018 was quite fast – 111%-122%, which slowed down in 2019 – to 113%. As shown in Table 7, there has been a steady growth in the number of flights serviced by «UkSATSE» since 2016. In 2018 the volume grew by 18%, while the number of flights serviced by both domestic airlines (by 9.7%) and foreign airlines increased by 23.9%. It should be taken into account that «UkSATSE» statistics on the number of serviced flights also takes into account transit flights performed by foreign airlines through Ukrainian airspace. In 2019, «UkSATSE» performed 11.5% more flights (335.4 thousand flights compared to 300.9 thousand in 2018), which is 63% of the volume of operations in 2013. One-third of the flights serviced were performed by Ukrainian airlines, the total number of flights serviced increased by 2.9%, while foreign airlines increased by 16.2%. In 2019, the volume of

departures and landings at international airports in Ukraine exceeded the volume of 2013 by 6%.

Among the important characteristics that led to the positive dynamics of the volume indicators of air transport in Ukraine is the fact of the introduction of visa-free regime between Ukraine and the EU. Analysis of statistical data confirmed an obvious gradual increase in the number of people crossing the state border of Ukraine after 2015. And at the end of 2017, after the introduction of visa-free regime between Ukraine and the EU on June 11, 2017, there was a more rapid increase in the number of Ukrainian citizens who used air transport services for international travel. The introduction of visa-free regime was one of the important steps towards liberalization of Ukraine's airspace, the milestone of which is the signing of the Ukraine-EU Common Aviation Area Agreement (CAP Agreement), which provides for the incorporation of 64 EU aviation regulations. It was signed in September 2021. This will allow Ukrainian air carriers to enjoy an expanded list of commercial rights when flying from Ukraine to the EU and between any EU member states (except for domestic air transportation within any EU country) and will provide similar rights to European air carriers [2; 3].

According to the results of 2018, by region, the largest share of scheduled air passenger traffic in the regions is to Europe, followed by Asia-Pacific and the Middle East. In 2018, more than 70% of the total number of passengers transported by air went to Europe, 11.6% of passengers went to the Asia-Pacific region and 7% of passengers went to the Middle East [12]. To determine the impact of air transport on the country's economy, IATA and ICAO consider the jobs and costs created by airlines and their supply chain, trade, tourism and investment flows generated by users of all airlines serving the country and partner cities, that is, creating, providing these flows [5; 6]. Such a systematic approach, in our opinion, makes it possible to highlight different aspects of the impact of air transport on the country's economy.

Thus, according to this approach, airlines, airport operators, airport businesses (restaurants and retailers), aircraft, their manufacturers and air navigation service provide jobs for 24,000 people in Ukraine [4]. In turn, the purchase of goods and services from local suppliers in this sector creates another 31,000 jobs.

In addition, IATA experts estimate that the air transport sector supports 52,000 jobs through wages spent on consumer goods and services, among

other things. Foreign tourists arrive in Ukraine through the air border, spending their money in the local economy, which is estimated to support another 38,000 jobs. A total of 146,000 jobs are supported by air travel and tourists arriving in Ukraine, according to a 2018 estimate [9]. Overall, IATA estimates that approximately 1.1% of Ukraine's GDP in 2018 was generated by inbound flows of the air transport sector and foreign tourists arriving by air [4; 9]. Given the positive dynamics of air traffic in Ukraine and the continuation of the current trend for 2018 over the next 20 years, that year IATA predicted that (all other things being equal) air traffic in Ukraine would increase by 96%, which would transport almost 9.8 million additional passengers by 2038. If realized, such increased demand could increase GDP by about \$2.7 billion. It would support nearly 210,000 jobs in the country [4].

However, the above predictions cannot yet come true. The pandemic situation in the world related to the outbreak of the acute respiratory disease COVID-19 and the restrictions imposed by states to combat its spread have directly affected the aviation industry of the world, including Ukraine, where in 2020 there is a significant decrease in the production indicators of aviation enterprises compared to the previous year.

3. Development of air transportation market of Ukraine

In the air transportation market of Ukraine for the last four years before the period of COVID-19 there was an increase in the volume of passenger traffic performed by both domestic and foreign airlines. However, by the end of 2019, growth in the passenger and cargo segments slowed down somewhat – a total of 103.3 thousand commercial flights were performed, which is only 3% more than in 2018, as shown in Table 7.

As shown in Table 7, the volume of cargo and mail traffic, as well as the total cargo turnover decreased in 2019 compared to 2018. In general for 2016–2019 there was an increase in the growth rate of all volume indicators of domestic airlines, in particular, passenger turnover – increased almost twice, 67% more passengers were transported, as well as cargo in regular service. However, at the end of their activities in 2020 there was a sharp decline due to the application of measures aimed at preventing the spread of the COVID-19 pandemic, based on the application of restrictions and lockdowns. In general, in 2020 the number of passengers who used the

services of domestic airlines decreased by 65% compared with 2019 and amounted to 4797.5 thousand people. At the same time, the volume of passenger transportation by air in Ukraine returned approximately to the level of 2006–2007, when the specified indicator was 4208.3 thousand people and 4928.6 thousand people, respectively. Table 8 presents information about the change in the performance of Ukrainian airlines in international traffic.

It should be noted that after a decline since 2012, total international passenger traffic by domestic airlines increased by 31.6% in 2016, 28.6% in 2017, while growth slowed to 19.5% and 9.6% in 2018 and 2019, respectively, and declined by 76% in 2020. As shown in Table 8, international freight and mail shipments declined in 2019, and cargo turnover on scheduled flights also declined by 14%. Overall, there is an increase in the growth rate of all volume indicators of domestic airlines over the period 2016–2019, in particular, passenger turnover in international traffic almost doubled, passengers were transported by 67% more, as well as cargo by 38% more in scheduled international traffic.

Thus, since international passenger and cargo traffic by volume provide the lion's share of domestic airlines' passenger traffic, changes in their volumes essentially determine the final performance of Ukrainian airlines. Moreover, more than half of all passenger traffic of domestic airlines are international scheduled flights. In 2018, according to the approved schedule, regular international flights were performed by 10 domestic airlines to 46 countries of the world, in turn, the number of passengers who used their services increased by 16.4%. In 2018, domestic and foreign airlines operated 300,000 flights, 18.5% more than in 2017. Simultaneously with the increase in the number of flights to many destinations, the route network of domestic airlines developed. Thus, during 2018 and 2019 Ukrainian airlines opened 17 new regular routes.

At the same time the activity of foreign airlines in the Ukrainian market has expanded, and 5 new foreign airlines began regular flights to Ukraine. 2018 was also marked by the development of the route network of foreign airlines, which 27 international airlines began to operate. Overall, 38 foreign airlines from 37 countries flew to Ukraine during 2018, their services were used by 37.8% more passengers than in 2017. In terms of the number of passengers transported in 2018, foreign airlines carried half of the total volume of regular passenger traffic between Ukraine and the world.

Table 7

Dynamics of volume indicators of Ukrainian airlines

Volume indicators	Volume indicators by years					The rate of change of volume indicators				
	2016	2017	2018	2019	2020	2017/2016	2018/2017	2019/2018	2020/2019	
Passengers transported	8277,8	10555,6	12533,4	13705,8	4797,5	127,52%	118,74%	109,35%	35,0%	
Including regular flights	5736,0	6768,4	7867,5	8252,4	1788,1	118,00%	116,24%	104,89%	21,6%	
Passenger kilometers performed	15,5	20,3	25,9	30,2	10,1	130,97%	127,59%	116,60%	33,5%	
Including regular flights	10,6	12,6	15,6	17,4	3,1	118,87%	123,81%	111,54%	17,7%	
Cargo and mail transported	74,3	82,8	99,1	92,6	88,3	111,44%	119,69%	93,44%	95,4%	
Including regular flights	14,3	19,2	21,1	19,6	5,7	134,27%	109,90%	92,89%	29,1%	
Ton-kilometers performed (cargo + mail)	226,4	275,3	339,7	295,6	316,2	121,60%	123,39%	87,02%	107,0%	
Including regular flights	45,3	70,5	92,0	93,0	18,4	155,63%	130,50%	101,09%	19,8%	
Commercial flights performed	79,5	93,0	100,2	103,3	45,3	116,98%	107,74%	103,10%	43,9%	
Including regular flights	55,2	63,3	67,0	66,6	20,4	114,67%	105,85%	99,40%	30,6%	

Source: compiled by the author on the basis of systematization [12]

Table 8
Dynamics of volume indicators of Ukrainian airlines in relation to international flights

Volume indicators	Volume indicators by years						The rate of change of volume indicators			
	2016	2017	2018	2019	2020	2020/2019	2017/2016	2018/2017	2019/2018	2020/2019
Passengers transported	7475,3	9614,5	11450,5	12547,2	4287,7		128,62%	119,10%	109,58%	34,2%
Including regular flights	4944,1	5837,5	6796,1	7107,2	1284,6		118,07%	116,42%	104,58%	18,0%
Passenger kilometers performed	15,2	19,9	25,4	29,7	9,8		130,92%	127,64%	116,93%	33,0%
Including regular flights	10,3	12,1	15,1	16,9	2,9		117,48%	124,79%	111,92%	17,1%
Cargo and mail transported	74,1	82,6	98,8	92,0	88,0		111,47%	119,61%	93,1%	95,7%
Including regular flights	14,1	18,9	20,8	19,4	5,6		134,04%	110,05%	93,27%	28,9%
Ton-kilometers performed (cargo + mail)	226,2	275,2	339,6	295,2	316,1		121,66%	123,40%	86,93%	107,1%
Including regular flights	45,2	70,4	91,9	92,9	18,4		155,75%	130,54%	101,09%	19,8%
Commercial flights performed	67,9	78,1	84,0	86,7	35,3		115,02%	107,55%	103,21%	40,7%
Including regular flights	44,6	49,9	52,3	51,6	11,8		111,88%	104,81%	98,66%	22,8%

Source: compiled by the author on the basis of systematization [12]

Below is a summary of the results of domestic airlines with the definition of the share of traffic by the largest of them in the years from 2016 to 2020. Thus, in 2016, six airlines: «Ukraine International Airlines», «Azur Air Ukraine», «Wind Rose», «Atlasjet», «Bravo», «YanAir» transported 7863.15 thousand people or 95% of the total volume of passengers, transported by all national airlines. In 2017, five airlines: «Ukraine International Airlines», «Azur Air Ukraine», «Wind Rose», «Atlasjet», «Bravo» carried 9817.1 thousand people or 93% of the total volume of passengers carried by Ukrainian airlines, including 85% (out of 3777.0 thousand passes) of passengers of non-scheduled flights. In 2018, five airlines: «Ukraine International Airlines», «Azur Air Ukraine», «Wind Rose», «Bravo», «YanAir», transported 11,620.6 thousand people, which is 93% of the total number of passengers, carried by Ukrainian airlines, including 84% of passengers (out of 5440 thousand passengers) non-scheduled flights. According to the results of 2019, five airlines: «Ukraine International Airlines», «SkyUp», «Wind Rose», «Azur Air Ukraine», «Bukovina» transported 11,620.6 thousand people, which is 93% of the total number of passengers, carried by Ukrainian airlines, including 84% of passengers (out of 5440 thousand passengers) non-scheduled flights. In 2020, the largest volumes were performed by «Ukraine International Airlines», «SkyUp», «AzurAir Ukraine» and «Wind Rose», which accounted for almost 98% of the total passenger traffic of Ukrainian airlines.

Table 9 presents the results of systematization of reporting of «UkSATSE» on the provision of air navigation services in the airspace of Ukraine and their ranking according to the number of flights.

During the period from 2018 to 2019, the absolute leader in passenger traffic was the airline «Ukraine International Airlines», despite the fact that then the second place was occupied by the Turkish airline «Turk HavaYollari A.O.». According to the results of 2019, «Belavia» lost its third place in the low-cost airline «Wizz Air Hungary», which doubled the number of flights over the period, ahead of LOT. According to the results of 2018, the domestic airline «Wind rose» lost its fifth place to the Polish carrier «LOT». The sixth place was taken by the domestic airline «SkyUp Airlines». Only the seventh place was taken by the airline «Wind rose» in 2019. Irish low-cost carrier «Ryanair» took eighth place. According to

Table 9
Top 10 airlines by the number of flights in the airspace of Ukraine for 2018–2020

Nº	Top 10 airlines 2018	Number of flights 2018	Top 10 airlines 2019	Number of flights 2019	Top 10 airlines 2020	Number of flights 2020
1.	Ukraine International Airlines	61 691	Ukraine International Airlines	58 772	Turk Hava Yollari A.O.	14 623
2.	Turk Hava Yollari A.O.	29 972	Turk Hava Yollari A.O.	33 716	Ukraine International Airlines	14 406
3.	Belavia	16 003	Wizz Air Hungary	20 944	Belavia	10 644
4.	LOT Polish Airlines	15 813	Belavia	18 629	Wizz Air Hungary	9 151
5.	Wizz Air Hungary LLC	15 251	LOT Polish Airlines	16 449	Wind rose Aviation Company	8 511
6.	Wind rose Aviation Company	9 301	SkyUp Airlines LLC	10 632	SkyUp Airlines	8 434
7.	Pegasus Hava Tasimaciligi A.S.	7 664	Wind rose Aviation Company	10 185	LOT Polish Airlines	6 260
8.	Air Moldova	7 224	Ryanair	9 295	Ryanair	5 965
9.	Azur Air Ukraine Airlines	4 859	Azur Air Ukraine Airlines	7 229	Azur Air Ukraine Airlines	4 663
10.	Qatar Airways CO	4 673	Qatar Airways CO	5 893	Pegasus Hava Tasimaciligi A.S.	3 446

Source: compiled by the author on the basis of systematization [13]

the results of 2019, «Air Moldova» dropped out of the ranking of the top 10 airlines in the Ukrainian air market.

The domestic airline «Azur Air Ukraine Airlines» remained in its 9th place, but almost doubled the number of flights. «Qatar Airways C.O.» retained the tenth place in the ranking of «Top 10 airlines by the number of flights in the airspace of Ukraine» in 2019.

According to the results of its activities in 2020, for the first time in many years, «Ukraine International Airlines» took the second place in this ranking, taking the place of Turkish carrier «Turk HavaYollari A.O.». «Belavia» retained its third place and «SkyUp Airlines» took the sixth. «Wind rose» regained fifth place «Wizz Air Hungary» took fourth place for the first time. Polish airline «LOT» lost fifth place and took the seventh. «Ryanair» and «Azur Air Ukraine» kept their place in the rating. The last place in the ranking was taken by the Turkish low-cost carrier «PegasusHavaTasimaciligi A.S.».

Table 10 presents a comparative estimate of the number of flights of the leading four domestic airlines («Ukraine International Airlines», «Wind Rose», «SkyUp airlines», «Azur Air Ukraine»), their total market share, the number of flights of all domestic airlines, their market share, and also the number of foreign airlines in the air transportation market of Ukraine.

Analysis of the data presented in Table 10 showed that between 2016 and 2020 there was a steady decline in the growth rate of flights of domestic airlines (from 119% to 103%), while the growth rate of flights of leading Ukrainian airlines was higher. At the same time, the growth rate of the number of direct flights of foreign airlines is much higher than that of domestic airlines. There has been a decline in the share of domestic airlines, from 64% in 2016 to 57% in 2019, and among the top ten airlines, the share of the top four domestic airlines has gradually declined from 47% in 2016 to 41.7% in 2019. For comparison, in 2017 the share of Ukraine International Airlines was 72%.

Table 11 systematizes reporting on regular passenger transportation by Ukrainian airlines, as well as by foreign airlines operating flights to Ukraine in accordance with intergovernmental agreements concluded between the countries.

According to the analysis of the systematized data presented in Table 11, from 2016 to 2019, 10 domestic airlines operated international

Table 10
The dynamics of the presence of airlines in the Ukrainian market

Indicators	2016	2017	2018	2019	Rate of change, 2017/2016	Rate of change, 2018/2017	Rate of change, 2019/2018
The number of flights by four leading domestic airlines	56737	69 974	78 262	86 817	123%	112%	111%
Total number of domestic airline flights	81862	97252	106654	109777	119%	110%	103%
The number of direct flights by foreign airlines	132362	156717	194199	225630	118%	123%	116%
The share of flights of the four leading domestic airlines in the total number of flights of the ten leading airlines in the Ukrainian market	46,78%	46,40%	43,41%	41,63%	99%	93%	95%
Share of flights of Ukrainian airlines in the total number of direct flights operated by «UKSAITSE»	63,99%	64,99%	60,70%	56,67%	102%	93%	93%

Source: compiled by the author on the basis of systematization [12]

scheduled passenger services to 43 countries in 2016 and 46 countries in 2019, according to the approved schedule. The average percentage of flight occupancy increased from 78% to 80%. The route network of domestic air carriers continued to grow, with only 4 new routes introduced on a regular basis in 2016, compared with 10 routes in 2017 and 17 new international airlines in 2018 and 2019. At the same time, the share of scheduled passenger traffic decreased from almost 70% in 2016 to 60% in 2019. The share of international scheduled traffic in the total volume of passenger traffic of domestic airlines is gradually decreasing – from almost 60% in 2016 to 50% in 2019.

The share of scheduled passenger traffic also gradually decreased during the period: from 69.4% in 2016 to 64.5% in 2019. In turn, the share of international scheduled flights in the total passenger traffic of domestic airlines gradually decreased, from almost 60% in 2016 to 52% in 2019. At the same time, the market saw the expansion of foreign airlines between 2016 and 2019. In 2019, 37.4% more passengers used their services than in the previous year. In 2016, two foreign airlines entered the Ukrainian market – «SprintAir» from Poland and «Air Serbia» from Serbia, in 2017 – «Qatar Airways» from Qatar, «Ernest SpA» from Italy and «Kish Air» from Iran. A total of 40 foreign airlines operated regular passenger flights to Ukraine in 2019, including 4 new ones – Austrian «Laudamotion», French «AigleAzur», Israeli «Israir Airlines» and «Scandinavian Airlines» from 37 countries. Foreign air carriers opened 29 new routes during the year, including 21 new «Ryanair» and «Wizz Air» routes, as shown in Table 12.

The number of international airlines started on a regular basis has increased: from 2 routes in 2016, 10 in 2017, 27 and 29 routes in 2018 and 2019, respectively. At the end of 2019, of the 29 new routes of foreign airlines, 21 routes were opened by budget airlines «Ryanair» and «Wizz Air». Accordingly, the share of foreign airlines in the total volume of regular passenger traffic between Ukraine and the world increased: from 43.8% in 2016 to 57% in 2019. It was from 2016 that the number of flights of foreign low-cost airlines to Ukraine began to grow, as noted by domestic researchers in their research [8; 11].

As of 2019, commercial flights by domestic and foreign airlines were served by 19 domestic airports and airfields. Analysis of the data in Tables 11 and 12 showed that Ukraine's airports saw rapid volume growth in

Table 11
Scheduled passenger transportation by airlines of Ukraine and foreign airlines in accordance with intergovernmental agreements on air communication concluded between the countries

Indicators	2016	2017	2018	2019
Share of scheduled passenger flights in the total number of flights of Ukrainian airlines, %	69,28%	64,11%	62,7%	60,2%
Average passenger load factor of Ukrainian airlines	78,2%	77,5%	78,8%	80,9%
Number of Ukrainian airlines operating international scheduled flights / Number of foreign airlines operating international scheduled flights	10/28	10/29	10/38	10/40
Share of international scheduled flights in the total volume of passenger flights operated by domestic airlines	59,72%	55,3%	54,22%	51,9%
Number of countries of the world connected by Ukrainian regular flights / Number of countries from which there were regular flights of foreign airlines	42/27	43/27	46/37	46/37
Number of international air routes opened by Ukrainian airlines on a regular basis / Number of international air routes to Ukraine opened by foreign airlines on a regular basis in the reporting year	4/3	10/10	17/27	17/29
Share of foreign airlines in the total volume of scheduled passenger traffic between Ukraine and the world, %	43,8%	46,1%	50,2%	57,0%

Source: compiled by the author on the basis of systematization [12]

2016–2019, with an 18 to 29 percent increase in 2017, a quarter increase in passenger traffic in 2018, and a slowdown in 2019, with the largest increase in international passenger traffic on scheduled flights.

According to «Ukraerorukh» statistics, since 2016 there is a positive dynamics in the number of takeoffs and landings at domestic airports. At the end of 2019, this figure is 216592 flights, which is 9.3% more than in 2018. «UkSATSE» provided the largest number of takeoffs and landings made by Ukrainian and foreign airlines at the following airports in Ukraine: «Boryspil» – annual growth of 14%, «Kyiv» – annual decrease of 11.8%, «Lviv» – annual growth of 24.2%, «Odessa» – annual growth of 8%, «Kharkiv» – annual growth of 25.8%, «Dnipro» – annual growth of 16.4%, «Zaporizhzhia» – a decrease of 7.5% for the year, «Poltava» – 30.3%, «Kherson» – a decrease of year by 12.7%, «Ivano-Frankivsk» – 8.6%, «Kropyvnytskyi» – annual growth by 10%, «Chernivtsi» – decrease by 2.4% per year, «Vinnytsia» – decrease by 32.7% per year, «Kryvyi Rih» – annual growth by 40%, «Uzhhorod» – annual growth by 42% [12].

Table 13 systematizes the dynamics of the number of aircraft takeoffs and landings at domestic airports, systematized as they decrease by annual data.

According to the statistics presented in Table 13, from 2016 to 2019 there is a positive trend in the number of services for their takeoffs and landings. “Boryspil” airport provided the largest number of flights by foreign and domestic airlines, exceeding the mark of 1,100,000 flights, with a growth rate of 127% over the past three years. In second place is “Kiev” airport, which provided 33,808 flights, with an annual growth rate of 124%. According to the results of 2019 the third place is taken by the airport «Lviv», which almost exceeded the mark of 20 thousand flights, ahead of the airport «Odessa», despite the fact that in 2018 they were almost at the same level (more than 15 thousand flights). During the study period, the growth rate of the number of take-offs and landings at the airport «Lviv» was 160%, while for the airport «Odessa» the increase was 30%.

According to the statistics presented in Table 13, from 2016 to 2019 there is a positive trend in the number of services for their takeoffs and landings. «Boryspil» airport provided the largest number of flights by foreign and domestic airlines, exceeding the mark of 1,100,000 flights, with a growth rate of 127% over the past three years. In second place is «Kyiv» airport,

Table 13
Dynamics of volume indicators of activity of the airports of Ukraine

Volume indicators	Volume indicators by years					The rate of change of volume indicators			
	2016	2017	2018	2019	2020	2017/2016	2018/2017	2019/2018	2020/2019
Number of departing and arriving airplanes	133,2	159,9	182,8	201,2	94,0	120,05%	114,32%	110,07%	46,7%
Including regular flights	101,5	121,4	140,3	153,6	58,6	119,61%	115,57%	109,48%	38,2%
Passenger traffic	12929,9	16498,9	20545,4	24334,5	8664,5	127,60%	124,53%	118,44%	35,6%
Including regular flights	10376,2	12646,1	15811,1	18833,0	5643,5	121,88%	125,03%	119,11%	30,0%
Mail and cargo flows	42,9	52,3	56,4	60,2	52,2	121,91%	107,84%	106,74%	86,7%
Including regular flights	37,9	47,3	51,3	54,1	40,8	124,80%	108,46%	105,46%	75,4%

Source: compiled by the author based on content analysis [12]

Table 14
Dynamics of volumetric indicators of the activity of Ukrainian airports to serve international flights

Volume indicators	Indicators of the volume of international flights by year					The rate of change of volume indicators			
	2016	2017	2018	2019	2020	2017/2016	2018/2017	2019/2018	2020/2019
Number of departing and arriving airplanes	104,4	125,6	145,6	162,7	69,0	120,31%	115,92%	111,74%	42,4%
Including regular flights	80,5	95,0	111,5	124,9	41,7	118,01%	117,37%	112,02%	33,4%
Passenger traffic	11294,5	14591,1	18357,5	21994,1	7628,9	129,19%	125,81%	119,81%	34,7%
Including regular flights	8775,6	10770,3	13658,7	16530,2	4627,2	122,73%	126,82%	121,02%	28,0%
Mail and cargo flows	41,8	51,1	55,2	58,4	51,5	122,25%	108,02%	105,80%	88,2%
Including regular flights	36,9	46,0	50,1	53,0	40,4	124,66%	108,91%	105,79%	76,2%

Source: compiled by the author based on content analysis [12]

**The number of takeoffs and landings at Ukrainian airports
in 2017–2019**

Name of the airport	2017	2018	2019	2020	The rate of change 2017–2018	The rate of change 2018–2019	The rate of change 2019–2020
Together all airports of Ukraine, including:	166246	198 227	217 339	94500	119,24	109,64	43,50
Boryspil	87352	97 928	111 667	47524	112,11	114,03	42,56
Kyiv	24071	33 808	29 806	12805	140,45	88,16	42,96
Odessa	14141	15 979	17 265	9282	113,00	108,05	53,76
Lviv	12048	15 566	19 334	9850	129,20	124,21	50,95
Kharkiv	8627	8 978	11 291	7576	104,07	125,76	67,10
Dnipro	6224	5 823	6779	4174	93,56	116,42	61,57
Zaporizhzhia	5756	6 396	5 914	4087	111,12	92,46	69,11
Kherson	1123	3 292	2872	1082	293,14	87,24	37,67
Poltava	1002	3 162	4121	4119	315,57	130,33	99,95
Ivano-Frankivsk	2148	2 106	2288	808	98,04	108,64	35,31
Kryvyi Rih	612	710	994	508	116,01	140,00	51,11

Source: compiled by the author based on content analysis [12]

which provided 33,808 flights, with an annual growth rate of 124%. In 2019, the third place is the airport «Lviv», which almost exceeded the mark of 20 thousand flights, ahead of the airport «Odessa», despite the fact that in 2018 they were almost at the same level (more than 15 thousand flights). During the study period, the growth rate of the number of take-offs and landings at the airport «Lviv» was 160%, while for the airport «Odessa» the increase was 30%.

«Dnipro» and «Zaporizhzhia» airports showed small but stable growth rates for the period 2017–2019, 108% and 102%, respectively. The analysis showed a rapid increase in the number of takeoffs and landings at the airports «Poltava» and «Kherson» in 2017–2019, by 255% and 411% respectively. Thus, at the end of 2018 the rate of change was 300% each, despite the

fact that at the end of 2019 the number of flights provided by «Poltava» airport increased by a quarter, and «Poltava» airport provided 13% fewer flights. There is a steady increase in the number of takeoffs and landings of aircrafts at «Ivano-Frankivsk» airport with a growth rate of 106% for the specified period. For the airport «Vinnitsa» there was a rapid increase in the number of takeoffs and landings of aircrafts in 2017–2018 – by 30%, with the same decrease at the end of 2019. The number of takeoffs and landings at Chernivtsi airport is gradually decreasing, overall for 2017–2019 – by 20%. Airports «Kryvyi Rih» and «Uzhhorod» showed a significant steady increase in the annual number of takeoffs and landings children, with a growth rate of 162% and 200% respectively. «Rivne» airport also gradually increased the number of serviced flights, the growth rate for this period was 137%. The most significant increase in the number of flights is observed for the airport «Kropyvnytskyi». So, the biggest annual growth was 3 times – in 2018, the total growth for the period was 588%. However, according to 2020, passenger traffic through airports in Ukraine decreased by 64.4%, mail and cargo – by 13.3% and amounted to 8664.5 thousand people and 52.2 thousand tons respectively. The decline in volumes at major airports is detailed in Table 15 above.

The growth in the number of flights is an important indicator of an airport's operational activity. At the same time, not all airports accept passenger flights, not all flights are commercial. Therefore, Table 15 systematizes airports according to their passenger traffic in 2017 through 2020. In 2019, passenger traffic at airports increased by 18.5% compared to 2018. The largest increase in passenger traffic occurred at airports: «Mykolaiv» – by 8867%, «Uzhhorod» – by 1112.8%, «Poltava» – by 520%, «Rivne» – by 74%, «Dnipro» – by 45%, «Kharkiv» – by 39%, «Lviv» – by 38%, «Boryspil» – by 21%, «Odessa» – by 17.8%. At «Kyiv», «Zaporizhzhia», «Ivano-Frankivsk» and «Kryvyi Rih» airports, passenger traffic decreased by 7%, 16%, 8% and 3%, respectively. The «Mykolaiv» airport has seen a rapid increase in passenger traffic due to its opening at the end of 2018 after reconstruction.

In general, during the period of 2017–2019, passenger traffic at the airports increased by 47.5%. The largest increase in passenger traffic occurred in the following airports: «Uzhhorod» – 15 times, «Rivne» – 3.25 times and «Lviv» – 2 times, «Chernivtsi» – by 56%, «Kharkiv» – 56%,

Table 16
Passenger traffic at the main airports of Ukraine for 2017–2020

Name of the airport	Number of departing and arriving passengers						
	2017	2018	2019	2020	The rate of change 2017–2018	The rate of change 2018–2019	The rate of change 2019–2020
Boryspil	10554757	12603271	15260281	6684003	119,41	121,08	43,8
Kyiv	1851700	2812300	2617900	706833	151,88	93,09	27
Odessa	1228102	1446521	1694022	697937	117,79	117,11	41,2
Lviv	1080800	1597700	2217789	878244	147,83	138,81	39,6
Kharkiv	806200	962500	1340800	659674	119,39	139,3	49,2
Zaporizhzhia	348438	400326	338888	254505	114,89	84,65	75,1
Dnipro	276954	299250	434000	190092	108,05	145,03	43,8
Ivano-Frankivsk	110600	112607	104600	44246	101,81	92,89	42,3
Kherson	105900	150100	154046	43441	141,74	102,63	28,2
Together all airports of Ukraine	16499823	20548364	24342323	8665867	124,54	118,46	35,6

Source: compiled by the author based on content analysis [12]

«Boryspil» – 44%, «Kyiv» – 41%, «Odessa» – 37%. At the same time for the period 2017-2019 there was a decrease in passenger traffic in airports «Kryvyi Rih» – by 35%, «Vinnitsa» – by 27% and «Ivano-Frankivsk» by 6%.

The leading regional airports of Ukraine: Boryspil, Kiev, Odessa, Lviv, Kharkiv, Zaporizhzhia and Dnipro provide the lion's share of all takeoffs and landings in Ukraine. As the analysis has shown, there are regional airports that are growing significantly, with a growth rate that exceeds that of the leading airports in particular: «Rivne», «Chernivtsi», «Kherson», «Uzhhorod», «Mykolaiv», «Poltava». But, as the analysis showed, such airports need to modernize the airfield complex, build new runways, develop airport infrastructure to accept flights of domestic and foreign airlines and provide passenger service. For example, «Chernivtsi» airport: in 2017, after the completion of the overhaul of the runway, the airport received a permit from the State Aviation Service to ensure the takeoff and landing of category 4C aircraft. The second example is «Poltava» airport, which served 968 passengers in 2017. This is 16 times less than the State Targeted Airport Development Program until 2023, which was approved in its original version in 2016. According to available data, most of the flights performed at «Poltava» airport are training flights, but there is a growing demand for flights to the resorts of Egypt and Turkey, for which it is necessary to implement measures to modernize the airport and airport complexes.

According to analytical calculations, 98% of total passenger and cargo flows are concentrated in 7 leading airports, namely «Boryspil», «Kyiv (Zhuliany)», «Odessa», «Lviv», «Kharkiv», «Dnipro» and «Zaporizhzhia». According to the results of 2019, the passenger traffic of Ukrainian airports was distributed as follows: «Boryspil» – 62.7%, «Kyiv» – 11%, «Lviv» – 9%, «Odessa» – 7%, «Kharkiv» – 6%, «Dnipro» – 2%, «Zaporizhzhia» – 1.39%, «Kherson» – 0.63%, «Ivano-Frankivsk» – 0.43%. Thus, for the period 2017-2019, the share of passenger traffic at «Boryspil» airport decreased by 1.5%, the share of «Lviv» airport increased by 2%, the share of passenger traffic at «Kharkiv» airport increased by 1%, the share of «Zaporizhzhia» decreased by 0.5%, by 0.2 % share of «Ivano-Frankivsk».

According to the results of 2020, the number of passengers served by the main airport of the country «Boryspil» decreased compared to the previous 2019 by 66.2%. Passenger traffic through «Kyiv» airport

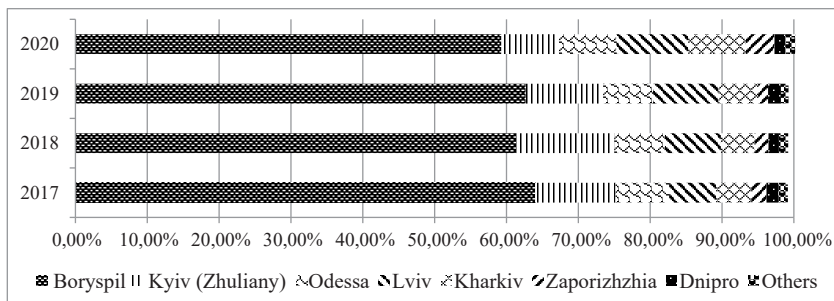


Figure 7. Structure of passenger traffic in Ukrainian airports

Source: compiled by the author based on content analysis [12]

decreased by 73.1%, «Lviv» – by 60.4%, «Odessa» – by 58.8%, «Kharkiv» – by 50.8%, «Zaporizhzhia» – by 24.9%. As shown in Figure 7, during the 2017–2020 study period, more than 98% of all passenger flows were concentrated at 7 major airports – «Boryspil», «Kyiv», «Odessa», «Lviv», «Kharkiv», «Dnipro» and «Zaporizhzhia».

Figure 7 shows that the structure of passenger traffic in the airports of Ukraine in the dynamics for 2017–2020 has slightly changed in the direction of increasing the share of such regional airports as «Kyiv» and «Lviv». Thus, the gradual liberalization of the air transport market of Ukraine and the growing presence of foreign airlines contributed to the development of domestic regional airports.

Conclusions. For Ukraine, the importance of aviation and the transport that ensures its functioning can hardly be overestimated, since the geopolitical position of our country, in particular its location between Western Europe, Asia and the Middle East, allows us to provide transit corridors for passenger and freight traffic. At the same time, the country is developing its own direct passenger and postal-cargo flows. It is due to the long transportation distances that air transport occupies a significant share in the structure of passenger traffic in Ukraine by various modes of transport, with an increase in passenger traffic in international traffic in 2017–2018 by 30%, and in 2019 – by 25%.

Due to the intensification of social life, the spread and deepening of international integration processes, structural changes in the economy,

the role of Ukrainian air transport in the implementation of international, intercontinental transportation of passengers and cargo is increasing. Analysis of statistical data on the aviation industry in 2016–2019 showed its steady development, with a slowdown in the growth of passenger traffic at the end of the period under study. Due to growth of the number of flights in the airspace of Ukraine the volume indicators increased and financial results of the State Air Traffic Service Enterprise of Ukraine «UkSATSE» and domestic airports improved.

The results of the study show an increase in the number of passengers carried by air transport for 2008–2019, the share of air transport in the structure of passenger transportation by major modes of transport increased almost 5 times, with 3 times only in 2019, although its share in the structure did not exceed 1% for the entire study period. With a significant reduction in the number of trips by road, water and rail transport, there is a rapid increase in the number of trips per capita by air transport.

By the end of 2019, the share of air transport in Ukraine's exports of transportation services was 48% (in 2011 – 30%, in 2016 – 37%). It is estimated that 146,000 jobs in 2018 are supported by air transport and tourists arriving in Ukraine, respectively, about 1.1% of Ukraine's GDP in 2018 was created by the influx of the air transport sector and foreign tourists arriving by air. Analysis of the dynamics and structure of exports and imports of transport services of Ukraine from 2008 to 2019 showed that it is the growing trade in air transport services that has a positive impact on the overall dynamics of both exports and imports of foreign trade in transport services of Ukraine. In general, for 2016–2019 there was an increase in the growth rate of all volume indicators of domestic airlines, in particular, passenger turnover – increased almost 2-fold, were carried 67% more passengers, as well as cargo in regular traffic. However, at the end of their activities in 2020 there was a sharp decline due to the application of measures aimed at preventing the spread of the COVID-19 pandemic, based on the application of restrictions and blockages. Overall, the number of passengers using domestic airlines decreased by 65% in 2020 compared to 2019. At the same time, the volume of passenger traffic by air transport in Ukraine returned approximately to the level of 2006–2007, when the specified figure was 4208.3 thousand people and 4928.6 thousand people, respectively. Analysis of the dynamics of the market share of airlines with the most significant volumes of aviation

services in the aviation market of Ukraine showed that in 2019–2020 there is a rapid decline in the market shares of the leading network airlines: «Ukraine International Airlines», «Turk Hava Yollari A.O.», «Air Moldova», the market position of such airlines as «Belavia», «LOT», «Wind Rose», «Azur Air Ukraine», «Austrian Airlines AG» and «Qatar Airways» is maintained. There was a rapid growth of market shares of the following airlines: «SkyUp Airlines», «Ryanair» and «Wizz Air Hungary LLC», and the latter two are well-known European low-cost carriers.

Over the past five years, domestic airlines have been more active in the Ukrainian aviation market on charter flights, while foreign airlines dominated on scheduled flights with the active participation of leading low-cost airlines. Such airline activity contributed to the growth of domestic airport volumes. Overall, as a result of the development of air transport in 2019, air travel became available to every third citizen of Ukraine, although in 2000 only every fiftieth citizen could use such a service.

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