



# **COVID-19 and AVIATION SECTOR**

## **Knowledge Mapping and Data Visualization**

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## THE IMPACT OF COVID-19 ON AVIATION SECTOR

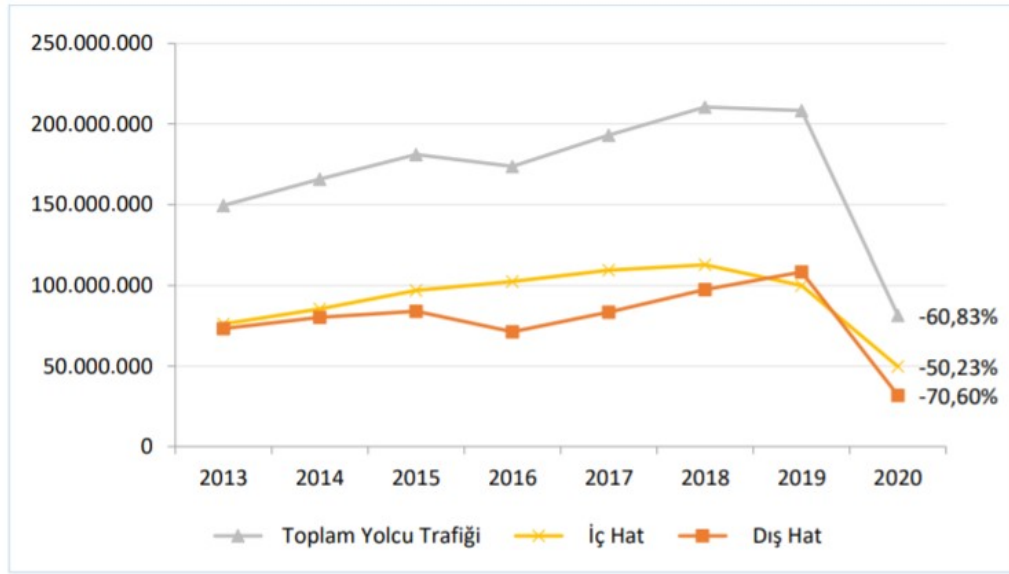
COVID-19, which started in Wuhan, China, and affected the whole world and was declared an international public health emergency on January 30, 2020, by the World Health Organization and a pandemic (universal epidemic disease) on March 11, 2020, deeply affected the air transportation industry. (Zhuang et al., 2020; Adiga et al., 2020; Zhang et al., 2020).

The aviation industry, which continued its development in the world and our country until 2020, was interrupted in 2020 by the impact of the COVID-19 pandemic, which affected the whole world. the rapid spread of the COVID-19 epidemic through respiratory and contact; has led governments to take precautions at the borders, causing countries to decide to limit and stop international flights first and then domestic flights. In our country, starting with China flights on February 5, 2020, all international flights on March 27, 2020, and domestic flights as of April 3, 2020, have been suspended, and as a result of the measures taken, there has been a decrease in aircraft and passenger traffic.

**Table.1 Passenger Traffic (2013-2020)**

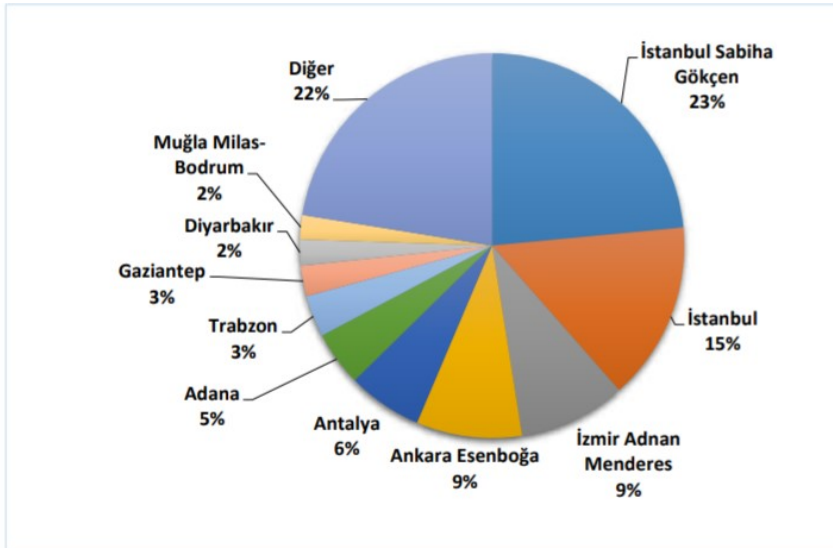
	2013	2014	2015	2016	2017	2018	2019	2020
Toplam Yolcu Trafiği (Direk Transit Dahil)	149.995.868	166.181.339	181.437.004	174.153.146	193.576.844	210.947.639	208.911.338	81.703.685
Toplam Yolcu Trafiği	149.430.421	165.720.234	181.074.531	173.743.537	193.045.343	210.498.164	208.373.696	81.616.140
İç Hat	76.148.526	85.416.166	97.041.210	102.499.358	109.511.390	112.911.108	99.946.572	49.740.303
Dış Hat	73.281.895	80.304.068	84.033.321	71.244.179	83.533.953	97.587.056	108.427.124	31.875.837
Direkt Transit Yolcu	565.447	461.105	362.473	409.609	531.501	449.475	537.642	87.545

Figure.1 Passenger Traffic (2013-2020)



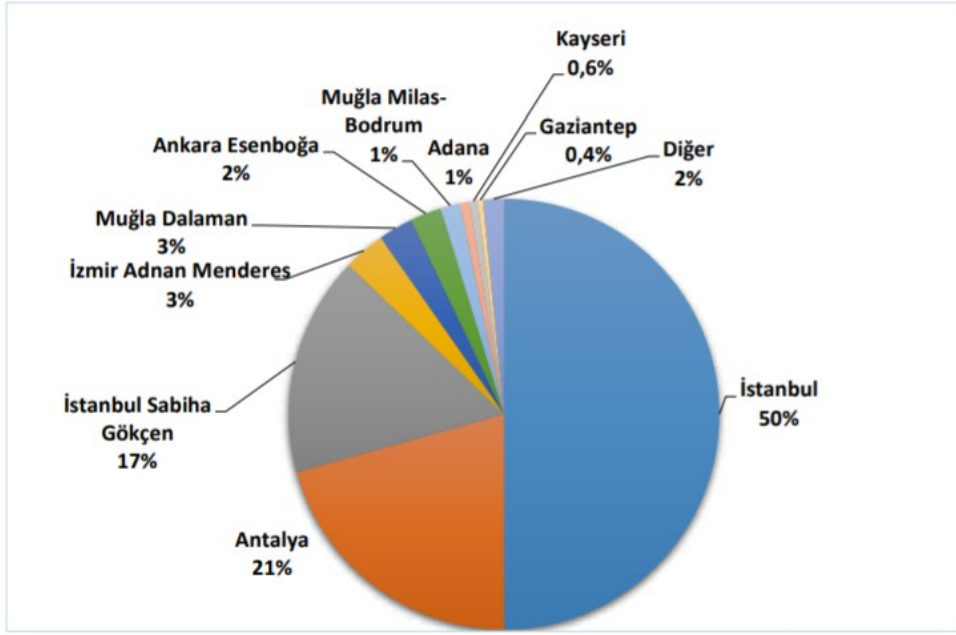
Total passenger traffic, which was 208,373,696 in 2019, decreased by 60.83% in 2020 to 81,703,685 (excluding direct transit passengers). In 2020, domestic passenger traffic was 49,740,303 with a decrease of 50.23% compared to the previous year, and international passenger traffic was 31,875,837 with a decrease of 70.60%.(Table.1-Figure.1)

Figure.2 Airports Domestic Passenger Shares (2020)



In 2020, a significant part of the domestic passenger traffic was realized from Istanbul Sabiha Gökçen (23%), Istanbul (15%), Ankara Esenboğa (9%), İzmir Adnan Menderes (9%) airports.(Figure.2)

**Figure.3 Airports International Passenger Shares (2020)**

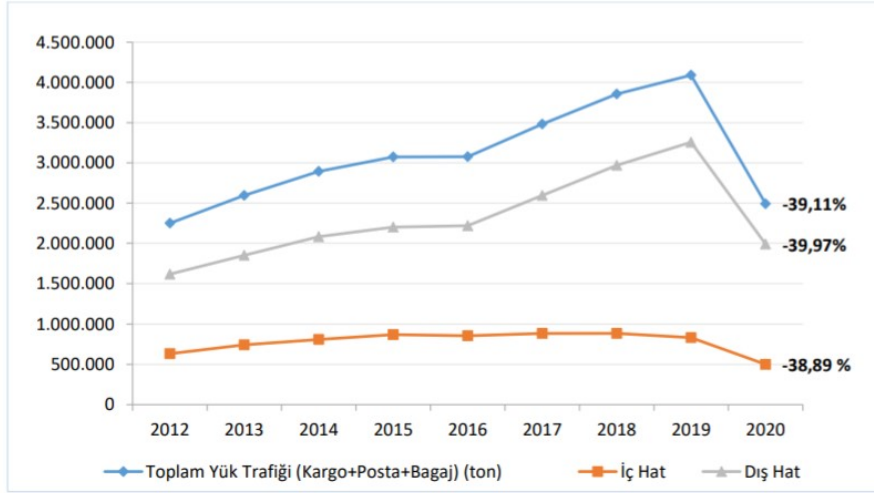


In 2020, most of the international passenger traffic occurred from Istanbul (50%), Antalya (21%), and Istanbul Sabiha Gökçen (17%) Airports.(Figure.3)

**Table.2 Freight Traffic (Tonnes) (2012-2020)**

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Toplam Yük Trafiği (ton) (Kargo+Posta+Bagaj)	2.249.133	2.595.317	2.893.000	3.072.831	3.076.914	3.481.211	3.855.231	4.090.168	2.490.521
İç Hat	633.076	744.028	810.858	871.327	857.335	884.811	886.025	833.768	500.551
Dış Hat	1.616.057	1.851.289	2.082.142	2.201.504	2.219.579	2.596.400	2.969.206	3.256.399	1.989.970

**Figure.4 Freight Traffic (Tonnes) (2012-2020)**

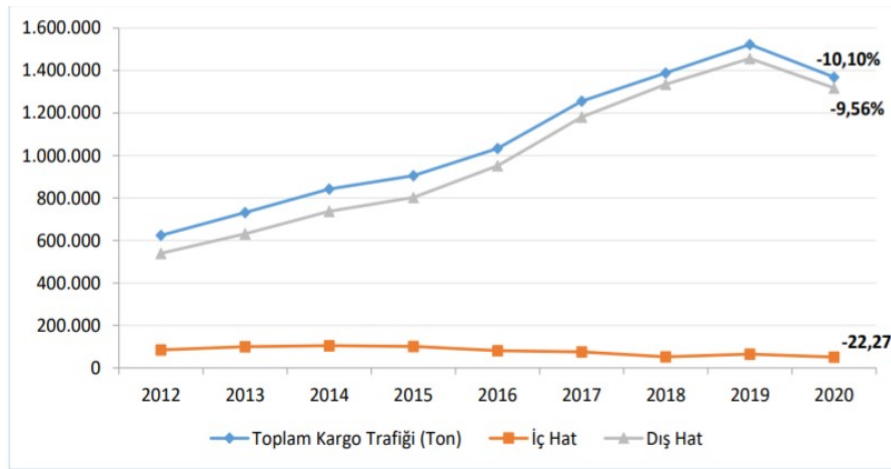


Total freight (cargo+mail+luggage) traffic was 4,090,168 tons in 2019, and it was 2,490,521 tons in 2020 with a decrease of 39.11%. In 2020, it was 500,551 tons with a 38.89% decrease compared to the previous year in domestic flights, and 1.989.970 tons with a 39.97% decrease in international lines.(Table.2- Figure.4)

**Table.3 Cargo Traffic (2012-2020)**

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Toplam Kargo Trafik (Ton)	624.058	731.962	842.241	904.762	1.032.943	1.256.224	1.388.623	1.522.404	1.368.577
İç Hat	84.431	100.097	104.941	101.447	81.587	75.254	52.807	65.667	51.043
Dış Hat	539.627	631.865	737.300	803.314	951.356	1.180.969	1.335.815	1.456.737	1.317.533

Figure.5 Cargo Traffic (2012-2020)



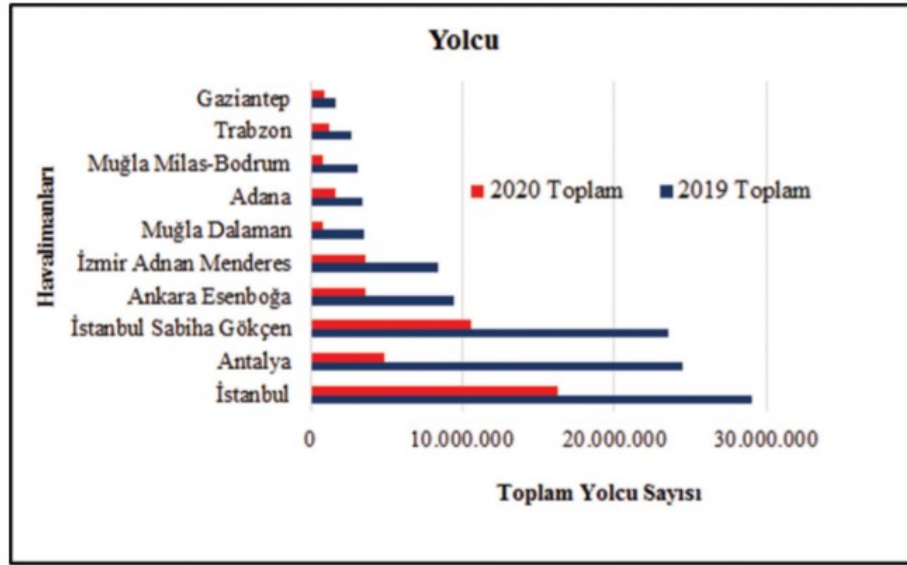
Considering the cargo traffic, the total cargo traffic in 2020 was 1,368,577 with a decrease of 10.10% compared to 2019. Cargo traffic has not been affected as much by the COVID-19 outbreak as passenger and airplane traffic.(Table.3- Figure.5)

Table.4 Changes at the Airports With the Highest Passenger Movement as of the End of August in 2019.

YOLCU TRAFİĞİ (Gelen-Giden)										
Sıra	Havalimanları	2019 YILI AĞUSTOS SONU			2020 YILI AĞUSTOS SONU			2019/2020 Değişim (%)		
		İç Hat	Dış Hat	2019 Toplam	İç Hat	Dış Hat	2020 Toplam	İç Hat	Dış Hat	Toplam
1	İstanbul	7.154.400	21.869.725	29.024.125	5.217.757	11.018.973	16.236.730	-27,1	-49,6	-44,1
2	Antalya	4.694.505	19.761.325	24.455.830	2.031.943	2.846.738	4.878.681	-56,7	-85,6	-80,1
3	İstanbul Sabiha Gökçen	14.426.149	9.146.497	23.572.646	7.113.067	3.482.055	10.595.122	-50,7	-61,9	-55,1
4	Ankara Esenboğa	7.912.457	1.536.937	9.449.394	2.998.681	581.289	3.579.970	-62,1	-62,2	-62,1
5	İzmir Adnan Menderes	6.139.355	2.238.339	8.377.694	2.961.589	711.177	3.672.766	-51,8	-68,2	-56,2
6	Muğla Dalaman	1.095.229	2.407.084	3.502.313	472.141	333.220	805.361	-56,9	-86,2	-77,0
7	Adana	2.879.560	511.003	3.390.563	1.499.916	186.284	1.686.200	-47,9	-63,5	-50,3
8	Muğla Milas-Bodrum	1.778.536	1.358.289	3.136.825	636.524	187.430	823.954	-64,2	-86,2	-73,7
9	Trabzon	2.297.423	341.825	2.639.248	1.141.540	43.626	1.185.166	-50,3	-87,2	-55,1
10	Gaziantep	1.410.393	248.343	1.658.736	781.837	101.240	883.077	-44,6	-59,2	-46,8
İlk 10 Havaalanı		48.377.614	59.171.024	107.548.638	24.073.158	19.390.792	43.463.950	-50,2	-67,2	-59,6
Türkiye Toplam		67.632.645	72.744.735	140.377.380	32.268.780	19.979.228	52.248.008	-52,3	-72,5	-62,8

Resource: DHMİ, 2020b

Figure.6 Changes at the Airports With the Highest Passenger Movement as of the End of August in 2019.



Resource: DHMİ, 2020b

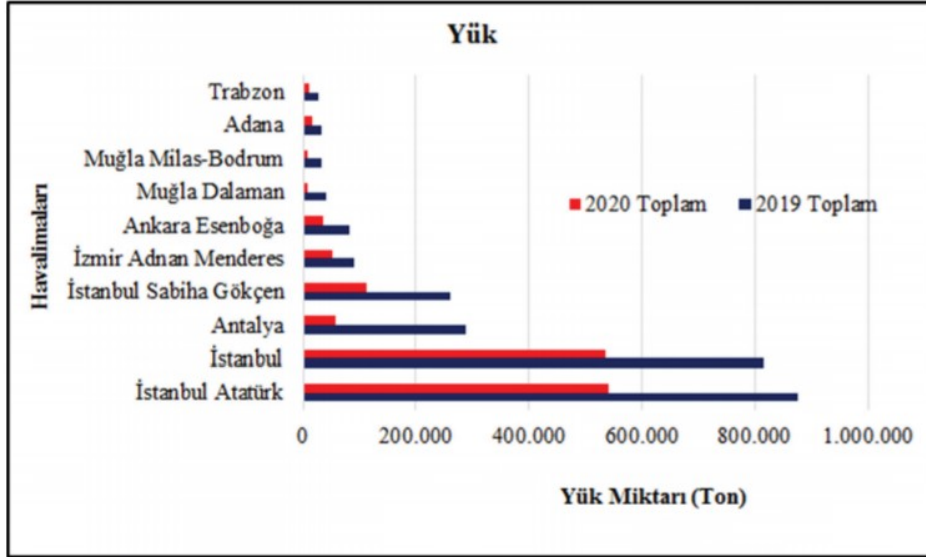
Table.5 Changes at the Airports With the Highest Freight Movement as of the End of August in 2019.

YÜK TRAFİĞİ ( Bagaj+Kargo+Posta) (TON)										
Sıra	Havalimanları	2019 YILI AĞUSTOS SONU			2020 YILI AĞUSTOS SONU			2019/2020 Değişim (%)		
		İç Hat	Dış Hat	2019 Toplam	İç Hat	Dış Hat	2020 Toplam	İç Hat	Dış Hat	Toplam
1	İstanbul Atatürk	43.055	832.052	875.107	2.686	539.362	542.048	-93,8	-35,2	-38,1
2	İstanbul	82.132	732.481	814.614	54.906	481.503	536.409	-33,1	-34,3	-34,2
3	Antalya	40.806	246.152	286.958	18.843	37.221	56.064	-53,8	-84,9	-80,5
4	İstanbul Sabiha Gökçen	101.997	158.288	260.285	57.020	54.957	111.977	-44,1	-65,3	-57,0
5	İzmir Adnan Menderes	49.605	40.479	90.084	36.227	17.026	53.253	-27,0	-57,9	-40,9
6	Ankara Esenboğa	56.288	26.270	82.558	21.894	14.495	36.389	-61,1	-44,8	-55,9
7	Muğla Dalaman	9.356	31.299	40.655	4.326	4.675	9.001	-53,8	-85,1	-77,9
8	Muğla Milas-Bodrum	14.920	17.697	32.617	5.933	2.447	8.380	-60,2	-86,2	-74,3
9	Adana	22.830	8.713	31.543	13.442	3.807	17.249	-41,1	-56,3	-45,3
10	Trabzon	19.779	6.176	25.955	10.282	1.089	11.371	-48,0	-82,4	-56,2
	<b>İlk 10 Havaalanı</b>	<b>440.769</b>	<b>2.099.607</b>	<b>2.540.376</b>	<b>225.559</b>	<b>1.156.582</b>	<b>1.382.141</b>	<b>-48,8</b>	<b>-44,9</b>	<b>-45,6</b>
	<b>Türkiye Toplam</b>	<b>568.862</b>	<b>2.130.207</b>	<b>2.699.069</b>	<b>301.927</b>	<b>1.172.786</b>	<b>1.474.713</b>	<b>-46,9</b>	<b>-44,9</b>	<b>-45,4</b>

Resource: DHMİ, 2020b



Figure 7. Changes at the Airports With the Highest Freight Movement as of the End of August in 2019.



Resource: DHMİ, 2020b

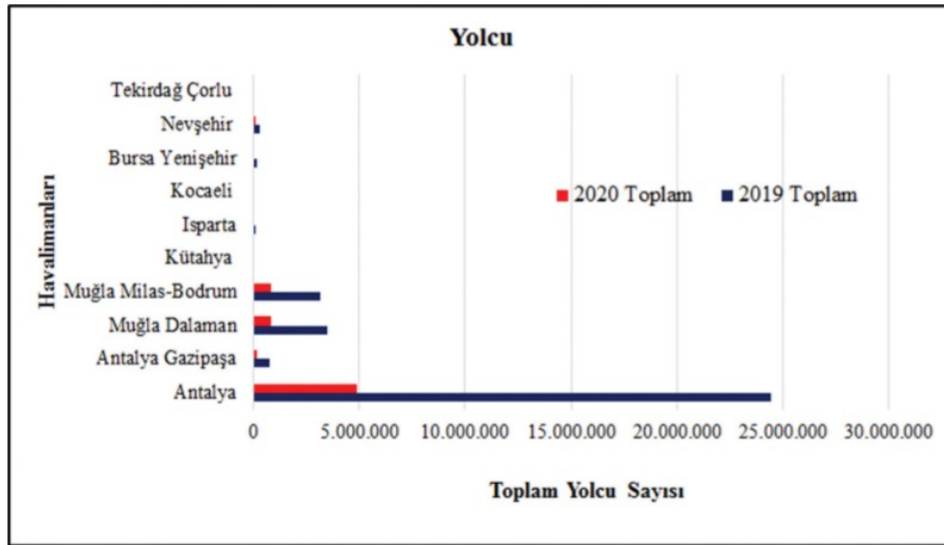
Table.6 Changes in Airports with the Highest Decline in Passenger Traffic in January-August in 2019.

YOLCU TRAFİĞİ (Gelen-Giden)									
Sıra	Havalimanları	2019 YILI AĞUSTOS SONU			2020 YILI AĞUSTOS SONU			2019/2020 Değişim (%)	
		İç Hat	Dış Hat	2019 Toplam	İç Hat	Dış Hat	2020 Toplam	İç Hat	Dış Hat
1	Antalya	4.694.505	19.761.325	24.455.830	2.031.943	2.846.738	4.878.681	-56,7	-85,6
2	Antalya Gazipaşa	334.195	426.801	760.996	136.947	20.084	157.031	-59,0	-95,3
3	Muğla Dalaman	1.095.229	2.407.084	3.502.313	472.141	333.220	805.361	-56,9	-86,2
4	Muğla Milas-Bodrum	1.778.536	1.358.289	3.136.825	636.524	187.430	823.954	-64,2	-86,2
5	Kütahya	41.975	18.463	60.438	9.512	6.938	16.450	-77,3	-62,4
6	Isparta	52.604	58.303	110.907	28.156	4.242	32.398	-46,5	-92,7
7	Kocaeli	35.212	3.821	39.033	10.604	1.016	11.620	-69,9	-73,4
8	Bursa Yenişehir	168.309	13.695	182.004	51.002	9.151	60.153	-69,7	-33,2
9	Nevşehir	314.686	3.027	317.713	104.292	1.148	105.440	-66,9	-62,1
10	Tekirdağ Çorlu	46.473	1.816	48.289	17.163	389	17.552	-63,1	-78,6
İlk 10 Havaalanı		8.561.724	24.052.624	32.614.348	3.498.284	3.410.356	6.908.640	-59,1	-85,8
Türkiye Toplam		67.632.645	72.744.735	140.377.380	32.268.780	19.979.228	52.248.008	-52,3	-72,5

Resource: DHMİ, 2020b



**Figure.8 Changes in Airports with the Highest Decline in Passenger Traffic in January-August in 2020**



Resource: DHMİ, 2020b

Air transport has come to an almost complete standstill on a global scale for the first time during the Covid-19 Pandemic process. This study, whose main purpose is to analyze the effects of the Covid-19 Pandemic on air transport in Turkey, is structured based on data evaluation. The basic data set of the study consists of the annual air transport data of the Turkish Statistical Institute (TUIK) and the monthly air transport data produced by the State Airports Authority (DHMI). In the January-August period of 2020, there was a 62.8% decrease in total passenger transports compared to the same period of the previous year, while a total decrease of 45.4% occurred in freight transports. Considering the top 10 airports with the highest number of transports in Turkey in 2019, Antalya Airport had the highest proportional decrease in total passenger transportation (80.1%) at the end of August 2020 compared to the same period of 2019, and Antalya had the highest decrease in freight transportation. It is understood that it took place at the airport (80.5%). Due to the pandemic, it is predicted that there will be a 53-60% decrease in the number of passengers carried throughout the world in 2020 compared to the previous year, and the available data show that a similar situation will be experienced in Turkey. Again, it is predicted that the Pandemic will cause a loss of 352-390 billion dollars in air transportation by the end of 2020. The pandemic is expected to adversely affect airline employment, which is 205 thousand according to 2019 data in Turkey.

## REFERENCES

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