Preliminary Findings

Federal Aviation Administration

The Economic Impact of Civil Aviation on the North Atlantic, 2020

Presented to: ICAO NAT EFFG 41
Paris, France

By: FAA

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Outline:

- Background – COVID's impact globally
- Operating statistics and values used to construct the Economic Impact
- Primary output
- Methodology for constructing secondary output
- NAT Economic Impact estimates for 2020

Effect of COVID on Air Transport

Passenger traffic (RPK), y-o-y % change	2015	2016	2017	2018	2019	2020		2020/2017 % change
Global	7.0	7.5	8.1	7.3	4.1	-65.9		-61.9
North America	4.5	4.3	4.0	5.3	4.0	-65.2		-61.9
Europe	5.8	5.3	9.1	7.5	4.2	-69.9		-66.3

Revenue	2015	2016	2017	2018	2019	2020		
Total, $ bn	721	709	755	812	838	372		
% change y-o-y	-6.1	-1.6	6.5	7.6	3.2	-55.6		-50.7
Passenger, $ bn	545	545	581	605	607	189		
% change y-o-y		0.0	6.6	4.1	0.3	-68.9		-67.5
Cargo, $ bn	83.8	80.8	95.9	113.3	100.8	128.2		
% change y-o-y		-3.6	18.7	18.1	-11.0	27.2		33.7

Net profit, $ billion	2015	2016	2017	2018	2019	2020
Global	36.0	34.2	37.6	27.3	26.4	-126.4
North America	21.7	17	17.8	14.5	17.4	-35.1
Europe	7.1	8.5	8.9	9.1	6.5	-34.5

Source: IATA Industry Statistics Fact Sheet, April 2021

North Atlantic Data

Operating Statistics – 2020

- **Annual Operations[1]**
  - Number of flights: 327,646 (▼ -55% from 2017)
    - 314,836 passenger flights (▼ -56%)
    - 12,810 freighter flights (▲ 19%)

- **Passengers and Cargo[2]**
  - Passengers: More than 31 million carried (▼ -77%)
  - Cargo: Almost 31 billion RTM transported (▼ -16%)

[1] FAA TFMS Data and estimated supplementary data for Santa Maria (15k for 2020)

[2] FAA estimates using TFMS and US DOT/BTS Operational Data

Average Economic Values – 2020

Passenger:

- Fare revenue per passenger flight: $65,607 (▼ -50% from 2017)
- Round-trip passenger fare[1]: $1,097 (▼ -21%)
- Average miles per departure: 3,519 (▼ -14%)
- Visitor Expenditure[2]: $987 (▼ -60%)

Cargo:

- Freight revenue per passenger flight: $56,256 (▲ 346%)
- Revenue per RTM, passenger flight: $0.65 (▲ 144%)
- Freight revenue per freight flight: $185,201 (▲ 20%)
- Revenue per RTM, freight flight: $0.67 (▲ 13%)

[1] Passenger fare: Total fare paid by passenger, including taxes and fees.
[2] Change in methodology contributed to the decline
Source: FAA calculations using U.S. DOT/BTS Form 41 data and visitors data from selected countries; Some visitor data not available for 2020 were estimated based on 2019 data.

Calculations – Primary Impacts

Estimation Overview and Sources

Primary Output of Four Segments

Segment	Quantity (Q)	Price (P)	Data Sources
Airline operations - Passengers	Passenger Flows	Average Passenger Fare	(Q) FAA TFMS[1] (ETMS) flights and BTS[2] load factors
			(P) BTS average passenger fare, freight revenues
Airline operations - Freight	Freight RTM	Average Revenue per RTM	(Q) TFMS flights and BTS RTM per flight, pax and cargo opns
			(P) BTS freight revenues, pax and cargo opns
Visitor Expenditures	Visitor Flows	Average Spending per Visitor	(Q) Passenger flows and visitors data from selected countries[3]
			(P) Visitors and spending data from US, UK and Canada agencies[3]
ANSP Fees	-	-	NAT revenue data from ANSP annual reports

[1] Traffic Flow Management System
[2] US Bureau of Transportation Statistics
[3] US International Trade Administration (ITA), UK Office of National Statistics, Statistics Canada and Canadian Tourism Commission.

- Estimates except ANSP fees are calculated by country-pairs, to and from.
- Countries include 8 NAT member countries and Rest-of-NAT.

Primary Output Matrix - 2020

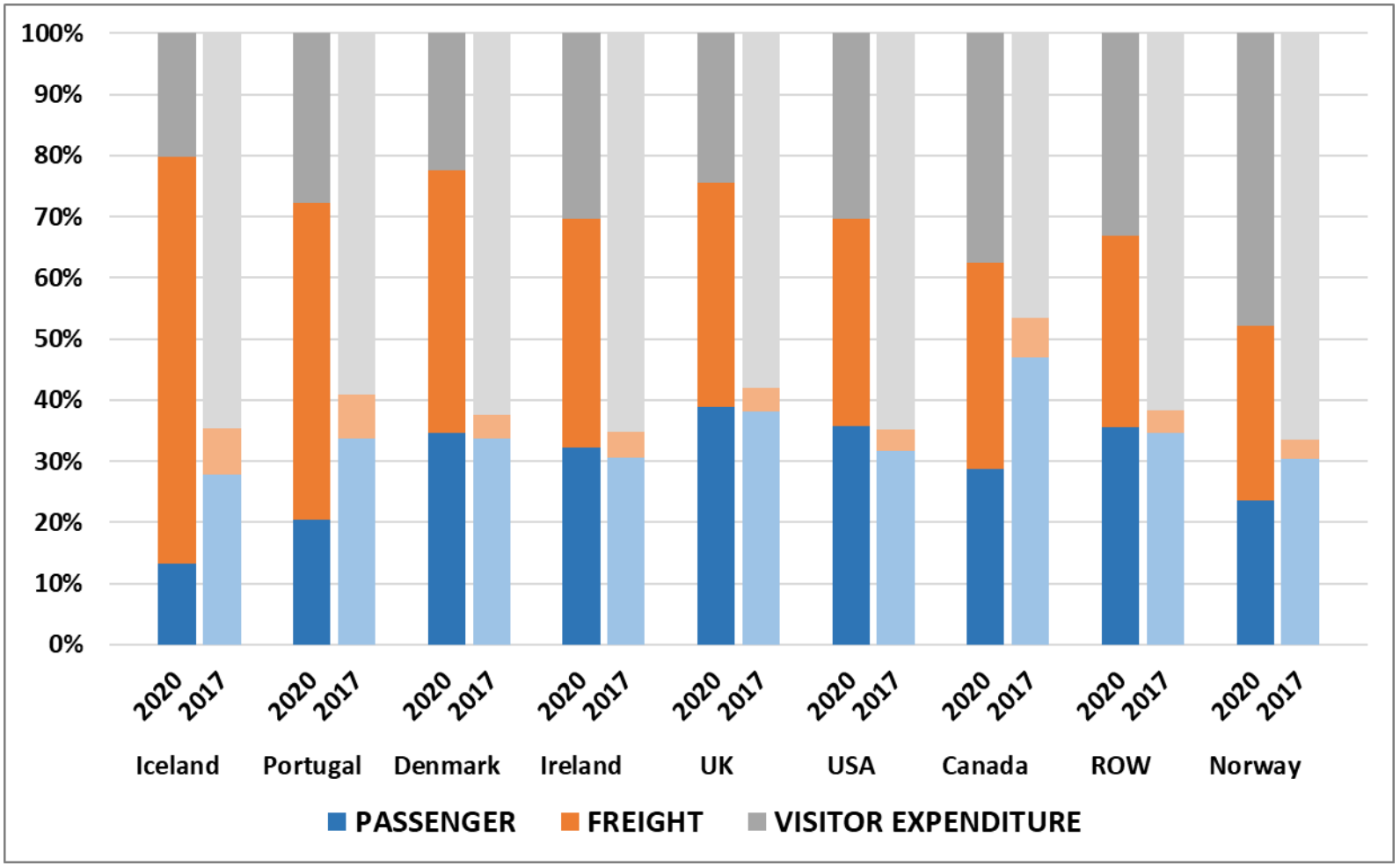
Total Primary Output[1]: NAT-8 vs. ROW[2]

(Million USD)

From: \ To:	NAT-8	ROW	Total	2017 Total	Percent Change
NAT-8	$ 13,919	$ 19,151	**$ 33,070**	$ 158,803	-79%
ROW	$ 17,815	$ 8,438	**$ 26,254**	$ 112,096	-77%
Total	**$ 31,734**	**$ 27,589**	**$ 59,323**		
2017 Total	$ 156,353	$ 114,546		$ 270,898	
Percent Change	-80%	-76%			-78%

[1]Total primary output here includes output for passengers, freight, and visitor expenditures (*excludes ANSP output*)
[2]ROW – Rest of countries in NAT airspace.

Share of Primary Output by Segment



Total Primary Output by Country

NAT Region Economic Impact in USD, 2020

Canada

Description **Direct and Indirect Impacts**	($Millions) **Primary Output**
Airline Operations - Passengers	1,657
Airline Operations - Freight	1,933
ANSP Fees	28
Visitor Expenditures	2,158
Total Impact	**5,776**

Ireland

Description **Direct and Indirect Impacts**	($Millions) **Primary Output**
Airline Operations - Passengers	418
Airline Operations - Freight	485
ANSP Fees	11
Visitor Expenditures	392
Total Impact	**1,306**

U.K.

Description **Direct and Indirect Impacts**	($Millions) **Primary Output**
Airline Operations - Passengers	3,938
Airline Operations - Freight	3,722
ANSP Fees	
Visitor Expenditures	2,485
Total Impact	**10,145**

Denmark

Description **Direct and Indirect Impacts**	($Millions) **Primary Output**
Airline Operations - Passengers	204
Airline Operations - Freight	253
ANSP Fees	
Visitor Expenditures	133
Total Impact	**589**

Norway

Description **Direct and Indirect Impacts**	($Millions) **Primary Output**
Airline Operations - Passengers	39
Airline Operations - Freight	47
ANSP Fees	
Visitor Expenditures	79
Total Impact	**164**

U.S.

Description **Direct and Indirect Impacts**	($Millions) **Primary Output**
Airline Operations - Passengers	14,904
Airline Operations - Freight	14,177
ANSP Fees	
Visitor Expenditures	12,651
Total Impact	**41,732**

Iceland

Description **Direct and Indirect Impacts**	($Millions) **Primary Output**
Airline Operations - Passengers	114
Airline Operations - Freight	575
ANSP Fees	0
Visitor Expenditures	175
Total Impact	**863**

Portugal

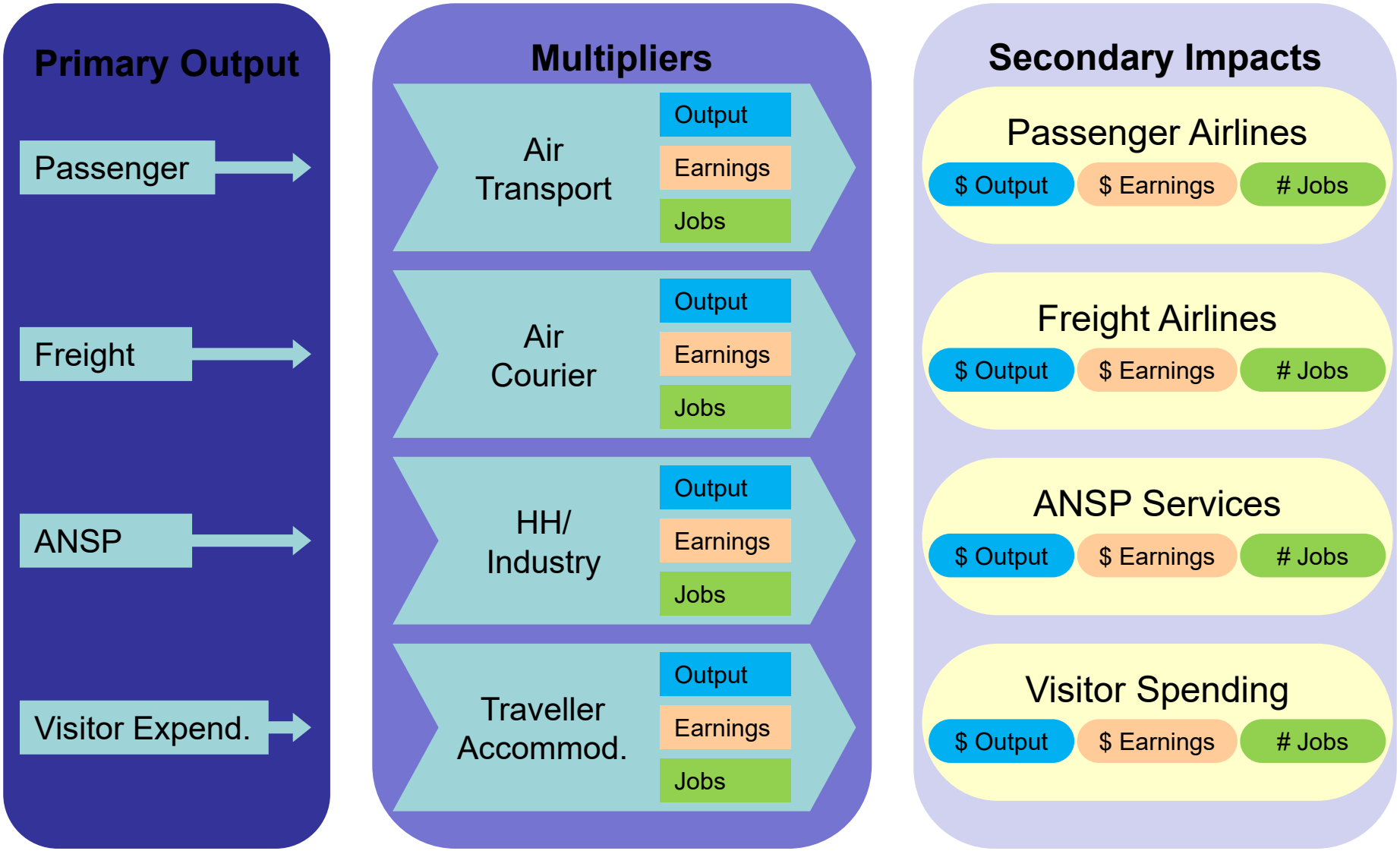
Description **Direct and Indirect Impacts**	($Millions) **Primary Output**
Airline Operations - Passengers	312
Airline Operations - Freight	792
ANSP Fees	
Visitor Expenditures	424
Total Impact	**1,528**

R.O.W. (Rest of NAT)

Description **Direct and Indirect Impacts**	($Millions) **Primary Output**
Airline Operations - Passengers	16,124
Airline Operations - Freight	14,254
ANSP Fees	
Visitor Expenditures	15,026
Total Impact	**45,404**

Calculations – Secondary Impacts

Secondary Impact Calculation



NAT Region Total Economic Impact - 2020

Source / Segment	Output (Million USD) Primary	Output (Million USD) Total	Earnings (Million USD) Total	Jobs (000s) Total
Airline Operations - Passengers	**20,656**	**51,418**	**12,643**	**216**
Airline Operations - Freight	**20,084**	**54,785**	**16,272**	**435**
ANSP Fees	**39**	**98**	**27**	**1**
Visitor Expenditures	**18,584**	**47,560**	**14,126**	**328**
Total Impact	**59,362**	**153,861**	**43,068**	**980**

2017 Total Impact	271,144	669,580	184,347	4,590

Summary

- **NAT Region Economic Impact (total output) was USD $154 billion and 1 million jobs in 2020**
- **The impact of COVID-19 was severe: total output was down 77% compared to 2017**
- **But 2021 has shown improvement**

Appendix

NAT Summary Stats and Economic Values, 2020

Total Economic Impact				
($ Billions)	**2012**	**2017**	**2020**	**% Change**
Total NAT Impact	**594**	**670**	**154**	**-77.0%**

Annual Operations				
(# Flights)	**2012**	**2017**	**2020**	**%Change**
Total NAT Flights	**547,907**	**723,356**	**327,646**	**-54.7%**
Passenger	536,309	712,620	314,836	-55.8%
Cargo	11,598	10,736	12,810	19.3%
Passengers and Cargo				
(Millions)	**2012**	**2017**	**2020**	**%Change**
Passengers Carried	109	134	31	-76.6%
Freight Transported (RTM)	27,000	36,700	30,891	-15.8%
Average Values in the NAT				
(Averages)	**2012**	**2017**	**2020**	**%Change**
Round-trip passenger fare	$ 1,510	$ 1,390	$ 1,097	-21.1%
Visitor expenditures	$ 2,300	$ 2,480	$ 987	-60.2%
Revenue per cargo flight	$ 182,500	$ 154,500	$ 185,201	19.9%
Fare revenue per pax flight	$ 153,900	$ 130,900	$ 65,607	-49.9%
Freight revenue per pax flight	$ 13,860	$ 12,600	$ 56,256	346.5%
Average miles per departure	4,400	4,070	3,519	-13.5%

NAT Primary Output Matrix - 2020

Total Primary Output[1]: Country-Pairs Matrix

(Million USD)

To: / From:	Canada	Denmark	Iceland	Ireland	Norway	Portugal	ROW	UK	USA	Total (From:)
Canada	$ 20.1	$ 34.6	$ 39.0	$ 81.0	$ 23.5	$ 98.1	$ 3,141.4	$ 494.4	$ 17.9	**$ 3,950**
Denmark	$ 12.3	$ 95.8	$ 34.3	$ 0.1	$ 0.1	$ 1.0	$ 15.0	$ 0.8	$ 228.0	**$ 387**
Iceland	$ 29.2	$ 32.3	$ 0.1	$ 15.6	$ 0.1	$ -	$ 139.6	$ 104.5	$ 118.8	**$ 440**
Ireland	$ 37.3	$ 0.0	$ 17.9	$ -	$ -	$ 0.1	$ 43.8	$ -	$ 578.3	**$ 677**
Norway	$ 5.1	$ 0.1	$ 0.1	$ -	$ -	$ 0.4	$ 20.6	$ 0.0	$ 64.3	**$ 91**
Portugal	$ 43.4	$ 0.3	$ -	$ 0.4	$ 0.2	$ 453.5	$ 187.6	$ 22.6	$ 216.1	**$ 924**
ROW	$ 1,199.3	$ 9.8	$ 93.0	$ 31.2	$ 22.3	$ 162.8	$ 8,438.4	$ 421.1	$ 15,875.6	**$ 26,254**
UK	$ 463.0	$ 0.7	$ 74.0	$ -	$ 0.1	$ 60.0	$ 1,367.7	$ 1.7	$ 3,929.3	**$ 5,897**
USA	$ 9.1	$ 124.0	$ 164.5	$ 489.6	$ 27.4	$ 281.7	$ 14,235.0	$ 3,204.9	$ 2,167.6	**$ 20,704**
Total (To:)	**$ 1,819**	**$ 298**	**$ 423**	**$ 618**	**$ 74**	**$ 1,058**	**$ 27,589**	**$ 4,250**	**$ 23,196**	**$ 59,323**

[1]**Total primary output** here includes output for passengers, freight, and visitor expenditures (***excludes ANSP output***)
ROW – Rest of countries in NAT airspace.

Passenger Flow Matrix (000s) - 2020

From: \ To:	Canada	Denmark	Iceland	Ireland	Norway	Portugal	ROW	UK	USA	Total (From:)
Canada	2.4	13.7	12.8	26.8	0.1	36.7	1,365.3	281.4	7.1	**1,746.3**
Denmark	13.9	31.7	32.8	0.0	0.0	0.7	5.7	0.1	125.2	**210.1**
Iceland	14.3	28.3	0.0	1.3	0.1	-	56.0	12.1	84.7	**196.8**
Ireland	44.0	-	1.6	-	-	-	16.7	-	357.6	**419.8**
Norway	0.1	0.0	0.0	-	-	0.3	9.3	-	21.5	**31.2**
Portugal	33.7	0.0	-	0.2	0.1	268.4	56.7	8.6	123.5	**491.2**
ROW	1,260.5	3.5	39.0	8.1	12.1	71.1	4,497.0	364.9	7,185.8	**13,442.1**
UK	299.3	0.1	6.5	-	0.0	26.8	479.2	0.3	2,113.3	**2,925.5**
USA	6.0	109.0	82.4	300.1	24.1	121.8	7,729.4	2,166.7	1,425.1	**11,964.7**
Total (To:)	**1,674.1**	**186.4**	**175.1**	**336.5**	**36.6**	**525.9**	**14,215.2**	**2,834.0**	**11,443.9**	**31,427.7**

Source: Calculations using FAA TFMS data for NAT flights by aircraft type; BTS Form 41 passengers and load factors

Average Round Trip Fare - 2020

From: \ To:	Canada	Denmark	Iceland	Ireland	Norway	Portugal	ROW	UK	USA
Canada	$-	$1,200	$798	$1,006	$1,052	$1,098	$939	$1,094	$824
Denmark	$1,200	$258	$409	$184	$184	$625	$1,237	$247	$1,405
Iceland	$798	$409	$-	$282	$341	$565	$436	$362	$790
Ireland	$1,006	$184	$282	$-	$247	$466	$561	$49	$1,140
Norway	$1,052	$184	$341	$247	$-	$685	$783	$229	$1,325
Portugal	$1,098	$625	$565	$466	$685	$282	$1,172	$374	$1,251
ROW	$939	$1,237	$436	$561	$783	$1,172	$1,493	$1,329	$1,456
UK	$1,094	$247	$362	$49	$229	$374	$1,329	$-	$1,425
USA	$824	$1,405	$790	$1,140	$1,325	$1,251	$1,456	$1,425	$284

Source: BTS DB1B Average Passenger Fare for US; Yield*Distance for rest of NAT

Freight Flights - 2020

To: / From:	Canada	Denmark	Iceland	Ireland	Norway	Portugal	ROW	UK	USA	Total (From:)
Canada							13			**13**
Denmark										
Iceland										
Ireland									2	**2**
Norway										
Portugal									29	**29**
ROW	7					26	8		4370	**4411**
UK									1370	**1370**
USA				1		2	4697	1331	954	**6985**
Total (To:)	**7**			**1**		**28**	**4718**	**1331**	**6725**	**12810**

Source: TFMS, NAT Flights
Note: No reported data for some NAT member countries

Passenger Flights - 2020

From:	Canada	Denmark	Iceland	Ireland	Norway	Portugal	ROW	UK	USA	Total (From:)
Canada	357	110	275	244	5	506	13,318	2,551	156	**17,522**
Denmark	111	1,485	389	2	1	14	150	14	927	**3,093**
Iceland	433	323	1	269	2	-	1,623	1,832	1,168	**5,651**
Ireland	417	-	310	-	-	-	541	-	3,548	**4,816**
Norway	7	1	1	-	-	5	139	-	184	**337**
Portugal	508	1	-	6	2	5,504	1,761	353	1,412	**9,548**
ROW	12,452	103	1,299	449	247	1,695	39,538	4,158	66,438	**126,379**
UK	2,726	12	1,214	-	2	757	6,575	30	18,235	**29,552**
USA	119	853	1,075	2,829	235	1,374	72,859	18,804	19,791	**117,939**
Total (To:)	**17,130**	**2,888**	**4,564**	**3,799**	**494**	**9,855**	**136,504**	**27,743**	**111,859**	**314,836**

Source: TFMS, NAT Flights

Unique Visitor Flow Matrix (000s) - 2020

To: / From:	Canada	Denmark	Iceland	Ireland	Norway	Portugal	ROW	UK	USA	Total (From:)
Canada	2.4	11.3	11.1	28.9	0.1	28.8	1,072.6	156.2	5.0	**1,316.3**
Denmark	2.5	31.7	15.3	0.0	0.0	0.2	2.3	0.0	81.8	**133.8**
Iceland	2.5	15.3	0.0	0.7	0.0	-	23.7	1.8	28.3	**72.3**
Ireland	6.5	0.0	0.7	-	-	0.1	6.2	-	175.6	**189.0**
Norway	-	0.0	0.0	-	-	0.1	5.4	0.0	18.1	**23.5**
Portugal	6.4	0.2	-	0.1	0.1	268.4	32.0	2.8	48.0	**358.0**
ROW	240.3	2.3	23.7	6.2	5.4	32.0	4,497.0	81.0	4,093.6	**8,981.5**
UK	134.1	0.0	7.5	-	0.0	14.9	341.0	0.3	1,246.2	**1,744.0**
USA	1.6	35.3	55.3	153.3	4.8	74.6	3,364.0	893.8	1,425.1	**6,007.8**
Total (To:)	**396.3**	**96.1**	**113.7**	**189.1**	**10.3**	**419.0**	**9,344.1**	**1,136.0**	**7,121.6**	**18,826.3**

Source: Adjusted Passenger Flows Matrix using Visitors Data from selected countries (US, UK, and Canada)