## Research on the impact of domestic excursions by international visitors to Japan on domestic air traffic demand (Research period: From FY2020)

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## 1. Purpose and background of research

In recent years, inbound travel demand in Japan has seen a sharp decline attributable to the impact of the COVID-19 pandemic, followed by a rapid recovery (Figure). Going forward, the domestic flow of international visitors to Japan is expected to pick up strongly. This will raise the need for air traffic demand forecasting to consider strengthening airport functions, and accordingly enhance the environment welcome international visitors to Japan. to Meanwhile, at present, the usage of domestic air routes by international visitors to Japan, which is required data for air traffic demand forecasting, is estimated from existing statistics for domestic and international passenger volume. We have attempted to improve the accuracy by using big data, which offers benefits such as a large number of samples.



Figure: Trends in the number of international visitors to Japan

# 2. Analysis of current state of domestic air route usage by international visitors to Japan

Below, we show the results of our estimates of domestic air route usage by international visitors to Japan using two methods: (1) method based on existing statistics (estimated number of passengers by route based on passenger nationality ratios in the "Annual Report of Air Transportation Statistics" and the "Air Passenger Movement Survey"), and (2) method using big data for air route use (Table). Compared to the method based on existing statistics, the method using big data shows a trend to be small in the number of international visitors to Japan. Big data has large numbers of samples, and can obtain data on the flow of people mechanically rather than relying on interviews with people as existing statistics do. As a result, there is a high likelihood this method can ascertain movement patterns that are not detected in existing data methods, and this is believed to be the likely cause behind the differences with existing statistics.

## Table: Number of international visitors to Japan

## by major domestic air routes (comparison of

## both methods)

Ranking	Top 30 routes		A: All purposes	B: Internatio	B: International visitors		C = B/A: Ratio of international visitors	
			CY2019 passengers	(1) Existing data method <sup>*2</sup>	(2) Using big data <sup>'3</sup>	(1) Existing data method	(2) Using big data	
	Haneda	- Shin- Chitose	9,416,816	80,215	144,325	0.90%	1.50%	
2	Haneda	- Fukuoka	8,811,944	68,216	42,211	0.80%	0.50%	
3	Haneda	- Naha	6,108,917	90,616	37,061	1.50%	0.60%	
4	Haneda	- Itami	5,541,344	77,133	54,962	1.40%	1.00%	
5	Haneda	- Kagoshi ma	2,466,061	20,827	7,237	0.80%	0.30%	
6	Haneda	- Hiroshim a	1,957,044	32,238	12,944	1.60%	0.70%	
7	Haneda	- Kumam oto	1,954,387	13,392	5,737	0.70%	0.30%	
8	Fukuoka	- Naha	1,922,691	27,160	8,154	1.40%	0.40%	
9	Narita	- Shin- Chitose	1,915,466	90,776	107,701	4.70%	5.60%	
10	Haneda	Nagasak	1,803,440	22,668	3,896	1.30%	0.20%	
11	Haneda	- Matsuya ma	1,554,158	11,164	12,998	0.70%	0.80%	
12	Haneda	<ul> <li>Miyazaki</li> </ul>	1,429,297	10,059	9,235	0.70%	0.60%	
13	Haneda	- Kansai	1,344,748	52,319	60,589	3.90%	4.50%	
14	Narita	<ul> <li>Fukuoka</li> </ul>	1,211,540	57,586	24,877	4.80%	2.10%	
15	Kansai	- Shin- Chitose	1,194,391	25,665	47,887	2.10%	4.00%	
16	Kansai	- Naha	1,190,152	51,531	15,591	4.30%	1.30%	
17	Itami	- Naha	1,168,963	13,224	4,274	1.10%	0.40%	
18	Naha	- Miyako	1,123,516	11,719	11,388	1.00%	1.00%	
19	Naha	- Ishigaki	1,116,294	22,918	18,517	2.10%	1.70%	
20	Haneda	- Komatsu	1,090,239	13,176	8,476	1.20%	0.80%	
21	Haneda	- Hakodat e	1,082,874	12,667	22,025	1.20%	2.00%	
22	Shin- Chitose	- Sendai	872,283	14,859	1,452	1.70%	0.20%	
23	Narita	- Naha	681,592	89,951	22,504	13.20%	3.30%	
24	Kansai	- Narita	680,064	45,516	49,998	6.70%	7.40%	
25	Narita	- Itami	476,001	59,753	47,346	12.60%	9.90%	
26	Kansai	- Fukuoka	469,050	10,333	8,700	2.20%	1.90%	
27	Chubu	- Narita	373,346	40,331	31,797	10.80%	8.50%	
28	Haneda	- Chubu	252,965	15,296	16,053	6.00%	6.30%	
29	Haneda	- Misawa	223,492	12,516	4,634	5.60%	2.10%	
30	Naha	- Minami- Daito	34,062	11,568	-	34.00%	-	
Total for 30 routes			59,467,137	1,105,393	842,569	1.90%	1.40%	
Total for all covered routes			02 619 679	1 4 20 500	1 105 226	1.50%	1 20%	

Source) \*1: Annual Report of Air Transportation Statistics (2019); 2: \*1 and the FY2017 Air Passenger Survey; \*3: Mobile Spatial Statistics (2019)

### 3. Future outlook

Based on this research, we aim to determine the effectiveness of using big data in air traffic demand forecasting models, and study concrete application methods. Furthermore, since air traffic demand forecasting requires estimates of transportation choices, we will study to improve forecasting using big data not only with regard to use of air routes, but also in connection with analysis of domestic destinations visited through all modes of transportation. In this way, we will aim to improve the accuracy of our forecasting.